

Distribution of Deep-water Commercial Fisheries Species-Golden Crab, Tilefish, Royal Red Shrimp- in Deep-water Habitats off Eastern Florida from Submersible and ROV Dives

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Images from *Johnson-Sea-Link* submersible and ROV dives off eastern and southern Florida. From top to bottom, left to right: royal red shrimp; golden crab in coral rubble habitat; golden crab on rocky slope of Miami Terrace escarpment; blue-line tilefish on rocky habitat of Pourtales Terrace; golden tilefish entering rocky burrow; galatheid crab sharing tilefish burrow; pelagic holothurian (*Enypniastes* sp.) apparently feeding on bottom; blind white lobster (*Acanthacaris caeca*) in mud burrow; lost military MK 76 practice bomb buried in bottom.

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EXECUTIVE SUMMARY

- The purpose of this study is to document the occurrence and distribution of golden crab, blueline tilefish, golden tilefish, and royal red shrimp in deep-water habitats (200 m to 900 m) off eastern and southern Florida, within the jurisdiction of the South Atlantic Fishery Management Council (SAFMC).
- Videotapes were selected from extensive surveys by the Principal Investigator (P.I.) and colleagues of the deep-water coral ecosystems using Harbor Branch Oceanographic Institute's (HBOI) *Johnson-Sea-Link* (JSL) and *Clelia* submersibles. In addition, the P.I. has conducted several deep-water benthic environmental surveys using the *JSL* submersible and Remotely Operated Vehicles (ROVs) that were also incorporated into this project: the proposed Seafarer liquified natural gas (LNG) pipeline (Reed, 2006 a), Calypso LNG pipeline (Messing et al., 2006 b), Calypso deep-water LNG port (Messing et al., 2006 a), and the CFX telecommunications cable (Reed et al. 2008).
- A total of 94 submersible and ROV dives were used for this project, covering a total distance of 203 nmi (376 km). A total of 386 hours of videotapes were reviewed and annotated (Appendix 1). The dives were categorized by type of survey: 1) submersible dives to survey deep-water reef ecosystems, and 2) environmental impact surveys for proposed deep-water LNG pipelines, port and telecommunication cable.
- The submersible reef ecosystem surveys ranged over four regions: 1) deep-water *Lophelia/Enallopsammia* coral mounds extending from North Florida to Miami at depths of 400 to 800 m (Figs. 7, 8, 9); 2) Miami Terrace- rock pavement, escarpments, and ledges, at depths of 300-600 m (Figs. 10-12); 3) Pourtalès Terrace- high relief bioherm mounds and massive deep-water sinkholes at depths of 200-450 m (Fig. 13); and 4) Tortugas and Agassiz Valleys, at depths of 300 to 940 m (Reed 2004, Reed et al., 2005 b, 2006). Of the reef ecosystems surveyed, 59% were the *Lophelia/Enallopsammia* coral mounds, and 41% were on rock/coral habitat on the Miami Terrace and Pourtalès Terrace.
- The pipeline and cable environmental surveys were E-W linear transects from 200 m depths to the EEZ (~900 m) and were mostly on soft-bottom habitat (46-77%; Figs. 4, 6). During the transects which crossed the Miami Terrace, various types of hard-bottom habitat were encountered from rock pavement to high-relief rocky escarpments.
- A total of 344 golden crabs were enumerated from all dives and ranged in depths from 247 to 888 m with a peak in numbers between 300 and 500 m (Table 6, Figs. 14-16). The temperature range of the golden crabs in our study was 7-11°C, with peaks in abundance at 9-10°C. From our size estimates, the carapace width of the golden crabs ranged from 58 to 229 mm. For the most part, the observations of golden crab were within or adjacent to the Allowable Golden Crab Fishing Areas designated by the SAFMC off eastern and southern Florida. The northern boundary of the "Northern" Allowable Fishing Area is 29°N, and we observed no crabs north of 28°30'N.
- The golden crabs were associated with the following reef zones: East Florida *Lophelia/Enallopsammia* coral bioherms, Miami Terrace, Pourtalès Terrace, and Tortugas/Agassiz Valleys. They were also common on the Miami Terrace escarpment and on the mud bottom of the Straits of Florida in the central Florida region (Fig. 15). Off south Florida, they were quite common on the southern Miami Terrace sites (Fig. 16).

- Of the 344 golden crabs recorded in this survey, 52% were found on soft bottom, 19% on coral habitat, and 29% on rock habitat (Fig 17). It appears that golden crabs in this region are adaptable to all habitat types including: dense live coral thickets, vertical rock walls, rock pavement, rock boulders and slabs, and flat muddy-sand soft bottom (Figs. 18, 19). However, the crab densities were twice as great on soft muddy-sand substrate compared to hard bottom, either coral or rock.
- A total of seven blueline tilefish were observed; five were associated with the high-relief bioherms on the Pourtalès Terrace and two were in the Calypso Port region at depths ranging from 186 to 285 m. Only three golden tilefish were observed which were along the Calypso LNG surveys and near a deep-water sinkhole on the Pourtalès Terrace at depths of 257 to 290 m.
- Documentation of the royal red shrimp was difficult. Most of the shrimp observations were at relatively long range and very short duration in the video, and size could only be determined for a few. The red shrimp observations were primarily in two regions: at the foot of the Miami Terrace escarpment and the Tortugas/Agassiz escarpment at depths of 240 to 921 m, but mostly >600 m (Figure 28).
- Mapping of deep-water reefs remains limited and very few regions of the South Atlantic Bight and Straits of Florida have been mapped with high-resolution bathymetry or multibeam sonar. Without proper maps it is impossible for fishers to avoid deep-water reef habitat.
- We have discovered several high-relief, deep-water reef sites off Florida that appear only as a small irregularities in the isobaths of the best available NOAA bathymetric charts. One example is where we discovered deep-water coral reefs with 60-m relief (200 ft) which are covered with pristine thickets of live *Lophelia* coral (Fig. 30).
- The current golden crab fishery off eastern Florida has been granted Allowable Golden Crab Fishing Areas (Northern, Middle [A,B,C], and Southern) by the SAFMC within the newly designated Deep-water Coral Habitat Areas of Particular Concern (CHAPC); however, some of these zones abut and overlap hard-bottom habitat in the following three regions: East Florida *Lophelia* reefs, Miami Terrace, and Pourtalès Terrace.
- Within the Deep-water Coral Habitat Areas of Particular Concern, we have documented at least eight sites that clearly show high-relief bathymetric features and probable coral habitat that are within the Allowable Crab Fishing Areas. (Fig. 31).
- We strongly request and recommend that NOAA NMFS and SAFMC remove these sites from the Allowable Crab Fishing Areas as discussed herein in order to protect and preserve vulnerable deep-water coral habitat.

INTRODUCTION

Recently, five Deep-water Coral Habitat Areas of Particular Concern (CHAPCs) were established off southeastern U.S., covering nearly 23,000 sq. mi, by NOAA Fisheries, Department of Commerce (Federal Register, Vol. 75, No. 119, June 22, 2010). These sites were originally designated in 2009 by the South Atlantic Fishery Management Council (SAFMC) after nearly six years of extensive research by numerous scientists (Reed, 2004; Ross, 2004). These CHAPCs were established due to the concern for the potential of benthic fisheries in this region to impact coral and hard-bottom habitat. Potential fisheries at these depths are the golden crab (*Chaceon fenneri*), the blueline tilefish (*Caulolatilus microps*), the golden tilefish (*Lopholatilus chamaeleonticeps*), and the various species called the royal red shrimp (*Pleoticus robustus*). All of these species have been observed during dives with human occupied submersibles (HOV) and Remotely Operated Vehicles (ROV).

Reed (2004), Ross (2004), and Lumsden et al. (NOAA, 2007) published the state of knowledge regarding deep-water reefs off the southeastern U.S., from North Carolina to southern Florida, based primarily on submersible dives using the *Johnson-Sea-Link* and *Clelia* manned submersibles. Expeditions by the Principal Investigator (P.I.) from 1999 to present have explored various deep-sea coral ecosystems (DSCE) off the southeastern U.S. (Blake Plateau, Straits of Florida, and eastern Gulf of Mexico). The P.I. has documented over 400 deep-water, high-relief geological features off eastern and southern Florida that are probable hard-bottom and coral habitat and has ground truthed many of these with submersible, ROV, and Automated Underwater Vehicles (AUV).

The purpose of this study is to document the occurrence and distribution of golden crab, blueline tilefish, golden tilefish, and royal red shrimp in deep-water habitats (200 m to ~900 m) off eastern and southern Florida, within the jurisdiction of the South Atlantic Fishery Management Council (SAFMC). The scope of this study extends from the latitude of the north Florida border to the Dry Tortugas and out to the boundary of the U.S. Exclusive Economic Zone which is ~900 m deep within the Straits of Florida. Videotapes from manned submersible and ROV dives were selected to be representative of the geographical range north to south off Florida and the depth range from 200 m to 900 m. In addition, some sites had multiple dives which allowed for comparisons of potential diurnal cycles and seasonal cycles for some of the species. The videotapes of each of these dives were re-analyzed to document these species and associated habitats. In addition to the submersible dives which targeted coral and hard-bottom habitat, several deep-water benthic environmental surveys for proposed natural gas pipelines, port, and telecommunications cable were also re-analyzed. These provided east-west transects from depths of 200 m to the EEZ (~900 m), which included extensive soft-bottom habitat for comparison of species distributions with the hard-bottom sites. And finally, data were included from a 1987 ROV benthic survey of a deep-water EPA Ocean Dredged Material Disposal Site off Miami for the occurrence of tilefish and golden crab.

These archives of submersible and ROV videotapes provide resource managers and researchers a valuable database regarding these deep-water resources. By analyzing the videotapes we have ascertained information regarding the distribution of these target species in this region: their relationship to coral, sponge and hard-bottom habitats; their relative abundances; and their sizes.

It must be understood that the original research expeditions were not targeting these species, and the video transects were used primarily to document and characterize the benthic habitat and fauna in general; however, the data they provide still are useful in assessing these target species and habitat.

Objectives

The primary objectives of this study are the following:

1. Develop a master database of metadata listing dives, tapes, dates, locations, and depth.
2. Select videotapes within the region and depth range to be used for analyses.
3. View and analyze tapes for the targeted taxa (golden crab, tilefish and royal red shrimp).
4. Develop Excel spreadsheets that provide detailed annotations for each dive, including, abundance of each target species and associated habitat type (i.e., coral, sediment, or rock; hard bottom vs. soft bottom).
5. Submit report on results to SAFMC and NOAA CRCP.

This report includes detailed analysis of the original videotapes with documentation of substrate, habitat, and fauna along with photographs (from video frame grabs). Maps are illustrated spatially on figures generated using ArcGIS software. This final report to the SAFMC and NOAA includes a DVD containing the PDF report with the complete videotape annotations, and JPEG images from the video frame grabs documenting the dominant habitat types and fauna.

Literature Review of Golden Crab

Taxonomy

Two species of deep-sea brachyuran crabs in the genus *Chaceon* occur off the western North Atlantic: the golden deep-sea crab, *Chaceon fenneri* (Manning and Holthuis, 1984) and the red deep-sea crab *C. quinquegens* (Smith, 1879). The older name *Geryon* is a synonym. The genus *Chaceon* of the decapod family Geryonidae is characterized by five anterolateral teeth on each side of the carapace whereas *Geryon* has three teeth (Manning and Holthuis, 1989). *C. fenneri* is cream to tan whereas *C. quinquegens* is red to deep orange (Manning and Holthuis, 1984).

All specimens from Florida that were originally identified at *C. quinquegens* by Rathbun (1937) proved to be *C. fenneri* by Manning and Holthuis (1984). Commercial fishing for the red crab on the eastern U.S. is mostly from Nova Scotia and Georges Bank to Cape Hatteras and is regulated by the New England Fishery Management Council (Chute, 2010). Therefore, although the species may occur off eastern Florida, it is not part of the deep-sea crab fishery managed by the SAFMC and will not be discussed further.

Size and Sex

The largest reported carapace width of golden crab was 195 mm for males (Kendall 1990) and 147 mm for females (Manning and Holthuis, 1984). Wenner et al. (1987) reported males weighing between 100-2109 g. Maximum carapace lengths are up to 150 mm (length is 0.79-0.82 times the width) (Manning and Holthuis, 1984). Non-ovigerous females carapace lengths

range in size from 31 to 102 mm and ovigerous females from 94 to 114 mm (Manning and Holthuis, 1984).

Commercial fisheries data suggest that oviposition in golden crab occurs from mid August through late October with eggs being carried until February and March (Hines, 1988; Erdman et al., 1990). Female golden crabs molt just before mating occurs (Wenner *et al.*, 1987; Lindberg and Lockhart, 1993) and produce a single brood per year (Erdman et al., 1990). Brood size is correlated with carapace width (Erdman et al., 1990) and is approximately 10% of the body weight (Hines, 1988). It has been suggested that there are some individuals in the population that may reproduce biannually (Erdman et al., 1990). Wenner et al. (1987) suggests that females become sexually mature when carapace width reaches 97 mm (Wenner et al., 1987).

Distribution

Geographic and Depth Ranges

Golden crabs are distributed in deep water, along the outer continental shelf, from the Chesapeake Bay into the Straits of Florida and the Gulf of Mexico (NOAA, 2010; Manning & Holthuis, 1984, 1989) where the Gulf Stream is essential to its larval distribution (NOAA, 2010). The maximum abundance of golden crabs is in the South Atlantic Bight (NOAA, 2010).

Depth records from golden crab fisheries for the southeastern U.S. range from 240 to 915 m (Kendall, 1990; Wenner, 1990; Wenner and Barans, 1990). Distribution records for the species show the shallowest record of 183 m off Tortugas (Boone, 1938 in Manning and Holthuis, 1986) and the deepest of 1,462 m off Bermuda (Wenner and Barans, 1990). In general, most records for golden crab occur between 350 and 500 m (Manning and Holthuis 1984). Trappings off the coast of South Carolina and Georgia show the maximum abundance of golden crab occurring between 367 and 549 m (Wenner et al., 1987).

In the Gulf of Mexico, golden crabs were found at all depths sampled (311 m to 677 m) but were most abundant between 311-494 m (Erdman et al., 1990). Wenner et al. (1987) caught 1.6 crabs per trap between 274 and 366 m depths. The most crabs caught were 22.3 crabs per trap in 458-549 m depths. Crabs per trap dropped off at deeper depths which may be related to unsuitable sediments. There is a deeper distribution of similar habitat types off the coast of Miami compared to South Carolina which suggests that the depth distribution of golden crab changes with latitude (Wenner and Barans, 1990). Wenner and Barans (1990) estimate that the small area (26-29 km²) off Charleston, South Carolina in 300-500 m depths has between 5,000 and 6,000 crabs. The total overall density of this study area is 1.9 crabs ha⁻¹. The low density of golden crabs observed compared to trap data indicates that crabs are drawn to traps from a wide range (Wenner 1990; Kendall 1990).

Substrate Preferences

Golden crabs essential fish habitats, as reported by NOAA (2010), are: flat foraminiferan ooze, dead coral mounds, ripple sediment, black pebble bottom, low outcrops and soft bioturbated habitats. Visual counts of golden crabs conducted via submersible showed higher densities of crabs on low relief outcrops (0.7/1000 m² as reported by Wenner and Barans 1990; Wenner 1990) then other substrates (dune substrates had the lowest, <0.1/1000 m²) even though trap

catch was higher on soft bottom substrates and namely on a mixture of silt-clay and foraminiferan tests (Lindberg and Lockhart, 1993). There were no crabs trapped on rock and coral rubble bottoms in the depth range of 550-640 m by Wenner et al. (1987). In situ observations of golden crabs also show low densities of crabs on coral, flat ooze and rippled sand (Wenner and Barans, 1990).

In the Gulf of Mexico golden crabs were observed on both hard- and soft-bottom habitats and were commonly found hiding under ledges, in cracks along the hard bottom, and at the base of soft corals (Lindberg and Lockhart, 1993). Golden crabs were most abundant along depth contours with the most hard bottom (Lindberg and Lockhart, 1993). The highest densities of golden crabs occurred on “canyon features” (Lindberg and Lockhart, 1993). The largest trap catches in the Gulf of Mexico were, in contrast to the South Atlantic Bight, on: cobble, vertical rock walls and rock outcroppings (Wenner and Barans, 1990).

Temperature and Current Preferences

The lowest temperature reported for crab trappings was 7.14°C (Wenner et al., 1987) and the highest temperature was 15°C (Wenner and Barrans 1990). Golden crabs were trapped where current velocity ranged from 1.4 to 1.6 km hr⁻¹ (Wenner and Barrans 1990).

Sex Zonation

Golden crabs show partial sex zonation with an inverse size to depth ratio. Trapped males were larger than females overall and the largest of both sexes appeared at the shallowest depths (Lindberg and Lockhart, 1993). In the Gulf of Mexico, golden crabs were found with the largest females found at the shallowest depths, which suggests an up-slope migration that may be related to reproduction (Erdman et al., 1990). It has been suggested that females migrate to shallower depths to accommodate larval release in shallower, warmer water as well as oogenesis and vitellogenesis being more productive at shallower depths (Erdman et al., 1990; Lindberg and Lockhart, 1993). More mated pairs were found at deeper depths on soft bottom (Lindberg and Lockhart, 1993). However, it is also common for larger golden crabs to be found in the deepest depth of their bathymetric range, but in low densities (Wenner et al., 1987; Lindberg and Lockhart, 1993). Wenner et al. (1987) showed that the mean carapace width and weight of females was greatest in the deepest depths sampled (733-823 m). Crab trapper’s accounts show a decline of catch rates and the overall number of males as depths increase (Wenner et al., 1987).

Golden Crab Fishery

There was a periodic fishery of golden crabs in the 1970’s off the Carolinas and then a more recent fishery which resulted in the removal of a few hundred tons of the crab every year since 1998 with roughly a fishing mortality of 2.0 (Wahle et al., 2008). The golden crab fishery has operated in the deep waters off Florida since the early 1990s following the prohibition of fish traps in the snapper grouper fishery (SAFMC, 2009 a). As the fishery began to grow, the same fishers who had been displaced earlier from their snapper grouper trap fishery approached the SAFMC with their plan proposed for the golden crab fishery. This plan included measures to protect the stock and a limited entry program to protect them from large vessels entering the fishery from outside the area. The SAFMC worked cooperatively with the fishers to develop a management plan that would eventually limit the number of fishers in established Allowable

Golden Crab Fishing Areas (Northern, Middle [A,B,C], and Southern) off eastern Florida and within the new Deep-water Coral Habitat Areas of Particular Concern (CHAPC). The fishery management plan was implemented in 1995 (SAFMC, 2009 a).

Currently there are only a few vessels that actively fish for golden crab off eastern Florida. Of these, three operate within the Allowable Golden Crab Fishing Area “A” which is part of the Middle Zone within the CHAPC (SAFMC, 2009 a). In 2003 there were 13 permits issued and four vessels reported landings with a total weight of 351,987 lbs (NMFS, 2004). Nine to 13 kilograms (20-30 pounds) of crabs per trap is a desirable catch. On a good season, fishers may catch 32 to 45 kilograms (70-100 pounds) per trap.

Because little is known about the impact this gear has on bottom habitat and how the gear shifts once it is deployed from the surface as well as on the bottom, the potential exists for deep-water coral habitat to be impacted. While the fishers may try to be careful not to intentionally impact the bottom, occasional gear failure is inevitable in which gear could land on deep-water coral habitat (SAFMC, 2009 a). Also it is well known that detailed bathymetric maps for these deep-water regions and reefs are inadequate and very few regions of the South Atlantic Bight and Straits of Florida have been mapped with high-resolution bathymetry or multibeam sonar. Without detailed maps it is impossible for fishers to avoid deep reef habitat. Much of the coral habitat is low relief and would not show up on a fathometer. In addition, although the fishers have indicated that they do attempt to avoid coral reefs, a string of traps may drift more than 2 kilometers (1.5 miles) of the initial placement. This presents a unique dilemma from an enforcement perspective. Monitoring the position of vessels using a Vessel Monitoring System (VMS) would not provide data regarding the position of the traps. The vessel could be outside of a closed fishing area but the gear could end up within it. The location of deployment is noted using GPS but buoys are not used to mark the location of traps due to strong currents. Because of these constraints, the SAFMC has currently opted not to require VMS for this fishery. Instead, the SAFMC recommended exploring other technologies that would accurately deliver the position of fishing gear on the seabed such as pingers or locating them with sonar for a more accurate location on the traps (SAFMC, 2009 a). Managers and law enforcement officials would ultimately have to consider the feasibility of this method based on ease of installation and cost.

The golden crab fishers deploy long-lines consisting of 5/8” polypropylene line up to 8 kilometers (5 miles) long to which 20-50 baited traps are attached approximately 152 m (500 feet) apart and fished at depths up to 548 m (1800 ft). The 30-lb traps are 4 ft x 2.5 ft x 1.5 ft, and made of 3/8” rebar covered in 1x2” mesh. The main trap door is shut using degradable wire to help prevent ghost fishing. In addition, the traps are required to have two escape gaps to allow females and small individuals to escape. Traps are the only allowable gear in the golden crab fishery. Rope is the only allowable material for mainlines and buoy line. Maximum trap size is 1.8 cubic meters (64 cubic feet) in volume in the Northern Zone and 1.4 cubic meters (48 cubic feet) in volume in the Middle and Southern Zones. Golden crab fishers may deploy 4 trawls in a two-week period pulling 100 per week (M. Brouwer, SAFMC, pers. communication). Trawls are set with the current in areas of soft mud adjacent to deep-water coral habitat. However, due to the strong currents of the Florida Current the string of traps may settle on the seabed more than 2 kilometers (1.5 miles) away from the vessel. Retrieval begins down current of the trawl where the main line on the bottom must be grappled. The success of this operation depends on

currents and sea conditions. The grapple consists of links of large chain and is used to hook the main line towards one end of the string. Once the grapple successfully hooks the main line, the line is pulled up and looped over the pulley allowing crew members to pull the traps.

Literature Review of Tilefish

Taxonomy

Three common tilefish species occur in this region— blueline tilefish, *Caulolatilus microps* Goode and Beane, 1878; golden tilefish, *Lopholatilus chamaeleonticeps* Goode and Beane, 1879; and sand tilefish, *Malacanthus plumieri* (Bloch, 1786). Due to their commercial importance as food and game fish, *C. microps* and *L. chamaeleonticeps* are important in a fisheries-management perspective (SAFMC, 2009 b) and are considered in our study. The golden tilefish is easily distinguishable from other members of the family Malacanthidae by the large adipose flap, or crest, on the head. The species is blue-green and iridescent on the back, with numerous spots of bright yellow and gold. The belly is white and the head is rosy, with blue under the eyes. The pectoral fins are sepia-colored, and the margin of the anal fin is purplish-blue. The blueline tilefish which lacks the adipose crest is dull olive-gray and white on the belly (SAFMC, 2010).

Sex and Size

Both the golden and blueline tilefish species have complex life cycles, but little information is available on reproduction. Blueline tilefish are hermaphroditic (Ross and Merriner, 1983), which may also be the case in golden tilefish. Golden tilefish are known to spawn March to September while blueline tilefish spawn from April through October off the Carolinas (Ross and Merriner, 1983). Female golden tilefish lay 2-8 million pelagic eggs; blueline tilefish produce between 0.2 million and 4.1 million eggs per spawning (Ross and Merriner, 1983). The pelagic eggs of golden tilefish are 1.16 to 1.4 mm in diameter and newly hatched young measure 2.6 mm in notochord length. Pelagic juvenile golden tilefish descend to the bottom when they measure 9.0 to 15.5 mm in standard length (Fahay, 1983).

Growth in northern stocks of golden tilefish occurs at about 10 cm per year for the first 4 years. At year 9, males average 74 cm fork length (FL) and females average 64 cm FL (Able, 2002). Sexual maturity is reached in female golden tilefish at about 50 cm FL and 5 years of age, while males reach maturity at 65 to 85 cm FL and 7 to 11 years of age (Able, 2002). The smaller blueline tilefish reaches maturity at 42.5 to 45.0 cm total length (TL) in females (ages 4 and 5) and males reach maturity at about 50 cm TL at age 5 (Ross and Merriner, 1983). Some evidence suggests that reduced population densities of golden tilefish may trigger males to reach maturity at smaller sizes and younger ages (Grimes et al., 1988).

Food

Prey taxa for golden tilefish include mainly crab and shrimp species, although other invertebrates (e.g., bivalves, squids, polychaete worms) along with elasmobranchs (i.e., spiny dogfish) and teleost fishes (e.g., eels, myctophids, butterfish, hake) are sometimes consumed (McEachran and Fehhelm, 2005). Prey taxa for blueline tilefish include mainly benthic invertebrates (e.g.,

polychaete worms, mollusks, portunid crabs) and to a lesser extent, fishes (Dooley, 2002).

Distribution

Geographical and Depth Range

The geographical ranges of both the golden and blueline tilefish include the outer continental shelf and slope waters of the western central Atlantic, including southeast Florida (Dooley, 2002; McEachran and Fechhelm, 2005). The golden tilefish generally occur at depths >200 m and have a wide distribution from Nova Scotia to South America, but apparently are excluded from the Caribbean (Dooley, 1978; Able et al., 1993). Off southeastern U.S. there are two stocks of golden tilefish: Mid-Atlantic Bight to southern New England, and Cape Hatteras to Gulf of Mexico and Yucatan. Grimes et al. (1986) has reported it at depths of 80-305 m off eastern U.S. and McEachran and Fechman (2005) reported it at depths of 81-540 m over its entire range. In detailed submersible surveys from depths of 30 m to 300 m off central eastern Florida slope, the blueline tilefish was documented at depths of 76-269 m, but most were within 100 and 200 m (Avent and Stanton, 1979). They had only a few sightings of golden tilefish which were at depths of 180-250 m. In studies off southeastern U.S., blueline tilefish were generally found at depths of 90-150 m, but burrows were documented from 57 to 211 m (Able et al., 1987 b). In other studies the blueline tilefish has been reported from southeastern U.S. to Campeche, Mexico at depths of 75-236 m (Ross and Huntsman, 1982) and from 30-130 m by McEachran and Fechhelm (2005).

Temperature Preferences

Blueline tilefish were reported off central eastern Florida at bottom temperatures of 13.8-18.0°C (Able et al., 1987 b); however, Avent and Stanton (1979) recorded average temperatures of 12-18°C at similar sites on the upper slope with occasional upwellings to 10° C and even as low as 6-9°C. Golden tilefish can also endure abrupt temperature changes from upwelling to below 8.0°C for a short time (Able et al., 1993). In general, golden tilefish are known to prefer temperatures of 9-14°C (Grimes et al., 1986; Matlock et al., 1991) and were recorded off eastern Florida at temperatures of 8.6-15.4° C (Able et al., 1993).

Habitat and Burrows

Numerous observational studies with submersibles of deep-water tilefish (blueline tilefish and golden tilefish) have documented the morphology of the tilefish burrows and have compared the two species. For the larger golden tilefish, burrows as large as 4-5 m diameter at the top of the cone-shaped depression and 2-3 m deep, have been observed in the clay sediments of Hudson Submarine Canyon, but average burrow size in the canyon was 0.88 to 1.6 m (Able et al., 1982; Twitchell et al., 1985). In these clay substrates off Mid-Atlantic and southern New England the golden tilefish form three types of burrows: horizontal excavations in clay outcrops on wall of submarine canyons, scour depressions under boulders, and the primary habitat of funnel-shaped vertical burrows in clay substrates (Grimes et al., 1986). The burrows are believed to be formed by a combination of oral excavations by the fish and finning motions to flush fine sediments from the burrow, and bioerosion by associated fauna (crabs, fish), (Grimes et al., 1986).

Off eastern Florida the sediments on the upper slope are siltier than off New England and the

burrows of golden tilefish are smaller, 0.3-1.5 m diameter (Able et al., 1993). The largest burrows of blueline tilefish observed by submersible off Florida were 1.5 x 0.5 m diameter, although sidescan sonar records of the area showed apparent tilefish burrows as large as 3 x 1.5 m (Able et al., 1987 a, b). Smaller burrows attributed to blueline tilefish ranged from 0.3 to 0.6 m diameter and averaged 48 cm. Sidescan sonar has been shown to be able to detect burrows as small as 0.5 m diameter of both blueline and golden tilefish in both clay sediments off New England and softer carbonate sediments off east coast Florida (Able et al., 1987 a).

The larger burrows tend to be elongate to elliptical. This is thought to be caused by the erosion and slumping of the sandy-silt sediment into the shaft burrow which then needs to be repeatedly burrowed out causing the elongate feature. Compared to sites off New England, which tend to have clay substrate, eastern Florida offshore sites tend to be sandy-silt sediment so the larger burrows are often elongate and the shafts are often oblique rather than vertical (Able et al., 1987 b). Analysis of sediments on the upper slope off central eastern Florida found blueline tilefish at depths of 150 m in sediment consisting of 50-82% sand and 5-11% clay; golden tilefish at 238 m were in 24% sand and 28% clay (Able et al., 1987 b, 1993).

The burrows of both blueline and golden tilefish are relatively similar and in fact both species have been observed in the same burrow (Able et al., 1987 b). Both species construct burrows in areas of malleable, relatively soft sediment. Burrows of both form cone shaped depressions that narrow to a single oblique or vertical shaft which is the actual burrow of the tilefish. Smaller secondary burrows of associated crustaceans and fish are common around the upper wall of the cone.

Based on burrow shape and size alone, we can not positively identify the burrows in this study as definitely made by either the golden or blueline tilefish except where the associated fish was observed. Both have very similar shapes and sizes especially in the siltier carbonate sediments of south Florida. Other parameters must be considered.

Neither the blueline nor golden tilefish are known to migrate (Dooley, 2002), and mark-recapture data indicate that the fish exhibit long-term residence, as all recaptures up to 20 months were made < 1 nmi from the release location (Grimes et al., 1986).

Densities

In surveys of densities of tilefish off central eastern Florida, golden tilefish burrow densities ranged from 0.44 to 8.10 burrows/1000m² (Able et al., 1993). Off the Mid-Atlantic and southern New England region, Grimes et al. (1986) reported densities of 145 to 1,234 burrows/1000m² and Matlock et al. (1991) reported 1,600/1000m² off Texas. These counts were based on total number of burrows and not necessarily active burrows. Average densities of blueline tilefish off southeastern U.S. were 0.5-1.5/1000m² with maximum density of 13/1000m² (Able et al., 1987 b). They also noted that for small burrows (0.3-0.6 m diameter) of blueline tilefish, burrow densities could be as high as 0.5-1.0/m² (=1000/1000m²).

Tilefish Fishery

Commercial and recreational tilefish fisheries within the jurisdiction of the SAFMC are regulated under the snapper grouper fishery gear restrictions (SAFMC, 2010). Allowable commercial gear includes bottom longline, but only in depths 50 fathoms or more and only north of St. Lucie Inlet, Florida. Annual commercial quota is 295,000 pounds gutted weight (gw) and trip limit is 4,000 pounds gw. Recreational retention limits are three tilefish per person per day and including a maximum of one golden tilefish. Data from South Carolina fishery showed substantial decline in catch rate and mean size over 4-5 year period with low to moderate fishing effort (Low et al. 1983).

Literature Review of Royal Red Shrimp

Taxonomy

Pleoticus robustus (Smith 1885), originally *Hymenopenaeus robustus* is known under the vernacular – royal red shrimp and is a penaeid in the family Solenoceridae. *P. robustus* is differentiated by short hairs on the body and a toothless ventral margin (Perez Farfante, 1977, SAFMC, 2010).

Color patterns of the royal red shrimp are variable, ranging from brick red to opaque white (Anderson and Lindner, 1971; Perez Farfante, 1977). The royal red shrimp also exhibit a diurnal color change appearing pink during the day and red at night. The three color phases described by Perez Farfante (1977) are: pink/red phase – mainly pink body with a few red and white lines, the salmon phase – the carapace is a deep salmon color, and an opaque white phase – the shrimp appears opaque white with a salmon tint. From video or photographs it is very difficult to differentiate various species, and in this region, various genera that may be mistaken for *Pleoticus* include *Aristaeopsis* or *Plesiopenaeus*.

Biology

Behavior

In situ observations of shrimp reveal they are benthic, commonly creating numerous one to three foot-long shallow grooves in which they partially bury in search of food. If disturbed, they rise from the burrows and swim upright. If frightened they flex their abdomen and swim forward quickly turning on their sides and bouncing off the bottom every few feet. When settled they stand on the bottom and do not burrow (Anderson and Lindner, 1971).

Size

The median length of males observed by Anderson and Lindner (1971) was 138 mm and 173-183 mm for females. The largest royal red shrimp reported is a 184 mm male and 229 mm female (Klima, 1969 In: Perez Farfante, 1977). Shrimp size has been correlated with latitude and inversely related to depth. Larger individuals are found north of 29°39'N and smaller specimens were between 29°00'N and 29°39'N (Anderson and Lindner, 1971). Male and female shrimp become sexually mature at a total length of 125 and 155 mm respectively with ovary

development starting when females are 136 mm (Perez Farfante, 1977; Anderson and Lindner, 1971).

Reproduction

Royal red shrimp become mature at three years when morphometric changes begin to occur and they can live up to five years. Spawning occurs throughout the year with a peak between January and May. Recruitment begins when shrimp are a year old and less than 100 mm in length. The shrimp are not fully recruited until two or three years old. Most recruiting occurs from the south and central location of the grounds (Anderson & Lindner, 1971; Perez Farfante, 1977).

Distribution

Geographic and Depth Ranges

The geographic range spans from Martha's Vineyard Massachusetts at 40°00'N through the Gulf of Mexico and the Caribbean to French Guiana (7°05'N) (Williams and Wigley, 1977; Perez Farfante, 1977). But, only occasionally does *P. robustus* appear north of Cape Hatteras and they are also scarce off Guiana. The highest concentrations of royal red shrimp are off northeast Florida (St. Augustine shrimping grounds) and in the northeastern Gulf of Mexico (Perez Farfante, 1977).

The depth range for royal red shrimp on the upper continental slope is 180-730 m with the largest concentrations between 256 and 500 m (Anderson and Lindner, 1971; Perez Farfante, 1977; Anonymous, 2010). There is a moderate commercial fishery in 73-750 m depths (Williams and Wigley, 1977).

Temperature Preferences

In the Gulf of Mexico and southeast U.S., royal red shrimp are found in a temperature range of 5-15°C and are commercially rich between 9-12 °C, and usually after a 2-3 day cold upwelling they move inshore to 75 m depths (Perez Farfante, 1977; Unknown 2010).

Substrate Preferences

Royal red shrimp have a substrate preference of black terrigenous silt off Mississippi Delta; calcareous mud off Tortugas and silty sand (green mud) off N.E. Florida (Perez Farfante, 1977).

Red Shrimp Fishery

It was first reported that *P. robustus* may be commercially viable in 1951 based on their abundance in the Mississippi River Delta (Perez Farfante, 1977). *P. robustus* is the only deep-water penaeid in the western Atlantic that is commercially fished (Perez Farfante, 1977). There are three locations off the U.S. that have commercial possibilities for the royal red shrimp fishery: St. Augustine Grounds off N.E. Florida, Dry Tortugas, and Mississippi River Delta (Anderson and Lindner, 1971; Perez Farfante, 1977).

The St. Augustine grounds, which began being exploited in 1962, are located from 27°30'N to 31°N running from Cape Canaveral, Florida to Georgia in greater than 100 fathoms (mainly

between 256-475 m) and inside the axis of the Gulf Stream (Perez Farfante, 1977). A survey done by the Bureau of Commercial Fisheries (now NMFS) showed that between 183-256 m the bottom was largely untrawlable due to limestone formations and dense gorgonians. At depths of 256-475 m the bottom was mainly sand or silty-sand creating excellent trawling conditions and greater than 475 m there were extensive patches of *Lophelia* making the bottom hazardous to trawling with standard shrimp gear (Anderson and Lindner, 1971). Total landing of shrimp in 1976 was 75.7 metric tons (heads removed), caught mainly in this area (Perez Farfante, 1977). Total landings in the South Atlantic averaged about 102 metric tons per year between 2004 and 2009. The Gulf of Mexico fishery has implemented a conservative catch limit because of concerns about over fishing this fairly long-lived species (SAFMC, 2009 b).

Review of Deep-sea Coral Ecosystems off Southeastern United States

Deep-sea coral ecosystems (DSCE) in the southeastern U.S. exist along the eastern and southeastern Florida shelf slope at depths >200 m. These include a variety of high-relief, hard-bottom and live-bottom habitats at numerous sites along the Florida-Hatteras Slope off eastern Florida, the Straits of Florida, and the Miami Terrace and Pourtales Terrace off southeastern Florida. The predominate coral on these reefs are the azooxanthellate, colonial scleractinian corals: *Lophelia pertusa*, *Madrepora oculata*, and *Enallopsammia profunda*; various species of hydrocorals of the family Stylasteridae, black corals of the order Antipatharia, and species of gorgonian octocorals including the bamboo coral of the family Isididae. Various types of high-relief, live-bottom habitat have been discovered in the area: *Lophelia* coral mounds, lithoherms, sinkholes, ancient Miocene escarpments and karst topographic features (Reed 2002 a; 2004; Reed et al., 2005 a, 2006). These all provide hard-bottom substrate and habitat for sessile macrofauna including deep-water corals, octocorals (gorgonians), black coral, and sponges, which in turn provide habitat and living space for a relatively unknown but biologically rich and diverse community of associated fish, crustaceans, mollusks, echinoderms, polychaetes, sipunculans, and other macrofauna, many of which are undoubtedly undescribed species.

Deep-water *Oculina* coral reefs occur at depths of 70-100 m along the shelf-edge off central eastern Florida (Avent et al., 1977; Reed, 1980; Reed, 2002 b; Reed et al., 2005 b). In contrast, *Lophelia*, *Enallopsammia* scleractinian corals form reefs at greater depths, 400-900 m, on the Blake Plateau from Florida to North Carolina, in the Straits of Florida, and the eastern Gulf of Mexico (Stetson et al., 1962; Milliman et al., 1967; Uchupi, 1968, 1969; Neumann and Ball, 1970; Emery and Uchupi, 1972; Mullins et al. 1981; Newton et al., 1987; Reed, 2002 a; Arendt et al., 2003 b; Reed, 2004; Ross, 2004; Reed et al., 2006). At the base of the Florida-Hatteras Slope, off northeastern Florida, Paull et al. (2000) described the geology of an extensive system of deep-water lithoherms with relief of 40-150 m at depths of 440 to >900 m. They estimated that over 40,000 individual lithoherms may cover ~400 km² on the Blake Plateau and Straits of Florida, perhaps exceeding the areal extent of all the shallow-water reefs of the southeastern U.S. Farther south, in the northern Straits of Florida and west of Little Bahama Bank, Neumann et al. (1977) described a region of lithified carbonate mounds at depths of 500-700 m. These lithoherms are up to 300 m long and 50 m high and provide habitat to a diverse community of corals, crinoids, and sponges (Messing et al., 1990).

Off southeastern Florida the continental slope is interrupted by two intermediate-depth terraces, the surfaces of which are composed of limestone outcrops of Eocene- to Miocene-age strata: the

Miami and Pourtalès Terraces. Each has karst-like, high-relief topography, and deep-water sinkholes. The Miami Terrace is a 65-km long carbonate platform at depths of 200-400 m in the northern Straits of Florida, and consists of high-relief Tertiary limestone ridges, scarps and slabs that provide extensive hard-bottom habitat (Uchupi, 1966, 1969; Kofoed and Malloy, 1965; Uchupi and Emery, 1967; Malloy and Hurley, 1970; Neumann and Ball, 1970; Ballard and Uchupi, 1971). In 1970, Ballard and Uchupi (1971) using the submersible *Ben Franklin* crossed the northern portion of the Miami Terrace and described the eastern escarpment as continuous phosphoritic rock that included steep ridges of 50 to >80 m relief with some near-vertical slopes, undercuts and slump blocks, as well as shallower steps. Neumann and Ball (1970) using the submersible *Aluminaut* described the outer terrace margin as a pair of north-south ridges with steep phosphoritic limestone escarpments with vertical relief reaching ~90 m. At the base of the Miami Terrace escarpment, Neumann and Ball (1970) observed thickets of the deep-water corals (*Lophelia pertusa*, *Enallopsammia profunda* and *Madrepora oculata*) on depressions, sand ridges, and mounds. The hard-bottom habitat and fauna of the Miami Terrace escarpment was recently described in detail by Reed et al. (2006) who reported that the dominant benthic macrofauna included *Lophelia pertusa*, Stylasteridae (lace corals), Isididae (bamboo corals) and a variety of sponges and other octocorals, as well as schools of jacks (Carangidae) and wreckfish (*Polyprion americanus*). Deep-water, benthic environmental ROV surveys for the CFX telecommunications cable (Reed et al., 2008), the Calypso LNG pipeline (Messing et al., 2006 b), and the Calypso LNG deep-water port (Messing et al., 2006 a) also documented habitat and fauna on the Miami Terrace.

Slightly south of this, the Pourtalès Terrace extends along the Florida Keys to the Tortugas in the southern Straits of Florida, and provides extensive, high-relief, hard-bottom habitat, covering 3,429 km² (1,000 nm²) at depths of 200-450 m. The terrace parallels the Florida Keys for 213 km and has a maximum width of 32 km (Jordan, 1954; Jordan and Stewart, 1961; Jordan et al., 1964; Gomberg, 1976; Land and Paull, 2000). The terrace is bounded to the north by the sediment slope to the Florida Reef Tract and terminates to the south along the steep Pourtalès Escarpment (Gomberg, 1976). The hard bottom habitat and fauna of the high-relief mounds and expansive deep-water sinkholes were documented by Reed et al. (2005 a).

Potential Overlap of Bottom Fisheries and Deep-water Coral Habitat

The current golden crab fishery off eastern Florida has been provided Allowable Golden Crab Fishing Areas (Northern, Middle [A,B,C], and Southern) by the SAFMC within the newly designated Deep-water Coral Habitat Areas of Particular Concern (CHAPC); however, some of these zones abut and may overlap hard-bottom habitat in the following three regions: East Florida *Lophelia* reefs, Miami Terrace, and Pourtalès Terrace. Because little is known about the impact this gear has on bottom habitat and how the gear shifts once it is on the bottom, the potential exists for deep-water coral habitat to be impacted. While the fishermen may try to be careful not to intentionally impact the bottom, occasional gear failure is inevitable in which gear could land on deep-water coral habitat (SAFMC, 2009 a).

In order to determine whether the boundaries of the Allowable Crab Fishing Areas include potential live-bottom habitat, we used GIS (ArcView[®], ArcMap[®]) to incorporate NOAA bathymetric maps, our ground-truth dive data, and our crab distribution data to draw polygons in the Allowable Crab Fishing Areas around regions that show potential coral ecosystem habitat.

METHODS

Source Data: Deep-water Submersible and ROV Surveys

Submersible Deep-water Reef Surveys

Harbor Branch Oceanographic Institute's (HBOI) extensive collection of in situ videotapes from *Johnson-Sea-Link* and *Clelia* submersible dives on deep-water habitats off eastern Florida were used for this study. Many of these have been used primarily for habitat characterization of the deep-water reefs and hard-bottom communities off eastern and southern Florida and these reports have been submitted to the SAFMC previously (e.g., Reed, 2004; Reed, 2006 b, 2007) and published in peer reviewed journals (Reed et al., 2005 a, 2006, 2007; Grasmueck et al., 2007; George et al., 2007). These reports and publications focused primarily on the benthic community.

The HBOI video archives for this region consist of a total of 142 submersible dives on these deep-water habitats from 1999-2009. Each dive has one to four 60-minute videotapes totaling approximately 284 hours of footage. Of these, a total of 71 submersible dives were selected for this project that were representative of the latitudinal and depth ranges for the species of interest (golden crab, tilefish, and royal red shrimp). The videotape annotations and analyses for this study will provide NOAA Fisheries and the SAFMC with a valuable database about these resources. Each tape was re-analyzed for this study in particular for habitat type and the species in question- golden crab, tilefish, and royal red shrimp.

Harbor Branch Oceanographic Institute's R/V *Seward Johnson* was used in support of the *Johnson-Sea-Link* (JSL) I and II, and *Clelia* human occupied research submersibles. The JSL has an acrylic sphere that provides >180° visibility to the observers. It is equipped with a manipulator arm (including a 20-cm clam-shell grab for sediment samples, jaw, and suction hose), twelve 12.7-l Plexiglas buckets, and a CTD data recorder (Seabird SBE 25 Sealogger) that continuously record time, temperature, conductivity, salinity, oxygen, and depth which are archived on DVD. The submersible is equipped with sonar (Sunwest Technologies Super Search SS300), which employs CTFM (Continuous Transmission Frequency Modulated) sonar techniques to provide rapid scanning and high resolution. The *Clelia* has comparable equipment but has a clear hemisphere acrylic dome rather than a sphere.

Ship navigation utilized differential GPS (Magnavox MX 200 Global Positioning System), which has an estimated statistical positioning error of 1-5 m. Three GPS system signals were continuously recorded into the UM database on board the ship and one signal was the PRIMV, the Private Marine Vessel GPS, which has an estimated accuracy of 3.3 m. Submersible navigation used Ultrashort Baseline Sonar (USBL) technology which consisted of ORE Trackpoint II Acoustic Positioning System and Integrated Positioning System (IPS) software that integrated the submersible's position relative to the ship and calculated the submersible's real time DGPS position throughout each dive. Analysis of USBL tracking accuracy for a worst-case tracking scenario estimated a maximum statistical positioning error of 9.6 m at a depth of 500 m (J. Kloske, Florida Institute of Oceanography, pers. comm.; Opderbecke, 1997).

Color videotapes (digital mini DV- Sony 60 minute, DVM60PRL) were recorded during each dive with an external pan and tilt videocamera (Sony DX2 3000A with Canon J8X6B KRS lens, 6-48 mm zoom, and 0.3 m minimum focus), which had parallel lasers (25 cm apart) for scale. The video had a data overlay of time, date, depth (feet), salinity, and temperature. The scientist in the sphere provided audio descriptions of the habitat and biota throughout the dive on the video. Deep-water habitats and biota were photographed in situ from the submersible using a Canon Power Shot G2 digital camera, 2272 x 1704 pixels high resolution images (4.1 million pixels), which also had parallel lasers (10 cm apart) for scale. Digital images are labeled with a unique code of sample number and time (e.g., JSL1_4935_6-20.jpg = photo at 6:20 pm EST during dive JSL I-4935) and are archived on DVD. Original videotapes and still images are archived at DBMR's Reference Museum at HBOI.

Video transects were originally used to document and characterize the benthic habitat and biota and allowed for qualitative estimates of densities and sizes of biota. The primary protocol was to qualitatively document the presence or absence of hard-bottom habitat. Qualitative estimates of size of habitat features and size of benthic invertebrates were made visually by the Principal Investigator in the submersible and from videotapes and digital images using the cameras' parallel lasers. During the transects, the submersible was kept ~0.5 m or less off the bottom whenever possible. The video camera was ~2 m off the bottom and angled down ~45°. The digital still camera was ~1.5 m off the bottom and ~45°. Depending on the cameras' degree of zoom, the field of view ranged from 25 cm to ~3 m but can be determined by the lasers in the image. The observer's field of view which was limited by visibility of the water column and available light from the submersible was approximately 10-20 m. Throughout each dive the Principal Investigator made audio notes on the video and detailed written notes describing all aspects of the habitat and biota including invertebrates and fish. The log form included time, depth, photo number and description of each photograph, habitat description (substrate, shape and height of feature), and description of density and size of benthic invertebrates and fish. These data were transcribed into an Excel spreadsheet as annotations (Appendix 1).

Deep-water LNG Pipeline, LNG Port, and Cable Surveys

In addition to submersible dives that focused on coral and hard-bottom habitat, the P.I. conducted several benthic environmental surveys that were used for this project: the proposed Seafarer liquified natural gas (LNG) pipeline (Reed, 2006 a), Calypso LNG pipeline (Messing et al., 2006 b), and the CFX telecommunications cable (Reed et al. 2008) using the *JSL* submersible and ROVs. These did not focus only on hard bottom per se but were used to characterize the bottom habitat and fauna along these routes from the Florida State 3-mi limit (or from a depth of ~200 m) along a E-W transect to the U.S.-Bahamas EEZ (~850 m depth). In addition, the proposed Calypso deep-water LNG port was surveyed on top of the Miami Terrace (Messing et al., 2006 a). These dive annotations (Appendix 1) and videotapes were re-reviewed for this project and analyzed along with the submersible reef surveys described above.

Seafarer LNG Pipeline Survey

Seafarer U.S. Pipeline System, Inc. (Seafarer) had proposed a LNG pipeline from the Bahamas to Florida in the region of West Palm Beach. As such, Seafarer was required by the State of

Florida Department of Environmental Protection (FDEP), NOAA Fisheries, the Minerals Management Service (MMS) and U.S. Army Corps of Engineers (COE) to determine if hard-bottom habitat is present within the proposed Seafarer pipeline right-of-way (ROW) in order to obtain permits for the construction and operation of the pipeline. To comply with state and federal requirements, Seafarer proposed to characterize the seafloor habitat types and document the presence or absence of hard-bottom habitats on the centerline of the proposed pipeline ROW (200 ft wide) by conducting a video survey of the proposed pipeline route from approximately Mile Post (MP) 12.0 to the US-Bahamas Exclusive Economic Zone (EEZ) boundary at MP 0.0. The target area included an area identified as “important” for deep-water corals (depths of 1,800 – 2,500 feet) by the FDEP biologists.

The P.I. conducted this habitat survey with the *Johnson-Sea-Link* manned submersibles along the deep-water portion of the proposed pipeline route (Reed et al., 2008). The proposed survey protocol was reviewed by various agencies including Florida Department of Environmental Protection, Minerals Management Service, and NOAA Fisheries. The survey was conducted from February 28 to March 7, 2006 and completed all objectives to characterize the benthic habitats and document areas of hard-bottom habitat along the proposed pipeline route from MP 0 to MP 12. The submersible survey consisted of continuous videotapes and digital still images of the benthos and annotated logs written by the P.I. describing habitat and biota throughout each dive. Twelve miles of submersible transects were completed along the centerline from MP 0 to MP 12. Total submersible transect length was ~14.36 nautical miles, or 16.53 statute miles. In addition, 60 statute miles of echosounder transects were completed along the centerline from MP 0 to MP 30 and along the 100-ft corridor from MP 0 to MP 15, which is 100 ft north and south of the centerline.

Calypso LNG Pipeline Survey

Calypso U.S. Pipeline, formerly named Tractebel Calypso Pipeline, proposed a LNG pipeline project that would interconnect at: (i) the Exclusive Economic Zone (EEZ) between the United States and The Commonwealth of The Bahamas with a non-jurisdictional pipeline to the east, and (ii) onshore in Florida with the Florida Gas Transmission pipeline to the west.

A deep-water qualitative and quantitative video and photographic benthic survey was conducted in federal waters from the eastern end of the previous shallow-water survey, at MP 31 all the way to MP 0—the boundary of the US/Bahamas EEZ, and covered a total distance of ~50 nmi (Messing et al., 2006 b). The area encompassed by the survey included benthic habitats that could be affected by direct impact of the pipeline and activities associated with its deployment. The scope of work (SOW) for this project was developed to follow the same methodological approach as in the SOW developed and approved for the Calypso LNG Port survey (Deep-Water Port Project) (Messing et al., 2006 a).

The survey used the Television Observed Nautical Grappling System (TONGS), a deep-water heavy-lift underwater vehicle owned and operated by the Naval Surface Warfare Center, South Florida Testing Facility (SFTF), Dania Beach, Florida. TONGS has a 10,000-ft operating depth, 10,000-lb lift capability, and can operate in currents in excess of 5 kt within a 1-yd radius on the seafloor for prolonged periods. Underwater position is determined using an ultra-short baseline acoustic tracking system integrated into a differential global positioning system (DGPS), which

provides highly-accurate (± 1 yd) georeferenced bottom positions. TONGS was equipped with four color cameras, multiple underwater lights, dual-frequency imaging and search sonar, altimeter and depth sensor. Two cameras were mounted to a pan-and-tilt unit to provide variable camera orientation. TONGS also has two thrusters for orientation and minor positional changes (± 30 ft). All control, data, and video are multiplexed through a fiber-optic telemetry system to the surface, providing wide bandwidth and high-quality video (William Baxley, SFTF, personal communication). For this survey, TONGS was equipped with a Kongsberg OE-1373 high-resolution video camera, OE11242 Flashgun and OE14208 Digital still camera; the latter provided with a pair of scaling lasers spaced 8 cm apart. The survey was carried out aboard the NASA vessel *Freedom Star*.

Calypso LNG Deep-water Port Survey

A quantitative benthic video and photographic survey was conducted for the Calypso LNG Deep-water Port Project (LNG DWP) from 15 to 18 April 2006 and which examined ~52 nmi of linear transects of the seafloor off Fort Lauderdale, Florida using the US Navy's TONGS ROV conducted (Messing et al., 2006 a). Calypso LNG, LLC, a subsidiary of SUEZ Energy North America, Inc., proposed to submit a Deep-water Port (DWP) application for a proposed offshore LNG import Deep-water Port terminal located approximately 10 miles northeast of Port Everglades, Fort Lauderdale, Florida. This facility, the first LNG DWP proposed for construction within the exclusive economic zone (EEZ) off the southeastern Florida coast, would connect with a previously surveyed proposed submarine pipeline (the Calypso Pipeline) to transport regasified LNG from the DWP to the Florida Gas Transmission Pipeline. The DWP licensing process requires identification and characterization of benthic marine resources that may be impacted by project activities. These surveys were conducted using methods consistent with the Florida Department of Environmental Protection Office of Intergovernmental Program's 2002 guidelines for offshore surveys of linear features (DEP, 2002) and included both qualitative videographic and quantitative still photographic analyses.

CFX Telecommunications Cable Survey

Columbus Networks' Columbia-Florida Express 1 (CFX-1) telecommunication cable from Boca Raton, Florida to Colombia, South America, was permitted through the State of Florida Department of Environmental Protection (FDEP) and the U.S. Army Corps of Engineers (COE). The NMFS, HCD requested that a special condition requiring a post-installation video survey be conducted for all submerged lands along the cable centerline between the Florida State 3-nmi limit and the U.S. Exclusive Economic Zone (EEZ), for a total cumulative distance of 51.7 km (27.9 nm). A deep-water benthic video and photographic survey was conducted June 16-19, 2008 (Reed et al., 2008). The survey used the methods protocol outlined by the *Guidelines for Conducting Offshore Benthic Surveys* (DEP Office of Intergovernmental Programs Offshore Projects Section, 2006). The vessel Cable Ship *Tyco Responder* was used in support of the *Nereus IV* Remotely Operated Vehicle (Perry Triton, Triton ST200 Series), owned and operated by Tyco Telecommunications. Color video (MPEG-2) was recorded continuously while on the bottom during each dive with an external pan and tilt video camera (Kongsberg Simrad 1364 Color Camera; horizontal resolution 460 TV lines, light Sensitivity 0.1 Lux (faceplate), sensor type 1/2" Hyper HAD CCD, 625 Line/50Hz PAL). The video overlay displayed date, time, heading, latitude, longitude, and depth (m). Deep-water habitats and biota were also documented with an Insite Pacific Inc. Scorpio Plus Digital Still U/W TV camera and strobe light which had

parallel lasers (10 cm apart) for scale. Digital images are archived on CD. Original videotapes and digital still images are archived at PBS&J, and CD copies are archived at DBMR's Reference Museum at HBOI.

EPA Ocean Dredged Material Disposal Site Survey

An Ocean Dredged Material Disposal Site (ODMDS) was created off the coast of Miami and has been used for dredged material disposal since 1957 (U.S. EPA, 2008). In 2007, the ODMDS water depths ranged between 127 and 235 m (415–770 ft) with an average depth of 180 m (590 ft). The dredged material contained within the ODMDS includes clay, silt, sand, gravel, and limestone rubble (U.S. EPA, 2008). Between 1957 and 1986 (date of the ROV survey), 3,050,541 cubic yards of material was deposited at the ODMDS site, and additional 160,083 cu yd was deposited ~ 1 nmi west of the site. In 1986 the USACE Jacksonville District contracted a benthic ROV video survey in and adjacent to the ODMDS. The videographic data generated during the study, contained approximately 17.8 hours of recorded data, and was submitted to the USACE Jacksonville District along with a brief summary of transects performed.

In 2009 the USACE Jacksonville District identified a need to have the 1986 video dataset reviewed and analyzed for the possible presence of species of fisheries management interest. Preliminary review of the video records by the P.I. indicated possible tilefish (Malacanthidae) habitat evidenced by the presence of large burrows in soft substrate. The main objective of this project was to confirm or deny the presence of tilefish and tilefish burrows in the Miami ODMDS based on the 1986 video transects. This report included detailed analysis of the original videotapes with documentation of substrate, habitat, bioturbation, burrows, and fauna (Reed and ANAMAR, 2010). Each videotape was reviewed and annotated into an Excel spreadsheet in two-minute increments: date, ROV dive number, DVD number, latitude/longitude, time, ROV heading, depth, bottom type, bioturbation, hard/soft bottom, potential tilefish borrows, and numbers of individuals of each identified benthic species including tilefish, other fish, and macroinvertebrates, including golden crab and royal red shrimp.

Although these data are not current, they are still relevant and provide an additional layer of information for the occurrence and distribution of golden crab, tilefish and royal red shrimp.

Video Analysis

An Excel spreadsheet was developed in order to record and annotate data from each submersible and ROV dive regarding substrate type and presence of the targeted species (golden crab, tilefish, and royal red shrimp). The following data are detailed in the annotations (Appendix 1): data source, date, dive number, site name, location, depth, time, bottom type, time on hard bottom and soft bottom, bottom temperature, golden crab (number and size), golden tilefish, sand tilefish, blueline tilefish, tilefish borrows, habitat and faunal notes, and photo capture log. Frame grabs were captured from the video as JPEG images (720x480 pixel, ~1.0 MB files) to document each specific habitat type and species of interest. These are archived on DVD along with a copy of this report that will be provided to the SAFMC and NOAA NMFS.

Field of View and Size Estimation

Parallel lasers were present on the still cameras and video cameras and provide a reference scale for measuring objects and fauna. The width of the laser scales varied accordingly:

JSL submersible video- 25 cm

JSL digital camera- 10 cm

TONGS ROV video- 8 cm

Nereus ROV- no lasers, sizes estimated from known cable diameter

1986 tilefish survey- no lasers, sizes estimated based on known object sizes (e.g., soda cans)

Ideally the submersible or ROV video cameras should be at a relatively constant angle and height off the bottom. For quantitative calculations of densities, the digital camera should be straight down to prevent parallax. When the lasers were visible in the field of view we were able to calculate the field of view and size of objects. We were able to document the size of substrate features (rocks, coral), and fauna including carapace width of the golden crab, standard length or total length of tilefish, and total length of red shrimp. Ten-point dividers were used to measure the size of the organism and width of the lasers from a frame grab on the video screen. The size of the organism could then be calculated. Only organisms that appeared close to and at the same horizontal line as the lasers were measured to prevent parallax.

Deep-water Habitat Survey Protocol and Terminology

Various parameters regarding substrate type, bioturbation, and burrows were documented in the video annotation (Appendix 1) and are defined below. These are typical features that we have documented elsewhere on the Florida shelf and Straits of Florida and have used in various other deep-water benthic surveys.

Substrate Types (S= sediment; Ru= coral/rock rubble; Ro= rock pavement, ledges, boulders; Co= standing coral)

- Soft bottom (SB)- mud, sand; with or without bioturbation, sand waves, or sand ripples
- Hard bottom (HB)
 - Consolidated hard bottom (rock pavement, ledges)
 - Unconsolidated rock substrate (rock slabs, boulders, rubble)
 - Coral (standing live/dead coral, coral rubble)
 - Artificial substrate (concrete rubble, shipwrecks, other manmade debris)

Deep-sea coral ecosystems (DSCE) are sometimes referred to as coral banks, bioherms, or lithoherms (Teichert, 1958; Stetson et al., 1962; Neumann et al., 1977; Wilson, 1979; Reed, 1980; Friewald et al. 1997; Fosså et al. 2002; Paull et al., 2000). Rogers (1999) has suggested that deep-water coral banks, which are below the effective wave base, fall within the definition of a coral reef based on their physical and biological characteristics. Some deep-water reefs consist of caps of living coral on mounds of unconsolidated mud and coral debris, such as *Oculina* and *Lophelia* coral bioherms (Reed, 2002 a), whereas deep-water lithoherms are defined as high-relief, lithified limestone mounds rather than unconsolidated mud mounds (Neumann et al., 1977).

The SAFMC refers to hard bottom as a class of coral communities occurring in temperate, subtropical, and tropical regions (SAFMC, 1998). Hard bottom is sometimes referred to as live bottom due to the amount of living organisms attached to these substrates. Hard bottom consists of substrates that provide anchorage for sessile or semi-sessile organisms (e.g., corals, octocorals, sponges). Note that in this context, coral includes non-accreting taxa such as octocorals and antipatharians (black corals) as well as stony corals and other taxa with solid calcareous skeletons. Hard-bottom habitat includes various sizes of loose rocks (gravel, rubble, cobble, boulders, and slabs), pavements, ledges, coral rubble, dead standing coral, and live standing coral. Hard bottom ranges from relatively flat, low-relief surfaces (<0.5 m vertical relief) to high relief geological features. Vertical relief of bottom features are reported as low relief (<0.5 m), moderate relief (0.5-1.0 m), or high-relief features (>1.0 m). These are relative terms and depend on the size of features within an area and field of view. Soft substrates are defined as unconsolidated sediments.

The SAFMC Southeast Area Monitoring and Assessment Program (SEAMAP) deep-water mapping project has documented deep-water, hard-bottom habitat from existing data throughout the South Atlantic Bight and Straits of Florida (Arendt et al., 2003 a, b; SAFMC, 2007). SEAMAP has defined deep-water hard bottom using the following subcategories: coral, rock rubble, coral rubble, exposed hard pavement, thinly covered hard substrate, and artificial structures. In addition, a “Special Habitats” category includes the subcategories of canyons, tilefish burrows, consolidated mud, methane seeps, sinkholes, and coral banks (Table 1). They define deep-water corals as Scleractinia (stony corals), Octocorallia (gorgonians), Stylasteridae (lace corals), and Antipatharia (black corals).

Table 1. SEAMAP deep-water bottom mapping categories (Arendt et al., 2003 a).

Category	Subcategory	Relief	Slope
Special Habitats	Canyon Tilefish burrows Consolidated mud Methane seeps Sinkholes Coral banks	Low: < 0.5 m Medium: 0.5 to 5 m High: > 5 m	<10 10< X <30 >30 degree slope
Hard Bottom	Live coral Rock/coral rubble Exposed hard pavements (low profile carbonate and phosphorite substrates) Thinly covered hard substrate with emergent growth (sessile benthic macrofauna indicators) Artificial structures (shipwreck, oil platforms)	Low: < 0.5 m Medium: 0.5 to 5 m High: > 5 m	<10 10< X <30 >30 degree slope

Category	Subcategory	Relief	Slope
Possible Hard Bottom	(indirect methods) Use indirect methods of indicator species to determine possible hard bottom category, but subcategories cannot be determined		<10 10 < X < 30 >30 degree slope
Soft Bottom	Unconsolidated sand Unconsolidated mud	Flat Sand waves	
No Data	Blank areas with no data		

Table 2 lists deep-water, colony-forming corals capable of forming complex 3-dimensional habitats in 200-2000 m off the southeastern United States (Blake Plateau to Straits of Florida). Table 3 lists additional sessile organisms that could indicate hard-bottom substrates in the same region. Sponges (Phylum Porifera, Classes Demospongiae and Hexactinellida) are the primary non-cnidarian group that may contribute substantially to the 3-dimensional complexity of deep-water, hard-bottom communities.

Table 2. Deep-water, colony-forming corals capable of forming complex 3-dimensional habitats in 200-2000 m off the southeastern United States (Blake Plateau to Straits of Florida). Common names are given in parentheses.

Phylum Cnidaria
Subphylum Anthozoa
Class Octocorallia (soft corals, gorgonians)
Order Alcyonacea 14 families
Family Coralliidae (precious corals)
Family Chrysogorgiidae (gold corals)
Family Isididae (bamboo corals)
Family Paragorgiidae (bubblegum corals)
Family Paramuriceidae
Family Plexauridae
Family Primnoidae
Family Ellisellidae
Family Gorgoniidae
Class Hexacorallia (stony corals, anemones, black corals)
Order Zoanthidea (colonial anemones)
Family Parazoanthidae (<i>Gerardia</i> sp.)
Order Antipatharia (black corals)
Family Antipathidae
Family Myriopathidae
Family Schizopathidae
Family Cladopathidae
Family Leiopathidae
Order Scleractinia (stony corals)
Family Oculinidae (<i>Madrepora oculata</i> , <i>M. carolinae</i>)
Family Caryophylliidae (<i>Lophelia pertusa</i>)

Family Dendrophylliidae (*Enallopsammia profunda*)
 Family Pocilloporidae (*Madracis* spp.)
 Subphylum Medusozoa
 Class Hydrozoa
 Order Filifera
 Family Stylasteridae (lace corals)

Table 3. Sessile or semi-sessile organisms other than colonial corals that may indicate hard-bottom substrates in 200-2000 m off the southeastern United States (Blake Plateau to Straits of Florida).

Phylum Porifera (sponges)
 Class Hexactinellida (glass sponges)
 Order Amphidiscosida
 Order Lyssacinosida
 Order Lychiniscosida
 Order Hexactinosida
 Class Demospongiae
 Order Astrophorida (5 families)
 Order Spirophorida (1 family)
 Order Lithistida (6 families)
 Order Hadromerida (4 families)
 Order Halichondrida (2 families)
 Order Agelasida (1 family)
 Order Axinellida (6 families)
 Order Poecilosclerida (8 families)
 Order Haplosclerida (5 families)
 Order Dictyoceratida (2 families)
 Order Dendroceratida (1 family)
 Order Verongida (2 families)

Phylum Cnidaria
 Subphylum Medusozoa
 Class Hydrozoa
 Order Leptothecata (thecate hydroids)

 Subphylum Anthozoa
 Class Octocorallia
 Order Alcyonacea (soft corals)
 Family Alcyoniidae
 Family Nidaliidae
 Family Nephtheidae
 Family Anthothelidae
 Family Spongiodermatidae

 Class Hexacorallia
 Order Scleractinia (solitary stony corals)
 Family Caryophylliidae (e.g., *Paracyathus*, *Trochocyathus*)
 Family Flabellidae (e.g., *Javania*)

Family Guyniidae (e.g., <i>Stenocyathus</i>)
Family Dendrophylliidae (e.g., <i>Balanophyllia</i> , <i>Bathypsammia</i>)
Order Zoanthidea (zoanths, colonial anemones)
Several families
Order Actiniaria (sea anemones)
Numerous families in several orders

The productivity of hard-bottom communities varies depending upon environmental and physical factors including but not limited to depth, current, light penetration, reef topography, habitat availability and location. Areas of hard bottom provide cover and foraging areas for many fish and invertebrates, including several commercially important species. The importance of hard bottom to fisheries stocks has been recognized and the SAFMC has designated all natural and artificial hard bottoms as Essential Fish Habitat (EFH) and/or Habitat Areas of Particular Concern (HAPC).

ArcGIS Analyses

Data compiled from Appendix 1 was entered into ArcGIS[®], ArcMap[®] version 9.3. Separate Excel spreadsheets were created that summarized habitat type, and counts and size of the target species- golden crab, golden tilefish, blueline tilefish, tilefish burrows, and red shrimp. For the submersible reef dives, data were recorded whenever there was a change in habitat type or observation of the target species. The individual submersible reef dives averaged 1-1.5 nmi in distance and were logged in the database as a single latitudinal and longitudinal position of the main high-relief feature. The pipeline and cable environmental survey datasets (CFX, Seafarer, Calypso), on the other hand, were logged as continuous data streams (as opposed to a single point) since they were transects that extended many miles. These data were also logged whenever there were changes in bottom type and for target faunal sightings. Due to the extensive nature of the Calypso port survey and the relative paucity of target fauna listed in the original annotations (Messing et al., 2006 a), the port survey was only re-analyzed for individual faunal sightings (Appendix 1).

The geographical coordinate data for all the surveys originally logged latitude and longitude in decimal minutes. The coordinates were then converted into decimal degrees and incorporated into ArcMap as a layer using the “add x y data” function. The coordinate data used the following geographic coordinate system- GCS_North_American_1983, and Datum-North_American_1983. The GIS map layers showing the dives sites include a series of points which indicate the pipelines and cable surveys, and single points (star) indicating the submersible reef dives. Additional layers were created connecting the individual points for the environmental surveys using a polyline, classified by bottom type, and then measured for distance which resulted in a calculable distance for the bottom types. The map layers were then queried for faunal sightings and exported into new layers containing only the data in which the fauna appeared for each survey. The layers were then symbolized and various maps were created in ArcMap using these multiple layers combined with various bathymetric layers. Polygon shapefiles for the HAPC and Allowable Crab Fishing Areas were provided by the SAFMC.

In order to determine whether the boundaries of the SAFMC’s Allowable Crab Fishing Areas impact potential live-bottom habitat, ArcGIS was used to incorporate NOAA bathymetric maps (NOAA 2010 b; <http://www.ngdc.noaa.gov/mgg/bathymetry/relief.html>), our ground-truth dive data, and our crab distributional data to draw polygons in the Allowable Crab Fishing Areas around regions that show potential coral ecosystem habitat. We used the best available bathymetry from NOAA’s National Geophysical Data Center including the U.S. Coastal Relief Model (CRM) and National Ocean Services (NOS) regional bathymetric maps. The following NOAA NOS bathymetric maps were imported and georeferenced into our GIS project: NOAA-DEM (3-d imagery of the Straits of Florida combining all the various NOAA bathymetry), CRM-10-m-NAD83 (digital 10-m contour line imagery), NH17-6, NH17-9, NH17-12, NG17-3, NG17-6, NG17-9, NG17-12, L-184, and L-185 (NOAA, 2010).

Environmental Data Incorporated in ArcGIS

Raw data for average annual mean bottom temperature ($^{\circ}\text{C}$), current velocity (m/s), salinity (ppt), and depth (m) were acquired from Fiechter and Mooers (2003) as individual Excel spreadsheets (Fig. 1). Each spreadsheet included latitude and longitude in decimal degrees as well as a value for the environmental data indicated. These data were then imported into ArcMAP as a shape file and had the correct geospatial reference data added. After all the data were added, each layer was then “Joined” to the “All Dives” layer by “Points to Points” using the “closest to” option. This results in each dive site entry having a value for average annual mean bottom temperature, current velocity, salinity, and depth along with a distance field with the distance from the nearest point from which the data was incorporated. These data were then used to compare to the distribution of the individual taxa to the various environmental parameters.

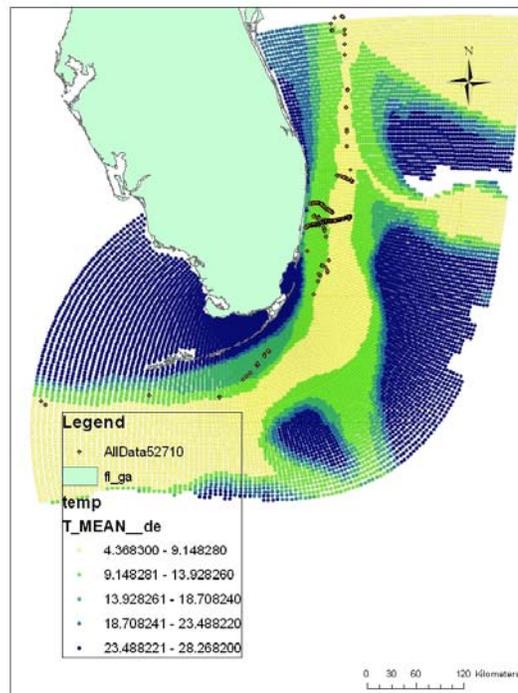


Fig 1. ArcMap[®] showing the average annual mean bottom temperature data points provided by Fiechter and Mooers (2003) color coded based on temperature (yellow, green and blue points). Brown diamonds = dive sites of our study.

Quality Assurance/Quality Control (QA/QC)

Habitat and faunal identifications were made by the authors by analyzing the submersible and ROV videotapes and dive annotations. Identifications made in the original ROV and submersible annotations for the LNG pipeline, LNG port, and cable surveys were reviewed by the authors for any of the targeted taxa (golden crab, tilefish, red shrimp) for this study. The P.I. reviewed any identifications that were questionable. In addition, the following QA/QC analyses were completed:

Size Analysis

To measure the size of taxa (crab carapace width, fish standard length or total length, and shrimp length) and tilefish burrow diameter, we used the paired laser beams or cable diameter for scale. Each was measured with 10-point calipers three times and then averaged. The second author measured 10 crabs initially and the first author remeasured the same and found 91.6 to 96.5% similarity in the measurements. Specimens that were too distant in the video or not immediately adjacent to the laser dots in the frame grabs were not used to prevent parallax.

RESULTS

Dive Source Summary

Of the total 142 submersible and ROV dives that we have made in this region (Fig. 2), 94 dives were selected that were representative of the latitudinal and depth ranges for this study (Table 4). The dive sites extended from northeast Florida, through the Straits of Florida, and terminate at the Tortugas, the southwestern boundary for the South Atlantic Fishery Management Council. North to south, the sites ranged from the Jacksonville lithoherms (30°30'N) to the Tortugas Valleys (24°09'N). The sites ranged from depths of 144 m to 921 m within U.S. territorial waters. The majority of these sites are within the newly designated Deep-water Coral Habitat Areas of Particular Concern (CHAPC). These dives were made between 1999 and 2009 but this does not include the EPA Ocean Dredged Material Disposal Site Tilefish Survey which was conducted in 1986 and will be discussed separately.

The total distance surveyed was 203 nmi (376 km). A total of 386 hours of videotapes were reviewed and annotated (Appendix 1). The dives were categorized by type of survey: 1) submersible dives to survey deep-water reef and hard-bottom habitat, and 2) environmental impact surveys for proposed deep-water LNG pipelines, port and telecommunication cable.

Table 4. Submersible and ROV dives analyzed for this study.

Source Data	Survey Platform	Total No. Dives	Bottom Distance (km)	Bottom Distance (nmi)	Total Bottom Time (0.0 Hr)	Depth Range (m)
HBOI Submersible Reef Dives	JSL, Clelia Sub	71	131.5	71.0	165.9	144-921
Calypso LNG Port	TONGS ROV	7	96.3	52.0	68.0	210-300
Calypso LNG Pipeline	TONGS ROV	7	92.6	50.0	87.0	189-782
CFX Telecom Cable	Nereus ROV	3	29.8	16.1	39.3	189-532
Seafarer LNG Pipeline	JSL Sub	6	26.6	14.4	26.0	524-789
Total		94	376.8	203.5	386.2	144-921

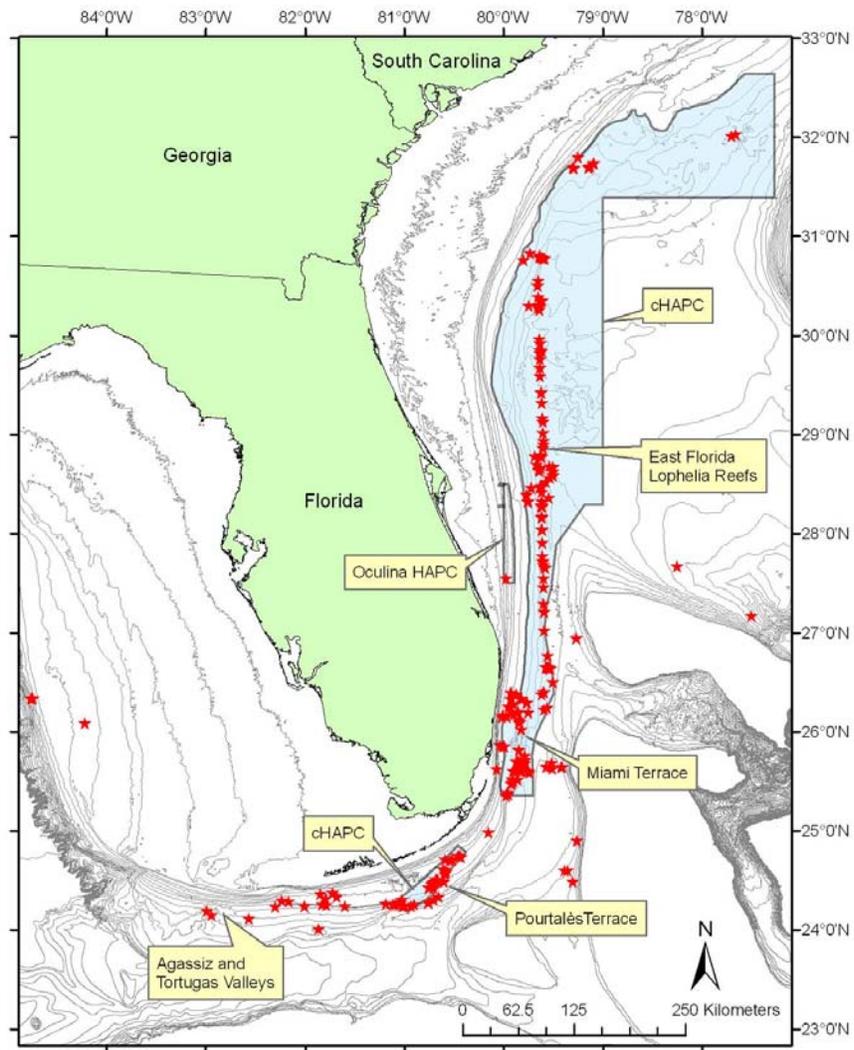


Figure 2. Map of southeastern U.S. and the Deep-water Coral Habitat Areas of Particular Concern (CHAPC, blue polygon) showing high-relief, hard-bottom, and coral habitat sites (red stars). (See Reed 2004, Reed et al., 2005, 2006)

Submersible Deep-water Reef Surveys

The deep-water reef ecosystem surveys were conducted by the Principal Investigator (P.I.) and colleagues using HBOI's *Johnson-Sea-Link* and *Clelia* submersibles between 1999 and 2009 throughout the southeastern U.S. deep waters (Fig. 2). The primary objectives for these dives were to map and characterize deep-water reef habitat, hard bottom, and benthic fauna (sponges, gorgonians, corals, fish). As a result, these dives targeted high-relief features thought to be either coral or hard-bottom habitat. Of these, a total of 71 submersible dives were selected for this project (Figs. 3-5) which represent a good distribution of latitude, depth, and habitat type over the range of the study from the north Florida border to the Tortugas and within the jurisdiction of the SAFMC. The submersible reef surveys used for this study covered approximately 71 nmi (131 km) of bottom for 165 hr of bottom time (Table 4). All videotapes and transcripts from these dives were re-reviewed for this project and annotations were made throughout each dive (Appendix 1) and specifically noting any change of habitat and documenting all targeted species (golden crab, tilefish, red shrimp). These data were then entered into an ArcGIS 9.3 project which was used for the maps in this report.

Environmental Surveys- Pipelines, Port, Cable

Environmental surveys conducted in part by the P.I. included proposed deep-water Liquid Natural Gas (LNG) pipelines, port, and telecommunication cable. These combined projects compiled data from a total of 23 submersible and ROV dives over a total transect distance of 132 nmi (245 km) for 220 hours of bottom time (Table 4). The surveys for the proposed deep-water LNG pipelines and cables included Seafarer pipeline (Reed, 2006 a), Calypso pipeline (Messing et al., 2006 b), and CFX telecommunication cable (Reed et al., 2008). These surveys were made ~E-W along the proposed routes from the 3-mile Florida limit, approximately 200 m depth, to the U.S.-Bahamas EEZ, approximately 800 m depth. As such, these dives did not target hard bottom but followed the cable and proposed pipeline routes; however, the objectives were to document any hard bottom and sessile fauna using the *Johnson-Sea-Link* submersible, TONGS ROV, and *Nereus* ROV with qualitative and quantitative video and digital photographic transects. The Calypso LNG Port survey (Messing et al. 2006 a) covered 52 nmi (96 km) of ROV transects, within the proposed 7.4 x 7.0 nmi boundaries of the proposed port on top of the Miami Terrace at depths of 210-300 m. Original videotapes of the Seafarer and CFX surveys were re-reviewed for this project. The written videotape annotations from the Calypso port and Calypso pipeline survey reports documented all benthic fauna larger than 5 cm; as such, these annotations were used to find any of the target taxa for this study. Where a target species was noted, the original Calypso videotapes were then re-reviewed and all the targeted species were verified and measured when possible (Appendix 1).

Habitat Descriptions- Hard vs Soft Bottom

Each of the five surveys (submersible reef ecosystem surveys; and pipeline, port and cable surveys) were categorized as to bottom type: either hard bottom (coral and rock) or soft bottom (Table 5, Figs. 3-5). The submersible reef surveys specifically targeted high-relief reefs consisting primarily of either coral substrate (*Lophelia/Enallopsammia/Stylaster* coral) or rock

substrate (rock rubble, pavement, ledges, slabs and escarpments). These all provide hard bottom habitat for various sessile fauna (black coral, gorgonians, sponges) and mobile invertebrate fauna (crabs, echinoderms, mollusk), as well as essential fish habitat (Figs. 6-13). In order to ascertain the percentage of each bottom type, each submersible reef dive was annotated (Appendix 1) to document the time of any change in habitat type. Then the total time for each habitat type for each dive could be summed and the percentage calculated. For the pipelines, port and cable surveys, we used ArcMap to measure the distance of each bottom type throughout each dive transect, and then determined the percentage of each bottom type.

Table 5. Habitat type for each survey. HB= hard bottom, SB= soft bottom; HB is subdivided as Co= coral substrate and Ro= rock substrate. The submersible reef dives are categorized as either deep-water coral substrate (e.g., *Lophelia/Enallopsammia* bioherm) or rock substrate (Miami and Pourtales Terraces).

Source Data	Total No. Dives	Bottom Distance (km)	Bottom Distance (nmi)	Total Bottom time (0.0 Hr)	% on HB	% on SB	% on Co	% on Ro
Submersible Reef Dives	71	131.5	71.0	165.9	93.1	6.9	56.7	36.4
Calypso Port	7	96.3	52.0	68.0	25.2	74.8	0.0	25.2
Calypso Pipeline	7	92.6	50.0	87.0	53.8	46.2	19.2	34.6
CFX Cable	3	29.8	16.1	39.3	22.7	77.3	0.0	22.7
Seafarer Pipeline	6	26.6	14.4	26.0	27.7	72.3	27.7	0.0
All Dives	94	376.8	203.5	386.2	59.9	40.1	29.9	30.0

The submersible reef ecosystem surveys ranged over four regions: 1) deep-water *Lophelia/Enallopsammia* coral mounds extending from North Florida to Miami at depths of 400 to 800 m (Figs. 7, 8, 9); 2) Miami Terrace- rock pavement, escarpments, and ledges, at depths of 300- 600 m (Figs. 10-12); 3) Pourtales Terrace- high relief bioherm mounds which are capped with stylaster coral fields (Fig. 13) and massive, deep-water sinkholes at depths of 200-450 m; and 4) Tortugas and Agassiz Valleys, at depths of 300 to 940 m (Reed 2004, Reed et al., 2005 b, 2006). The newly designated CHAPC encompasses all of the known *Lophelia/Enallopsammia* coral mounds in this region, all of the Miami Terrace escarpment, and portions of the Pourtales Terrace bioherms, but none of the sinkholes. Neither does it cover the Tortugas and Agassiz Valley sites. Of the sites selected for this survey, 59% were the *Lophelia/Enallopsammia* coral mounds, and the remainder were rock substrate on the Miami Terrace and Pourtales Terrace. Transects on these submersible reef dives only encountered 7% soft bottom, primarily at the beginning of the dive while approaching the reef mound.

The pipeline and cable environmental surveys which were primarily E-W linear transects encountered 46-77% soft bottom habitat (Figs. 4, 6) which is typically a muddy fine sand with varying amounts of silt and clay. During the transects which crossed the Miami Terrace, various types of hard bottom habitat were encountered. Rock pavement, rock/coral rubble, rock ledges and rock escarpments are typical on top of the terrace and the eastern escarpment (Figs. 9-12) whereas *Enallopsammia* coral mounds and coral rubble are present at the base of the Miami Terrace escarpment. East of the Miami Terrace is mostly mud sediment (Fig. 6) until the low to

high relief *Lophelia/Enallopsammia* coral mounds are encountered closer to the EEZ.

The Seafarer LNG pipeline survey was north of the northern terminus of the Miami Terrace and encountered coral habitat from the EEZ to ~ 3nmi west of the EEZ (28% of the transect, Fig. 4), the remainder of the transect to 200 m depth was soft sediment (72% of the transect). The coral habitat were low to moderate relief mounds and ridges of *Lophelia/Enallopsammia* coral and coral rubble. The CFX cable survey was near the northern end of the Miami Terrace and so encountered some low relief rock and rubble habitat (23% of the transect) on the Terrace; however, the survey was cut short at a depth of 531 m when the ROV was unable to operate in the strong Florida Current and did not extend to the EEZ (Fig. 4). Further south on the Miami Terrace, the Calypso pipeline survey encountered extensive hard bottom habitat on the terrace and coral habitat near the EEZ (Fig. 4). Of the total 50 nmi transect, 54 % was on hard bottom (19% coral, 25% rock habitat) and 46% was on soft bottom. The Calypso LNG port survey (Fig. 4) covered 52 nmi, entirely on top of the Miami Terrace, and documented soft sediment (75% of the transects) and sediment overlying rock pavement mostly along the western half of the Terrace with increasing amounts of hard bottom toward the middle and eastern side of the Terrace. The hard bottom (25% of the transects) consisted of rock pavement, rock rubble, and low relief rock ledges with large rock ledges and high relief escarpments near the eastern side of the Terrace.

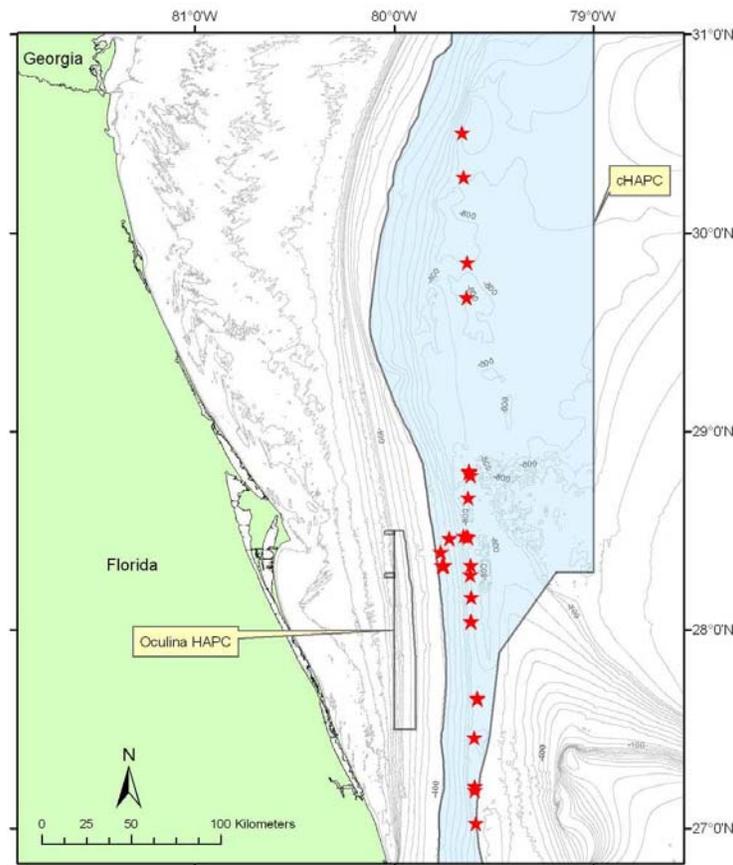


Figure 3. Map of north Florida dive sites selected for this study. Red stars=*Lophelia/Enallopsammia* coral reef sites from the HBOI submersible reef survey dives. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern (CHAPC).

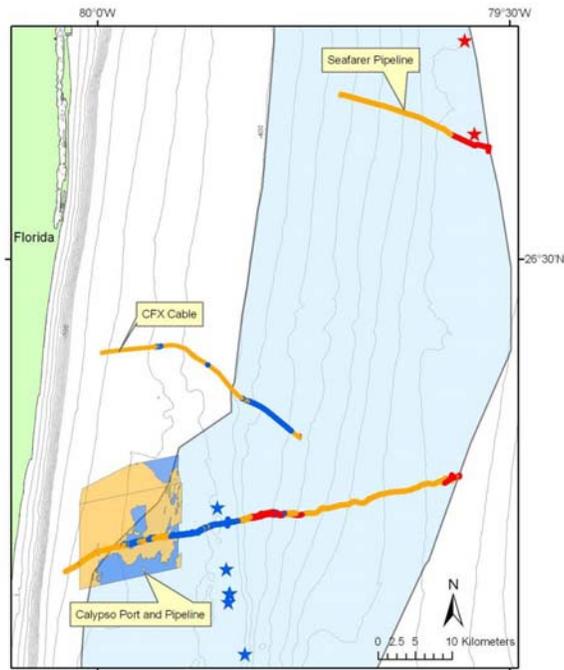


Figure 4. Map of central Florida dive sites. Red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef survey dives; blue stars= hard-bottom, rock/coral habitat from submersible reef dives; polygon lines= CFX cable, Seafarer LNG pipeline, and Calypso pipeline surveys; polygon = Calypso port survey. Polygon red segments= coral habitat; blue= rock habitat; tan= soft bottom habitat. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern (CHAPC).

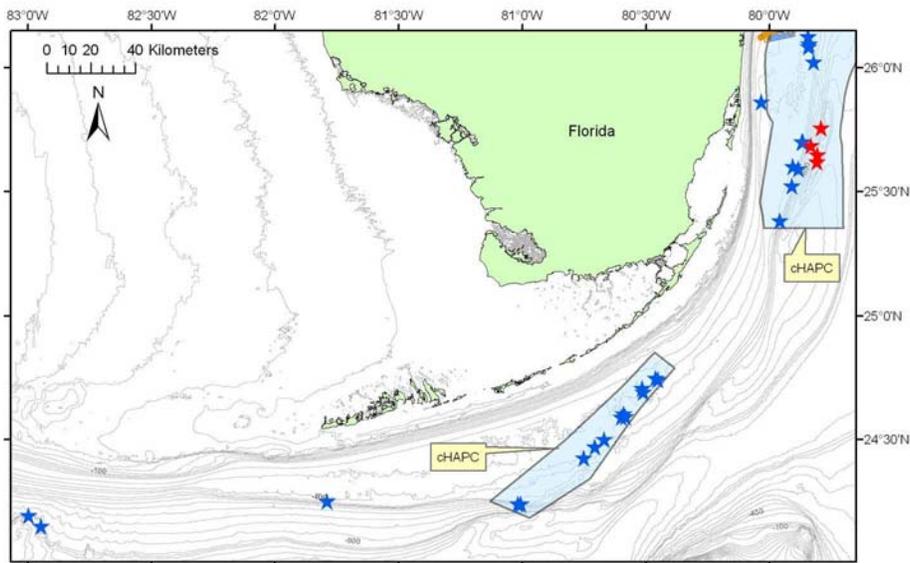


Figure 5. Map of south Florida dive sites. Red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef survey dives; blue stars= hard-bottom, rock/coral habitat from submersible reef dives. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern (CHAPC).

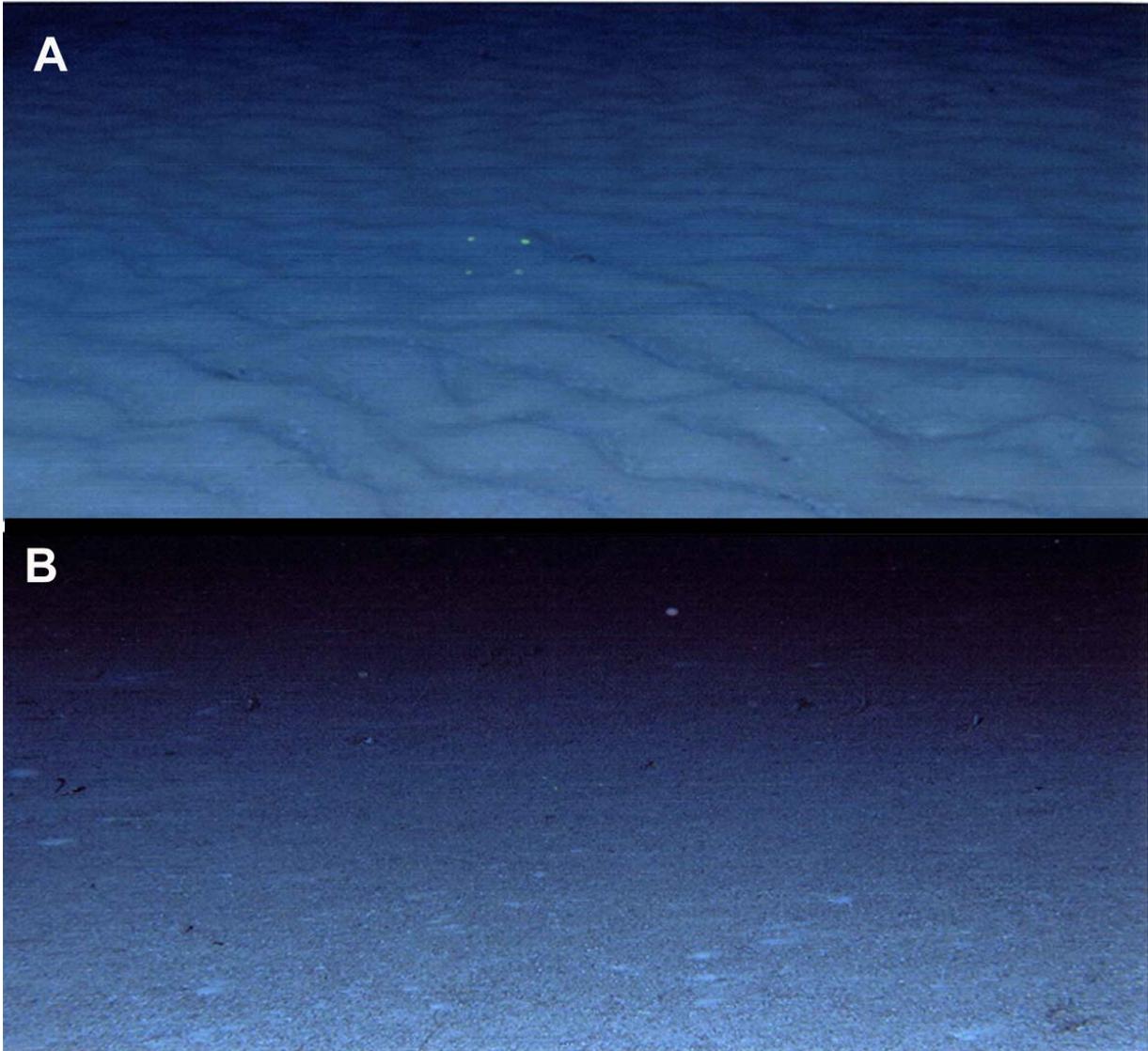


Figure 6. Soft-bottom habitat. A. Sandy mud with small sand waves; B. sandy-mud sediment in trough between coral rubble ridges. (From *Johnson-Sea-Link* submersible, Seafarer pipeline survey, Reed, 2006 a)

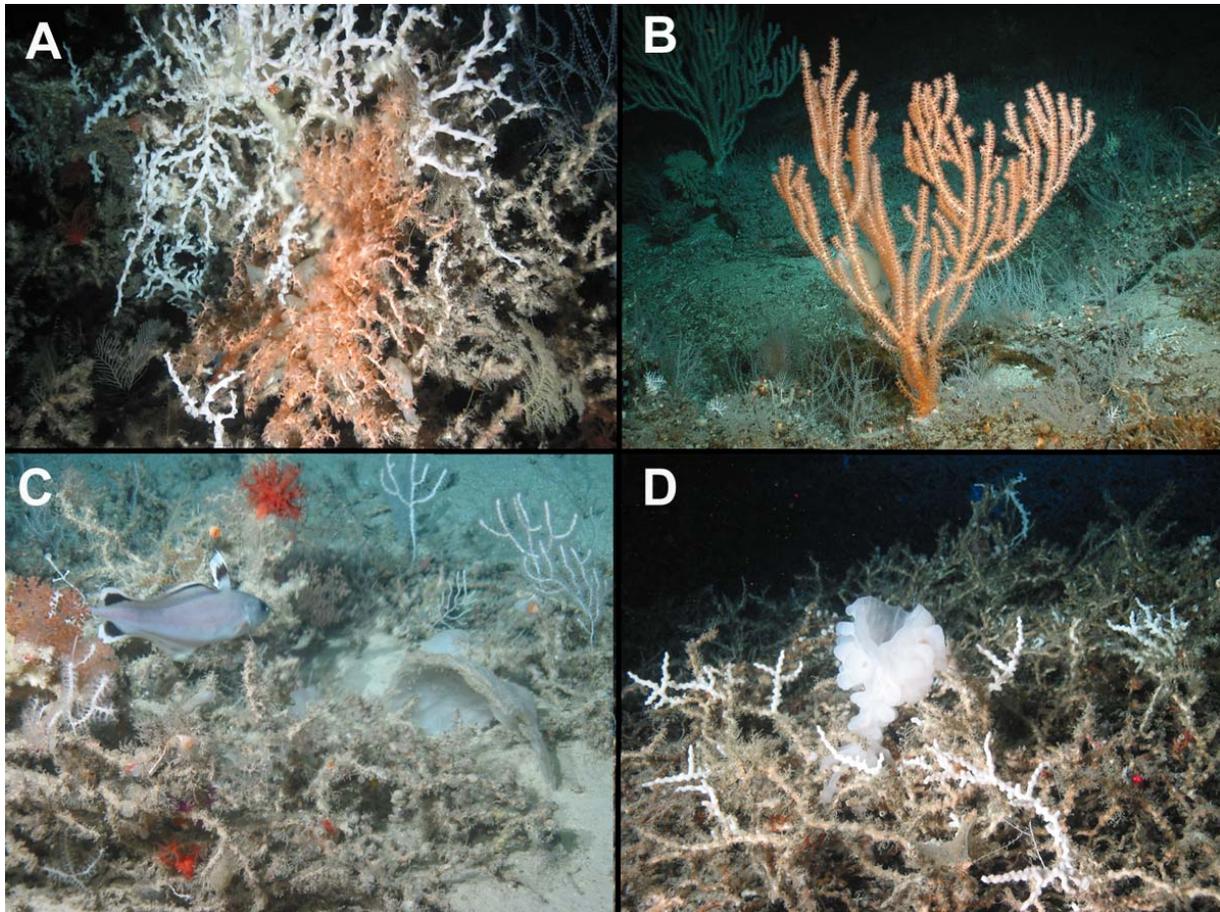


Figure 7. Coral habitat- East Florida deep-water reefs. Coral bioherms with standing coral thickets (*Enallopsammia profunda* and *Lophelia pertusa* coral). A. *Lophelia pertusa* and *Stolonifera*; B. bamboo coral (*Keratoisis flexibilis*); C. codling (*Laemonema* sp.) on coral habitat; D. *Enallopsammia profunda* coral and Hexactinellida sponge. (From *Johnson-Sea-Link* submersible, Reed et al., 2006)

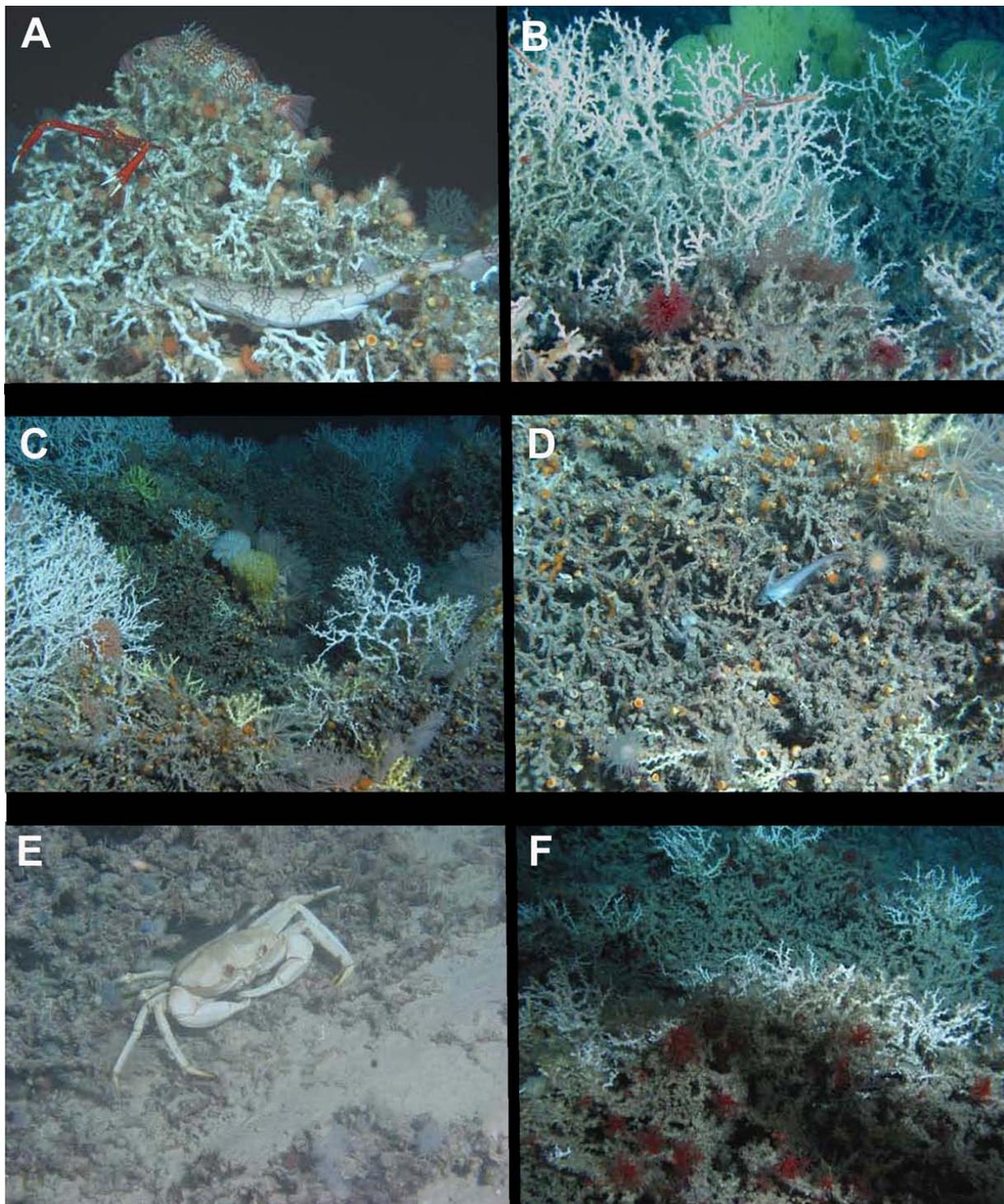


Figure 8. Coral habitat- East Florida deep-water reefs. Coral bioherms with standing coral thickets (*Enallopsammia profunda* and *Lophelia pertusa* coral). A. Coral thicket with squat crab (Galatheidae) and chained catshark (Scyliorhinidae); B. coral thicket with dense invertebrate community; C. slope of coral bioherm with numerous glass sponges (Hexactinellida); D. coral thicket with rat tail grenadier (*Nezumia* sp.); E. coral habitat with golden crab (*Chaceon fenneri*); F. coral thicket with numerous anthozoans (*Anthomastus* sp.). (From *Johnson-Sea-Link* submersible, NOAA OE 2009 cruise)

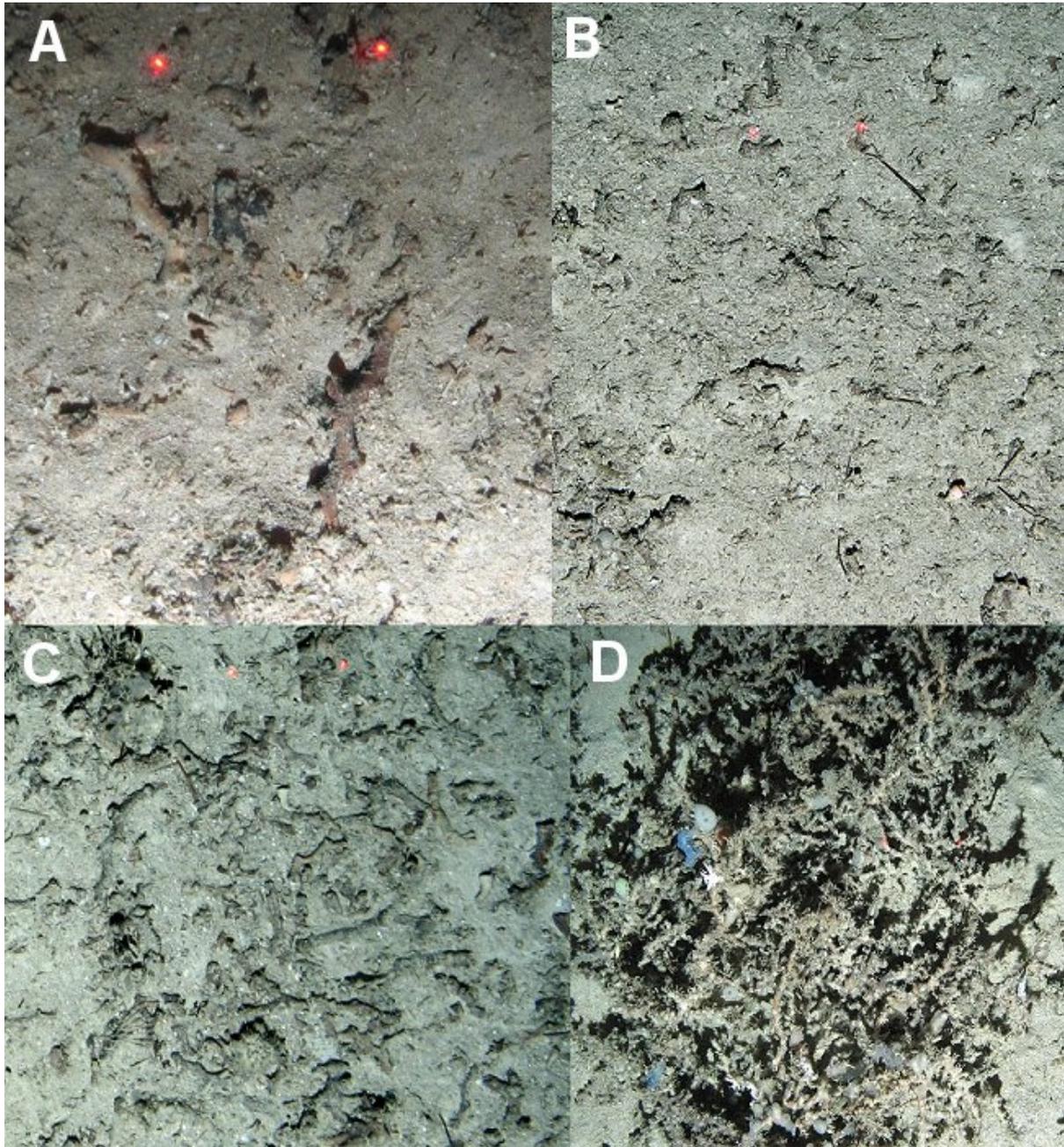


Figure 9. Coral rubble habitat off Miami Terrace. A. Close-up of coral rubble embedded in sediment; B. sparse coral rubble, probably *Lophelia pertusa*; C. dense coral rubble, probably *Lophelia pertusa*; D. standing dead thicket of *Enallopsammia profunda*. (From TONGS ROV, Calypso pipeline survey, Messing et al., 2006 b)

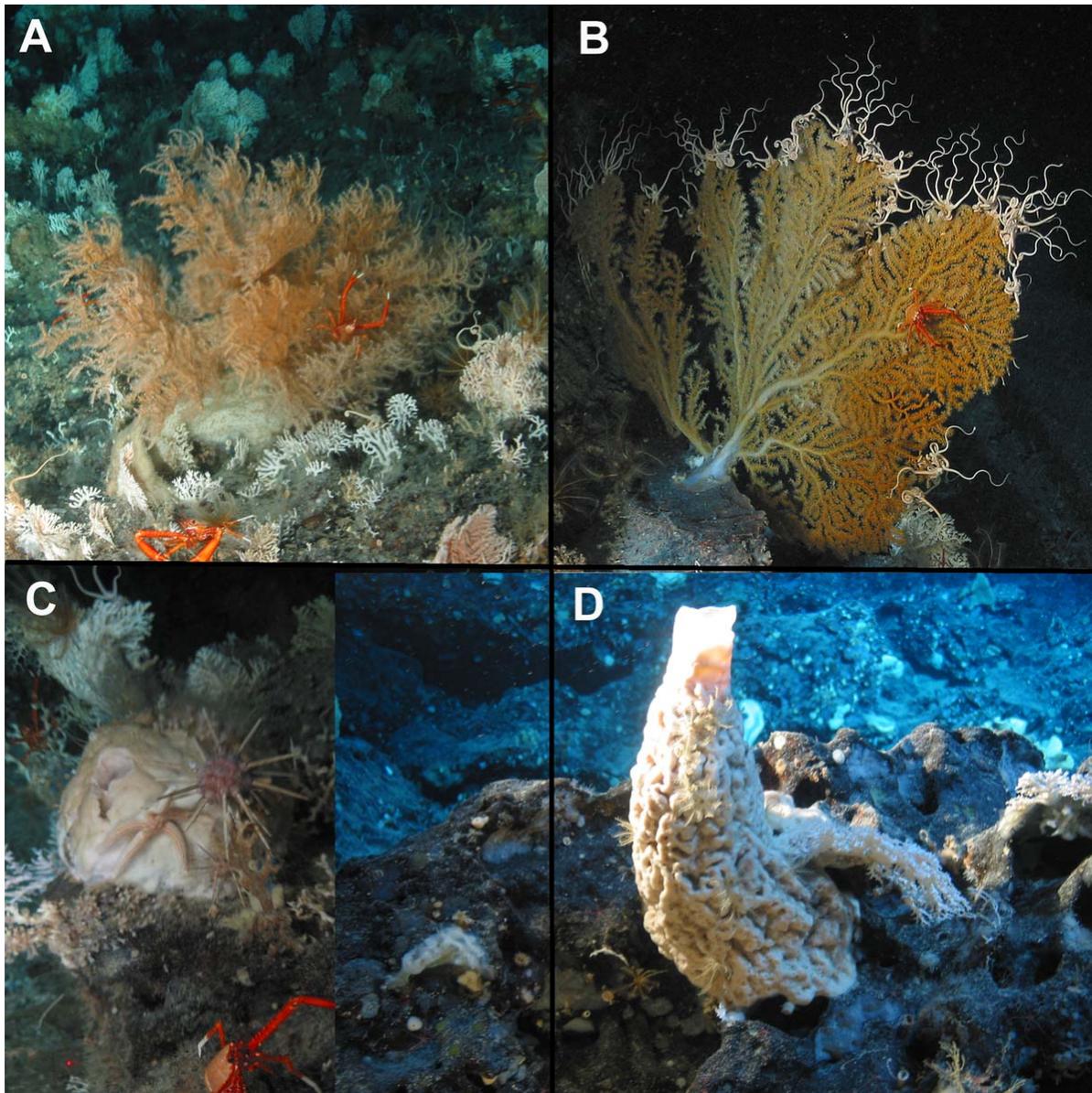


Figure 10. Hard-bottom habitat- Miami Terrace escarpment. A. Rock pavement and ledges provide habitat for variety of species including black coral, stylaster coral, gorgonians, and sponges; B. large 1-m tall Paramuriceidae gorgonian coral with squat crab and brittlestars (Ophiuroidea); C. diverse habitat of sponges, stylaster coral, pencil urchins and squat crabs; D. Petrosiidae vase sponge. (From *Johnson-Sea-Link* submersible, Reed et al., 2006)

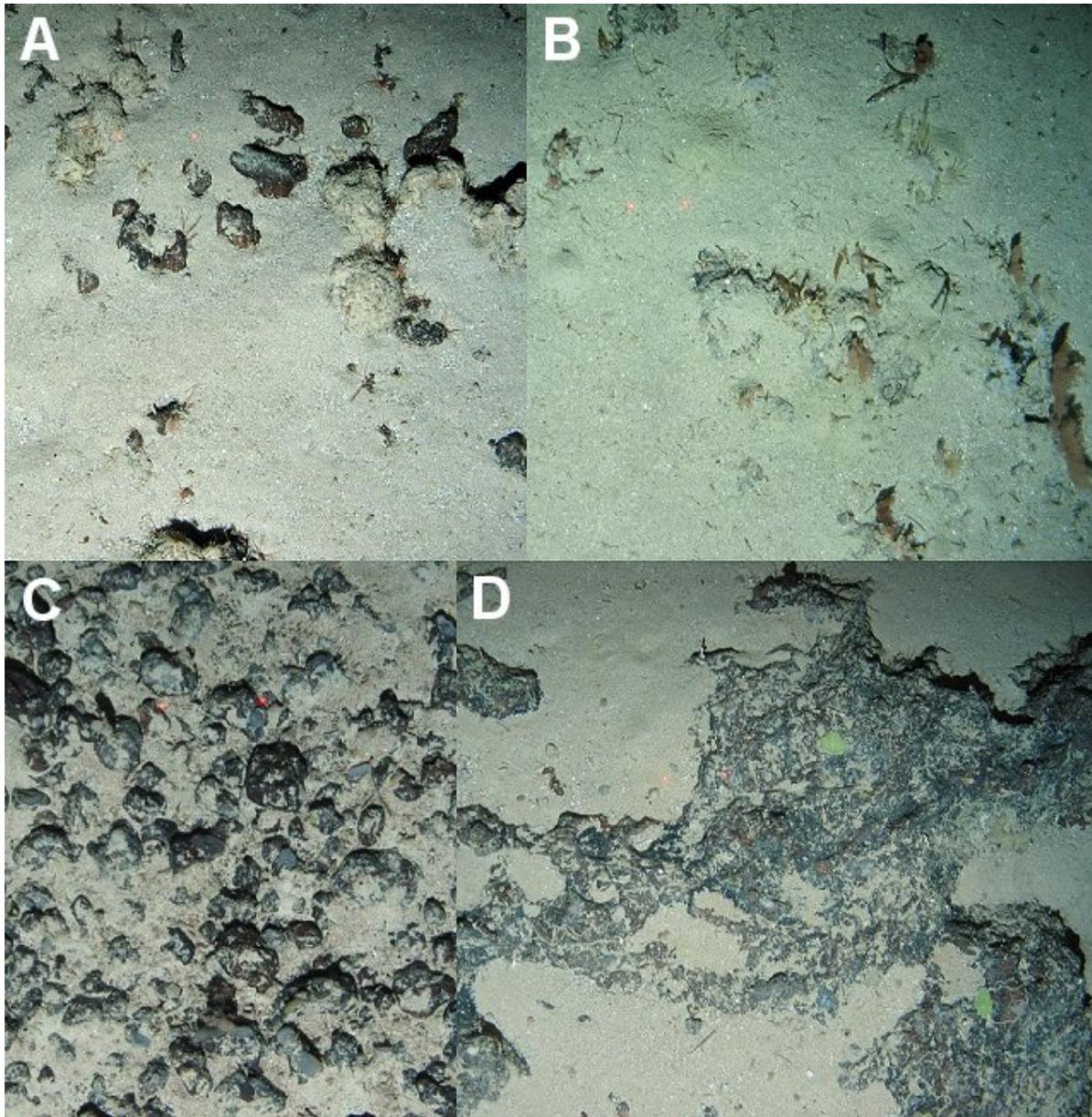


Figure 11. Miami Terrace low-relief hard bottom. A. Low-cover hard bottom with scattered rock rubble on sediment; B. low-cover hard bottom with sediment veneer over partly buried low-relief pavement with small gorgonians and sponges; C. high-cover hard bottom with dense rock rubble and cobble; D. high-cover hard bottom with low-relief eroded outcrop. (From TONGS ROV, Calypso pipeline survey, Messing et al., 2006 b)

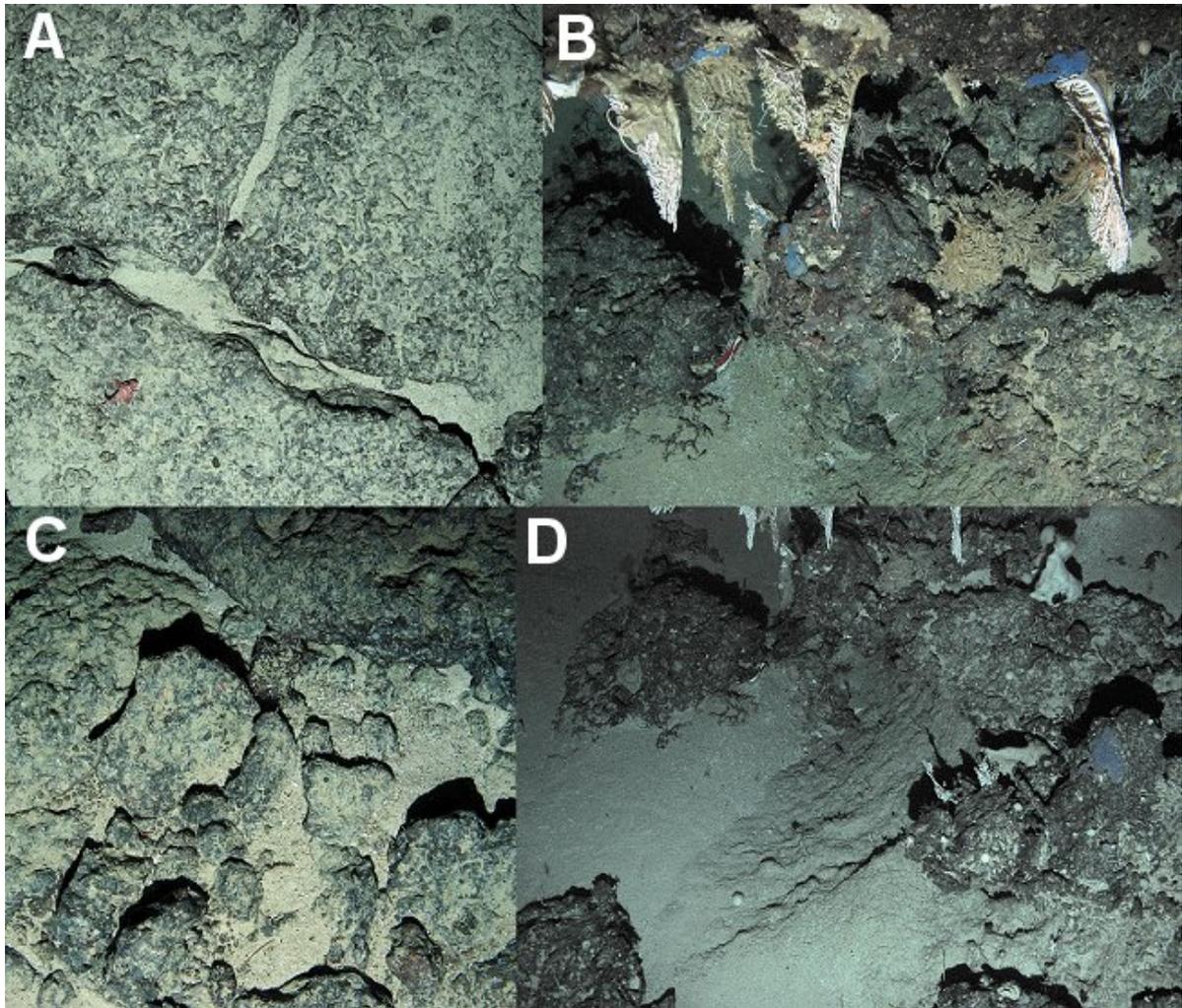


Figure 12. Miami Terrace high-relief hard bottom. A. Rock slabs and jointed rock pavement on escarpment between high-relief ledges; B. vertical face of high-relief ledge with projecting lace corals (*Stylasteridae*); C. moderate-relief rock outcrops and boulders; D. deep sediment and boulder-strewn slope (projecting lace corals visible at top). (From TONGS ROV, Calypso pipeline survey, Messing et al., 2006 b)

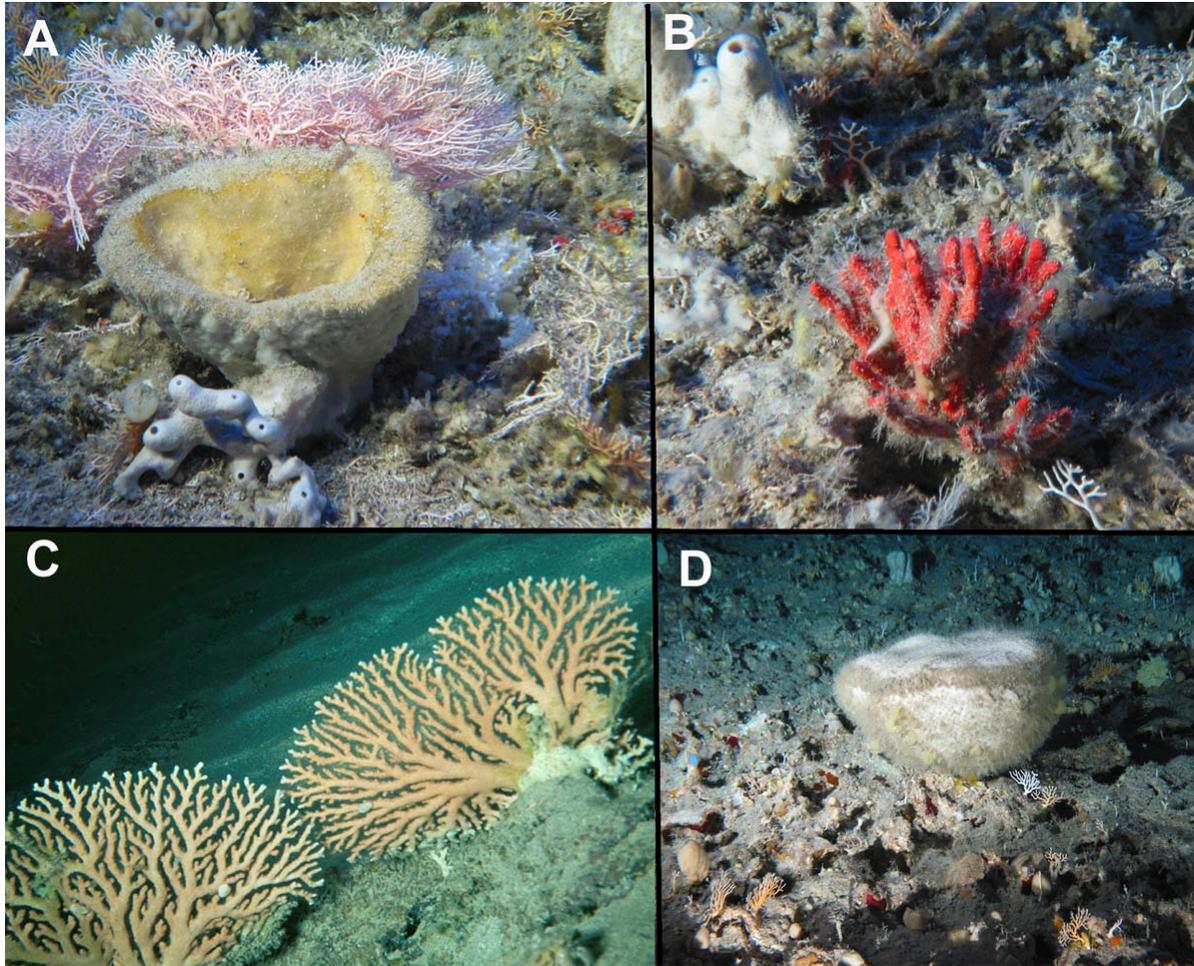


Figure 13. Pourtalès Terrace- coral-rock habitat. A. Dense community of stylaster corals (*Stylaster filigranus*), sponges (Choristida and *Erylus* sp.) and octocorals on top of high-relief bioherm; B. thick layer of stylaster coral debris provides hard-bottom habitat on top of the bioherms (red sponge- Theonellidae); C. Stylaster corals (*Stylaster miniatus*); D. Stylaster coral rubble and rock with large choristid sponge (*Geodia* sp.). (From *Johnson-Sea-Link* submersible, Reed et al., 2005 a)

Golden Crab- Habitat Distribution

A total of 344 golden crabs were enumerated from all dives (Table 6, Figs. 14-16). They were associated with the following reef zones: East Florida *Lophelia/Enallopsammia* coral bioherms, Miami Terrace, Pourtalès Terrace, and Tortugas/Agassiz Valleys. For unknown reasons they were not recorded from the coral reef sites off north Florida (north of 28°30'N) (Fig. 14), but were abundant on and around the deep-water reefs off north-central Florida (Cape Canaveral to West Palm Beach). They were also common on the Miami Terrace escarpment and on the mud bottom of the Straits of Florida in the central Florida region (Fig. 15). Off south Florida, they were quite common on the southern Miami Terrace sites (Fig. 16). On the Pourtalès Terrace, none were recorded from the coral bioherms, but they were observed on or within the deep-water

sinkholes. They were also found on the 122-m tall escarpment of the Tortugas/Agassiz Valleys (Fig. 16).

Table 6. Number of golden crabs observed for each survey type and bottom type. SB= soft bottom; hard-bottom habitat is subdivided into coral habitat and rock habitat.

Source Data	Number of Crabs Observed on SB Habitat	Number of Crabs Observed on Coral Habitat	Number of Crabs Observed on Rock Habitat	Total Number of Crabs
Submersible Reef Dives	13	64	55	132
Calypso LNG Port	0	0	0	0
Calypso LNG Pipeline	12	2	22	36
CFX Telecom Cable	145	0	22	167
Seafarer LNG Pipeline	9	0	0	9
Total	179	66	99	344

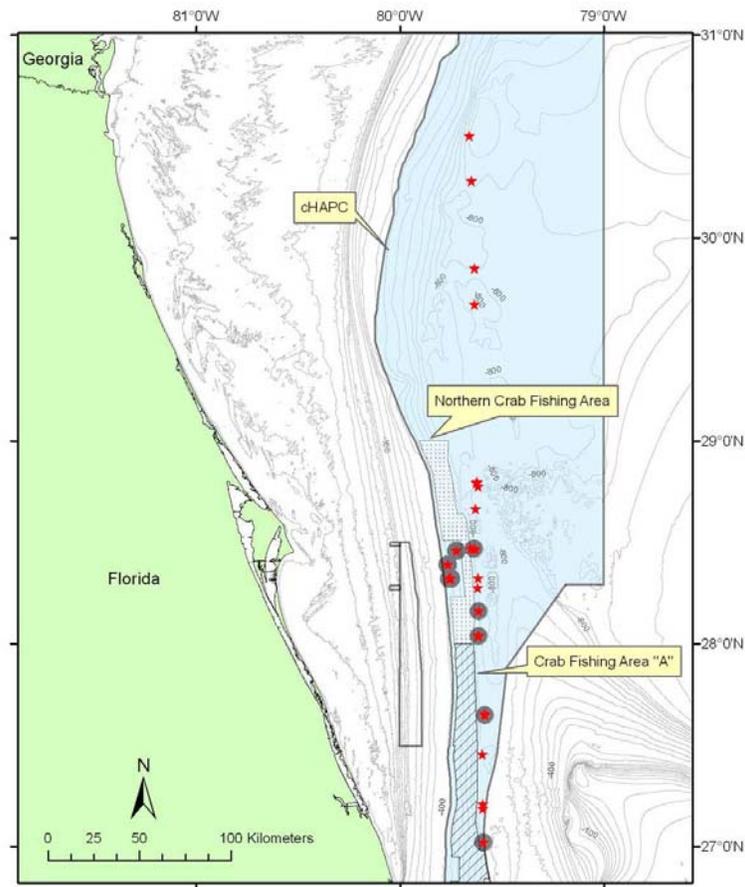


Figure 14. Distribution of golden crabs on or near deep-water coral reefs off north Florida. Gray circles= golden crab observed; red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef dives; light blue polygon= Deep-water Coral Habitat Areas of Particular Concern. Allowable Golden Crab Fishing Areas: stippled polygon= “Northern” Area; hatched polygon= Area “A”.

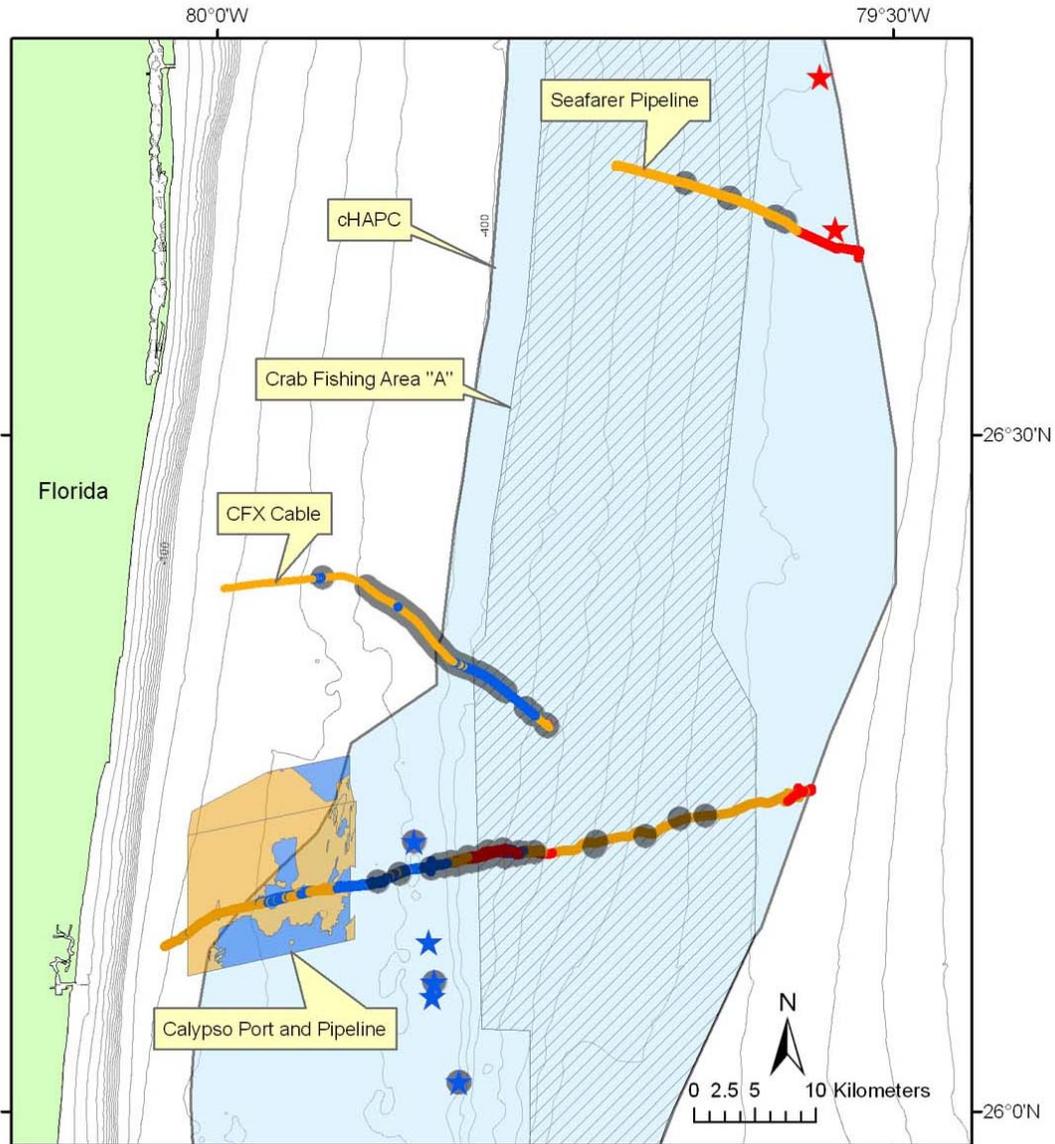


Figure 15. Distribution of golden crabs at survey sites off central Florida. Gray circles= golden crab observed; red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef survey dives; blue stars= hard-bottom, rock/coral habitat from submersible reef dives. Polygon lines= CFX cable, Seafarer LNG pipeline, and Calypso pipeline surveys; Polygon = Calypso port survey. Polygon red segments= coral habitat; blue= rock habitat; tan= soft bottom habitat. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern. Allowable Golden Crab Fishing Areas: hatched and stippled polygons.

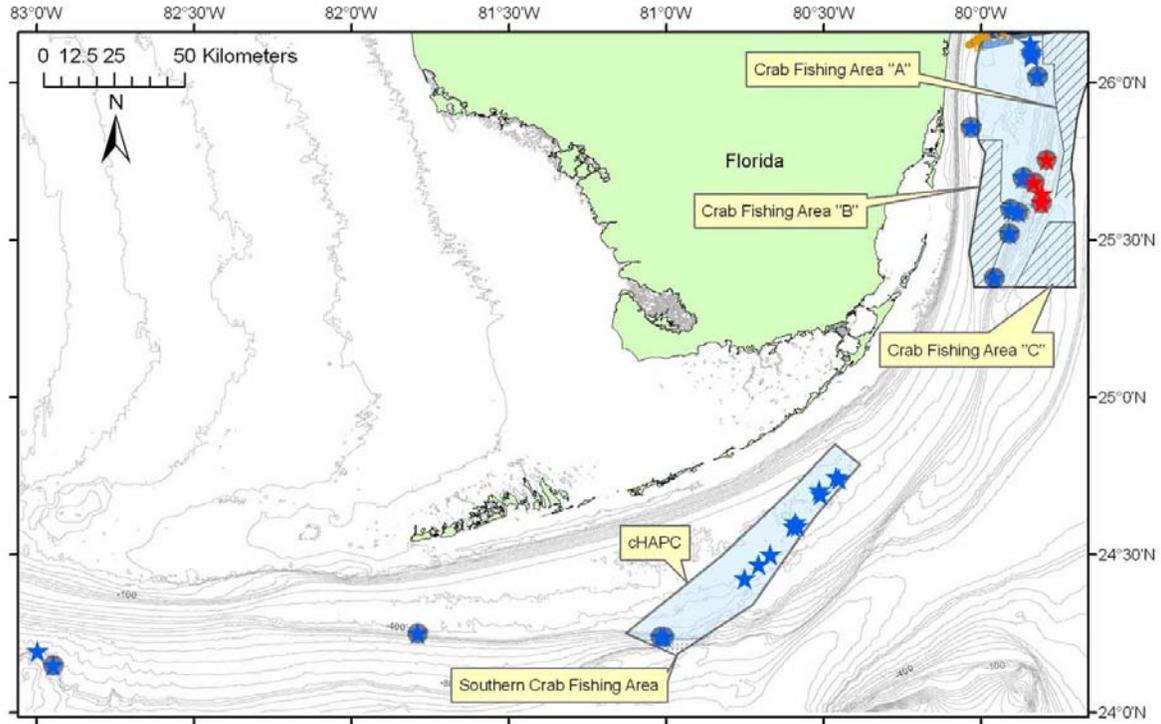


Figure 16. Distribution of golden crabs at survey sites off south Florida.

Of the 344 golden crabs recorded in this survey, 52% were found on soft bottom, 19% on coral, and 29% on rock habitat (Fig 17). It appears that golden crab in this region are adaptable to all habitat types including: dense live coral thickets, vertical rock walls, rock pavement, rock boulders and slabs, and flat muddy-sand soft bottom (Figs. 18, 19).

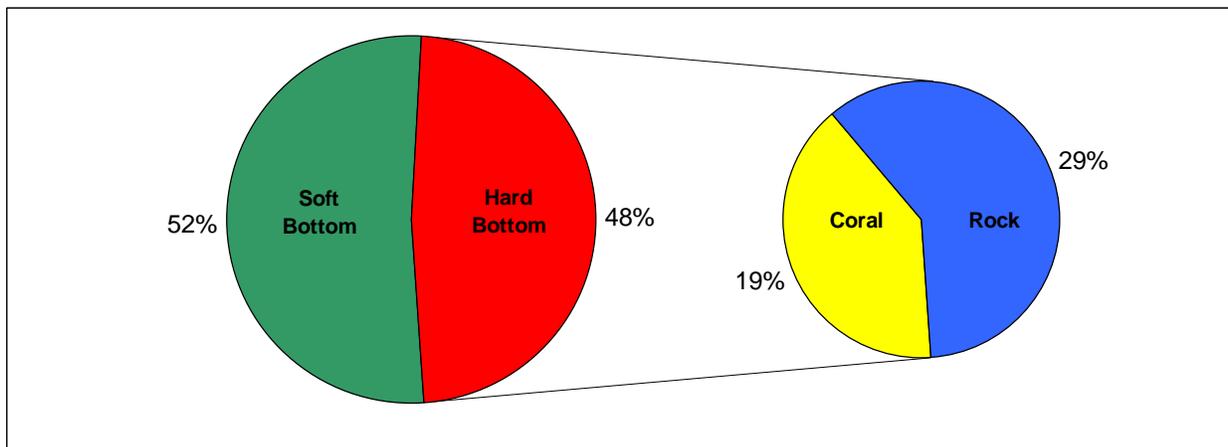


Figure 17. Percentage of golden crabs found on soft-bottom habitat sites (green) versus hard-bottom sites (red) which are further subdivided into coral habitat (yellow) and rock (blue).

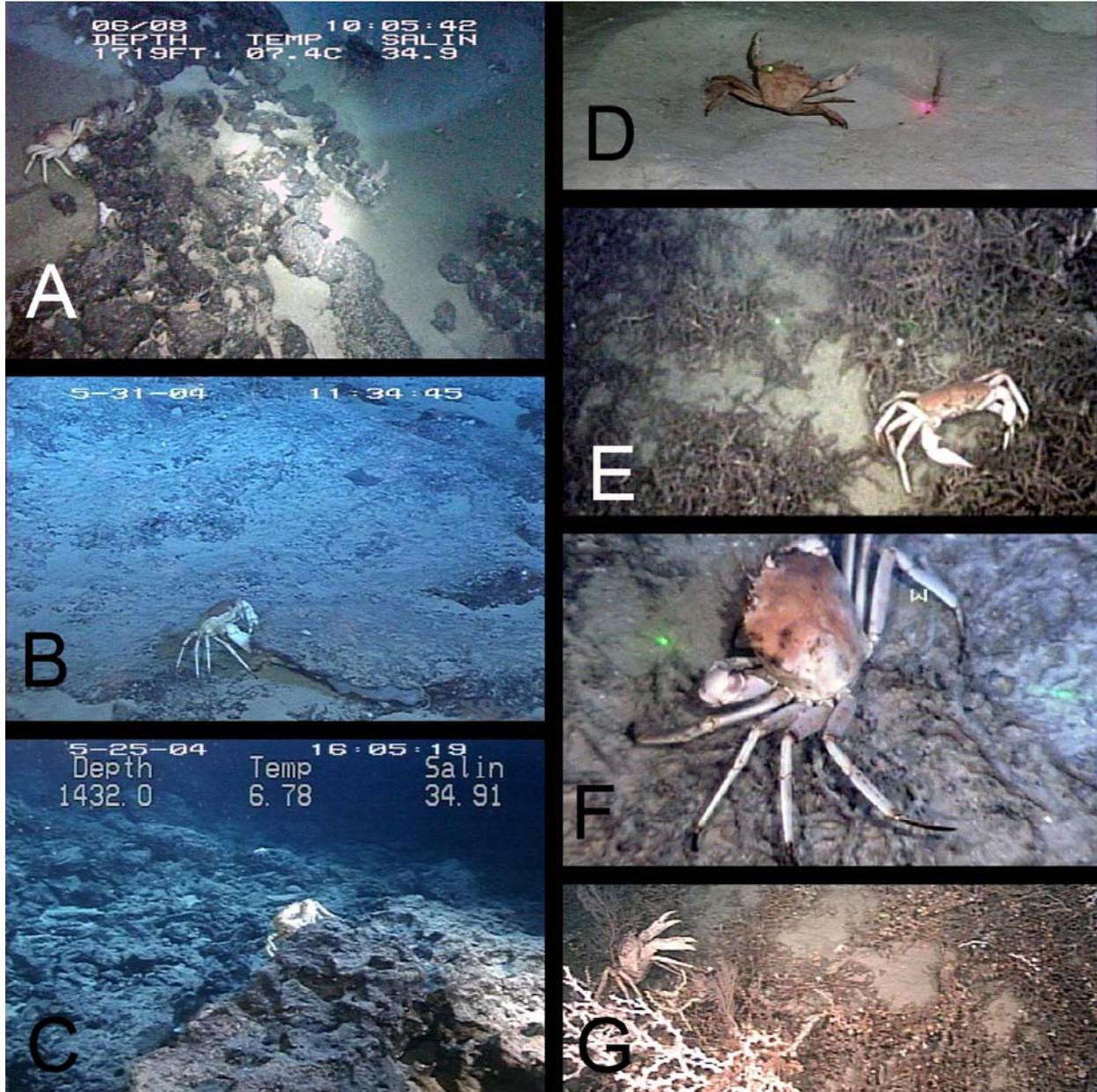


Figure 18. Golden crabs on a variety of hard- and soft-bottom habitats. A. Rock cobble and boulders on the Miami Terrace; B. rock slabs and pavement on Miami Terrace; C. rugged high-relief rock on Miami Terrace escarpment; D. flat muddy sand habitat; E. standing dead coral on slope of *Lophelia* coral bioherm; F. coral rubble habitat; G. live *Lophelia* coral habitat on slope of coral bioherm. (From *Johnson-Sea-Link* submersible, Harbor Branch Oceanographic Institute)

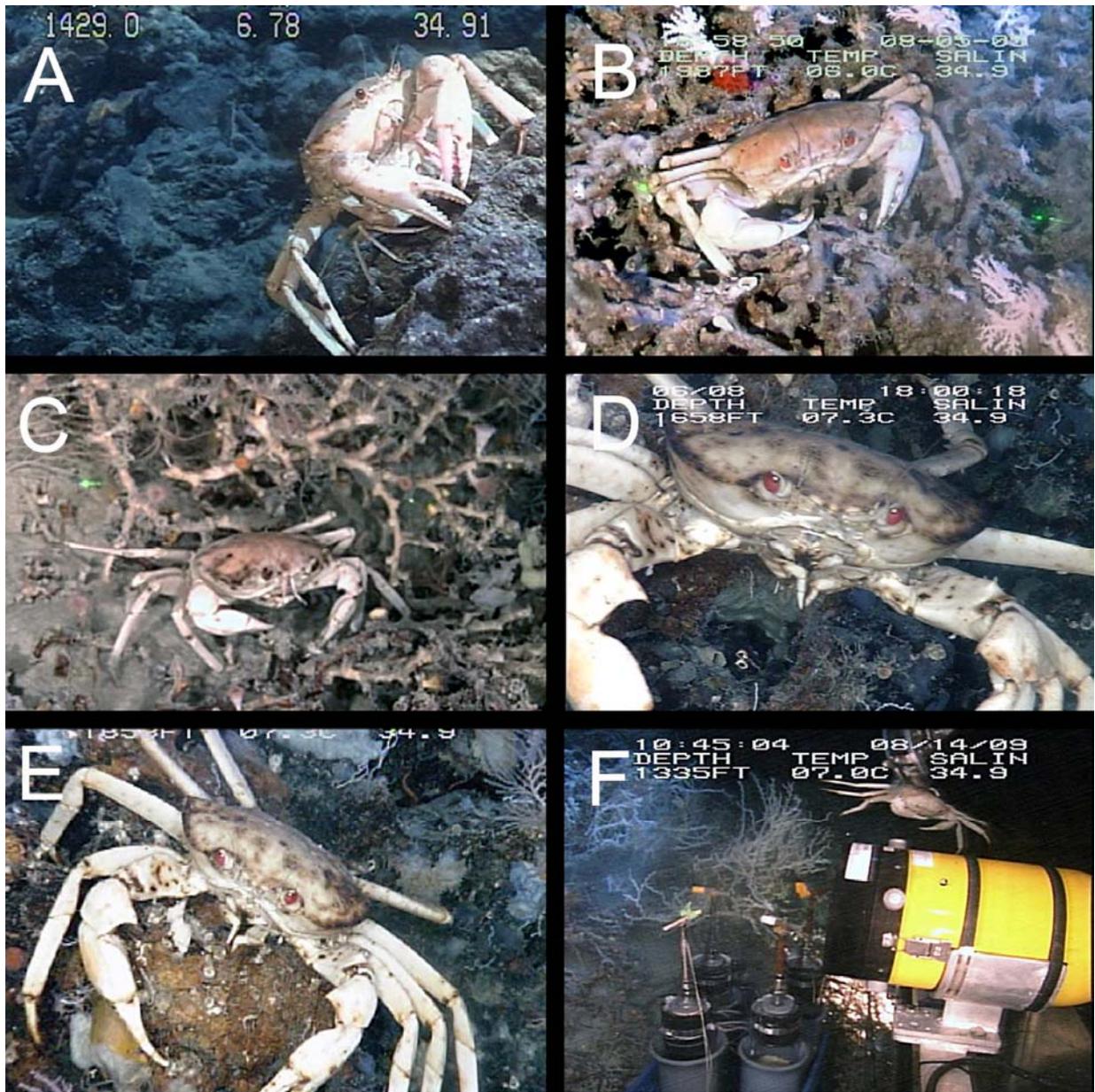


Figure 19. Close-up views of golden crabs on various deep-water *Lophelia/Enallopsammia* coral bioherms off eastern Florida. (From *Johnson-Sea-Link* submersible, Harbor Branch Oceanographic Institute)

To determine whether there were any preference by the golden crabs for habitat type (hard bottom versus soft bottom, and coral versus rock habitat), we had to normalize the data since the total transect distance and time for the different habitats was quite different among the surveys. To normalize the data we calculated the average densities of the crabs for each survey by enumerating the total number of crabs found on each habitat type divided by the total distance (km) of the transect on that habitat (Table 7, Fig. 20). It appears from Figure 20 that the density of crabs is about double on soft sediment compared to hard-bottom habitat, and that the rock habitat is slightly preferred over coral habitat.

Table 7. Density of golden crabs (number per km and per hour) for each major habitat type. Hard bottom = coral + rock habitat.

Substrate Type	No. Crabs	Time (0.0 Hr)	Distance (km)	No. Crabs Hr ⁻¹	No. Crabs km ⁻¹
Coral	66	121.45	118.85	0.543	0.555
Rock	99	123.40	120.73	0.802	0.820
Hard Bottom	165	244.82	239.58	0.674	0.689
Sediment	179	140.22	137.22	1.277	1.304
Total	344	385.07	376.80	0.893	0.913

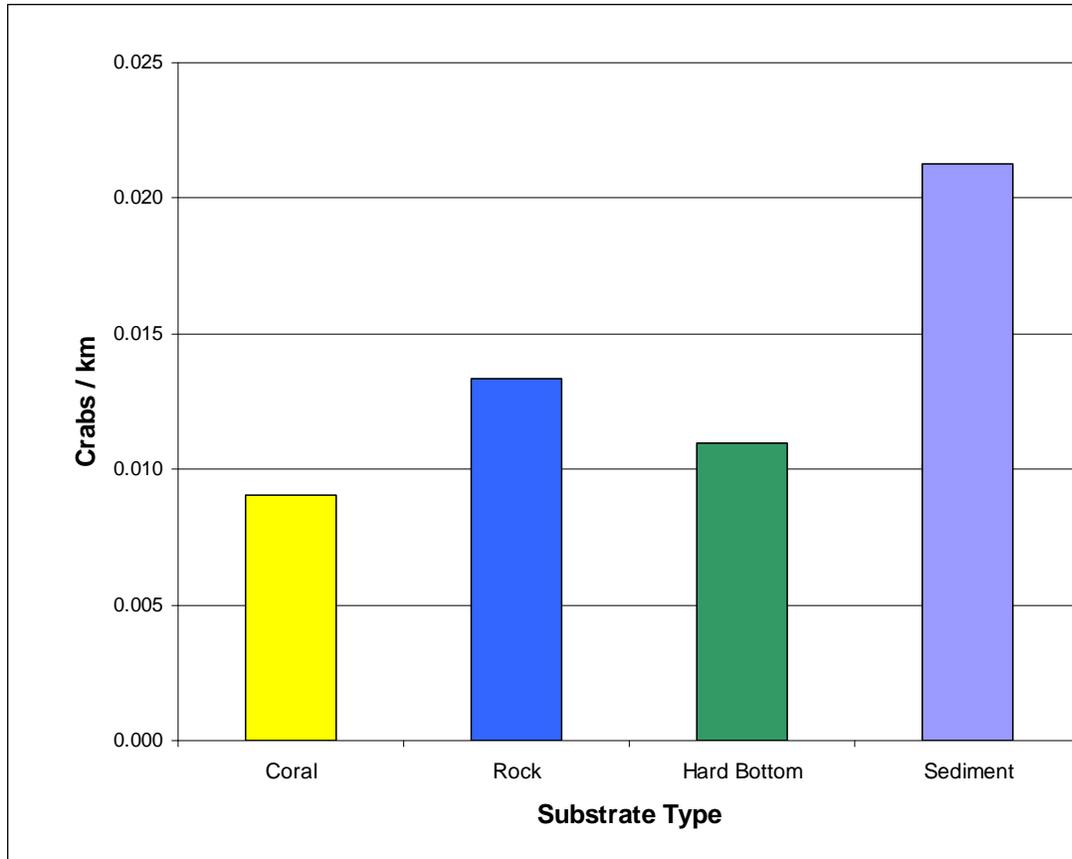


Figure 20. Density of golden crabs (number km⁻¹) for each major habitat type for all surveys.

Golden Crab- Distribution by Depth, Latitude, Physical Parameters

The number of golden crabs were also analyzed for any apparent preferences for depth, latitude, and various physical parameters such as temperature, salinity, and current. The distribution of crabs was plotted by depth; however, these data were not normalized for the relative amount of time spent at each depth (Fig. 21). Many of the dives were on steep rugged slopes where the submersible would be transecting up and down over a relatively short distance and time, so these data could not be adequately determined. Overall the crabs ranged from depths of 200 to 900 m with a peak in numbers between 300 and 500 m (984-1640 ft). This depth zone peak is comprised mostly of dive sites on the eastern escarpment of the Miami Terrace. The sites >600 m are primarily the deep-water coral sites.

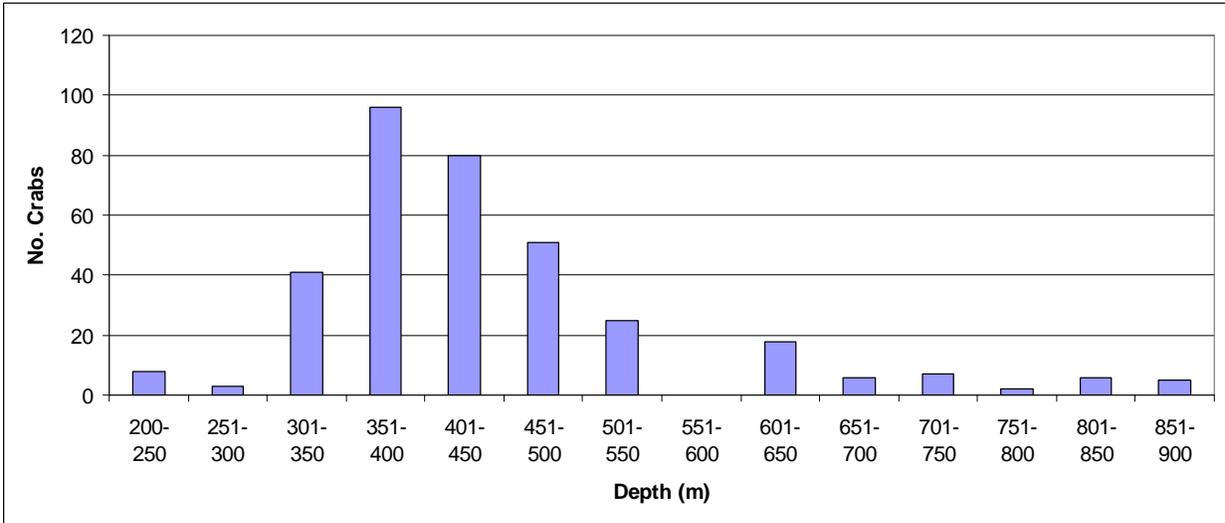


Figure 21. Number of golden crabs per depth zone in 50 m increments.

The total latitudinal range of the survey was from ~24 to 31°N. A plot of the number of golden crabs per degree latitude was normalized by correcting for the number of crabs per km (Fig. 22). No crabs were observed at the northern Florida sites north of 28°30'N, north of Cape Canaveral to the Jacksonville lithoherms. The peak in abundance at 28°N corresponds to the high relief coral reefs off Cape Canaveral, and the second peak at 26°N corresponds to the Seafarer and Calypso pipelines and CFX cable sites. The highest peak at 25°N is along the southern Miami Terrace sites. Surprisingly, even though there were a large number of crabs observed during the CFX cable survey, when normalized by number per km, the densities were lower than the other two regions.

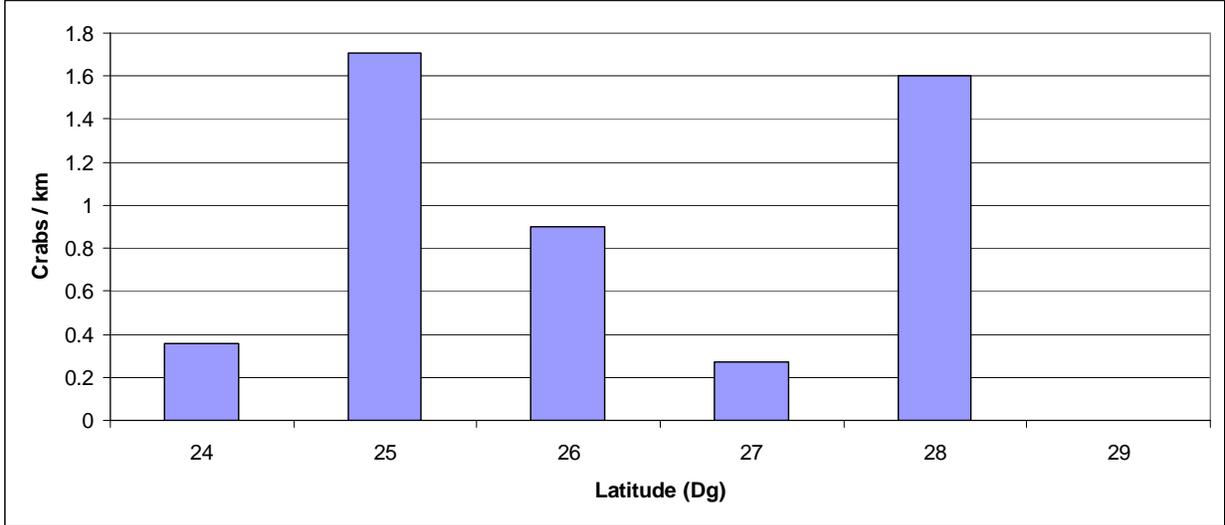


Figure 22. Density of golden crabs (number km⁻¹) for each degree increment of latitude.

The distribution of golden crabs was also compared to several physical factors to determine any preferences. The number of crabs was plotted against average annual mean bottom temperature (°C), salinity (ppt), and bottom current velocity (m/s) using bottom modeling data of Fiechter and

Mooers (2003). We used this database and annual mean parameters since these data were only collected intermittently during the dives.

The total bottom temperature range of all the dives was 5.6 to 16.7°C from the annotation records; however, the annual mean temperature range of the golden crab distribution was 7 to 11°C with peaks in abundance at 9-10°C (Fig. 23). The range of annual mean salinity for the crab distribution was only 35.0 to 35.5 and showed a peak in numbers of crabs at 35.1. The range of annual mean current range for the crab was 0.05 to 0.13 m s⁻¹ (0.1-0.26 knot). A number of dives had currents exceeding this mean, especially on the Pourtalès Terrace bioherms, and on the peaks of the coral mounds where currents at times exceeded 1-2 knots.

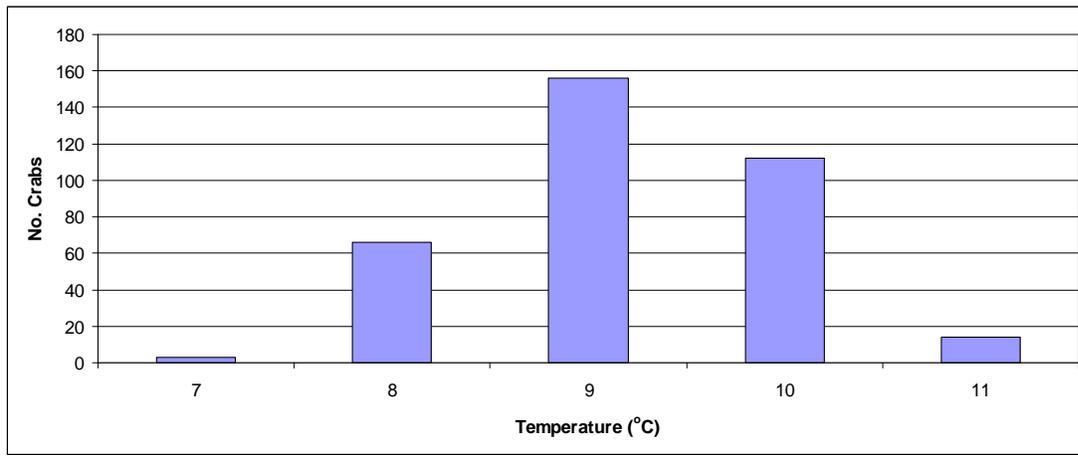


Figure 23. Number of golden crabs in relation to temperature (°C).

We were able to measure the carapace width of the golden crab only when the parallel laser beams of the submersible or ROV were near the crab and at the same level of the crab to prevent parallax. Overall 74 golden crab were measured and the carapace width ranged from 58 to 229 mm (Fig. 24). We could not determine from the visual sightings or video the sex of the crabs. There was no correlation of crab size to annual mean bottom temperature, salinity, or latitude. Nor was there any correlation of size to actual depth (Fig. 25).

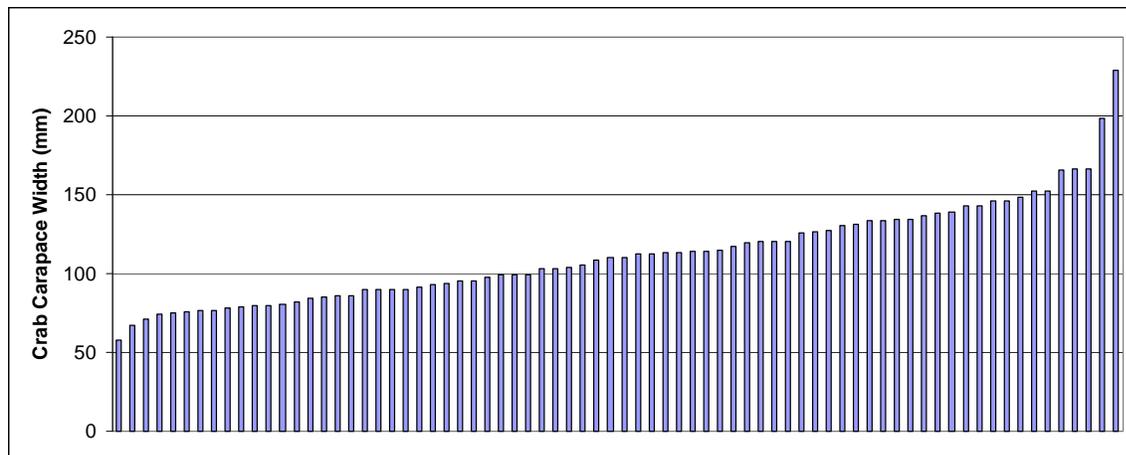


Figure 24. Size range of golden crabs from all sites (carapace width in mm).

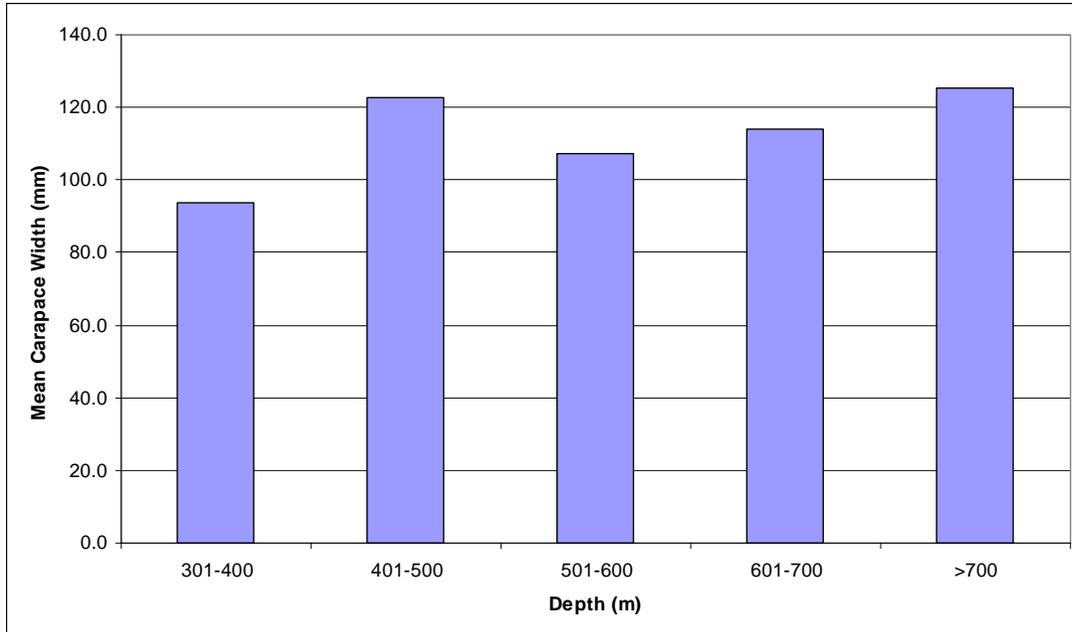


Figure 25. Size of golden crab carapace width (mm) in relation to depth.

Tilefish and Royal Red Shrimp Distributions

The other species of interest for this project are deep-water benthic species that are potentially commercially fished in this region, including golden tilefish, *Lopholatilus chamaeleonticeps*; blueline tilefish, *Caulolatilus microps*; and royal red shrimp, *Pleoticus robustus*. Overall only relatively few tilefish and royal red shrimp were observed (Table 8). A total of seven blueline tilefish were observed; five were associated with the high-relief bioherms on the Pourtalès Terrace and two in the Calypso Port region at depths ranging from 186 to 285 m. Only three golden tilefish were observed which were along the Calypso LNG surveys and near a deep-water sinkhole on the Pourtalès Terrace at depths of 257 to 290 m. On previous tilefish surveys it has been noted that they quickly dive into their burrows upon approach by the submersible or ROV so it is possible that some of the numerous burrows that were noted had a hidden tilefish. Burrow counts (Table 8) were made for large burrows (>30 cm diameter) that had characteristics of golden or blueline tilefish burrows; these can not be easily differentiated. However, many of these appeared to be ‘inactive’ burrows in that the central shaft was filled in with sediment which indicates that the tilefish was no longer maintaining the burrow. Active burrows were noted during the submersible reef dives on the *Lophelia* coral sites from Cape Canaveral to Miami region (Fig. 26), on the Miami Terrace (Fig. 27), and Pourtalès Terrace sites (Fig. 27). For unknown reasons, the majority of burrows noted on the CFX cable survey were filled in and empty, and no tilefish were sighted. It is possible that fish had been recently fished out. Experiments show that inactive burrows fill within 6 months of inactivity (Able et al. 1993).

Table 8. Depth range and number of tilefish and red shrimp observed for each survey type. Burrows= large burrows >30 cm which may be golden or blueline tilefish burrows. Red shrimp= large (>8 cm) red shrimp which may be royal red shrimp. Other shrimp= large shrimp with coloration other than solid red.

Source Data	No. Golden Tilefish	No. Blueline Tilefish	Total Burrows	No. Red Shrimp	No. Shrimp (Other)
HBOI Reef Dives	1	5	14	13	44
Calypso LNG Port	1	2	6	2	0
Calypso LNG Pipeline	1	0	6	9	2
CFX Telecom Cable	0	0	35	0	0
Seafarer LNG Pipeline	0	0	0	0	0
Total	3	7	61	24	46
Depth Range (m)	257-290	186-285	189-865	240-921	

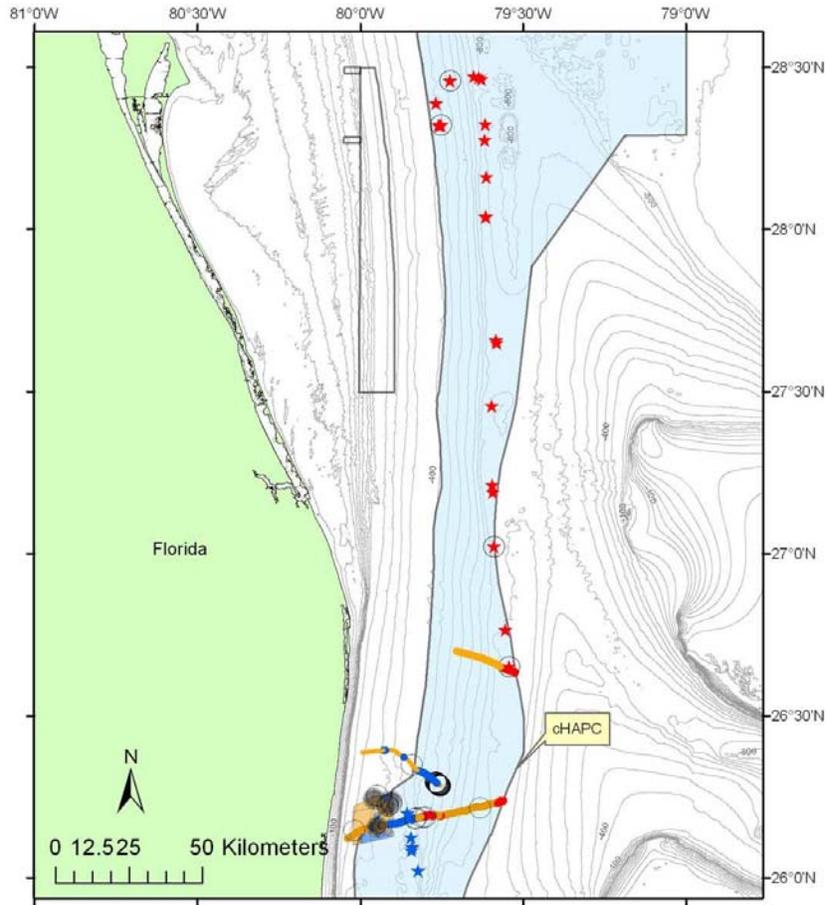


Figure 26. Distribution of golden and blueline tilefish on or near deep-water coral reefs off north and central Florida. Gray circles= tilefish observed; hollow circles= potential tilefish burrows observed; red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef survey dives; blue stars= hard-bottom, rock/coral habitat from submersible reef dives. Polygon red segments= coral habitat; blue= rock habitat; tan= soft bottom habitat. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern.

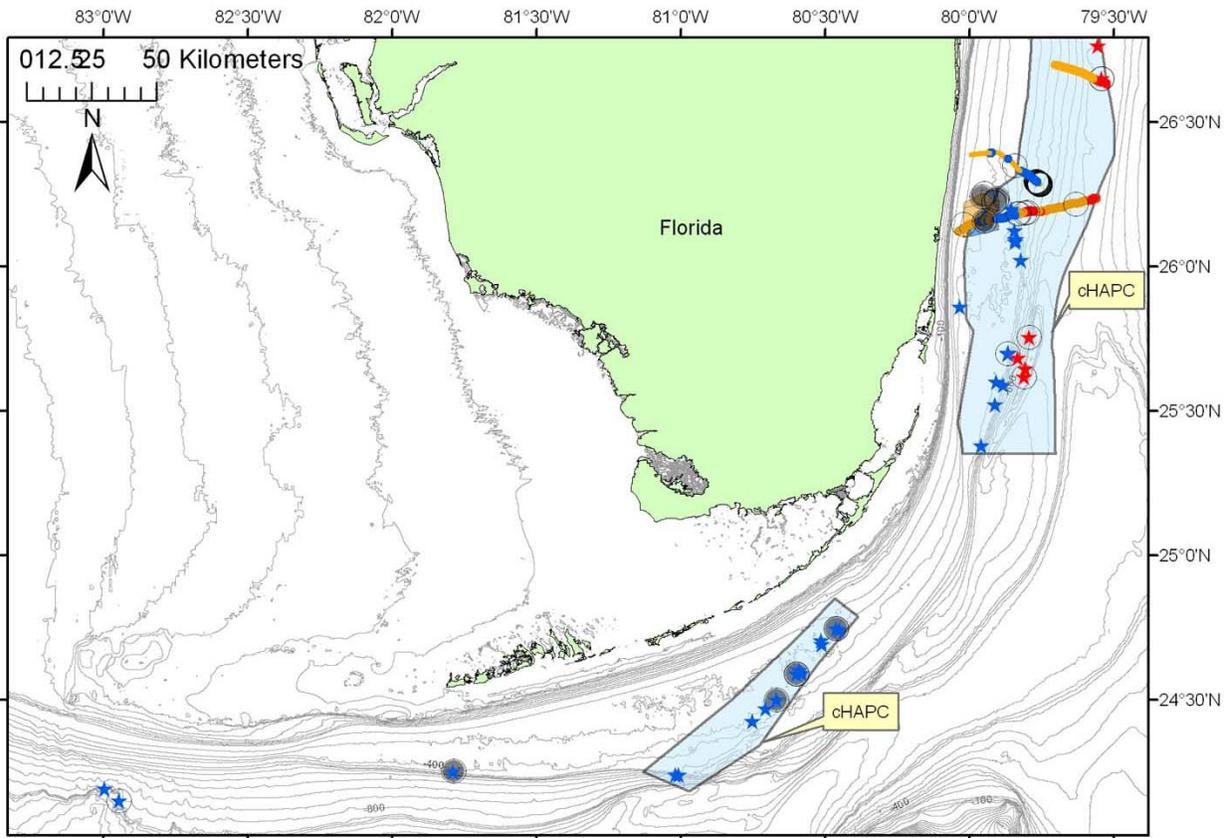


Figure 27. Distribution of golden and blueline tilefish on or near deep-water coral reefs off south Florida. Gray circles= tilefish observed; hollow circles= potential tilefish burrows observed; red stars= *Lophelia/Enallopsammia* coral reef sites from HBOI submersible reef survey dives; blue stars= hard-bottom, rock/coral habitat from submersible reef dives. Polygon red segments= coral habitat; blue= rock habitat; tan= soft bottom habitat. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern.

Documentation of the royal red shrimp was difficult. Most of the shrimp observations were at relatively long range and very short duration in the video, and size could only be determined for a few. In general, any large shrimp that were all red was counted as a potential royal red shrimp. However, reports indicate that they can occur in various colors including pink and even white (Perez Farfante, 1977). From video or photographs it may be impossible to differentiate the various species, and in this region, various genera that may be mistaken for *Pleoticus* include *Aristaeopsis* and *Plesiopenaeus* (T. Frank, pers. comm.). Also royal red shrimp are noted to burrow into the sediment forming elongate furrows, but we did not observe this behavior. The red shrimp observations were primarily in two regions: at the foot of the Miami Terrace escarpment and the Tortugas/Agassiz escarpment at depths of 240 to 921 m, but mostly >600 m (Figure 28). They were usually near the bottom and associated with soft sediment or sediment and rock rubble but also over sediment adjacent *Lophelia/Enallopsammia* coral habitat. Numerous other smaller shrimp, striped shrimp, and other species were also noted.

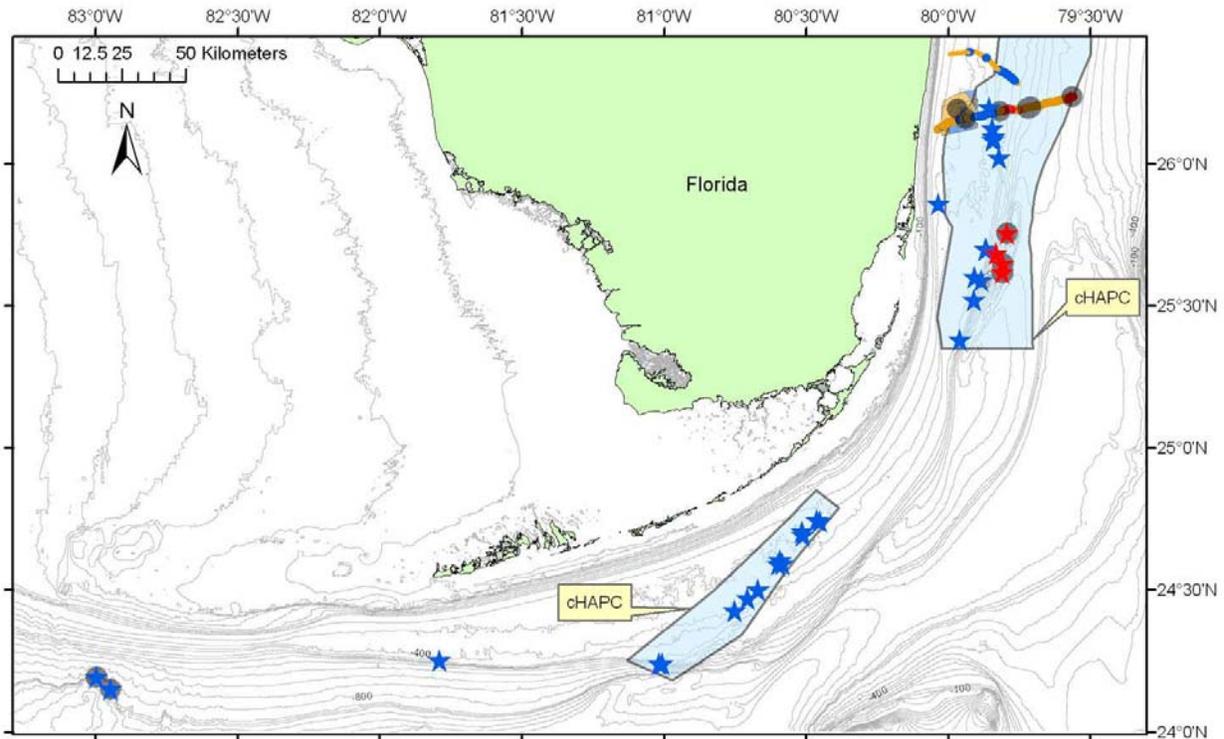


Figure 28. Distribution of royal red shrimp on or near deep-water coral reefs off south Florida. Gray circles= red shrimp observed; stars= submersible reef dive sites; red= coral habitat; blue= rock/coral habitat; tan= soft bottom habitat. Light-blue polygon= boundaries of Deep-water Coral Habitat Areas of Particular Concern.

Historical Survey of Tilefish Habitat

Not part of this study but within the region of interest is a recent survey of tilefish habitat off Miami, within and around the Miami Ocean Dredged Material Disposal Site (ODMDS) which is centered at 25°45.0'N and 80°03.37'W (Reed and Anamar, 2010). In 1986, the consulting firm Conservation Consultants, Inc. conducted an underwater video survey of this site using a remotely operated vehicle (ROV). Four video transects were completed (VT-1 through VT-4), ranging from 2.0 to 3.8 nmi in length and the size of the entire study area was 5.1 nmi² (Fig. 29).

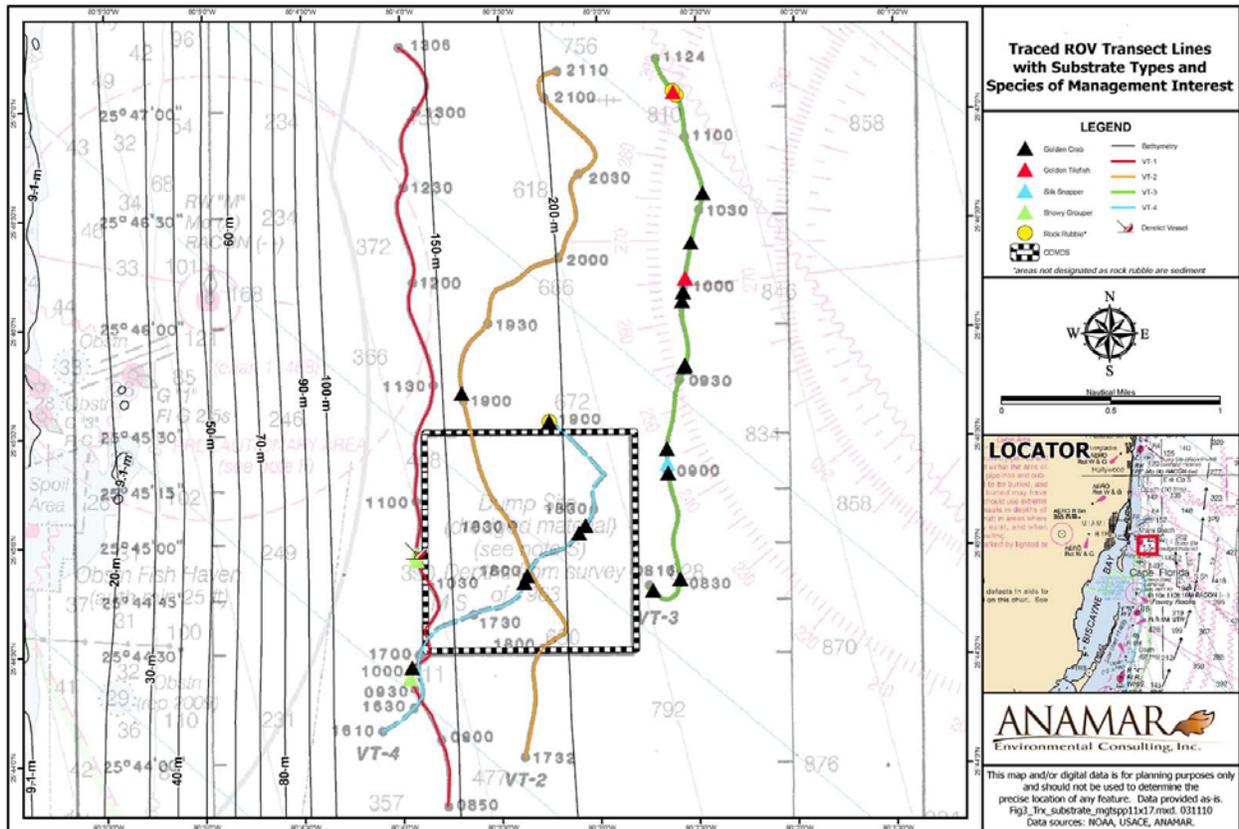


Figure 29. 1986 ROV video survey of the Miami Ocean Dredged Material Disposal Site for potential tilefish and golden crab habitat (from Reed and Anamar, 2010). Red triangles= golden tilefish observations; black triangles= golden crab; green triangles= snowy grouper.

The video transects traversed a combined total of 12.30 nmi and a total of 17.8 hours of recorded videotapes. Recently the USACE and U.S. Environmental Protection Agency (USEPA) identified a need to have this 1986 video dataset reviewed and analyzed for the possible presence of federally managed species. Review of the video records by the P.I. indicated possible golden and blueline tilefish habitat evidenced by the presence of large burrows in soft substrate (Reed and Anamar, 2010). Golden tilefish were identified in the video on two occasions, both of which occurred along VT-3 outside of the Miami ODMDS in water 247–252 meters deep (Fig. 29). No blueline tilefish were observed. In addition, a total of 16 individual golden crabs were observed along all four transects in depths of 122–252 meters, both inside and outside of the Miami ODMDS (Fig. 29). The most golden crabs observed in one transect were located along VT-3, downslope of the ODMDS. In addition, crabs tentatively identified as Jonah crabs (*Cancer cf. borealis*) were seen a total of 28 times along all four transects in water 136–250 meters deep.

Based on sediment characteristics, possible and potential burrow densities, temperature attributes, and depth constraints, it is estimated that the entire 5.1 nmi² area contained suitable tilefish habitat during the time of the video surveys. However, it is important to understand that these video transects were made more than two decades ago and cannot be used to estimate the current status of the site or potential for tilefish. Since the time of the video survey, an estimated 4,893,300 cubic yards of dredged material have been deposited at the Miami ODMDS as of September 2008 (USEPA and USACE, 2008). Of this material, at least 4.6% was characterized

as silt/clay, while the majority of the deposited material included a gravel or limerock component (84.8%). Recent surveys have shown that limestone rubble occurs in portions of the ODMDS as well as in areas to the north and west of the site (USEPA and USACE, 2008). Gravel and limerock, and to a lesser extent, coarse sand, deposited after the 1986 video survey are likely to have decreased the availability of suitable tilefish habitat within the Miami ODMDS.

DISCUSSION

Tilefish Distribution

Because of the few sightings of either tilefish or royal red shrimp there is little reason to discuss these distributions in great detail. We only observed seven blueline tilefish and three golden tilefish in all the surveys. Five of the blueline tilefish were associated with the high-relief bioherms on the Pourtalès Terrace and two in the Calypso Port region at depths ranging from 186 to 285 m. The golden tilefish were observed on the Calypso LNG surveys and at a deep-water sinkhole on the Pourtalès Terrace at depths of 257 to 290 m. The known depth distribution of the golden tilefish over its entire range is 81-540 m (McEachran and Fechman, 2005), and it is reported at depths of 80-305 m off eastern U.S. (Grimes et al., 1986). In other studies, the blueline tilefish has been reported from southeastern U.S. to Campeche, Mexico at depths of 75-236 m (Ross and Huntsman, 1982); during submersible transects off central eastern Florida, Avent and Stanton (1976) documented it at depths of 76-269 m. It appears that our observations of the blueline tilefish to 285 m may be a depth record.

We also observed numerous unidentified burrows that had characteristics of tilefish burrows. The burrows of both the golden tilefish and blueline tilefish are relatively similar, and in fact, both species have been observed in the same burrow (Able et al., 1987 b). Both species construct burrows in areas of malleable, relatively soft sediment. Both form cone-shaped depressions that narrow to a single oblique or vertical shaft which is the actual burrow of the tilefish. Smaller secondary burrows of associated crustaceans and fish are common around the upper wall of the cone. Based on burrow shape and size alone, we cannot positively identify the burrows in this study as definitively made by either the golden or blueline tilefish. Sidescan-sonar is able to detect burrows as small as 0.5 m diameter of both blueline and golden tilefish in soft carbonate sediments off east coast Florida (Able et al., 1987 a). We observed large burrows (30 to >100 cm) at depths from 189 to 865 m, but the deeper burrows are likely made by some other species such as *Acanthacaris caeca*, a blind white lobster which makes large burrows in soft mud in the deep Straits of Florida.

For unknown reasons, the majority of burrows noted along the CFX cable survey were filled in and empty, and no tilefish were sighted. Exclusion experiments using submersibles off eastern Florida found that after blocking tilefish from entering their burrows, the cone-shaped depressions were nearly filled within 173 days (Able et al. 1993). Inactive burrows break down as the shaft first fills in, followed by erosion of the upper cone, and loss of associated burrows around the upper cone, finally leaving a relatively smooth, shallow depression (Grimes et al. 1986, Matlock et al. 1991). It is possible that fish in the CFX survey region had been recently fished out and the burrows filled with sediment. Also, neither the blueline nor the golden tilefish are known to migrate far (Dooley, 2002), and mark-recapture data indicate that golden tilefish

exhibit long-term residence (Grimes et al., 1986).

Shrimp Distribution

In this study it was very difficult to identify positively royal red shrimp (*Pleoticus robustus*) from the annotations or videotape. In general, any large, entirely red shrimp was counted as a potential royal red shrimp. However, color patterns of royal red shrimp range from brick red to opaque white (Anderson and Lindner, 1971; Perez Farfante, 1977). The royal red shrimp also exhibits a diurnal color change appearing pink during the day and red at night. The three color phases described by Perez Farfante (1977) are: pink/red phase – mainly pink body with a few red and white lines, salmon phase – the carapace is a deep salmon color, and an opaque white phase – the shrimp appears opaque white with a salmon tint.

Also red shrimp burrow into the sediment and form elongate furrows, which we did not see, and which would be difficult to identify from ROV or submersible observations. The red shrimp observed in our study were primarily in two regions: at the foot of the Miami Terrace escarpment and the Tortugas/Agassiz escarpment at depths of 240 to 921 m, but mostly >600 m. They were usually near the bottom and associated with soft sediment or sediment and rock rubble but also with sediment on *Lophelia/Enallopsammia* coral habitat. The depth range for royal red shrimp is on the upper continental slope at about 180-730 m with the largest concentrations between 256 and 500 m (Anderson and Lindner, 1971; Perez Farfante, 1977; Anonymous, 2010). There is a moderate commercial fishery in 73-750 m depths (Williams and Wigley, 1977), and the geographic range spans from Massachusetts through the Gulf of Mexico and the Caribbean to French Guiana (Williams and Wigley, 1977; Perez Farfante, 1977).

Golden Crab Distribution

Habitat Preference

Overall the golden crab (*Chaceon fenneri*) in this region occurs on all habitat types in its depth range, including dense live coral thickets, vertical rock walls, rock pavement, rock boulders, rock slabs, and flat muddy-sand bottom. We observed crab densities twice as great on soft muddy-sand substrate compared to hard bottom, either coral or rock. The golden crab essential fish habitat, as reported by NOAA (2010), include flat foraminiferan ooze, dead coral mounds, rippled sediment, black pebble bottom, low outcrops and soft bioturbated habitats. Visual counts of *C. fenneri* conducted via submersible in the South Atlantic Bight off the Carolinas showed higher densities on low-relief outcrops (0.7/1000 m²) than on other substrates (Wenner and Barans, 1990; Wenner, 1990). There were no crabs trapped on rock and coral rubble bottoms in the depth range of 550-640 m by Wenner *et al.* (1987). However, in the Gulf of Mexico *C. fenneri* was observed in situ on both hard and soft bottom habitats and was commonly found hiding under ledges, in cracks along hard bottoms, and at the base of soft corals (Lindberg and Lockhart, 1993). In fact, the largest trap catches in the Gulf of Mexico were, in contrast to the South Atlantic Bight, on cobble, vertical rock walls and rock outcroppings (Wenner and Barans, 1990).

Density

Our observed densities ranged from 0.5 to 1.3 crabs km⁻¹ but it is difficult to extrapolate this density from transect length to area because the width of field of view varied from a minimum of <1 m during some of the ROV pipeline transects to >10 m for visual observations from the submersible. So assuming a minimum field of view width of 1 m, the densities would range from 0.5-1.3 crabs/1000 m², and a 10-m field of view would be 5-13 crabs/1000 m². The former falls within the range reported by Wenner and Barans (1990) cited above. In general, the low density of *C. fenneri* observed in submersible studies compared to trap data indicates that the crabs are drawn to traps from a wide range (Wenner 1990; Kendall 1990).

Latitudinal Distribution

For the most part, the observations of golden crab were within or adjacent to the Allowable Golden Crab Fishing Areas off eastern and southern Florida. The northern boundary of the “Northern” Allowable Fishing Area is 29°N, and we observed no crabs north of 28°30’N. The peak in abundance at 28°N corresponds to the high-relief coral reefs off Cape Canaveral which is adjacent to the “Northern” Allowable Fishing Area. The second peak at 26-27°N corresponds to the Seafarer and Calypso pipelines and CFX cable sites, which are within or adjacent to Fishing Area “A”. The highest peak at 25°30’N is the southern Miami Terrace sites, which are bordered by Fishing Areas “A, B, and C”. The species occurs as far north as Chesapeake Bay, and a fishery occurs off the Carolinas, so the reason for the lack of crab observations off north Florida is unknown. Lindberg and Lockhart (1993) suggest that crab distribution may be more related to substrate type than to depth, as they found the greatest density of golden crabs (36.5 crabs/ha) associated with “hard-bottom canyon features”.

Depth Range

Overall the crabs ranged from 247 to 888 m with a peak in numbers between 300 and 500 m. This depth zone peak chiefly comprises dive sites on the eastern escarpment of the Miami Terrace. The sites >600 m are primarily the deep-water coral sites. These depths fall within the bathymetric range of the species, which is reported as 183 m off Tortugas (Boone, 1938 in Manning and Holthuis, 1986) to 1,462 m off Bermuda (Wenner and Barans, 1990). The typical depth range is 250-290 m with most records occurring between 350 and 500 m (Manning and Holthuis 1984). Trap records off South Carolina and Georgia coasts show the maximum abundance of *C. fenneri* between 367 and 549 m (Wenner et al., 1987), which is similar to the peak distribution in our study.

Temperature and Current

The temperature range of the golden crab in our study was 7-11°C, with peaks in abundance at 9-10°C. The lowest and highest temperatures reported from crab trap records were 7.14°C (Wenner et al., 1987) and 15°C (Wenner and Barrans 1990). The range of average current velocity in our study was 0.05-0.13 m s⁻¹ (0.1-0.26 knot) with instantaneous peaks in excess of 0.5 m s⁻¹, whereas off the Carolinas, Wenner and Barrans (1990) reported the crab in currents of 0.38-0.44 m s⁻¹.

Size and Sex

From our size estimates, the carapace width of the golden crabs ranged from 58 to 229 mm but only two were >195 mm and most ranged from 50 to 150 mm. The largest reported carapace width of *C. fenneri* was 195 mm for males (Kendall 1990) and 147 mm for females (Manning and Holthuis, 1984), so our two measurements >195 mm may be records. Some studies indicate an up-slope migration related to reproduction (Erdman et al., 1990). Although captured males of *C. fenneri* are generally larger than females overall, Lindberg and Lockhart (1993) found that the largest of both sexes was caught at the shallowest depths in which they appeared. However, other studies show the opposite; Wenner et al. (1987) reported that the mean carapace width and weight of females were greatest in the greater depths sampled (733-823 m). Although we could not differentiate male from female, we found no correlation of carapace width with depth.

Potential Overlap of Allowable Golden Crab Fishing Areas and Live-Bottom Habitat

The current golden crab fishery off eastern Florida has been granted Allowable Golden Crab Fishing Areas (Northern, Middle [A,B,C], and Southern) by the SAFMC within the newly designated Deep-water Coral Habitat Areas of Particular Concern (CHAPC); however, some of these zones abut and may overlap hard-bottom habitat in the following three regions: East Florida *Lophelia* reefs, Miami Terrace, and Pourtalès Terrace. Because little is known about the impact crab fishing gear has on bottom habitat and how the gear shifts once on the bottom, the potential exists for impacts to deep-water coral habitat. Although fishers may try to avoid intentional impact to coral bottom, inevitable gear failure could damage deep-water coral thickets (SAFMC, 2009 a).

Mapping of deep-water reefs remains limited and very few regions of the South Atlantic Bight and Straits of Florida have been mapped with high-resolution bathymetry or multibeam sonar. Without proper maps it is impossible for fishers to avoid deep-reef habitat. Also, not all deep coral habitats are high relief; much of it is low relief that will not appear on fathometers. In addition, although fishers have indicated that they do attempt to avoid coral reefs, crab trap strings may drift more than 2 kilometers (1.5 miles) from their initial placement, presenting a unique enforcement dilemma.

Further, we have discovered several high-relief, deep-water reef sites off Florida that appear only as a small irregularities in the isobaths of the best available NOAA bathymetric charts. One example is off Cape Canaveral (Fig. 30). The NOAA bathymetry is based on 10-m contour lines and only shows a slight dip. However, our AUV multibeam survey of the site in 2008 revealed five individual mounds, up to 60-m relief (200 ft) and extending over 1 km. When we ground-truthed the AUV maps with the *Johnson-Sea-Link* submersible, we discovered magnificent, pristine *Lophelia* coral reefs, with thickets of living coral, up to 3 m tall, covering the peaks and slopes.

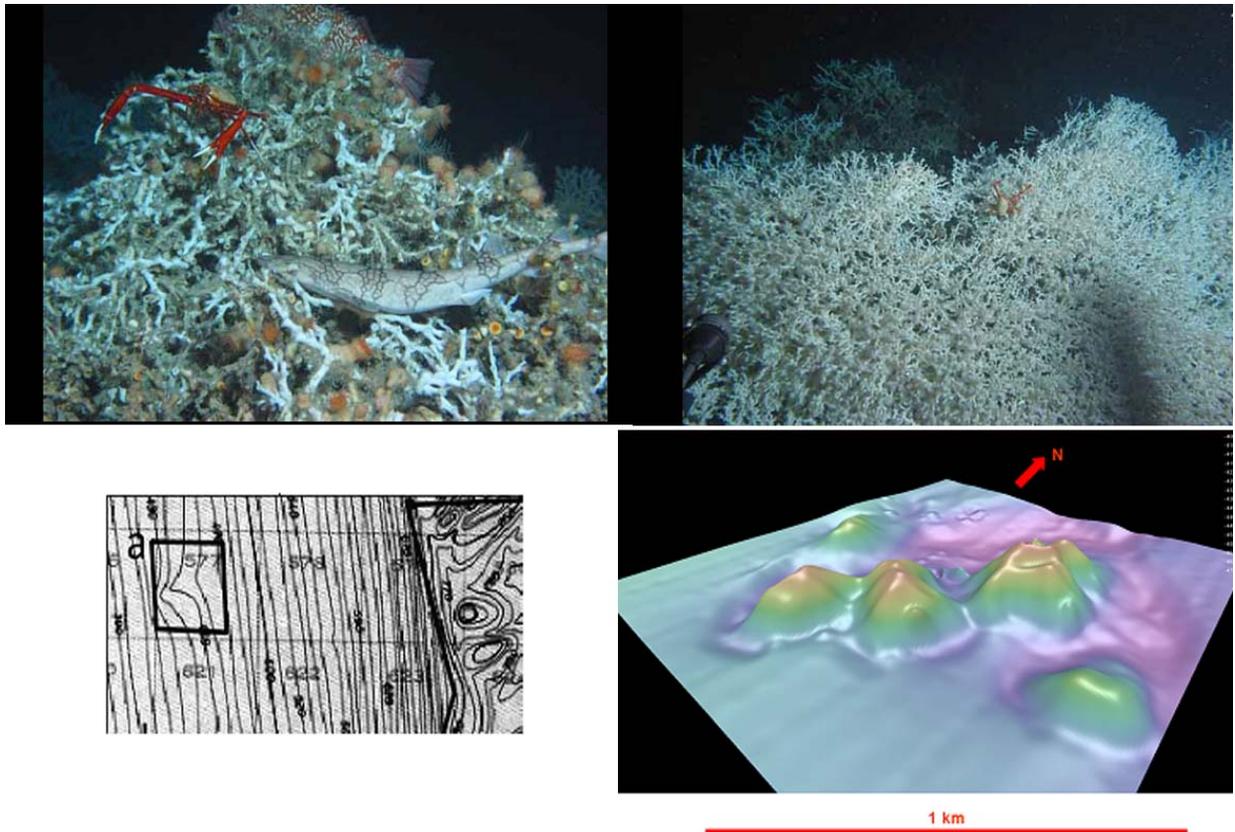


Figure 30. Bathymetry and images of a deep-water *Lophelia* coral reef within the Deep-water Coral Habitat Areas of Particular Concern off Cape Canaveral. Top- images from *Johnson-Sea-Link* submersible: *Lophelia* coral thickets with crabs and fish; lower left- 10-m contour lines from NOAA chart (Pillsbury NH 17-12); lower right- AUV multibeam sonar of same site showing five, 60-m tall mounds over 1 km area.

In order to determine whether the current boundaries of the Allowable Crab Fishing Areas impinge on potential live-bottom habitat, we used ArcGIS (ArcView[®], ArcMap[®]) to combine NOAA bathymetric maps (<http://www.ngdc.noaa.gov/mgg/bathymetry/relief.html>), our ground-truth dive data, and our crab distribution data to draw polygons in the Allowable Crab Fishing Areas around regions that show potential coral ecosystem habitat (Fig. 31). We used the best available bathymetry from NOAA’s National Geophysical Data Center, including the U.S. Coastal Relief Model (CRM) and National Ocean Services (NOS) regional bathymetric maps. These are not available as charts to fishers as GPS navigation maps, and the typical “Chart Pack” navigation software that is available to boaters and fishers does not show any of these high-definition, bathymetric contour lines. The following NOAA NOS bathymetric maps were imported and georeferenced into our ArcGIS project: NOAA-DEM (3-d imagery of the Straits of Florida combining all the various NOAA bathymetry), CRM-10-m-NAD83 (digital 10-m contour line imagery), NH17-6, NH17-9, NH17-12, NG17-3, NG17-6, NG17-9, NG17-12, L-184, and L-185 (NOAA, 2010 b). Although the CRM 10-m maps provide digitized contour data, they only show limited topographic features. The older regional bathymetric maps (NH and NG series) provide the best detailed contours in 10-m intervals showing high-relief features which we have found to be quite accurate. For the Straits of Florida, we also imported Malloy and

Hurley's (1970) bathymetric maps which show prominent features with 18-m contour resolution, and Ballard and Uchupi's (1971) map which provides 5-m contours of the Miami Terrace. These regional maps were imported into GIS as georeferenced TIFF images although the depth contour lines were not available as individual digitized records.

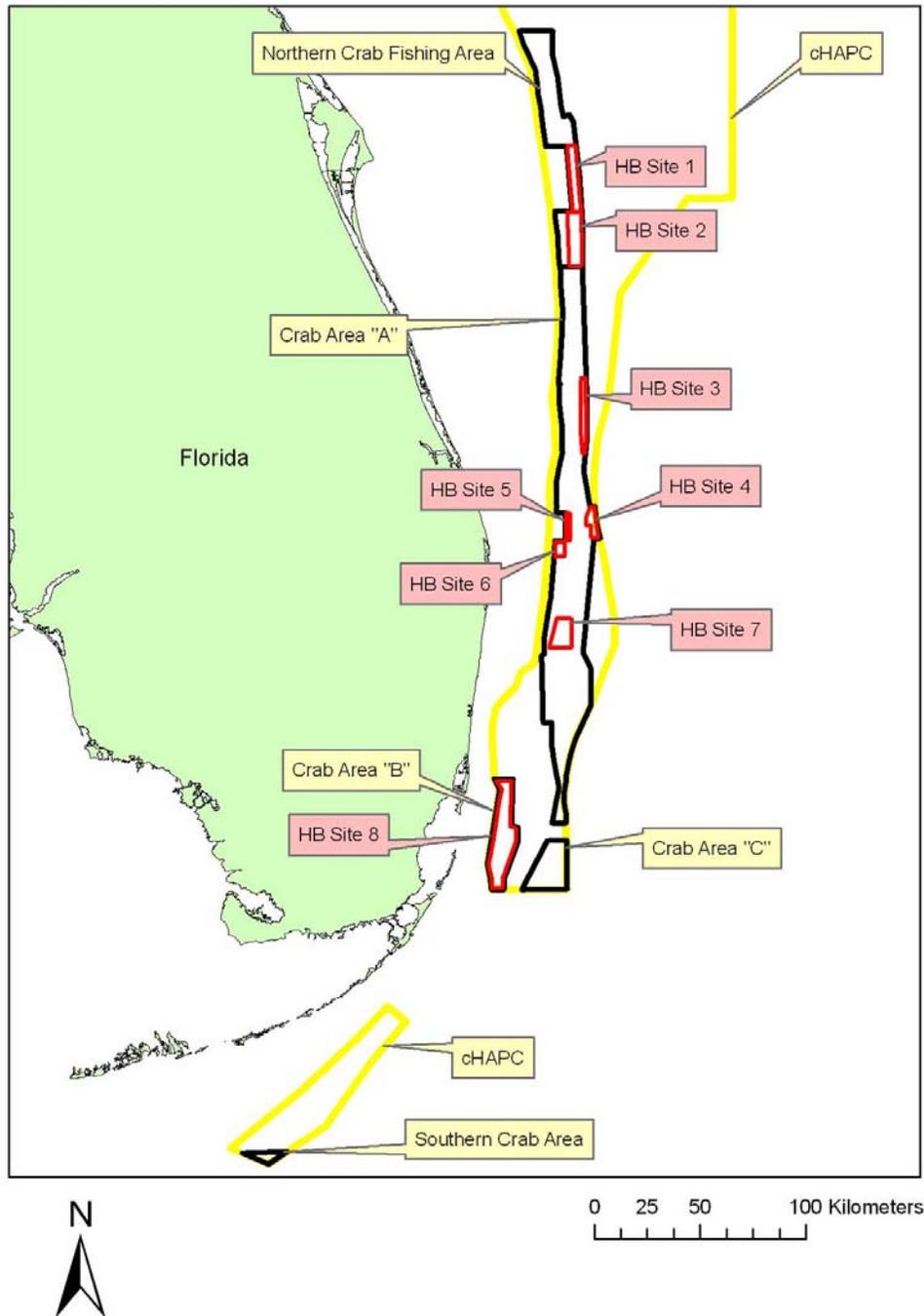


Figure 31. Boundaries of Deep-water Coral Habitat Areas of Particular Concern (CHAPC; yellow polygons), Allowable Crab Fishing Areas (black polygons), and probable hard-bottom (HB), coral habitat sites (red polygons) that are within the Crab Fishing Areas. (Refer to Figures 32-40)

Figure 31 shows all the Allowable Crab Fishing Areas in relation to the CHAPC. The red polygons (numbered HB Sites 1-8) are regions that show potential high-relief bathymetry and therefore probable hard-bottom, coral ecosystem habitat. In all our previous submersible and ROV dives that we have made in this region (Fig. 2), all the high-relief sites proved to be coral or hard-bottom habitat. We strongly request and recommend that NOAA NMFS and SAFMC remove these sites from the Allowable Crab Fishing Areas as discussed below.

In the north central region of Florida, from Cape Canaveral to West Palm Beach, the Allowable Crab Fishing Areas within the CHAPC include the “Northern” Area and Area “A”. These fishing areas abut coral habitat and especially off Cape Canaveral, they surround extremely sensitive living reefs. Figure 30 shows one such reef in this region. Figure 32, HB Site 1 (red polygon) indicates a very narrow corridor (<5 km wide) which is open to fishing but is bounded on both sides by extremely sensitive living coral reefs. Because crab longlines can potentially drift more than 2 kilometers (1.5 miles) of initial placement, we propose that this region (HB Site 1) be closed to fishing.

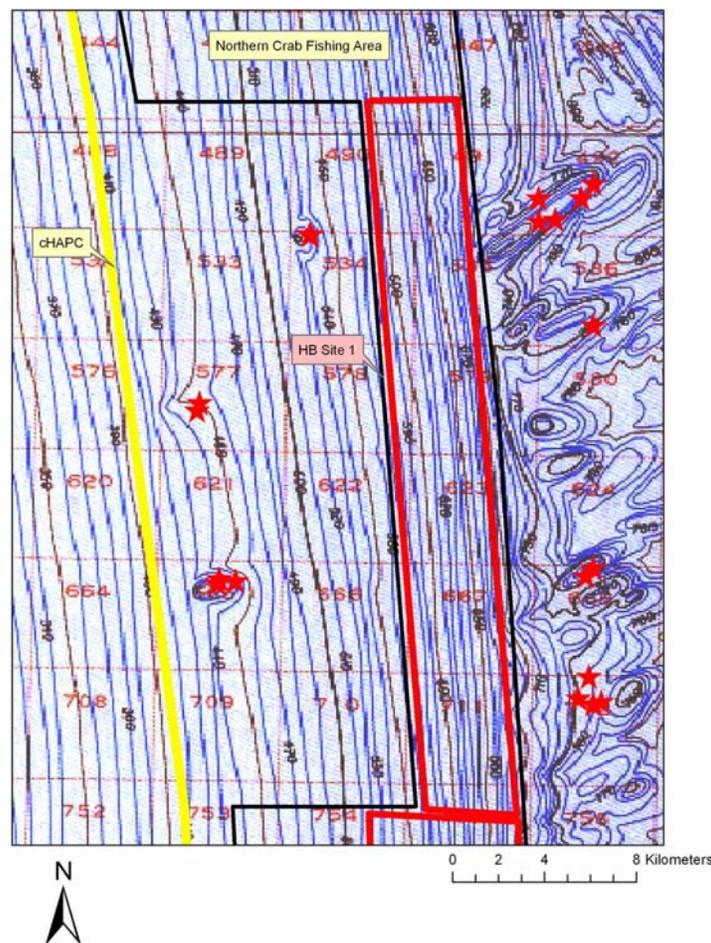


Figure 32. Northern Allowable Crab Fishing Area (black polygon) within CHAPC (yellow). HB Site 1 (red polygon) is a narrow corridor between two regions of known high-relief coral ecosystems. Red stars- *Lophelia* coral reefs ground-truthed by submersible dives. Bathymetry from NOAA Pillsbury NH 17-12 chart. (See Figure 31 for location)

The second site that shows potential hard-bottom, coral habitat is HB Site 2, also within the Northern Allowable Crab Fishery Area (Fig. 33). This site shows definite irregular bathymetry that is very likely coral reef habitat and which is the western edge of the known high-relief *Lophelia* mounds that we have documented <1 km to the east.

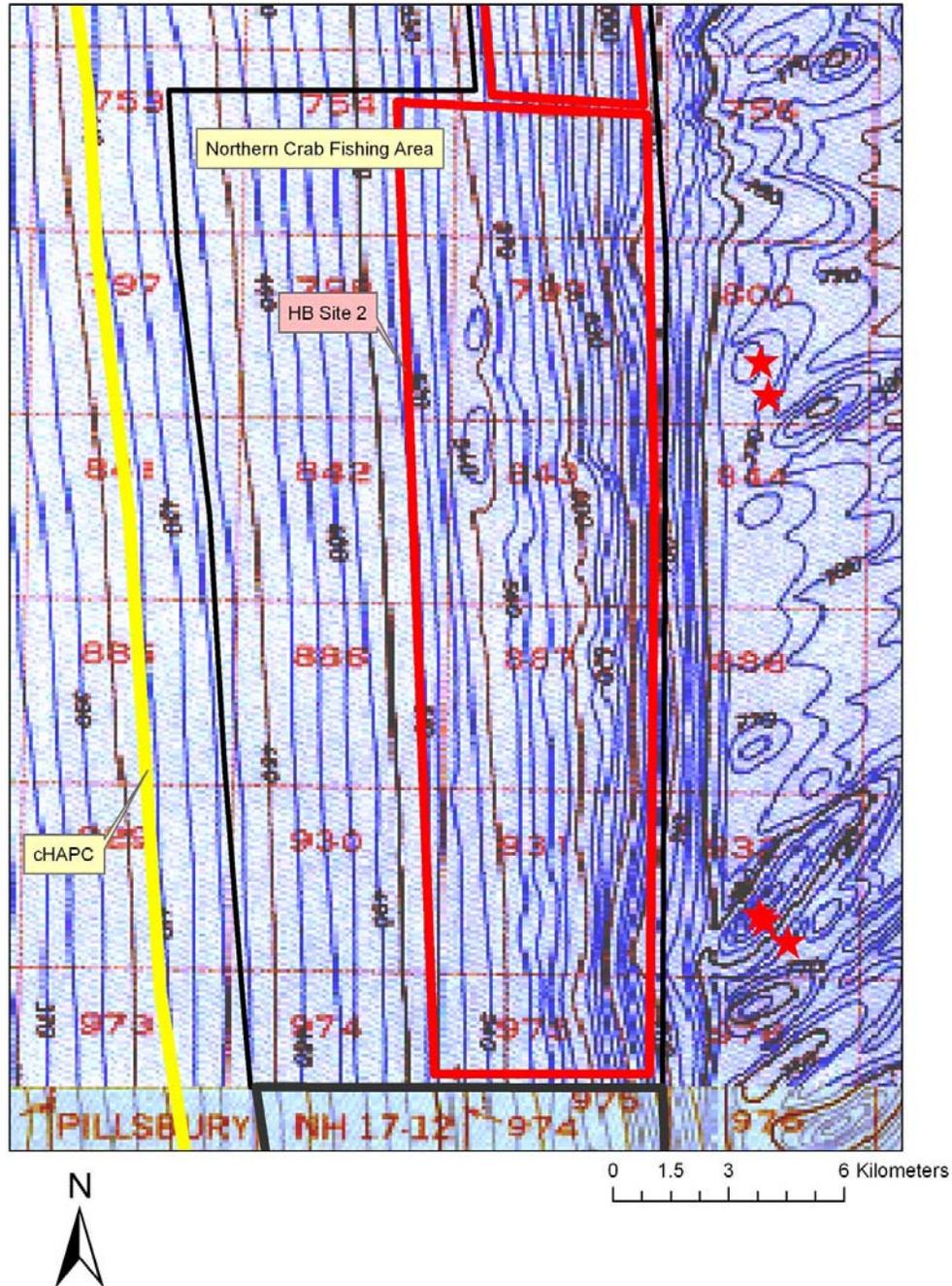


Figure 33. Northern Allowable Crab Fishing Area (black polygon) within CHAPC (yellow). HB Site 2 (red polygon) borders the eastern edge of the Allowable Fishing Area and shows potential high-relief bathymetry. Red stars- *Lophelia* coral reefs ground-truthed by submersible dives. Bathymetry from NOAA Pillsbury NH 17-12 chart. (See Figure 31 for location)

Hard Bottom Site 3 is slightly south of HB Sites 1 and 2 (Fig. 31) and is within the Allowable Crab Fishing Area “A” (Fig. 34). As with HB Site 2 it has irregular bathymetry and appears to lie at the western margins of the known high-relief *Lophelia* reefs which have been ground-truthed to the east. Figure 35 is the same feature but mapped using the NOAA-DEM 3-d imagery. This too shows definite features of the high-relief coral area impinging within the Allowable Crab Fishing Area.

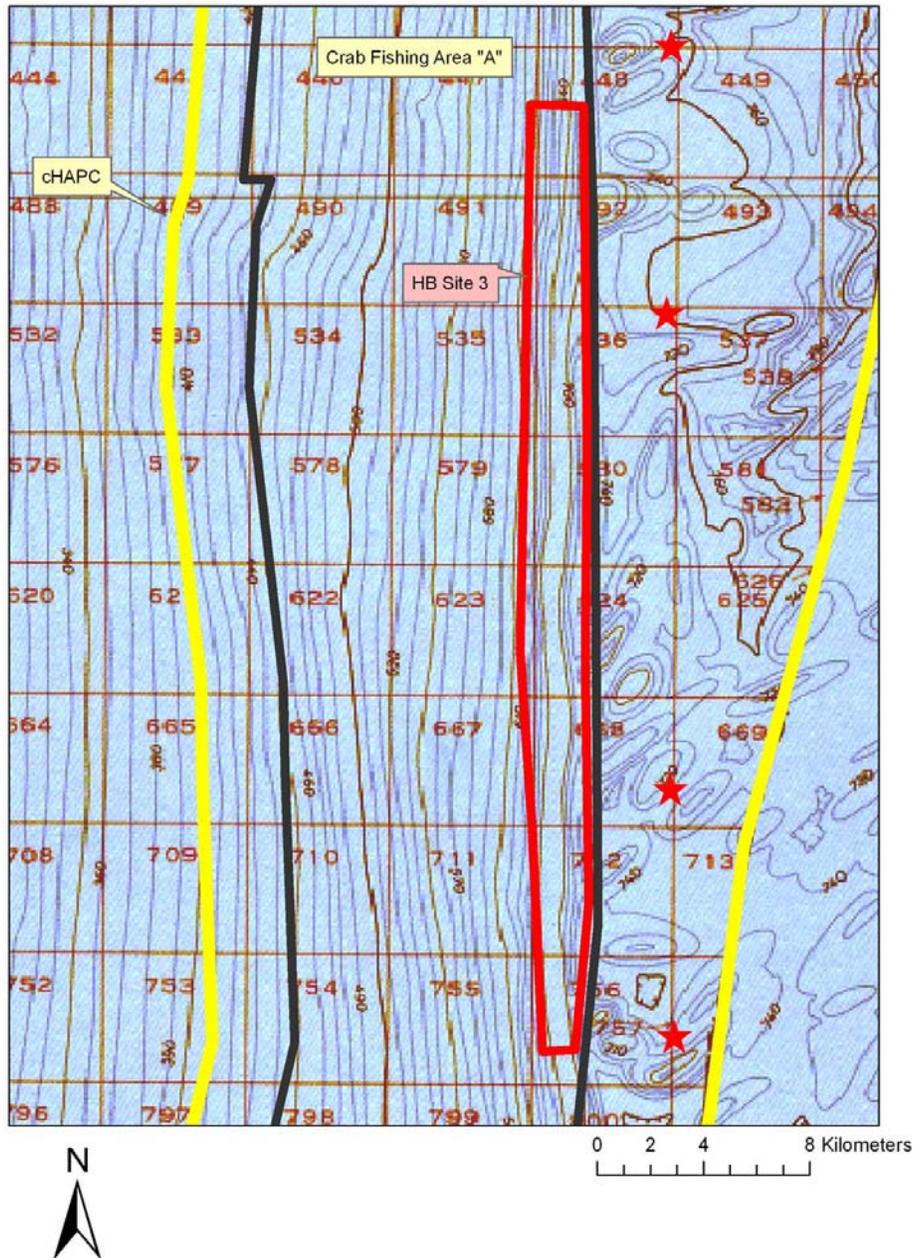


Figure 34. Allowable Crab Fishing Area “A” (black polygon) within CHAPC (yellow). HB Site 3 (red polygon) borders the eastern edge of the Allowable Fishing Area and appears to show potential high-relief bathymetry. Red stars- *Lophelia* coral reefs ground-truthed by submersible dives. Bathymetry from NOAA Walker Cay NG 17-3 chart. (See Figure 31 for location)

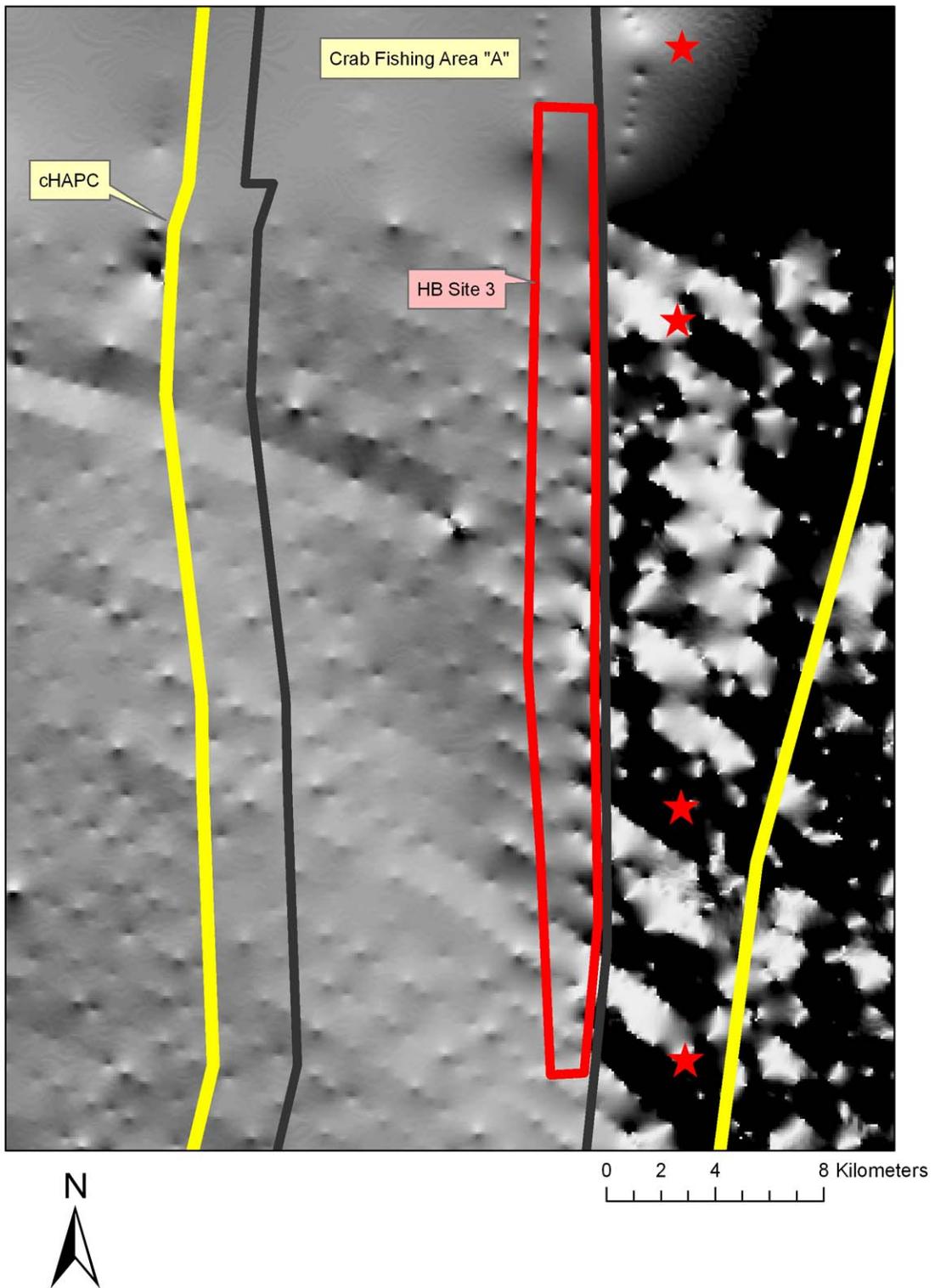


Figure 35. Allowable Crab Fishing Area “A” within CHAPC. Same HB Site 3 as Figure 34 but with NOAA 3-d bathymetric imagery showing margins of high-relief bathymetry inside of the Allowable Fishing Area. Bathymetry from NOAA-Dem chart. (See Figure 31 for location)

Probable hard-bottom, coral habitat sites HB 4, 5, and 6 are also within the Allowable Crab Fishing Area “A” (Fig. 36). The bathymetric features in HB Sites 4-6 are similar to those seen in Figure 30, where 60-m tall coral reefs were discovered.

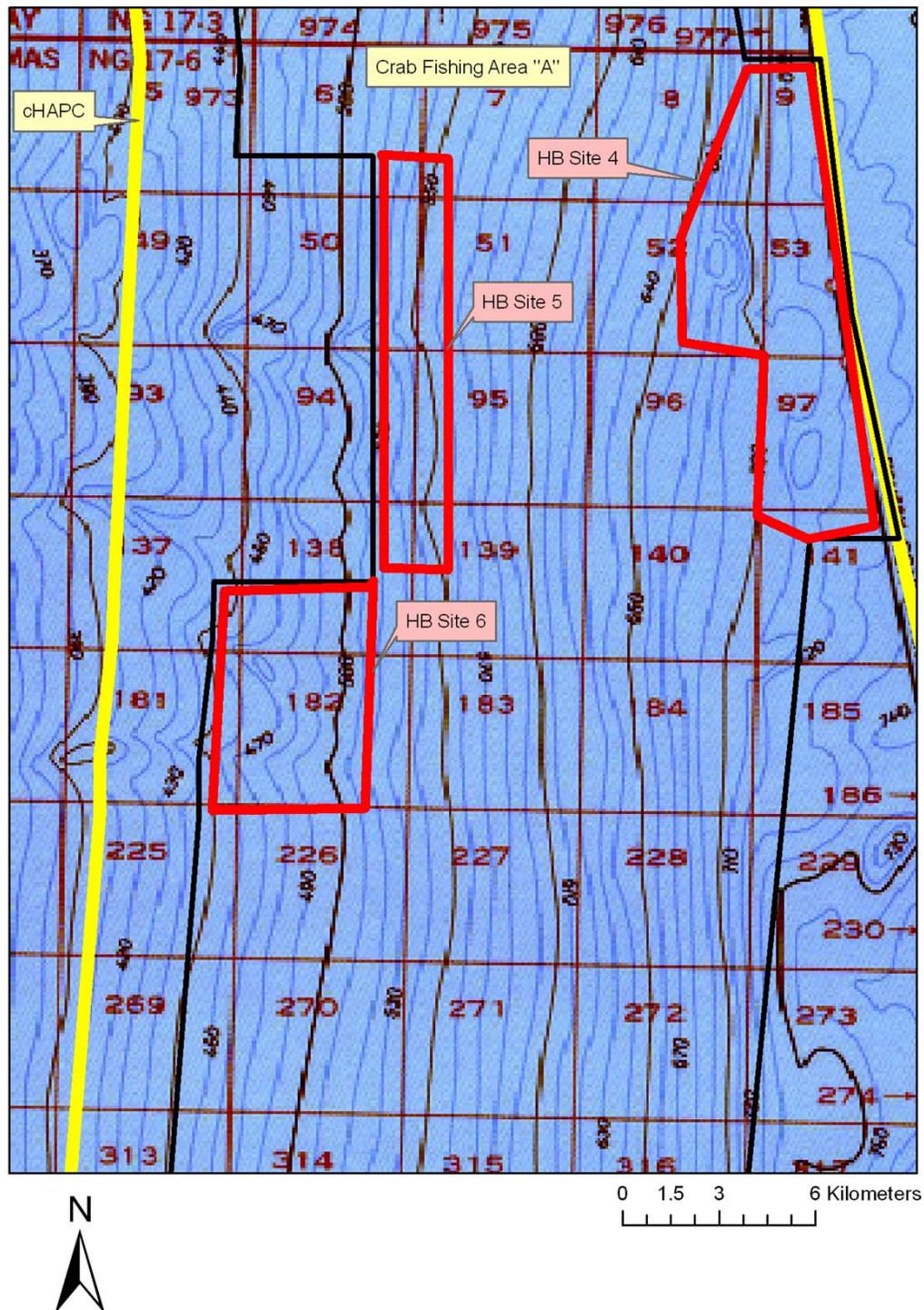


Figure 36. Allowable Crab Fishing Area “A” (black polygon) within CHAPC (yellow). HB Sites 4, 5, and 6 (red polygons) within the Allowable Fishing Area clearly appear as probable high-relief bathymetry. Bathymetry from NOAA Bahamas NG 17-6 chart. (See Figure 31 for location)

Hard Bottom Site 7 appears as several high-relief features within Allowable Crab Fishing Area “A” (Fig. 37). These are similar in shape and contour to known *Lophelia* coral reef sites that have been ground-truthed elsewhere in this region. Figure 38 is of the same site but showing the NOAA 3-d imagery, which clearly shows high-relief features and likely coral habitat.

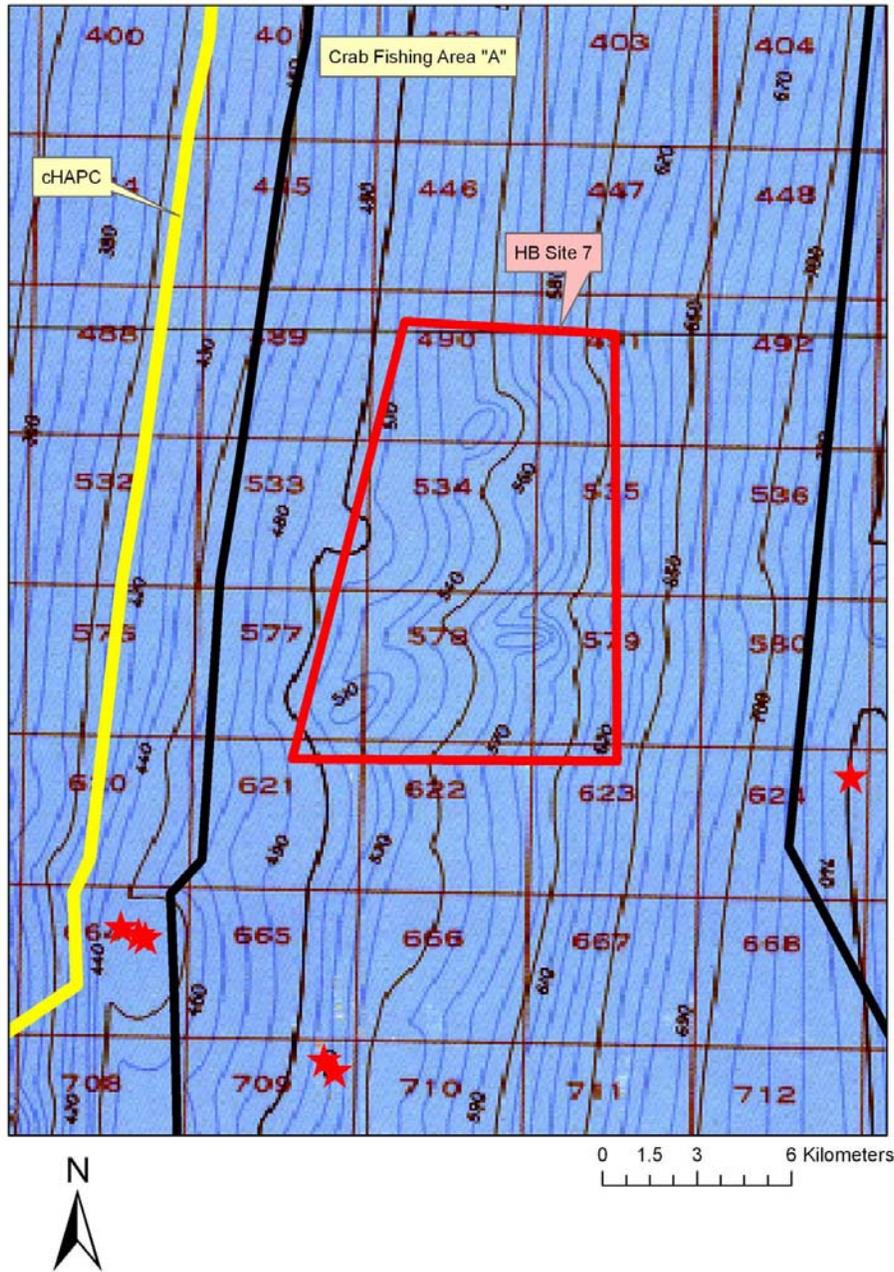


Figure 37. Allowable Crab Fishing Area “A” (black polygon) within CHAPC (yellow). HB Site 7 (red polygon) within the Allowable Fishing Area clearly appears as potential high-relief bathymetry. Bathymetry from NOAA Bahamas NG 17-6 chart. (See Figure 31 for location)

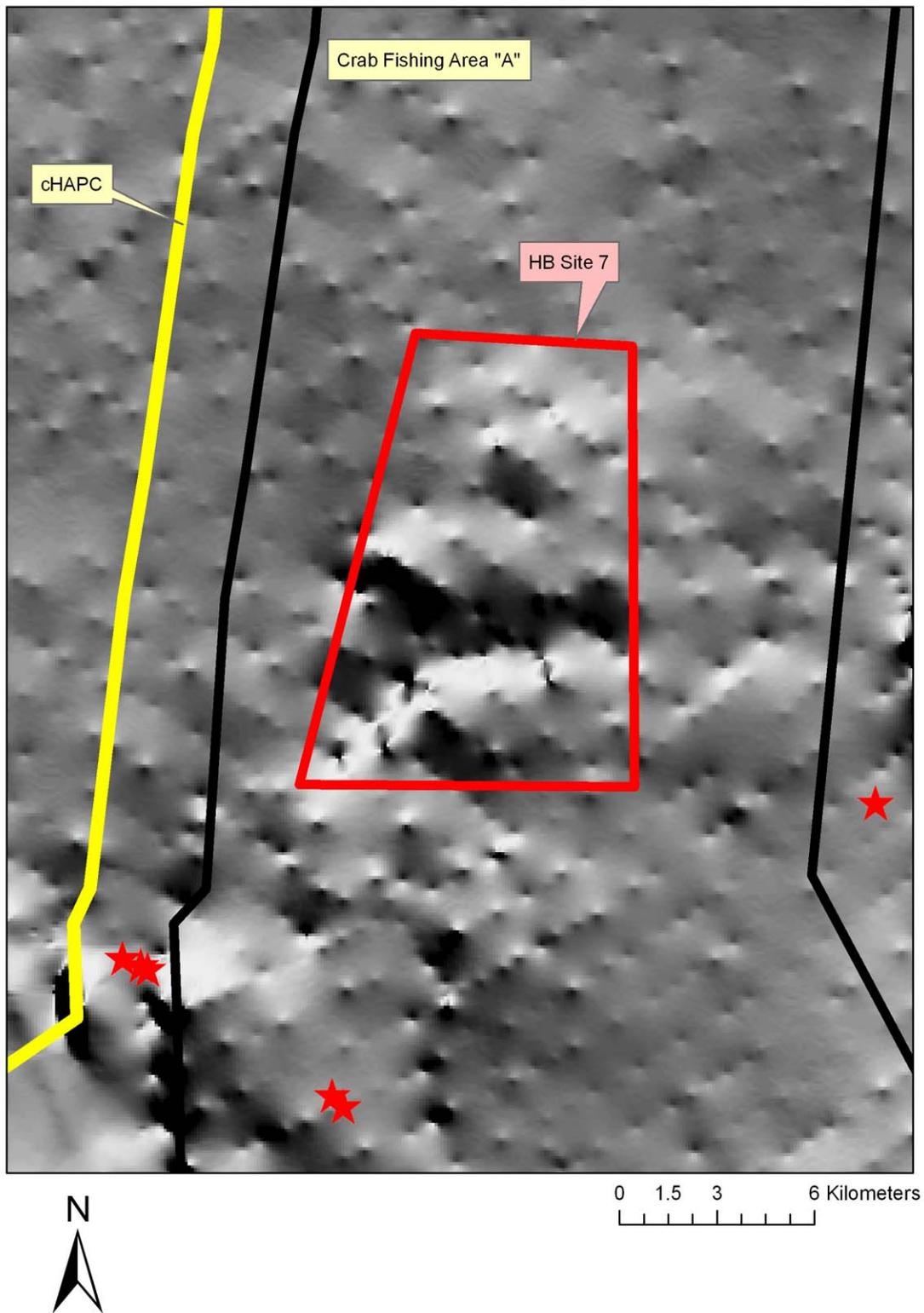


Figure 38. Allowable Crab Fishing Area “A” within CHAPC. Same HB Site 7 as Figure 37 but with NOAA 3-d bathymetric imagery showing definite high-relief bathymetry inside the Allowable Fishing Area. Bathymetry from NOAA-Dem chart. (See Figure 31 for location)

Allowable Crab Fishing Area “B” lies along the southwestern portion of Miami Terrace (Figs. 39, 40). We have had several submersible dives adjacent to this area which proved to be the high-relief, hard-bottom, rocky escarpment of the Terrace. Because of the similar bathymetry within the Allowable Fishing Area “B” (Figs. 39, 40), we propose that this entire Area be closed to crab traps until further surveys are completed.

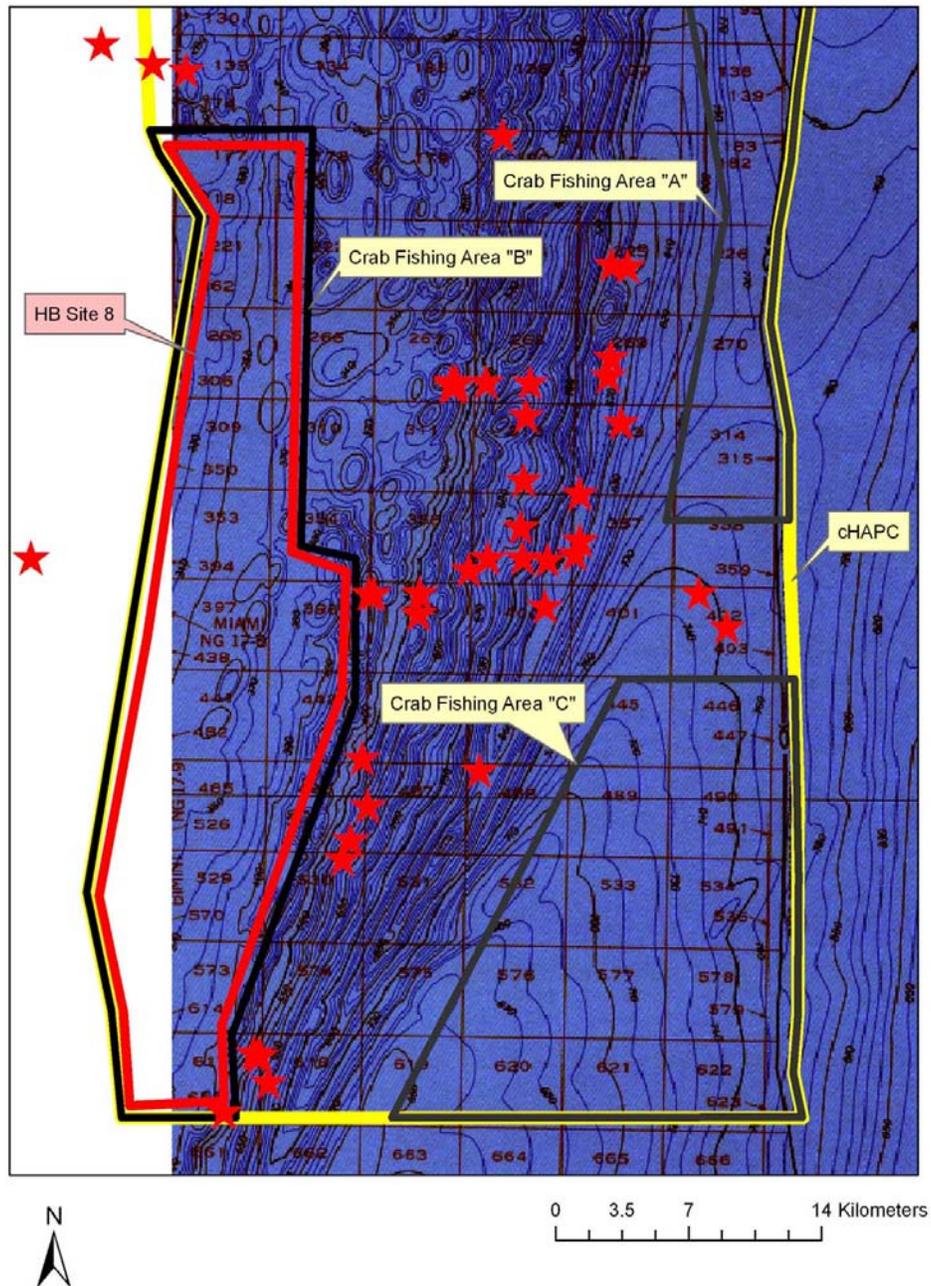


Figure 39. Allowable Crab Fishing Area “B” (black polygon) within CHAPC (yellow). HB Site 8 (red polygon) borders the entire Fishing Area “B”, as high-relief bathymetry is evident throughout this site. Red stars- hard-bottom habitat ground-truthed by submersible dives. Bathymetry from NOAA Bimini NG 17-9 chart (See Figure 31 for location)

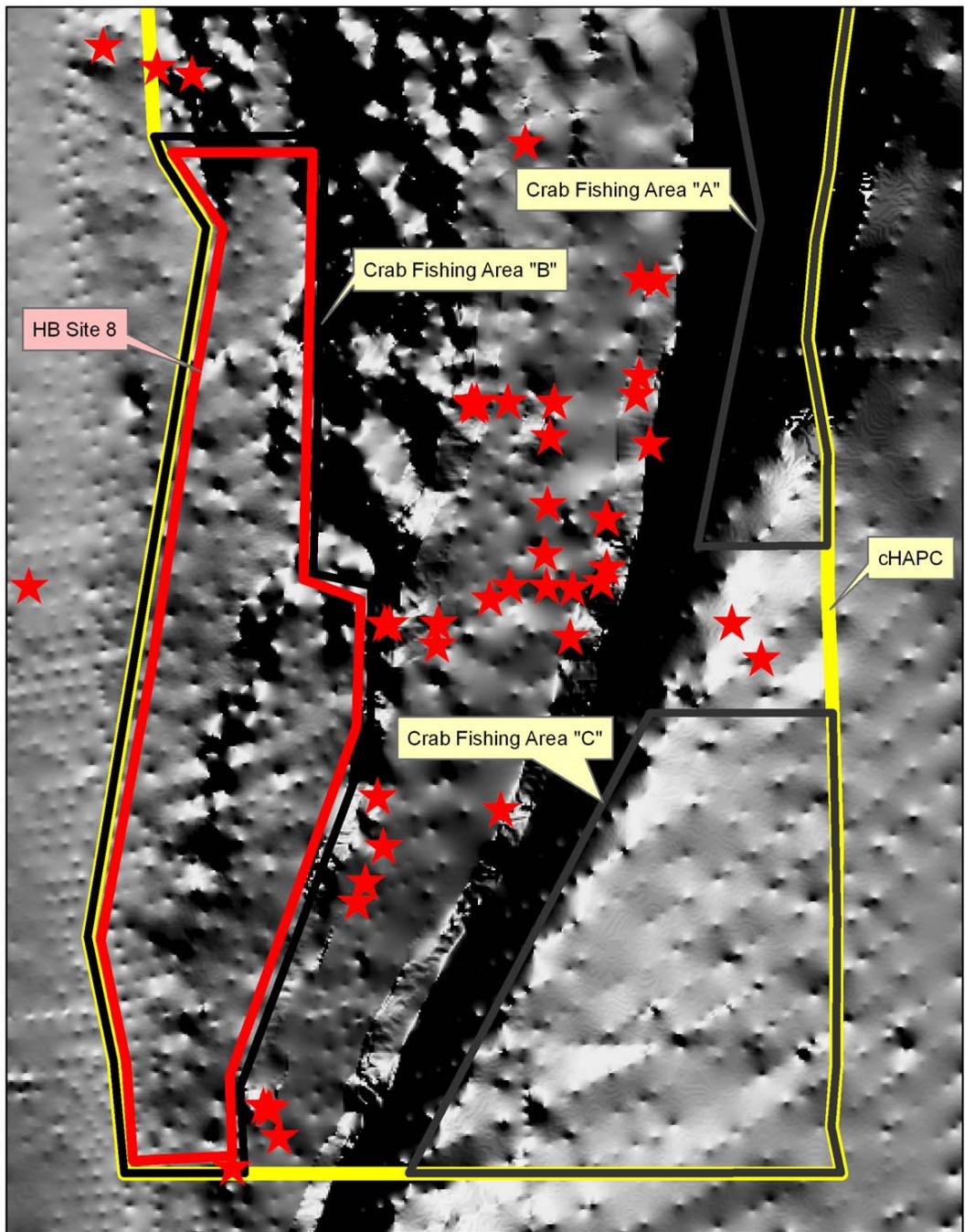


Figure 40. Allowable Crab Fishing Area “B” (black polygon) within CHAPC (yellow). Same HB Site 8 as Figure 39 but with NOAA 3-d bathymetry showing high-relief bathymetry within the Allowable Fishing Area. Red stars- hard-bottom habitat ground-truthed by submersible dives. Bathymetry from NOAA-Dem chart. (See Figure 31 for location)

Allowable Crab Fishing Area “C” appears to be relatively flat and presumably soft mud bottom from the available NOAA bathymetry, and we have no dive data in this area to show otherwise (Figs. 39, 40). Therefore this area should remain open to fishing. The corridor between Area “A” and “C” has been documented with high-relief coral habitat even though it is not apparent from the low resolution bathymetry (red stars, Fig. 40). The “Southern” Allowable Crab Fishing Area is a small triangular tip of the CHAPC off Pourtales Terrace (Fig. 31). This is in a region of numerous deep-water sinkholes and high-relief bioherms which have exposed hard bottom (Reed et al., 2005 a). The available NOAA bathymetry of this “Southern” Fishing Area shows tight contour lines indicating a relatively steep slope, but we see no definite indication of irregular or hard-bottom bathymetry here. Although submersible dives immediately north of this area revealed high-relief, coral habitat, we propose keeping this area open to crab trap fishing at this time.

CONCLUSIONS

Potential Impact of Bottom Fisheries on Deep-water Coral Ecosystems

The greatest concern for any bottom fishery in this region is potential impact to live-, hard-bottom habitat, which here includes deep-water coral ecosystems. Impact from bottom-tending gear, such as crab traps, longlines, deep-drop weights, and bottom trawls, could damage sessile, habitat-forming species such as hard corals, gorgonians, black corals, and sponges, and also potentially impact populations of slow maturing deep-water fishes. The devastating impact of shrimp trawling on Florida’s deep-water *Oculina* coral reefs, which form features similar to the *Lophelia* coral reefs (Reed, 2002 a), is well documented (Koenig et al., 2005; George et al., 2007; Reed et al., 2007). Unprotected *Oculina* coral reef sites had nearly 100% loss of live coral, whereas some reefs within the boundaries of the original *Oculina* Habitat Area of Particular Concern (created in 1984) survived and were not impacted by trawling.

The incidence of trawling on or near deep-water reefs such as *Oculina* or *Lophelia* reefs is sufficiently high that the SAFMC requires local trawlers to use vessel monitoring systems. Currently, the penalties for illegal trawling are relatively light (i.e., confiscated catch and moderate fines), and viewed by violators as a business expense (anonymous commercial fisherman, via C. Koenig, personal communication). This differs significantly from the Florida Keys National Marine Sanctuary, where, based on the National Marine Sanctuaries Act (U.S. Code, Title 16, chapter 32, section 1431 et seq., as amended in Public Law 106-513, November 2002), those guilty of destroying coral habitat—for whatever reason—are subject to fines substantial enough to cover the costs of habitat restoration or mitigation (Koenig et al., 2005). However, because the great depth and inaccessibility of Florida’s deep-water reefs rule out any consideration of restoration or direct mitigation, and because deep-water reefs, once destroyed, may require centuries to recover (if ever), development of a proactive preventative regulatory regime is even more critical than for shallow reefs. Management and conservation plans for deep-sea coral reef ecosystems in the U.S. and worldwide must be based on sound scientific understanding as well as adequate surveillance and enforcement.

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APPENDIX 1

Dive Annotations of Submersible and ROV Surveys

Order of Annotations:

Row 2- HBOI Submersible Reef Dives (from north to south)

Row 752- Seafarer LNG Pipeline Survey

Row 1038- Calypso LNG Pipeline Survey

Row 4324- Calypso LNG Port Survey

Row 4335- CFX Telecommunications Cable Survey

JSL = *Johnson-Sea-Link* submersible, Clelia= *Clelia* submersible, *Nereus* ROV, TONGS ROV; BMR Site # = day+month+year+site; Bottom Type: S= Sediment, Ru= coral/rock rubble, Ro= rock pavement, ledge, boulder; Co= standing coral

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
SUBMERSIBLE REEF DIVES																				
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC							0		0	0					Lophelia lithoherm rock mound, 20% live Lophelia coral on top, rubble and more barren on flank, dense large Isididae bamboo coral; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	674	843	S	S	8.1	0	0	0	0	0					flat sediment, sparse bioturbation
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	654	849	Ru	H		0	0	0	0	0					coral rubble, 2 ft black coral,
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	666	855	Ro, Ru	H		0	0	0	0	0					rock outcrop or slab, 2 ft relief, sediment, rubble, sparse 1-2 ft white Keratoisis bamboo cora
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	657	905	Ru	H		0	0	0	0	0					100% coral rubble, low slope <10 dg, no standing coral, sparse biota, occ. 2 ft black coral and Keratoisis, appears to be some rock pavement under sediment
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	640	913	Ro, Ru	H		0	0	0	0	0					rock boulders, slabs, 1-2 ft relief, 10 dg slope, gorgonians, sparse 1 ft live coral (Lophelia?)
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	629	915	Ru	H		0	0	0	0	0					100% coral rubble on slope
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	611	918	Ru	H		0	0	0	0	0					same
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	607	920	Ru, Co, Ru	H		0	0	0	0	0					more dense, standing coral, rubble, denser biota, sponges, gorgonians, 1 ft live Lophelia sparse
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	589	936	Ru, Co, Ru	H		0	0	0	0	0					same, rock boulders exposed, 1 ft relief,
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	589	954	Co, Ru, Ru	H		0	0	0	0	0					2 ft live Lophelia on rock boulder
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	587	1030	Co, Ru, Ru	H		0	0	0	0	0					some areas with dense coral and biota, other areas 100% rubble and sparse biota
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	586	1038	Co, Ru, Ru	H		0	0	0	0	0					area of dense coral and biota, 3' shark, dense standing Lophelia 1-2 ft tall, to 20% live, dense hexactinellids, gorgonians, Lophelia
Sub Reef Dives	5/22/2004	JSL I-4658	22-V-04-1	Reed 204	Jacksonville Lithoherm; HAPC	566	1124	Co, Ru, Ru	H		0	0	0	0	0					off bottom, same habitat
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC							0	0	0	0					Lophelia-Enallopsammia bioherm, series of mounds, dense thicket of Lophelia on top, 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	821	1858	Co, Ru, Ru	H	7.7	0	0	0	0	0					80% cover standing coral 1-2 ft tall and coral rubble, sparse live, rock boulder outcrop
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	813	1903	Ru	H		0	0	0	0	0					manmade debris, 2 ft cylinder with parachute?, w. wires hanging out attached to cable, coral rubble and sediment, sparse biota
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	816	1921	Co, Ru	H		0	0	0	0	0					100% cover 1 ft standing coral and rubble, appears to be Lophelia mostly and maybe Enallopsammia but not sure; sparse live coral, sponges, sparse gorgonians
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	816	1950	Co, Ru	H		0	0	0	0	0					100% cover 1 ft standing coral, rubble, <5% live, dense gorgonians, hexactinellid sponges
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	811	2010	Co, Ru	H		0	0	0	0	0					dense thickets 100% cover coral, looks like Enallopsammia mostly top of mound
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	809	2030	S	S		0	0	0	0	0					100% sand, sand dunes, sand waves; large depressions, very clean, no coral rubble or biota; dense bioturbation, mounds and depressions 10-50 cm; some depressions to 50-100 cm like tilefish burrow, but no burrow seen at bottom, maybe all physical sand wa
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	800	2046	Ru, Co	H		0	0	0	0	0					back in coral habitat, hexactinellid sponges, Isidella bamboo coral, 100% cover, 1-2 ft standing Lophelia, sparse live <1-10%, dense thickets of Enallopsammia (closeup of sponge still photos shows Enall)
Sub Reef Dives	5/22/2004	JSL I-4659	22-V-04-2	Reed 186	Jacksonville Lophelia Pinnacle, HAPC	785	2110	Co, Ru	H		0	0	0	0	0					off bottom, same habitat, dense coral, near top
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC							0	0	0	0					Lophelia lithoherm, top 2396 ft, base 2883 ft, 4.72 ft relief, 1 nm diam, nearly all dead, 30-45 dg slope, flat top mound, top nearly all dead, barren, trawled?, Navy bombing range?, 100% coral rubble, 1 ft standing dead coral, <1% live coral, verified- E
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	829	848	Ru, Co	H	7.9	0	0	0	0	0					on bottom, on reef, 100% coral rubble, sparse 1 ft standing dead coral, 2 ft tall Madrepora, sparse gorgonians, sponges, some <1 m exposed rock outcrops or boulders, stylaster
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	823	921	Ru, Co	H		0	0	0	0	0					collect live Enallopsammia, most standing dead appears to be Enallopsammia but could be Lophelia too, exposed rock pavement, low ledges covered w/ coral rubble
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	821	936	Ro, Ru	H		0	0	0	0	0					rock slabs, boulders on slope, 1 ft relief, sparse biota, appears to be white carbonate rock exposed, sparse 1 ft live Enallopsammia
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	816	938	Ru, Co	H		0	0	0	0	0					terrace top, flat top, 100% coral rubble, low <1 ft standing dead coral, very sparse biota, 6 ft swordfish attacks sub; barren looks like trawled flat
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	817	943	Ru, Ru	H		0	0	0	0	0					coral rubble, 100% coral rubble, barren
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	793	952	Ru	H		0	0	0	0	0					2 ft ordnance?, rocket shaped with four fins stuck into bottom, coral rubble sediment; barren, no fish, no inverts; in Navy bombing range?
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	780	956	Ru	H		0	0	0	0	0					2 ft Keratoisis, uncommon, sparse small sponges, gorgonians
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	755	1007	Ru, Co	H	8.1	0	0	0	0	0					100% cover coral rubble, 1 large colony 3 ft tall, 6 ft diam standing dead coral, all dead, can not tell if Lophelia or Enallopsammia, sparse live small gorgonians sponges, no fish, very weird
Sub Reef Dives	9/11/2005	JSL I-4911	9-XI-05-1	Reed 160	St. Augustine Pinnacles, HAPC	749	1017	Ru	H		0	0	0	0	0					face ends, missing tape 2; 2 ft white Keratoisis- collected; same habitat, near top
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC							0	0	0	0					Lophelia-Enallopsammia bioherm, 30-80 dg slope, coral rubble, standing coral, 10% live, no rock visible; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC	758	859	Co, Ru	H	7.8	0	0	0	0	0					on bottom, reef slope, coral rubble 100% cover, very dense and thick layer, w/ patches of 1-2 ft standing coral, mostly dead, 2 ft standing Enallopsammia (close up) live tips, 2 ft Lophelia, dense cover sponges, gorgonians, primnoids and thin Isididae c
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC		938	Co, Ru	H		0	0	0	0	0					2-3 ft diam live Enallopsammia
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC	762	950	Co, Ru	H		0	0	0	0	0					sediment sample Enallopsammia and Lophelia rubble
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC		1023	Co, Ru	H		0	0	0	0	0					another ridge, dense 100% rubble, thickets of 1-2 ft standing coral, mostly dead, mostly Enallopsammia, gorgonians, sponges
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC		1029	Co, S	H		0	0	0	0	0					30% open sediment with patches of standing coral, ripples in sediment
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC	754	1034	Co, Ru	H		0	0	0	0	0					top of ridge, 100% cover, 1-2 ft tall dense standing coral thickets <3% live, sponges, gorgonians, Lophelia and Enallopsammia, stylaster, 2 ft white Keratoisis, dense Isidella, primnoids,
Sub Reef Dives	5/21/2004	JSL I-4657	21-V-04-1	Reed 3	St. Augustine Pinnacles, HAPC		1110	Co, Ru	H		0	0	0	0	0					off bottom
Sub Reef Dives	9/9/2009	JSL II-3706	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC							0	0	0	0					Lophelia bioherm, Enallopsammia, Camera lander site, 0 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	9/9/2009	JSL II-3706	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC	756	1711	Co, Ru	H		0	0	0	0	0					on bottom
Sub Reef Dives	9/9/2009	JSL II-3706	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC	728	1904	Co, Ru	H		0	0	0	0	0					off bottom
Sub Reef Dives	8/7/2009	JSL II-3701	7-VIII-09-1	Reed 113	Canaveral Pinnacles, HAPC							0	0	0	0					Lophelia bioherm, coral rubble, sparse live Lophelia; Camera Lander site; 0 Chaceon, 0 Red Shrimp, 0 tilefish
Sub Reef Dives	8/7/2009	JSL II-3701	7-VIII-09-1	Reed 113	Canaveral Pinnacles, HAPC	760	922	cr	H		0	0	0	0	0					on bottom
Sub Reef Dives	8/7/2009	JSL II-3701	7-VIII-09-1	Reed 113	Canaveral Pinnacles, HAPC	759	927	Co	H		0	0	0	0	0					mostly dead Lophelia
Sub Reef Dives	8/7/2009	JSL II-3701	7-VIII-09-1	Reed 113	Canaveral Pinnacles, HAPC	708	1145	Co	H		0	0	0	0	0					off bottom, reef ridge
Sub Reef Dives	8/7/2009	JSL II-3702	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC							0	0	0	0					Lophelia bioherm, camera lander site; 1 Chaceon in time lapse camera, none observed on dive, 0 shrimp 0 tilefish
Sub Reef Dives	8/7/2009	JSL II-3702	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC	753	737	Co	H		0	0	0	0	0					in time lapse camera, coral thicket and rubble
Sub Reef Dives	8/7/2009	JSL II-3702	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC	763	1840	Co	H		0	0	0	0	0					on bottom, coral mound

Data Source	Date (m/d/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef Ref #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	# Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish	
Sub Reef Dives	8/7/2009	JSL II-3702	7-VIII-09-2	Reed 113	Canaveral Pinnacles, HAPC	713	2057	Co	H		0	0	0	0	0	0	0	0	off bottom	
Sub Reef Dives	9/9/2009	JSL II-3705	9-VIII-09-1	Reed 116	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	Lophelia bioherm, 2 white shrimp, 0 Chaceon, 0 tilefish	
Sub Reef Dives	9/9/2009	JSL II-3705	9-VIII-09-1	Reed 116	Canaveral Pinnacles, HAPC	782	845	Ru,Co	H		0	0	0	0	0	0	0	0	on bottom, mounds, mostly coral rubble; steep mounds, some standing Lophelia; low percent live	
Sub Reef Dives	9/9/2009	JSL II-3705	9-VIII-09-1	Reed 116	Canaveral Pinnacles, HAPC	749	1043	Ru,Co	H		0	0	0	0	0	0	0	0	Pilot states that looks like area was trawled because so devoid of life	
Sub Reef Dives	9/9/2009	JSL II-3705	9-VIII-09-1	Reed 116	Canaveral Pinnacles, HAPC	743	1055	Co	H		0	0	1	0	0	0	0	0	top of bioherm, shrimp swimming- 3" white body w/ red tail and claws	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	coral bioherm, 30 dg slope, 1-2 ft tall dense standing Lophelia coral on top, to 25% live, sponges, gorgonians, Madrepora, 0 Chaceon, 0 Red shrimp, 0 tilefish	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	789	1008	S	S	6.8	0	0	0	0	0	0	0	0	on bottom, flat sediment, sparse bioturbation, sparse rubble	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	790	1016	Ru, S	S		0	0	0	0	0	0	0	0	coral rubble on sediment flat, sparse biota	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	783	1019	Ru, S	S		0	0	0	0	0	0	0	0	occasional 0.5 m diam burrow, may be Acantharicus white lobster burrow	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	767	1022	Ru, Co	H		0	0	0	0	0	0	0	0	start reef, 80% coral rubble and 1-2 ft tall standing coral, <5% live coral, Lophelia, sponges, gorgonians, Madrepora, Phakelia, primnoids, Isidella? Bamboo coral	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	746	1033	Co, Ru	H		0	0	0	0	0	0	0	0	80% cover 1-3 ft tall standing coral, <5% live, live coral is Lophelia in close up, steep slope, series of mounds and ridges	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	729	1220	Co	H		0	0	0	0	0	0	0	0	100% cover dense 2-3 ft standing coral, to 20% live, Lophelia, sponges, gorgonians, very diverse and dense biota	
Sub Reef Dives	5/23/2004	JSL I-4660	23-V-04-1	Reed 129	Canaveral Pinnacles, HAPC	726	1221	Co	H		0	0	0	0	0	0	0	0	off bottom, top of mound, same habitat	
Sub Reef Dives	5/23/2004	JSL I-4661	23-V-04-2	Reed 137	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	Lophelia bioherm, 150 ft reef, 85 dg slope, series of ridges N-S on top, dense coral thickets, 5% live coral, 0 Chaceon, 0 Red shrimp, 0 tilefish	
Sub Reef Dives	5/23/2004	JSL I-4661	23-V-04-2	Reed 137	Canaveral Pinnacles, HAPC	725	1803	Co	H	7.2	0	0	0	0	0	0	0	0	on bottom, on reef, top of ridge, 80% cover 1-3 ft tall standing coral, <5% live, Lophelia (closeup), and rubble, dense biota, Isididae- Keratoisis and Isidella, sponges, Hertywigia, hexactinellids, stylaster, gorgonians,	
Sub Reef Dives	5/23/2004	JSL I-4661	23-V-04-2	Reed 137	Canaveral Pinnacles, HAPC	742	2000	Co	H		0	0	0	0	0	0	0	0	same habitat, dense standing coral, dense biota, some coral may be Enallopsammia, can not be sure	
Sub Reef Dives	5/23/2004	JSL I-4661	23-V-04-2	Reed 137	Canaveral Pinnacles, HAPC	742	2014	Co	H		0	0	0	0	0	0	0	0	off bottom, near top of reef, same habitat	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	Enallopsammia bioherm, some Madrepora, series of ridges, 60-70% coral cover, 1-10% live coral, 3 Chaceon in coral, 1 Red Shrimp, 0 tilefish	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	725	1749	Co	H		0	0	0	0	0	0	0	0	on bottom, coral mound	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	703	1755	Co	H		0	0	1	0	0	0	0	0	shrimp w/ red bands observed (aft)- check video	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	727	1819	Co	H		0	0	1	0	0	0	0	0	red shrimp on sand (royal red?) - get video	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	728	1821	Co	H		0	0	1	0	0	0	0	0	shrimp w/ red bands observed (aft)- check video	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	720	1829	Co	H		0	0	1	0	0	0	0	0	shrimp observed (aft) no color noted- check video	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	725	1836	Co	H		0	0	1	0	0	0	0	0	shrimp w/ red bands observed (aft)- check video	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	725	1855	Co	H	1	0	0	0	0	0	0	0	0	Chaceon on sand mound [18:55:34, unmeasurable; poor angle], but standing coral habita	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	718	1909	Co	H	2	0	0	0	0	0	0	0	0	matting pair Chaceon [19:09:33, unmeasurable, too far away and 2nd obstructed from view], coral habitat, video of them	
Sub Reef Dives	8/8/2009	JSL II-3704	8-VIII-09-2	Reed 135, West	Canaveral Pinnacles, HAPC	730	1945	Co	H		0	0	0	0	0	0	0	0	off bottom	
Sub Reef Dives	8/8/2009	JSL II-3703	8-VIII-09-1	Reed 137, East p	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	Lophelia bioherm, 100% coral thickets, 5-20% live coral, 0 Chaceon, 0 Red Shrimp, 0 tilefish	
Sub Reef Dives	8/8/2009	JSL II-3703	8-VIII-09-1	Reed 137, East p	Canaveral Pinnacles, HAPC	673	832	Co	H		0	0	0	0	0	0	0	0	on bottom	
Sub Reef Dives	8/8/2009	JSL II-3703	8-VIII-09-1	Reed 137, East p	Canaveral Pinnacles, HAPC	703	1049	Co	H		0	0	0	0	0	0	0	0	off bottom	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	Lophelia bioherm, 100% coral cover, 100% live, 10 Chaceon, 0 shrimp, 0 tilefish	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	532	835	S	S		0	0	0	0	0	0	0	0	on bottom	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	531	845	S	S		0	0	0	0	0	0	0	0	apparent trawl or crab pot tracks, 6-8" wide, straight line	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	531	852	S	S		0	0	0	0	0	0	0	0	2nd apparent trawl or crab pot tracks, 6-8" wide, straight line	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	531	856	Ru	H	2	99	0	0	0	0	0	0	0	Chaceon [1 OF 2 OFF TO SIDE OF CAMERA], 10 ft tall mound, coral rubble	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	530	903	Ru	H	1	94	0	0	0	0	0	0	0	ADDED BY SFR	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	530	913	Ru	H		0	0	0	0	0	0	0	0	fishing line on bottom	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	529	917	Ru	H		0	0	0	0	0	0	0	0	Chaceon, sediment and coral rubble [NOT SEEN ON CAMERA]	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	529	918	Co	H		0	0	0	0	0	0	0	0	at reef mound, coral rubble, standing coral	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	527	919	Ru	H		0	0	0	0	0	0	0	0	Chaceon, mound slope, coral rubble	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	526	919	Co	H		0	0	0	0	0	0	0	0	Chaceon, coral ridge, live coral habitat	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	525	920	Co	H		0	0	0	0	0	0	0	0	Chaceon [PREVIOUSLY MENTIONED]- live coral habitat	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	504	925	Co	H		0	0	0	0	0	0	0	0	Chaceon- live coral habitat	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	497	928	Co	H		0	0	0	0	0	0	0	0	Chaceon- live coral habitat	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	490	941	Co	H		0	0	0	0	0	0	0	0	Chaceon- live coral habitat, top of reef	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	496	1121	Co	H		0	0	0	0	0	0	0	0	Chaceon- live coral habitat	
Sub Reef Dives	8/13/2009	JSL II-3713	13-VIII-09-1	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	495	1124	Co	H		0	0	0	0	0	0	0	0	off bottom	
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC						0	0	0	0	0	0	0	0	0	Lophelia bioherm, 100% cover, 100% live, huge live thickets at top, some Enallopsammia, and large Madrepora on top of mound; 8 Chaceon, 0 shrimp, 0 tilefish, but several 1-2 m diam depressions (no burrow)
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	534	1702	S	S		0	0	0	0	0	0	0	0	0	on bottom, flat sediment, little bioturbation, 680 ft south of reef
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	534	1705	S	S		0	0	0	0	0	0	0	0	0	apparent trawl or pot track, straight E-W, ~12" wide
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	534	1705	S	S		0	0	0	0	0	0	0	0	0	2 m diameter, 25 cm deep depressions in sediment, no burrow in bottom [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	531	1709	S	S		0	0	0	0	0	0	0	0	0	several 1 m diameter depressions, no burrow [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	527	1709	Ru	H		0	0	0	0	0	0	0	0	0	start coral rubble pile of monofilament longline, series of low rubble mounds
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	528	1713	Ru, Co	H	1	0	0	0	0	0	0	0	0	0	Chaceon in coral rubble; at base of reef [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	529	1728	Co	H	1	0	0	0	0	0	0	0	0	0	Chaceon in live coral habitat, reef slope [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	528	1732	Co	H	1	0	0	0	0	0	0	0	0	0	Chaceon in live coral habitat, reef slope [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	525	1733	Co	H	2	0	0	0	0	0	0	0	0	0	Chaceon in live coral habitat, reef slope [not on tape]
Sub Reef Dives	8/14/2009	JSL II-3716	14-VIII-09-2	Reed 339 (Poor)	Canaveral Pinnacles, HAPC	509	1738	Co	H	1	0	0	0	0	0	0	0	0	0	Chaceon in live coral habitat, reef slope [not on tape]
Sub Reef Dives	8/14/2009	JSL II-371																		

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef Ref #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; Ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu)= possible burrow	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/14/2009	JSL II-3715	14-VIII-09-1	Reed 402 (New F)	Canaveral Pinnacles, HAPC	403	1121	Co	H			0		0	0					off bottom
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC							0		0	0					Lophelia bioherm, 100% cover, 80% live coral, mostly Lophelia, some Enallipsammia near base, Madrepora; 4 Chaceon, 0 shrimp, 0 tilefish; videotape 1 was no good
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	442	1736	Co	H			0		0	0					on bottom, on reef
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	422	1815	Co	H			0		0	0					3 ft piece of trawl net, live reef slope
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	415	1833	Co	H			1		0	0					Chaceon, live coral habitat
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	408	1912	Co	H			3		0	0					Several Chaceon, dense live coral habitat
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	408	1912	Co	H			0		0	0					large 3 ft pile of heavy monofilament longline (no video, was below sub); live coral, near peal
Sub Reef Dives	8/13/2009	JSL II-3714	13-VIII-09-2	Reed 402 (New F)	Canaveral Pinnacles, HAPC	408	1943	Co	H			0		0	0					off bottom
Sub Reef Dives	9/10/2009	JSL II-3707	10-VIII-09-1	Reed 240	Canaveral Pinnacles, HAPC							0		0	0					Lophelia bioherm, Lophelia on top, Enallipsammia on slopes, dense cover, small percent live; 0 Chaceon, 1 shrimp, 0 tilefish
Sub Reef Dives	9/10/2009	JSL II-3707	10-VIII-09-1	Reed 240	Canaveral Pinnacles, HAPC	730	834	Co, Ru	H			0		0	1					shrimp, not very red, in sediment trough
Sub Reef Dives	9/10/2009	JSL II-3707	10-VIII-09-1	Reed 240	Canaveral Pinnacles, HAPC	726	925	Co, Ru	H			0		0	0					Rochinia? Crab
Sub Reef Dives	9/10/2009	JSL II-3707	10-VIII-09-1	Reed 240	Canaveral Pinnacles, HAPC	713	1047	Co, Ru	H			0		0	0					off bottom
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0		0	0					Lophelia bioherm, Triceratops Reef= "The Pinnacle", "Grant's Bump"; first dive ever on reef, massive 100% live coral thickets; much of video dark, by LYYN 38; 3 Chaceon, 0 Red shrimp, 0 tilefish, numerous burrows
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	464	842	Ru	H	7.7		0		0	0					on bottom, coral rubble, standing coral, sediment, base of reef, transect up south slope and peak
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	771	845	Ru, Co	H			0		0	0					chain shark, standing dead coral 1 ft tall, rubble 90% cover, sponges, sparse live coral, Nezumi
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	457	852	Co, Ru	H			0		0	0					more standing coral, slope 60 dg, 90% cover standing coral and rubble, 1-2 ft tall
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	434	856	Co, Ru	H			0		0	0					2-3 ft standing Lophelia, 50% live, primnoids, sponges, 90% cover
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	433	856	Co, Ru	H	9.0		1		0	0					Chaceon on standing coral, 60 dg slope
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	430	857	Co, Ru	H			0		0	0					100% cover standing Lophelia thickets, >80% live coral, 3 ft tall colonies
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	421	903	Co, Ru	H			0		0	0					100% cover standing Lophelia thickets, nearly 100% live coral, 3 ft tall colonies, 2 ft Madrepora oculata live, gorgonians, Mora codling Laemonema feeding in coral
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	409	910	Co, Ru	H	9.4		0		0	0					taller coral, to 3-5 ft tall, 100% cover, >80% live, galatheids Eumunidia picta
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	405	912	Co, Ru	H			0		0	0					near top of pinnacle, 100% coral cover, >80% live, 2-5 ft tall colonies, spindly branched Lophelia; lost overlay on video
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	398	922	Co, Ru	H	9.2		0		0	0					top of pinnacle, same habitat. Mola mola ocean sunfish swimming 2 ft over reef- good video
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC		923					0		0	0					on top of reef, same habitat, lost overlay on video
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC			Ru, Co	H			0		0	0					back to base of reef, north base, cat sharks, flat sediment, 100% cover coral rubble
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	462	1034	Ru	H			0		0	0					numerous 25 cm diam depressions in sediment and rubble, some 10 cm burrows, dozens of 20 cm catsharks Galeus arae, veru turbid; 30 cm mound and depression w/ burrow, under coral rubble, nothing seen in burrow, catsharks spawning aggregation?, did they make
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	459	1047	Ru	H	8.4		1	126	0	0					Chaceon walking on coral rubble touching catshark, north base of reef, sparse biota, catsharks; measured w/ laser scale
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	459	1111	Ru	H			1	71	0	0					Chaceon on rubble, measured w/ laser scale, windowpane skate; numerous 50 cm mounds w 50 cm depressions, some 10 cm burrow in depression, catsharks all around but none seen in burrow, used manipulator suction of burrow, mud and coral rubble, nothing came
Sub Reef Dives	11/10/2005	JSL I-4913	10-XI-05-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	459	1121	Ru	H			0		0	0					off bottom, base of north slope, 100% rubble
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0		0	0					Lophelia bioherm, Triceratops Reef= "The Pinnacle", "Grant's Bump"; second dive ever on reef, massive 100% live coral thickets, video transects over reef; 6 Chaceon (mating pair), 0 Red shrimp, 0 tilefish
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	455	1614	S	S	7.2		0		0	0					on bottom, flat sediment, sparse bioturbation, 1800 ft south of reef, some 5-25 cm depressions w/o burrow, barren, no megafauna or fish, Thalassia detritus, plastic trash bag, burrowing anemone
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	451	1623	S	S			1		0	0					Chaceon- no video, in transcript, 100% flat mud, sparse bioturbation, sparse fauna
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	457	1633	S	S			0		0	0					mud bottom, drop off into valley at south base of reef, rosefish
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	466	1638	S, Ru	S	7.4		1	146	0	0					Chaceon walking on mud, claws in defense mode, sized w/ lasers; mud, rubble bottom, in valley at base of reef, sparse coral rubble over sediment, abundant Thalassia detritus; video overlay cutting off and on
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	466	1646	Ru, S	H			0		0	0					base of reef, coral rubble, sparse standing dead <1 ft tall, fishing line, sparse live coral, primnoid
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	464	1649	Co, Ru, S	H			0		0	0					gorgonians, Lophelia, video transect up south slope (1 m field of view, good close clear video)
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	464	1650	Co, S	H	7.4		1	95	0	0					on reef slope, 90% standing Lophelia, 1 ft tall, <10% live
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	464	1650	Co, S	H	7.4		1	138	0	0					Pair of Chaceon, large male holding female underneath carapace in mating behavior, coral slope, standing dead coral 80% cover, standing on mud
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	460	1651	Co	H			0		0	0					Pair of Chaceon, large male holding female underneath carapace in mating behavior, coral slope, standing dead coral 80% cover, standing on mud
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	411	1708	Co	H			0		0	0					1-3 ft Lophelia, 80% cover, 30-40% live, 60-70 dg slope, long sparse branches; sponges, gorgonians, Aphrocalistes, primnoids
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	410	1720	Co	H	8.0		0		0	0					top of ridge, video overlay going out, reads 1421 ft, actual depth (dive chamber) is 1350 ft; 100% coral cover, 20% live Lophelia, 3-6 ft tall; end of Transect 1, galatheids, primnoids, comatulid crinoids; video on top of mound, depth overlay incorrect;
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	410	1729	Co	H			0		0	0					video overlay now correct, on top of reef, 3 ft spiny dogfish swimming around cora
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	403	1735	Co	H			0		0	0					video transect 2, rd south along top of coral ridge, 100% coral cover, 1-2 m thickets, series of E-W ridges, thermoclines? Varies from 7.4 to 8.0 C;
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	399	1737	Co	H			0		0	0					video transect 3, hd 90 dg along ridge, near top of reef, same habitat, sparse sponges, gorgonians, fish, audio breaking up on tape 2; photo mosaic of top of reef, overlay shows low temp 7.4 and 8.0 so unsure what is correct
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	399	1748	Co	H			0		0	0					video transect 4, top ridge of reef, 70-100% live coral, 100% cover, 1-2 m tall, series of steps, squid common, video dark
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	400	1752	Co	H			0		0	0					end transect 4, top of reef; head down slope to north base; 1343 to 1360 ft on north slope 100% coral rubble, 1 ft standing dead coral, primnoids, Aphrocalistes, 30 dg slope; no schools of cat sharks that were there this morning
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	418	1800	Ru	H			1		0	0					Chaceon- transcript only, north slope, 20 dg, coral rubble
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	431	1804	Ru	H			0		0	0					start transect 5 up north slope
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	421	1807	Ru, Co	H			1	105	0	0					Chaceon, 35 dg north slope, 100% coral rubble, standing dead cora
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1814	Co	H			0		0	0					end of transect, top of reef, 2 m tall Lophelia thickets
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1826	Co	H			0		0	0					top ridge, Lophelia, some 1 ft Madrepora, Aphrocalistes, primnoids, galatheids, few fish
Sub Reef Dives	11/10/2005	JSL I-4914	10-XI-05-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1856	Co	H			0		0	0					off bottom, top of reef, same habitat

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC															Lophelia bioherm, Triceratops Reef, massive 100% live coral thickets; 0 Chaceon, 0 Red Shrimp, 0 tilefish
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	450	1538	S	S			0	0	0	0	0	0	0	0	on bottom; poor video, camera fogged
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	449	1556	S	S			1	0	0	0	0	0	0	0	flat sediment south of reef
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	461	1604	Cr	H			0	0	0	0	0	0	0	0	coral reef slope- live Lophelia
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	461	1609	Co	H			0	0	0	0	0	0	0	0	off bottom, reef
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	400	1642	Co	H			0	0	0	0	0	0	0	0	100% live coral
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	400	1647	Co	H			1	0	0	0	0	0	0	0	reef top, 100% live coral.
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1706	Co	H			1	78	0	0	0	0	0	0	reef top, 100% live coral.
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1814	Co	H			2	0	0	0	0	0	0	0	coral reef slope
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	402	1815	Co	H			1	0	0	0	0	0	0	0	coral reef slope
Sub Reef Dives	8/6/2009	JSL II-3700	6-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	425	1825	Co	H			0	0	0	0	0	0	0	0	off bottom, reef
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm, 100% cover, 100% live at top; 8 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	453	1716	S	S			0	0	0	0	0	0	0	0	on bottom south of reef
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	464	1726	Co	H			0	0	0	0	0	0	0	0	at base of reef
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	424	1750	Co	H			1	99	0	0	0	0	0	0	ADDED by SFR 17:50:12 - accurate measurement, very close view
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	420	1800	Co	H			1	152	0	0	0	0	0	0	Chaceon- male, 152 mm width, 125 mm length
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	398	2005	Co	H			0	0	0	0	0	0	0	0	off bottom
Sub Reef Dives	9/10/2009	JSL II-3708	10-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC		2006	Co	H			6	0	0	0	0	0	0	0	no notes, observer stated saw 6-8 Chaceon in coral habitat
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm, 70-100% cover on top, 10-80% live, sparse Enallapsamma, Madrepora, 6 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	436	821	S	S			0	0	0	0	0	0	0	0	on bottom, flat sediment, south of reef
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	438	830	S	S			0	0	0	0	0	0	0	0	monofiliation line on bottom
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	445	837	Cr, Co	H			0	0	0	0	0	0	0	0	at reef
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	433	931	Co	H			0	0	0	0	0	0	0	0	Bathymouse
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	413	956	Co	H			1	0	0	0	0	0	0	0	Chaceon on sediment in coral rubble habitat on slope of reef
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	406	1047	Co	H			1	0	0	0	0	0	0	0	Chaceon in standing live coral, 95% cover
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	410	1048	Co	H			4	0	0	0	0	0	0	0	Ross stated saw 4 Chaceon in coral habitat (3 near top of reef, 1 on slope)
Sub Reef Dives	8/11/2009	JSL II-3709	11-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	415	1052	Co	H			0	0	0	0	0	0	0	0	off bottom
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm, 100% cover, 11 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Verbal notes- 6 Chaceon on sand 200-300 ft south of reef, 4-5 on reef
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	1651	S	S			3	0	0	0	0	0	0	0	on bottom, flat sand; 3 Chaceon [off camera, no measurement]
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	442	1657	S	S			7.0	3	0	0	0	0	0	0	3 more Chaceon, sediment [16:57:25, unmeasurable, 16:59:52 unmeasurable, 1 off screed on reef]
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	423	1704	Co	H			0	0	0	0	0	0	0	0	at reef
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	408	1955	Co	H			1	113	0	0	0	0	0	0	Chaceon- female, 113 mm width, 90 mm length; on upper reef slope, coral habitat
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	408	1856	Co	H			4	0	0	0	0	0	0	0	Verbal notes- observed 4-5 on coral slope [no chaceon on screen]
Sub Reef Dives	8/12/2009	JSL II-3712	12-VIII-09-2	Reed 294, Tricer	Canaveral Pinnacles, HAPC	408	1904	Co	H			0	0	0	0	0	0	0	0	off bottom
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm, 100% cover; 4 Chaceon, 14+ shrimp (other), 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	440	822	S	S			0	0	0	0	0	0	0	0	on bottom, flat sediment, south of reef
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	829	S	S			1	0	0	0	0	0	0	0	crab moving in and out of burrow in sediment habitat [off camera]
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	438	833	S	S			0	0	0	0	0	0	0	0	shrimp swimming
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	438	838	Co	H			1	115	0	0	0	0	0	0	Chaceon- female, 115 mm width, 97 mm length
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	438	842	S	S			0	0	2	0	0	0	0	0	shrimp clear w/ brown edges
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	844	S	S			1	0	0	0	0	0	0	0	Chaceon- flat sediment
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	846	S	S			0	0	2	0	0	0	0	0	small shrimp on bottom or swimming, flat sand
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	440	857	S	S			0	0	2	0	0	0	0	0	small shrimp on bottom or swimming, flat sand
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	440	858	S	S			0	0	2	0	0	0	0	0	more shrimp
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	904	S	S			0	0	3	0	0	0	0	0	more shrimp on bottom
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	442	906	Ru	H			0	0	3	0	0	0	0	0	few more shrimp; rope/line on bottom; start coral rubble
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	439	909	Co	H			0	0	0	0	0	0	0	0	on reef
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC	422	939	Co	H			1	134	0	0	0	0	0	0	Chaceon in standing coral habitat, reef slope
Sub Reef Dives	8/12/2009	JSL II-3711	12-VIII-09-1	Reed 294, Tricer	Canaveral Pinnacles, HAPC		1057	Co	H			0	0	0	0	0	0	0	0	off bottom
Sub Reef Dives	8/11/2009	JSL II-3710	11-VIII-09-2	Reed 245	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm; 0 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	8/11/2009	JSL II-3710	11-VIII-09-2	Reed 245	Canaveral Pinnacles, HAPC	746	1715	Ro, Ru	H			0	0	1	0	0	0	0	0	on bottom; shrimp on bottom, sediment veneer on hard bottom
Sub Reef Dives	8/11/2009	JSL II-3710	11-VIII-09-2	Reed 245	Canaveral Pinnacles, HAPC	735	1742	Co	H			0	0	0	0	0	0	0	0	more reef
Sub Reef Dives	8/11/2009	JSL II-3710	11-VIII-09-2	Reed 245	Canaveral Pinnacles, HAPC	712	1904	Co	H			0	0	0	0	0	0	0	0	top of steep mound
Sub Reef Dives	8/11/2009	JSL II-3710	11-VIII-09-2	Reed 245	Canaveral Pinnacles, HAPC	711	1913	Co	H			0	0	0	0	0	0	0	0	off bottom
Sub Reef Dives	8/15/2009	JSL II-3717	15-VIII-09-1	Reed 251	Canaveral Pinnacles, HAPC							0	0	0	0	0	0	0	0	Lophelia bioherm, mostly standing dead, sparse live coral; 1 Chaceon, 0 shrimp, 0 tilefish
Sub Reef Dives	8/15/2009	JSL II-3717	15-VIII-09-1	Reed 251	Canaveral Pinnacles, HAPC	747	843	S	S			0	0	0	0	0	0	0	0	on bottom, coral mound, coral rubble
Sub Reef Dives	8/15/2009	JSL II-3717	15-VIII-09-1	Reed 251	Canaveral Pinnacles, HAPC	736	925	Co	H			0	0	0	0	0	0	0	0	live Lophelia
Sub Reef Dives	8/15/2009	JSL II-3717	15-VIII-09-1	Reed 251	Canaveral Pinnacles, HAPC	1000	Co	H			1	0	0	0	0	0	0	0	0	coral mound
Sub Reef Dives	8/15/2009	JSL II-3717	15-VIII-09-1																	

Data Source	Date (mndy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; Ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/16/2009	JSL I-3719	16-VIII-09-1	Reed 341 (CORC)	Canaveral Pinnacles, HAPC	690	918	Co	H			0		0	1					3 inch red shrimp swimming
Sub Reef Dives	8/16/2009	JSL I-3719	16-VIII-09-1	Reed 341 (CORC)	Canaveral Pinnacles, HAPC	691	1103	Co	H			0		0	0					off bottom
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC							0		0	0					Enalopsammia? bioherm, 85 ft mound, 20 dg slope, series of ridges, mound flanks 100% coral rubble, 1 2 ft standing coral near peak, <5% live; trawl damage?? Extensive coral rubble, small sponges, gorgonians; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	734	1709	S	S	6.8	0			0	0					on bottom, flat sediment, sparse bioturbation, possibly coral rubble, video poor, turbid
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	737	1717	S, Ru	S		0			0	0					sediment with coral rubble, Hyalonema Hexacnellidus w/ zoantheid
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	733	1736	Ru	H		0			0	0					dense coral rubble on sediment, 100% cover, no standing coral, sparse biota, gorgonacea, small sponges near peak of bioherm, coral rubble, low standing coral <1 ft tall, 100% dead coral, can't tell species, appears as small pieces, probably Enalopsammia mostly, 1 ft Keratoisis common, small sponges and gorgonians dominant
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	728	1752	Ru, Co	H		0			0	0					same habitat, 2 ft wide, 1 ft tall Keratoisis knocked down, trawl damage?
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	729	1825	Ru, Co	H		0			0	0					near peak, rubble, standing dead coral, some may have live tips, few colonies 2 ft with live tips, no close up so can not identify
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	726	1901	Co, Ru	H		0			0	0					on peak, video of 2 ft diam standing coral, live tips, may be Enalopsammia?
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	727	1913	Co, Ru	H		0			0	0					near peak, thick layers of dead standing and broken coral, Enalopsammia and Lophelia?, can't tell for sure.
Sub Reef Dives	5/20/2004	JSL I-4656	20-V-04-1	Reed 270	Fort Pierce Pinnacles, HAPC	1937		Co, Ru	H		0			0	0					off bottom, same habitat
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC							0		0	0					Lophelia bioherms, 2398 ft at peak, Enalopsammia and Lophelia, transect up south slope but not peak, mostly dead coral rubble, 1-2 ft standing dead coral, <5% live coral, fathometer series of mounds; 1 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC	743	847	Co, Ru	H	6.3	0			0	0					on bottom, coral rubble, standing dead coral 1 ft tall, 100% cover, sediment, 10 dg slope, sponges, gorgonians, stylocidaris
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC	741	929	Co, Ru	H		1			0	0					Chaceon, coral rubble slope, sponges, gorgonians, standing dead coral
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC	749	1019	Co, Ru	H		0			0	0					1-2 ft standing coral, 5% live, 80% cover, Enalopsammia collected live, coral more dense here
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC	749	1035	Co, Ru	H		0			0	0					100% cover standing coral, <5% live, mostly on ridges, more rubble on slopes, standing coral both Lophelia and Enalopsammia
Sub Reef Dives	6/11/2007	JSL II-3600	11-VI-07-1	Reed 270	Fort Pierce Pinnacles, HAPC	749	1048	Co, Ru	H		0			0	0					off bottom, habitat same
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC							0		0	0					Enalopsammia bioherm, one collection of Enalopsammia, no definite id of Lophelia, series of mounds, coral on top, sand in valleys, coral rubble, 1 ft tall standing dead coral, no live, sponges, gorgonians common, few fish; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	742	816	Ru, S	H	6.5	0			0	0					on bottom, 100% cover coral rubble, sediment, 20% cover 1 ft standing dead coral (mostly Enalopsammia), sponges, 480 ft to base of reef, ee, hexactinellids, Herwigia, Nezumia, Aphrocalistes, gorgonians, water turbid, echinoid, Paragorgia gorgonians,
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	742	1033	Co, Ru, S	H		0			0	0					same habitat, 20% cover standing dead coral, Corallium gorgonian
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	742	1059	Ru, Co, S	H		0			0	0					same, series of low 5 ft mounds or ridges, comatuld cnoidal
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	738	1125	Ru, Co, S	H		0			0	0					denser standing dead coral up to 50% cover, 100% coral rubble and sediment, sponges and corals on low ridges, few fish, sponges, gorgonians, isididae, Keratoisis,
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	735	1143	S	S		0			0	0					fine white sediment, sparse bioturbation, sparse gorgonians, dead coral, rubble
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	729	1144	Ru	H		0			0	0					100% coral rubble, very sparse biota, few sponges, sparse standing dead coral
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	724	1149	Ru, Co, S	H		0			0	0					near top of pinnacle, coral rubble, series of mounds and valleys, sparse standing dead, sparse sponges, gorgonians, few fish
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	720	1152	Ru, Co, S	H		0			0	0					top of peaks, coral rubble, 1 ft standing dead coral, no definite id of dead coral- Lophelia and Enalopsammia, one sample was Enalopsammia, no galatheids
Sub Reef Dives	8/16/2005	JSL I-4845	16-VIII-05-1	Reed 286	Fort Pierce Pinnacles, HAPC	720	1156	Ru, Co, S	H		0			0	0					off bottom
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC							0		0	0					Lophelia bioherm, single large bioherm mound, 2200 ft at peak, series of hills and hummocks, mostly dead coral, <1% alive, Enalopsammia and Lophelia confirmed, collections of Lophelia; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	750	1715	Ru	H	6.7	0			0	0					coral rubble, sediment, Areosoma, sparse small gorgonians, sponges, video dark, pool reef slope, 1-2 ft tall standing dead coral, coral rubble, sponges, gorgonians, sediment and rubble
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	750	1723	Co, Ru	H		0			0	0					between coral ridges, Phakellia, hexactinellids
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	750	1737	S	S		0			0	0					sediment, sparse bioturbation, few Hyatella, Areosoma, 10-25 cm mounds, depressions, eels common
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	734	1747	Ru, Co	H		0			0	0					low coral mound, coral rubble, 80% cover 1 ft standing dead coral, gorgonians, sponges, Lophelia close up dead.
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	733	1755	S	S		0			0	0					cont transect over sediment, sparse bioturbation, patchy rubble.
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	723	1957	Ru	H		0			0	0					more coral rubble, sponges, gorgonians, patchy standing dead coral, very sparse live, <1%
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	705	1908	Co, Ru	H		0			0	0					80% cover standing coral, <1% live coral, video shows both Lophelia and Enalopsammia, Aphrocalistes sparse
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC		1818		H		0			0	0					
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	688	1832	Co, Ru	H		0			0	0					coral thicket, standing coral, some live
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	684	1902	Ru, S	H		0			0	0					100% standing coral, 98% dead, 1-2 ft tall, sponges, gorgonians, just above cable, steep hummock top about 20 ft tall
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	682	1905	Co, Ru	H		0			0	0					2 ft tall white Keratoisis, Phakellia, small Plexauridae common; series of small hummocky mounds with patchy densities of standing dead coral
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	691	1919	Ru, Co	H		0			0	0					
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	680	1923	Ru, Co	H		0			0	0					1" cable, heading 010 dg, same as above
Sub Reef Dives	5/28/2007	JSL II-3583	28-V-07-1	Reed 292	St. Lucie Pinnacles, HAPC	683	1930	Co, Ru	H		0			0	0					off bottom, same habitat
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC							0		0	0					Enalopsammia? bioherm, single large bioherm mound, series of hills and ridges on top, all dead coral; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	738	853	S	S		0			0	0					on bottom, flat sediment, sparse bioturbation, urchins, skates,
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	736	859	Ru, Co	H		0			0	0					small mound, dense coral rubble, some 1-2 ft standing coral, Lophelia?, mostly dead, sponges
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	736	859	S	S		0			0	0					back in flat sediment, small bioturbation, Hyalonema common
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	727	904	Ru	H		0			0	0					coral rubble, possible pavement, gorgonians common
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	725	905	S	S		0			0	0					back in flat sediment, small bioturbation, Hyalonema common
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	723	921	Ru	H		0			0	0					coral rubble, no live Lophelia coral, 1 small live Lophelia, gorgonians common, Keratoisis bamboo coral common
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	693	1020	Ru, Co	H		0			0	0					large grouper, 2 ft, wreckfish?; top of mound, standing dead coral thickets, coral rubble, no live Lophelia, zoantheida common, some sponges; 2-3 ft ridges of dead coral like it was piled up- trawl damage?
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC		1045					0		0	0					large wreckfish, same one?

Data Source	Date (mn/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC		1047	Ru, Co	H			0		0	0					top of reef, mound of coral 1-15 ft tall, with large cable? laying across, 1" diam with yellow stripes on black, small sponges, gorgonians
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC		1051	Ru, Co	H			0		0	0					1 ft standing Enallopsammia, little live
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC		1052	Ru, Co	H			0		0	0					close up of cable with yellow stripes
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC		1054	Ru, Co	H			0		0	0					cable on coral and sponges, may be only 1/2" diam
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	680	1110	Ru, Co	H			0		0	0					top of mound, thickets of dead coral and rubble, no live, all Enallopsammia?, 2 ft Keratoisis bamboo coral common, small sponges, gorgonians, Anthomastus
Sub Reef Dives	5/24/2004	JSL I-4662	24-V-04-1	Reed 292	St. Lucie Pinnacles, HAPC	679	1130	Ru, Co	H	6.7		0		0	0					off bottom; top of mounds, thickets of standing dead coral, coral rubble
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC							0		0	0					Enallopsammia? bioherm, mounds 20 dg slope, coral thickets 1-2' tall, <1% live coral, mostly dead rubble and standing dead coral; 2 Chaceon, 0 Red shrimp, 0 Tilefish
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC	729	1757	S	S	6.5		0		0	0					on bottom, flat sediment, sparse bioturbation
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1803					0		0	0					video of vampire orange squid swimming
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1809	S	S		1	93		0	0					Chaceon, flat sediment with bioturbation, 10-40 cm wide depressions, 10 cm diam burrows in bottom of some
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		728	1812	S	S		0		0	0					sediment, fine clay and silt, holds shape of bottom grab
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		728	1815	S	S		0		0	0			Bu	large depression, 1-2 m diam, can not see if burrow in bottom	
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1820	S	S			0		0	0			Bu	flat sediment, with patchy areas of bioturbation, 10-15 cm mounds, 10-20 cm depressions and 10 cm burrows, no animals seen, few Benthobatis skates	
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1831	S	S			0		0	0					Aereosoma urchin
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1832	Ru	H			0		0	0					start reef, coral rubble, some standing 1 ft tall dead coral, sponges, gorgonians, cup corals
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1906	Ru, Co	H			0		0	0					1-2 ft Enallopsammia, part live
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		714	1932	Ru, Co	H		1	135		0	0				Chaceon on sediment in reef habitat, coral rubble, standing dead coral
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		718	1935	S	S		0		0	0					sediment, sparse bioturbation
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		1949	Ru	H			0		0	0					coral rubble, standing dead coral, sponges, gorgonians
Sub Reef Dives	5/24/2004	JSL I-4663	24-V-04-2	Reed 293	Jupiter Pinnacles, Joe's Hump; HAPC		2027	S	S			0		0	0					off bottom, flat sediment, in valley between ridges
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2							0		0	0					Bioherm, series of mounds, Enallopsammia, Lophelia?, 30-90% standing dead coral, coral rubble; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2	757	1640	Co, S	H	6.5		0		0	0					on bottom, flat sediment, 2 ft tall standing dead coral, sponges, gorgonians,
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		757	1643	S	S		0		0	0					flat sediment, transect to reef, occ patch of standing dead coral, sparse bioturbation
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		756	1644	S	S		0		0	0					1 m diam depression, no burrow at bottom, no evidence tilefish
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		755	1650	S, Co	H		0		0	0					patches of 1-2 ft tall standing dead coral, can not tell what species, fan sponges
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		754	1657	S	S		0		0	0					flat sand, transect to reef, sparse bioturbation, occ area 1 m diam depression, no burrow at bottom
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		749	1700	Ru, Co	H		0		0	0					on reef, standing dead coral 1-2 ft tall, 80% cover, sediment, fan sponges, Hexactinellid, gorgonians, large Corallium?, bamboo coral
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		745	1706	S	S		0		0	0					flat sand, Valley? Between mounds, 1-2 m depression, but no burrow
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		746	1706	S	S		0		0	0					1 m depression, appears to have burrow, Acanthicanis white blind lobster, scale bar not on; has groove burrow at one side of 1 m diam depression, 30 cm deep
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		744	1708	Co, Ru	H		0		0	0					on reef, standing dead coral 1-2 ft tall, 80% cover, abundant sponges, 1-2 ft gorgonians, hexactinellids,
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		746	1725	S	S		0		0	0					flat sediment, valley between mounds,
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		748	1726	Co, Ru	H		0		0	0					on reef, same habitat
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		744	1728	S	S		0		0	0					flat sediment with Hyatella sponges
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		746	1729	Co, Ru	H		0		0	0					reef, up slope, 2 ft Keratoisis,
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		741	1732	Co, Ru	H		0		0	0					first live coral, Enallopsammia confirmed
Sub Reef Dives	11/11/2005	JSL I-4916	11-XI-05-2	Reed 297	West Palm Beach, Seafarer Site Peak #2		741	1732	Co, Ru	H		0		0	0					end of tape, not end of dive. What happened?
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7							0		0	0					Coral bioherm, 88 ft tall, collected Enallopsammia, looks like mostly Enallopsammia, no close up of Lophelia to be sure, mostly ridges and mounds of coral rubble, 30% cover standing dead coral, no live Enallopsammia; 0 Chaceon, 0 Red Shrimp, 0 tilefish
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7		775	850	Ru, Co	H	6.6	0		0	0					on bottom, coral rubble, standing dead coral, small sponges, small gorgonians, primnoids common, stylaster, sparse biota, turbid
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7		777	914	S	S		0		0	0					transect, flat sediment, sparse bioturbation, Hyalonema, Aereosoma, Thalassia detritus, patches of rubble, sparse gorgonians
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7		774	930	Ru, Co	H		0		0	0					series of low ridges, mostly coral rubble, standing dead coral, sparse small sponges, gorgonians
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7		765	934	Co, Ru	H		0		0	0					reef slope, denser 1-2 ft standing dead coral, 30% cover, sponges, gorgonians common, Corallidae, Phakellium, Paragorgia, Hexactinellida; series of ridges or low mounds, denser biota on mounds, coral 100% dead, no close up of coral, species?, looks more
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7		760	959	Ru, Co	H		0		0	0					same habitat

Data Source	Date (mm/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	763	1002	S	S			0		0	0					sediment
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	763	1003	S	S			0		0	0				Bu?	depression 1.25 m diameter, 30 cm deep, elongate groove at one end, no apparent burrow, looks like Acantharis burrow
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	761	1004	Co, Ru	H			0		0	0					coral mound, same habitat
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	760	1014	Co, Ru	H			0		0	0					Acantharis blind lobster walking on rubble, coral rubble, gorgonians
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	761	1019	Co, Ru	H			0		0	0					2 ft white Keratoisis, dense sponges, Phakellia, hexactinellids, 1-2 ft tall dead standing coral, no live coral
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	770	1051	S	S			0		0	0					transect over sediment
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	770	1052	S	S			0		0	0				Bu	two large depressions 1 m diam, no burrow apparent, no fish; patchy coral habitat
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	762	1056	Co, Ru	H			0		0	0					coral habitat patchy, same
Sub Reef Dives	11/11/2005	JSL I-4915	11-XI-05-1	Reed 296	West Palm Beach, Seafarer Site Peak #7	774	1120	Co, Ru	H			0		0	0					off bottom, coral habitat, same
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC							0		0	0					Miami Terrace escarpment, Reed Site BU 5, east ridge, transect up east and west slope and ridge, 60-90 dg slope, rock slabs, boulders, pavement, ridge w/ dense styalaster, sponges, gorgonians, Lophelia thickets; 1 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	345	1656	Ru, Ro	H	8.1		0		0	0					on bottom, rock cobble, rubble, 1-3 ft boulders
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	343	1700	Ro, S	H			0		0	0					rock slope, boulders, slabs, sponges, 1-2 m relief, hexactinellids, asteroid, echinoid
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	310	1718	Ro, S	H			0		0	0					styalaster, crinoids, sponges, rock boulders, slabs, 1-2 m relief, 30%sediment cover, 30-40 dg slope
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	281	1730	Ro	H			0		0	0					top ridge, flat rock pavement, dense cover sponges, styalaster, gorgonians, 2-3 ft Paramuriceidae, transect along vertical face of ridge top, ledges and undercut, no large fish
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	283	1735	Ro	H	8.1	1			0	0					Chaceon under 3 ft black coral, rock pavement and ledges
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	285	1749	Ro	H			0		0	0					1-2 ft live Lophelia, few fish, no galatheids, fishing line on bottom, 3 ft black coral common, antheids,
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	282	1816	Ro	H			0		0	0					ridge edge, Lophelia thickets 2-3 ft diam, galatheids,
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC		1819					0		0	0					
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	277	1827	Ro	H			0		0	0					ridge top, rock pavement, manmade debris- tube w/ bag
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	280	1856	Ro	H			0		0	0					continue transect along face of ridge terrace, same habitat and biota, no large fish, scattered 1-2 ft Lophelia, sponges, gorgonians, styalaster, patchy density from high to low
Sub Reef Dives	8/3/2005	JSL I-4821	3-VIII-05-2	Reed 355	Miami Terrace, Reed BU5, east ridge; HAPC	288	1926	Ro	H			0		0	0					off bottom
Sub Reef Dives	6/2/2006	JSL II-3500	2-VI-06-2	Reed 376- Night	Miami Terrace, Reed BU4A, terrace, slope; HAPC							0		0	0					Night dive- Miami Terrace, BU4A, transects on terrace top, and east slope, 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/2/2006	JSL II-3500	2-VI-06-2	Reed 376- Night	Miami Terrace, Reed BU4A, terrace, slope; HAPC	292	2102	Ro	H	11.1		0		0	0					on bottom, transect up east slope and terrace top, Lophelia 1-2 ft, styalaster, sponges, gorgonians, ledges, rock pavement, slabs, boulders
Sub Reef Dives	6/2/2006	JSL II-3500	2-VI-06-2	Reed 376- Night	Miami Terrace, Reed BU4A, terrace, slope; HAPC	295	2306	Ro	H			0		0	0					same habitat, Beryx, fishing line
Sub Reef Dives	6/2/2006	JSL II-3500	2-VI-06-2	Reed 376- Night	Miami Terrace, Reed BU4A, terrace, slope; HAPC	294	2311	Ro	H			0		0	0					5 ft long Lophelia live coral with fishing line wrapped
Sub Reef Dives	6/2/2006	JSL II-3500	2-VI-06-2	Reed 376- Night	Miami Terrace, Reed BU4A, terrace, slope; HAPC	294	2312	Ro	H			0		0	0					off bottom
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC							0		0	0					Night dive- Miami Terrace, BU4, transects on terrace top, and east and west slope; try out Lynn 38, video is dark; 0 Chaceon, 1 Bathynectes, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	287	2212	Ro, Co	H	11.6		0		0	0					on bottom, terrace top, rock pavement, dense Lophelia thickets, sponges, gorgonians, styalaster, galatheids, basketstars extended and feeding
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	287	2358	Ro, Co	H			0		0	0					transect along top ledge, vertical escapment and undercut with dense biota
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	304	2320	Ro	H			0		0	0					west slope, rock pavement, transect up to top
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	287	2330	Ro	H			0		0	0					transect on top of terrace, rock pavement, dense layer coral rubble, styalaster, Lophelia thickets, sponges, galatheids, no large fish seen, few e.e.s
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	292		Ro	H			0		0	0					red crab, portunid, red tip legs, light red body- Bathynectes?
Sub Reef Dives	6/1/2006	JSL II-3498	1-VI-06-2	Reed 350- Night	Miami Terrace, Reed BU4, terrace, east and west slope; HAPC	287		Ro	H			0		0	0					end of tape
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC							0		0	0					Miami Terrace BU4, transect up west slope and terrace, rock pavement, slabs slope, rock pavement, ledges, live Lophelia thickets on top, sharp escarpment, ledges, and undercut along top rim, samples all Lophelia- confirmed; 1 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	372	826	Ru	H	7.9		0		0	0					on bottom, rock rubble, cobble, 30% cover, sediment, gentle slope, transect 220 dg, sparse sponges, barren
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	377	835	Ru	H		1			0	0					Chaceon, rock rubble, cobble; sparse small sponges, few fish

Data Source	Date (mn/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	374	836	Ro	H			0		0	0					rock pavement, 1 ft ledges, start slope, sparse inverts, more fish, few sponges, beardfish, Laemonena,
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	342	843	Ro	H			0		0	0					pavement, same, very sparse biota
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	327	847	Ro	H			0		0	0					pavement, gorgonians?, small sponges, echinoderms, 2 ft black coral, more gorgonians, 25 cm rock cobble,
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	314	854	Ro	H			0		0	0					rock slabs, boulders, 2-3 ft relief, sponges, gorgonians common, begin vertical ledges at 1000 ft,
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	305	858	Ro	H			0		0	0					vertical, series rock ledges, dense biota, sponges, gorgonians, stylaster
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	285	859	Ro	H			0		0	0					top of terrace, flat pavement, edge with sharp escarpment and ledges, start transect along vertical face edge of terrace, west side, heading south, dense stylaster, hydroids, galatheids, gorgonians, many small reef fish, anemones, black coral, 2 ft gorgo
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	285	916	Ro	H			0		0	0					top of edge, large thicket of 1-2 ft tall live Lophelia over large area at edge, basketstarfish
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	289	928	Ro	H			0		0	0					another transect along vertical face of ledges, same habitat, lots of galatheids
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	284	939	Ro	H			0		0	0					transect on top of terrace, rock pavement, sponges, anemones, Lophelia near edges
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	287	949	Ro	H			0		0	0					on other side of pinnacle, transect along vertical face of ledges below rim, large 8 ft sand tiger shark-audio and video, dense stylaster, Lophelia, anemones, sponges, galatheids,
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	284	1016	Ro	H			0		0	0					fishing line on bottom along rim, same habitat
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	283	1028	Ro	H			0		0	0					transect on top of terrace, same habitat, pavement, low ledges on top
Sub Reef Dives	11/17/2005	JSL I-4919	17-XI-05-1	Reed 350	Miami Terrace, Reed BU4, west ridge, west face and top; HAPC	285	1110	Ro	H			0		0	0					off bottom, top of terrace, habitat same, dense biota
Sub Reef Dives	5/26/2004	JSL I-4666	26-V-04-1	Reed 350	Miami Terrace, Reed BU4, east ridge, west face; HAPC							0		0	0					Miami Terrace, BU4, east ridge, rock pavement, boulders, slabs, ledges, very rugged rock, 30-90 dg slope, plateau at 940 ft, 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/26/2004	JSL I-4666	26-V-04-1	Reed 350	Miami Terrace, Reed BU4, east ridge, west face; HAPC	296	957	Ro, Co	H	7.6		0		0	0					near top of plateau, rock ledges, rugged rock, coral rubble, 1-2 ft standing Lophelia coral, dense 1-3 ft gorgonians, sponges, stylaster,
Sub Reef Dives	5/26/2004	JSL I-4666	26-V-04-1	Reed 350	Miami Terrace, Reed BU4, east ridge, west face; HAPC		1017	Ro, Co	H	8.1		0		0	0					on top of terrace, rock pavement, ledges, 1-2' Lophelia thickets, live, dense stylaster, black coral, gorgonians, squat lobster
Sub Reef Dives	5/26/2004	JSL I-4666	26-V-04-1	Reed 350	Miami Terrace, Reed BU4, east ridge, west face; HAPC	296	1050	Ro, Co	H			0		0	0					off bottom, east face, on slope of pinnacle
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC							0		0	0					Miami Terrace, BU6, east ridge, rock pavement, boulders, slabs, very rugged rock, 30-90 dg slope, plateau at 1130 ft w/ dense sponges, Isididae bamboo coral, gorgonians, 8 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	429	1553	S	S	6.9		0		0	0					on bottom, flat sediment, sparse bioturbation, some 10-20 cm depressions, sparse rubble; sparse biota
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	438	1604	Ro	H			0		0	0					start of hard bottom, large rock boulders 1-2 m, outcrops, rock slabs, 100% cover, dominant biota-sponges common, sparse small gorgonians, small stylaster
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	436	1605	Ro	H			1		0	0					Chaceon on rock habitat
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	434	1605	Ro	H			1		0	0					Chaceon on rock habitat, 1 ft coral colony, sponges
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	416	1631	Ro	H			1		0	0					Chaceon on rock habitat, sponges, very rugged rock slope
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	391	1646	Ro	H			0		0	0					same habitat
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	383	1654	Ro	H			1		0	0					Chaceon on rock habitat, sponges, very rugged rock slope
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	363	1710	Ro	H			1		0	0					Chaceon on rock habitat, sponges, very rugged rock slope
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC		1718					0		0	0					Bathynomeus isopod
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	350	1722	Ro	H			1		0	0					Chaceon on rock habitat, dense sponges, stylaster, cup coral, very rugged rock slope
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	348	1724	Ro	H	7.6		1	80	0	0					Chaceon on rock habitat, dense sponges, stylaster, cup coral, very rugged rock slope
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	347	1724	Ro	H			1		0	0					Chaceon on rock
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	349	1727	Ro, S	H			0		0	0					terraces or plateau with sediment, pavement, boulders, rock rubble; rubble, sponges, small gorgonians, some <1 ft Lophelia? Coral,
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	342	1732	Ro	H			0		0	0					rock pavement, top of slope, sponges, gorgonians,
Sub Reef Dives	5/25/2004	JSL I-4665	25-V-04-2	Reed 351	Miami Terrace, Reed BU6, east ridge; HAPC	341	1743	Ro	H			0		0	0					off bottom, rock pavement
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?							0		0	0					Miami Terrace, Miami Sinkhole, 70 ft deep, 400 ft diam, ~805 at top rim, 880 ft max depth center, 9 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	244	824	S	S	7.9		0		0	0					on bottom, flat sediment layer, sparse bioturbation, Arecosoma urchins; 1600 ft south of sinkhole
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	246	837	S	S			0		0	0					Chaceon? (not chaceon, Cancer SFRJ), flat sediment, south of sinkhole, some 15-25 cm mounds and depressions, but no tilefish burrow holes, Thalassia detritus, numerous beer bottles
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	263	843	S	S			0		0	0					flat sediment
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	250	847	Ro, S	H			0		0	0					edge of sinkhole, 8-10 ft rock wall, sponges, large plastic bag
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	250	849	Ro	H			1		0	0					Chaceon on vertical rock wall of sinkhole, top edge of sinkhole rock pavement, low ledges, rock cobble, sparse biota, few sponges
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	250	851	Ro, Ru	H			0		0	0					transect along top edge from south end along east edge; 15 cm cobble, rock pavement, sparse biota, sponges

Data Source	Date (mn/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	249	855	Ro	H			0		0	0				transect along face of north wall, 10-15 ft vertical w/ ledges, undercut, several 1 ft live Lophelia at edge, reef fish, coral debris at base, very sparse, few sponges, anthurids, cup coral, anemones, rosefish
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	247	935	Ro	H			0		0	0				pile of fishing live on edge of wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	249	939	Ro	H			1		0	0				Chaceon on vertical rock wall of sinkhole; 805 ft at top
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	266	955	S	S			0		0	0				transecting along bottom of sinkhole, flat sediment, sparse bioturbation, some rock rubble
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	259	959	Ro	H			0		0	0				at south wall, 855 ft., less vertical than north wall, last 10 ft vertical, top of wall 803 ft; transect along face of south wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?		1006					0		0	0				hermit crab, slit shells, quite barren, very few sponges, no Lophelia coral, rosefish and anthurids common
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1025	Ro	H			1		0	0				Chaceon on vertical wall of sinkhole
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1029	Ro	H			1		0	0				Chaceon on vertical wall of sinkhole
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1029	Ro	H			1		0	0				Another Chaceon on vertical wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1030	Ro	H			1		0	0				Another Chaceon on vertical wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1030	Ro	H			1		0	0				Another Chaceon on vertical wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1030	Ro	H			1		0	0				Another Chaceon on vertical wall; very barren, no coral, few sponges, some gorgonians on top
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1031	Ro	H	7.9	1			0	0				Another Chaceon on vertical wall, becoming very turbid
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	248	1035	Ro	H			0		0	0				pile of fishing live on edge of wall
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	262	1043	S	S			0		0	0				at bottom of sinkhole, flat sediment
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?		1044					0		0	0				large shark
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	260	1050	Ro	H			0		0	0				at base of east wall, seroes of ledges, barren, few sponges, top 821 ft, rock pavement, barren on top, pavement extends 50-100 ft then flat sediment
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	250	1053	S	S			0		0	0				top edge, flat sediment, barren, scattered 1 m boulders, outcrops
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	250	1059	Ro	H			0		0	0				transect along rim top, rock pavement, barren, rock rubble, 10-50 boulders
Sub Reef Dives	11/16/2005	JSL I-4917	16-XI-05-1	Reed 360	Miami Terrace, Miami Sinkhole, HAPC?	249	1115	Ro	H			0		0	0				off bottom, same habitat
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC							0		0	0				Foot of Miami Terrace, Enallopsammia bioherm, double peaks 2405 ft peak, 20-40 dg slope, 80% cover coral rubble and standing dead coral, 5% live coral; video poor, water turbid; video reviewed and copied with LYNN T-38 Video Image Enhancer which greatly
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	871	1655	Ru, S	H	5.6	0			0	0				on bottom, 50% cover rubble, sediment, very turbid, looks like snowing
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	868	1657	Ru, Co	H			0		0	0				standing dead coral, sparse live coral- 1-2 ft tall, Enallopsammia and/or Lophelia, coral rubble, 50-100% cover, on reef slope; sponges, gorgonians
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	868	1704	Ru, Co	H	5.6	0			0	0				same bottom, tripod fish, Bathypterois viridensis, blue white striped, very unusual; closeup of coral red shrimp 10 cm, on sediment, by burrow 38 cm diam w/ 7 cm oblique shaft: tilefish?; some coral to 2 3'
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	865	1715	Ru, Co, S	H	5.6	0			1	0			Bu	slope steeper, 1-2' coral denser, 70-100% cover, live and dead Enallopsammia, Lophelia? 5-10% live coral
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	847	1721	Ru, Co	H	5.6	0			0	0				Acanthycaris lobster?
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	841	1722	Ru, Co	H	5.6	0			0	0				may be series of ridges and valleys on top of bioherm
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	826	1727	Ru, Co	H	5.6	0			0	0				dense standing coral, may be near peak, series of ridges and valleys, dense coral on peaks of ridges
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	808		Ru, Co	H	5.6	0			0	0				dense standing coral, steep slope 70-90 dg, 100% coral cover, 10% live Enallopsammia?
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	799		Ru, Co	H			0		0	0				peak?
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	791		Ru, Co	H			0		0	0				another ridge peak, dense coral; overlay missing time
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	774		Ru, Co	H	5.8	0			0	0				another ridge peak, dense coral; overlay missing time; some coral >50% live, 1-2 m diam.
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	774		Ru, Co	H	5.8	0			1	0				another ridge peak, dense coral; overlay missing time; some coral >50% live, 1-2 m diam.; red shrimp about 10 cm, no laser
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	767		Ru, Co	H	5.8	0			0	0				another ridge peak
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	771	1811	Ru, Co	H	5.8	0			0	0				dense coral, time back on overlay, closeup video of coral and encrusters, Anthomastus, galatheid, 100% coral cover. Hexactinellids, Euplectella.
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	766	1902	Ru, Co	H	5.8	1	143		0	0				golden crab in dense coral and rubble
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	747		Ru, Co	H	5.8	0			0	0				another ridge peak, time off
Sub Reef Dives	11/16/2005	JSL I-4918	16-XI-05-2	Reed 299	Fort Lauderdale Enallopsammia Bioherm, HAPC	748	1916	Ru, Co	H	5.8	0			0	0				peak, off bottom
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC							0		0	0				Miami Terrace escarpment, west ridge, 30-80 dg slope, rock ledges, pavement, dense biota, dense Lophelia at 1123 ft and top of escarpment at 1052 ft. 1 Chaceon, 0 Red shrimp, 0 tilefish

Data Source	Date (m/d/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	388	1640	Ro	H		7.6	0		0	0					on bottom, rock ledges, pavement, boulders; numerous sponges, gorgonians, stylaster.
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC		1642					0		0	0					Bathynomeus giant isopod
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	384	1645	Ro	H			0		0	0					2 ft Keratois bamboo coral
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	351	1703	Co, Ro	H			0		0	0					2 ft live Lophelia on flat rock pavement, low ledges, sponges, gorgonians
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	347	1704	Ro	H			1		0	0					Chaceon on flat rock pavement, sparse sponges, gorgonians
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	346	1705	Ro	H			0		0	0					3 ft black coral, flat rock pavement
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	333	1725	Co, Ro	H			0		0	0					dense Lophelia thickets, live, 1-3 ft tall at top edge of escarpment, sponges, gorgonians, stylaster, dense prinnoids
Sub Reef Dives	5/27/2004	JSL I-4670	27-V-04-2	Reed 352	Miami Terrace, Reed BU2, west ridge; HAPC	326	1835	Co, Ro	H			0		0	0					off bottom, edge of escarpment, large ledges, dense Lophelia
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top							0		0	0					Miami Terrace, Reed BU2, west slope of west ridge and top of ridge, dense layers of coral rubble on pavement, live Lophelia thickets on terrace on top of ridge, thickets of live Lophelia, 1-3 ft tall, quite extensive, to 100% live: 3-4 Chaceon, 0 Re
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	381	1725	Ru, Ro, S	H		7.2	0		0	0					on bottom, coral rubble, sediment, stylaster, sparse biota; may be pavement under sediment for stylaster to attach
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	379	1732	Ru, Ro	H			1		0	0					Chaceon, not in video; thick layer of coral rubble, over rock pavement and sediment [Rubble Burrow, possibly sandtile]
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	379	1733	Ru, Ro	H			1		0	0					Chaceon on rubble
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	361	1741	Ro, Ru	H			0		0	0					pavement, some 1 m boulders, rock slabs, dense sponges, some Lophelia, stylaster
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	347	1743	Ro, Ru	H			0		0	0					1-2 ft Lophelia, Phakellia common
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	339	1745	Co, Ru, Ro	H			0		0	0					dense thickets of Lophelia, 1-3 ft diam, 10-30% live
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	329	1746	Co, Ru, Ro	H			1		0	0					Chaceon, not in video; dense extensive Lophelia thickets on top terrace of ridge, 1-3 ft tall 2-4 ft diam, up to 100% live coral rubble on pavement rock
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	329	1822	Co, Ru, Ro	H			0		0	0					school of fish
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	322	1834	Co, Ru	H			0		0	0					transect on ridge, dense extensive Lophelia thickets, to 100% live, few gorgonians, sponges
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	325	1837	Ro, Ru	H			0		0	0					on slope, rock slabs, boulders, sponges, dense schools of 10" fish, mackerals?
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	328	1847	Ro, Ru, Co	H			0		0	0					Chaceon?, not in video, on slope, rock ledges, 1-2 ft Lophelia, 100% live, sponges, stylaster, galatheids; dense extensive Lophelia on top of ledge, continuous colonies along edge, 80% cover, gorgonians, Plumarella abundant; transect along edge of ledge
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	324	1906	Ro, Ru	H			0		0	0					transect on top of ridge, flat pavement covered with 100% coral rubble, sponges, patches of Lophelia mostly near terrace edge, prinnoids, fish schools still dense
Sub Reef Dives	11/17/2005	JSL I-4920	17-XI-05-2	Reed 352	Miami Terrace, Reed BU2, west ridge, west slope and top	323	1931	Ro, Ru, Co	H			0		0	0					off bottom, terrace top, same habitat
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC							0		0	0					Miami Terrace escarpment, east face of west ridge, 30-70 dg slope, rock ledges, pavement; 1 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	390	819	Ru	H		7.5	0		0	0					on bottom, 100% coral rubble, flat
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	389	822					0		0	0					Bathynomeus isopod
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	388	823	Ro	H			0		0	0					rock pavement, sparse biota, sponges, gorgonians, black coral, 45-60 slope and terraces
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	340	841	Ro, Co	H			0		0	0					rock ledge, escarpment, dense live Lophelia 1-2 ft on edge, sponges, gorgonians,
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	337	842	Ro, Co	H			1		0	0					Chaceon on rock pavement, near escarpment, coral, sponges, gorgonians, stylaster
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	324	908	Ro, Co	H			0		0	0					rock ledge, escarpment, dense live Lophelia 1-2 ft on edge, sponges, gorgonians, stylaster, dense prinnoids, lots of galatheids
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	321	1021	Ro, Co	H			0		0	0					edge of escarpment, rock ledge, dense Lophelia, sponges, gorgonians, stylaster, Madrepora common
Sub Reef Dives	6/1/2004	JSL I-4679	1-VI-04-1	Reed 352	Miami Terrace, Reed BU2, west ridge, east face; HAPC	322	1049	Ro, Co	H			0		0	0					off bottom, edge of escarpment, rock ledge, dense Lophelia, sponges, gorgonians, stylaster, Madrepora common
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2							0		0	0					Lophelia lithoherm, east of site BU2, foot of Miami Terrace escarpment, 40-60 dg rock slope, top with series of coral ridges 10-20 ft relief, coral rubble, standing dead coral, total relief 245 ft, sponges, gorgonians, Lophelia and Madrepora oculata (ver)
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	675	1624	Ru	H		6.0	0		0	0					on bottom, coral rubble, base of coral mound, 80% cover rubble, <1 ft standing dead coral, 40-50 dg slope,
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	656	1628	Ru, Co	H		6.0	1		0	0					Chaceon on coral rubble, mound slope, sparse biota, 1 ft standing coral, <1% live [Crab not measureable no lasers]
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	652	1628	Ru, Co	H			1		0	0					Chaceon on coral rubble and standing coral habitat, mound slope, sparse biota [Crab not measureable, no lasers]
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	638	1629	Ro, Ru	H			0		0	0					rock outcrop, 3 ft relief, 45 dg rock pavement with sand and coral rubble
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	631	1630	Ro, Ru	H			1	95	0	0					Chaceon, steep rock pavement, coral rubble slope, 1 ft relief, sparse sponges
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	627	1630	Ro	H			1		0	0					Chaceon in 1 ft ledge, rock pavement, 60 dg slope
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	619	1632	Ro	H			0		0	0					50 dg rock slope, rock pavement, 1-2 ft ledges, sparse biota, poor video too far away

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	610	1634	Co, Ru	H			0		0	0					rounded mound top, smooth, coral rubble, rock pavement?, series of 10-20 ft mounds on top, dead coral thickets-1-3 ft relief, sparse live, gorgonians, sponges, stylaster
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	605	1651	Co, Ru	H		6.0	0		0	0					top of mound, 100% cover coral rubble and 1-3 ft standing dead coral, no exposed rock on top
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	606	1658	Co, Ru	H			1	110	0	0					Chaceon in coral habitat, top of mound, 100% cover coral rubble and 1-3 ft standing dead coral, sparse fish, no large fish, coral appears to be Lophelia (confirmed- sample)
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	606	1722	Co, Ru	H			0		0	0					mound top, 20 cm squit, lots of squit in transcript
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	605	1754	Co, Ru	H			1		0	0					Chaceon, top of mound, coral habitat
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	600	1837	Co, Ru	H			1	74	0	0					Chaceon, top of mound, coral habitat
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	604	1850	Co, Ru	H			0		0	0					large mora codling Laemonema, first large fish seen
Sub Reef Dives	8/5/2005	JSL I-4825	5-VIII-05-2	Reed 333	Miami Terrace, Lophelia lithoherm, east of BU2	605	1904	Co, Ru	H			0		0	0					end of tape
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3							0		0	0					Enallopsammia bioherms (coral collected Enallopsammia, Madrepora oculata, Lophelia? rubble, no Lophelia observed), series of 2-4 m tall E-W ridges, 75 ft apart, north faces steeper, 60-80 dg, w/ thickets of dead Enallopsammia coral, sparse live coral, 5%
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	838	947	Ru, Co, S	H		6.1	0		0	0					on bottom, coral rubble, 1-2 ft standing dead coral, gorgonians, sponges, sparse live coral, video poor, turbid? series of low ridges, coral on ridges, sediment in valleys
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	825	1012	Co, Ru	H			0		0	0					ridge w/ dense 1-2 ft standing dead coral, <5% live, sparse sponges, sediment valleys with moderate bioturbation, sparse biota, Hylonema, no close up of coral to id.
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	822	1025	Co, Ru	H			0		0	0					3 m ridge with 50 dg north face, dense 1-2 ft standing dead coral, <5% live
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	820	1039	Co, Ru	H			0		0	0					dense coral thicket, positive id of Enallopsammia live coral, thickets 2-3 ft tall, extensive in length, 80% cover on ridge
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	823	1042	Co, Ru	H		6.1	0		1	0					15 cm red shrimp (Pleoticus?) swimming on back 1 m off bottom, standing coral habitat
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	832	1043	S	S			0		1	0					>20 cm red shrimp (Pleoticus?) swimming near bottom, sediment, sparse bioturbation, benthobatis skate, Iskidiidae in mud
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	829	1052	Ru	H			0		0	0					back in coral rubble and standing coral on ridges
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	829	1118	S	S			0		0	0					sediment valley, sparse bioturbation, rattail, rubble
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	825	1120	Ru	H			0		0	0					coral rubble
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3		1202	Ru	H			0		0	0					
Sub Reef Dives	5/29/2006	JSL II-3494	29-V-06-1	Reed 374	Miami Terrace, UM Site #2, target 3	832	1209	Ru, Co	H			0		0	0					off bottom, coral rubble, standing dead coral
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1							0		0	0					Enallopsammia bioherms (all samples were Enallopsammia, no Lophelia), series of ridges, coral thickets and rubble, 20-30 ft tall, 80 ft apart, standing dead coral and rubble; 3 Chaceon, 6 red shrimp, 0 tilefish
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	865	846	Ru, S	H		6.1	0		0	0					on bottom, poor visibility, poor video, flat sediment, 50% coral rubble, gorgonians
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	865	855	Ru, S	H		6.1	1		0	0					Chaceon standing on sediment coral rubble bottom, sparse biota, sparse bioturbation, few sponges, gorgonians
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	862	857	Ru, S	H			0		0	0					denser coral rubble, series of 1 m tall ridges, 75 ft crest to crest, sediment in valleys, swimming purple holothurian, sparse 1 ft tall standing dead coral more abundant on north face of ridges, sponges and gorgonians on low ridges
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	861	903	S	S			0		0	0					1-2 m oval, irregular depression in mud, w/ two grooves at one end, appears to be Acanthacans lobster burrow
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	867	912	Ru, S	H		6.1	0		1	0					<10 cm red shrimp swimming off bottom, coral rubble, sediment, sparse bioturbation, no standing coral, sparse sponges, gorgonians
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	861	915	Ru, S	H			0		0	0					mound or ridge, more gorgonians, on top, sponges, sparse <1 ft standing dead coral
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	857	917	Ru, S	H			0		1	0					red shrimp?, coral rubble, sediment mound, very sparse bioturbation
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	862	920	Ru, S	H			0		0	0					denser standing dead coral 1 ft tall, sponges, gorgonians, 8' live coral?, eel, rows of standing dead coral, sparse live <1%
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	869	924	Ru, S	H		6.1	0		1	0					red shrimp on bottom, coral rubble, sediment
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	843	1034	S	S			0		0	0					1 m elongate depression with groove and burrow at one end, Acanthacans blind lobster in burrow
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	837	1043	Ru, Co	H			0		0	0					dense cover 1-2 ft standing coral, <5% live on ridge, Enallopsammia? sediment in valley at 2752 ft
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	839	1044	S	S			0		0	0					sediment, moderate bioturbation, several 50 cm depressions, 10-25 cm mounds, sparse gorgonians. Some rubble and coral
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	838	1046	Ru	H			0		0	0					coral rubble, sediment, gorgonians.
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	836	1055	Ru	H		6.1	1	146	0	0					Chaceon walking on coral rubble, sediment substrate, very sparse biota
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	858	1111	S	S			0		0	0					transition to 100% sediment, 10 cm irregular sand waves, and larger 2-3 m sand dunes, sample was 100% large pteropods
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	858	1112	S	S			0		1	0					12 cm light red, translucent shrimp, sediment
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	860	1117	S	S			0		1	0					10 cm red shrimp swimming off bottom, sediment, irregular sand waves
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	858	1119	S	S		6.1	1		0	0					Chaceon on sediment, extensive desert, sand waves, barren

Data Source	Date (mn/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blue-line Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	858	1119	S	S			0		1	0					red shrimp swimming off bottom
Sub Reef Dives	5/28/2006	JSL II-3492	28-V-06-1	Reed 362	Miami Terrace, UM Site #2, target 1	860	1124	S	S			0		0	0					off bottom, sediment, plastic bad with nasty organic? Material
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC							0		0	0					Miami Terrace escarpment, east ridge and 950 ft wall, 45-50 dg slope; slab pavement, rock ridges, ledges, and series of terraces; 2 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	433	1734	Ru	H	8.5		0		0	0					on bottom, base of wall, flat coral rubble and sediment, rock boulders
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	430	1739	Co	H			0		0	0					standing coral 1-3' tall, Lophelia, dense, coral rubble, sponges, gorgonians
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	417	1742	Co, Ru	H			1		0	0					Chaceon on coral rubble
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	384	1746	Co, Ru	H			0		0	0					standing Lophelia 1-3' abundant, series of rock walls,
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	369	1748	Ru, Co	H			0		0	0					top of wall, coral rubble, standing coral 1-2', sponges, gorgonians
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	361	1758	Co	H			0		0	0					standing Lophelia up to 6' tall, very dense, sponges, gorgonians, styaster
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	351	1818	Co	H			1	113	0	0					Chaceon in standing coral habitat and rubble
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	329	1829	Ro	H			0		0	0					rock pavement, ledges, vertical walls, sponges, gorgonians, styaster, top of escarpment, very rugged
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	329	1850	Ro	H			0		0	0					rock pavement, 1" cable heading E-W
Sub Reef Dives	5/31/2004	JSL I-4678	31-V-04-2	Reed 353	Miami Terrace, Reed BU1b, east ridge, west wall: HAPC	338	1922	Ro	H			0		0	0					off bottom, rock pavement, <1 ft ledges, very sparse biota
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC							0		0	0					Miami Terrace escarpment, east ridge and 500 ft wall; 20-60 dg slope; slab pavement, rock ridges, ledges, and series of terraces; 1 Chaceon, 0 Red shrimp, 0 tilefish.
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	530	938	S	S	8.0		0		0	0					on bottom, flat sediment, 10% rock rubble, small few cm diameter, sand ripples, no bioturbation
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	515	944	Ro	H			0		0	0					start hard bottom, rock slabs and ledges, black coral, sponges, gorgonians
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC		948	Co	H			0		0	0					small live Enallopsammia
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	508	1002	Co, Ru	H			0		0	0					rock ledges, 80% coral rubble, sparse standing live coral; 2' standing Lophelia
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	496	1025	Ru	H			0		0	0					in valley, rock rubble, sediment, pavement
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	497	1026	S	S			0		0	0					flat sediment, some rock rubble, sparse bioturbation
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	492	1028	Ro	H			0		0	0					rock boulders, ledges, slabs: cup coral, styaster, sponges, gorgonians
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC		1033	Ro, Co	H			0		0	0					sparse Lophelia
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	463	1038	Ro	H			0		0	0					sponges, Zoanthidea, styaster, gorgonians
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	422	1134	Ro	H			1		0	0					Chaceon on rock pavement, low ledges, sponges, gorgonians, styaster
Sub Reef Dives	5/31/2004	JSL I-4677	31-V-04-1	Reed 353	Miami Terrace, Reed BU1b, east ridge: HAPC	403	1213	Ro	H			0		0	0					off bottom, rock pavement, sponges, gorgonians, coral rubble
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	448	833	S	S	7.2		0		0	0					Miami Terrace escarpment, 20 dg slope, rock boulders, slabs, terrace edge at 1273- 1230 ft, Lophelia, gorgonacea, sponges, styaster, 3 Chaceon, 0 Red shrimp, 0 tilefish.
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	447	836	Ro	H			1		0	0					Chaceon walking, rock boulder; 20 dg slope, rock boulders 1-6 ft, 1-3 ft relief, 10-50% cover sediment, few gorgonians
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	443	846	Ro	H			1		0	0					Chaceon walking on boulder, boulders and rock slabs, 20 dg slope, sparse biota, sponges, gorgonians, lots of plankton swimming, copepods? And small fish, black coral, Laemonema, rosefish, styaster
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	439	850	Ro	H			1		0	0					Chaceon under boulder, same habitat
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	418	928	Ro	H			0		0	0					20 dg slope, 1-2 m rock boulders, slabs, 1-2 m relief, 10-30% cover sediment, sparse biota, gorgonacea, sponges, styaster, black coral, Isididae, primnoids
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	388	959	Co, Ro	H	7.3		0		0	0					dense thickets standing coral, 1-3 ft relief, <1% live Lophelia? (no close up), on rock pavement and slabs
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	375	1000	Co, Ro	H			0		0	0					terrace edge, undercut ledge, 1-3 ft live and dead Lophelia, 1-2 ft gorgonians
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	370	1032	Ro	H			0		0	0					100% cover rock pavement and slabs, fairly flat terrace, 1-23ft relief, 4 ft shark, nephtheidae, 2 ft orange Keratosis, Laemonema,
Sub Reef Dives	4/14/2005	JSL I-4816	14-IV-05-1	Reed 354	Miami Terrace, Reed Site BU1	368	1111	Ro	H			0		0	0					off bottom, same habitat
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0							0		0	0					Miami Terrace escarpment, southern end of terrace, rock slope, 10-20 dg, rock boulders, slabs, silted low diversity, terrace top and escarpment at 1200 ft, denser biota, Lophelia; 7 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	437	1704	Ro, S	H	6.6		0		0	0					on bottom, slope, rock boulders, cobble, slabs, 1-3 ft relief, 60% cover, sediment veneer, sparse biota, rosefish.
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	434	1714	Ro, S	H			1		0	0					Chaceon on rock slabs, barren, 2 ft Keratosis, sparse sponges, most rock silted, few primnoids.
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	439	1733	Ro	H			1		0	0					Chaceon, rock slabs and sediment, very sparse biota, few rosefish
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	441	1742	Ro	H			1		0	0					Chaceon standing on rock boulders
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	436	1743	Ro	H	6.6		1		0	0					Chaceon standing on rock boulders
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	368	1829	Ro	H			0		0	0					20 dg rock slope, boulders, slabs, 1-3 ft relief, silted, very low diversity and density, few Isididae, sponges
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	376	1845	Ro	H			1		0	0					Aporocallistes
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	371	1902	Ro	H			1		0	0					Chaceon on rock boulder, sponges, gorgonians, Laemonema, very few fish
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	367	1911	Ro	H			0		0	0					Chaceon on rock slab, 30 dg slope, barren
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0		1913					0		0	0					terrace edge, vertical rock, denser biota

Data Source	Date (mn/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	368	1918	Ro	H			1		0	0					Chaceon walking along vertical rock, near terrace top, more density of sponges, gorgonians, galatheids, stylaster, some 1-2 ft live Lophelia
Sub Reef Dives	8/6/2005	JSL I-4827	6-VIII-05-2	Reed 356	Miami Terrace, Reed Site BU0	365	1948	Ro	H			0		0	0					off bottom, top edge of terrace, vertical rock, undercut ledge, dense biota
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?							0		0	0					Pourtales Terrace, Alligator Lithoherm #4, 699 ft base, 157 ft relief, terrace top for entire dive, rock pavement, ledges, sponges, stylaster, small gorgonians, 0 Chaceon, 0 Red shrimp, 3 blueline tilefish
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	172	1527	Ro	H	10.0	0			0	0					on bottom, rock pavement slope, sediment veneer, dense stylaster, sponges
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?		1550	Ro	H		0			0	0					spider crab, blue line tilefish [1 measurable], rock pavement, sediment veneer, sponges, stylaster, no gorgonians, video turbid
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?		1751	Ro	H		0			0	0					rock peak, terrace, rock pavement, crust, 1 ft thick overhang and undercut at edge, sponges, stylaster on top, no gorgonians, snowy grouper, transect along ledge
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?		1814	Ro	H		0			0	0					rock pavement slope below peak, snowy grouper
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	186	1818	Ro, Ru	H		0			0	0			1		rock pavement, rock slabs, outcrops, blueline tilefish swimming along bottom 40 cm long
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	194	1825	Ro, Ru	H		0			0	0					rock terrace, sponges, biota more sparse than peak
Sub Reef Dives	8/24/2001	Clelia 602	24-VIII-01-3	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	200	1830	Ro	H		0			0	0					off bottom, rock pavement, sparse sponges
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?							0		0	0					Pourtales Terrace, Alligator Lithoherm #4, 699 ft base, 157 ft relief, terrace top for entire dive, rock pavement, ledges, sponges, stylaster, small gorgonians, 0 Chaceon, 0 Red shrimp, 0 tilefish; water very turbid and video poor, video copied with LYNN
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	172	923	Ro, Co	H	12.7	0			0	0					on bottom, 100% rock pavement, dense sponges, small gorgonians, stylaster nearly 100% cover of biota; bottom same, thin veneer over rock pavement, dense sessile biota, few motile fauna, invert or fish, hermit crab, echinoid, few small fish
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	173	945	Ro, Co	H	12.7	0			0	0					bottom same, thin veneer over rock pavement, dense biota, few motile fauna, invert or fish
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	174	1000	Ro, Co	H	12.8	0			0	0					bottom same
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	173	1015	Ro, Co	H	12.7	0			0	0					bottom same
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	170	1030	Ro, Co	H	12.7	0			0	0					bottom same
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	170	1045	Ro, Co	H	12.8	0			0	0					bottom same
Sub Reef Dives	5/28/2004	JSL I-4671	28-V-04-1	Reed 349	Pourtales Terrace, Alligator Lithoherm #4; HAPC?	170	1052	Ro, Co	H	12.8	0			0	0					off bottom; bottom same
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?							0		0	0					Alligator Bioherm #3, rock pinnacle, 712 ft base, 203 ft relief, 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?	219	1526	Ro, S	H	11.0	0			0	0					on bottom, flat rock pavement, sediment veneer, stylaster, sponges, very turbid, poor video.
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?	177	1742	Ro	H		0			0	0					rock slope, sediment veneer, dense stylaster, sponges, red/white striped angelfish
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?		1821	Ro	H		0			0	0					rock pavement slope, dense stylaster, sponges, asteroid, few fish,
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?		1839	Ro	H		0			0	0					flat terrace, rock pavement, sediment veneer, stylaster fields, red stripe angelfish common
Sub Reef Dives	8/22/2001	Clelia 598	22-VIII-01-2	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?		1841	Ro	H		0			0	0					off bottom, same habitat
Sub Reef Dives	8/23/2001	Clelia 600	23-VIII-01-3	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?							0		0	0					Alligator Bioherm #3, rock pinnacle, 712 ft base, 203 ft relief, 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/23/2001	Clelia 600	23-VIII-01-3	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?		1528	Ro, S	H	10.0	0			0	0					on bottom, flat rock pavement, sediment veneer, stylaster common, sponges,
Sub Reef Dives	8/23/2001	Clelia 600	23-VIII-01-3	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?	198	1543	Ro, S	H		0			0	0					plateau, rock pavement, stylaster, sponges, rock crust, ledge and undercut at edge, video poor, turbid, sparse fish and motile biota, Phakellia, oranges striped angelfish, no apparent gorgonians
Sub Reef Dives	8/23/2001	Clelia 600	23-VIII-01-3	Reed 348	Pourtales Terrace, Alligator Bioherm #3, HAPC?		1700	Ro, S	H		0			0	0					off bottom, same habitat
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?							0		0	0					Tennessee Bioherm #2, peak 420 ft, base 699 ft, rock pavement; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	218	854	Ro, Co, Ru	H	12.6	0			0	0					on bottom, flat terrace, rock pavement, dense stylaster, sponges, and gorgonians, very dense and diverse
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	208	924	Ro, Co, Ru	H		0			0	0					same habitat, slit shell
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	199	944	Ro, Co, Ru	H		0			0	0					same, 100% cover stylaster, sponges, no fish, no motile biota, dense gorgonians
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	183	952	Ro, Co, Ru	H		0			0	0					same
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	182	1038	Ro, Co, Ru	H	15.1	0			0	0					same, 50 cm snowy grouper, 1 ft ledge, no pavement, school greater amberjack, flat terrace
Sub Reef Dives	8/23/1999	JSL II-3181	23-VIII-99-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	191	1139	Ro, Co, Ru	H		0			0	0					off bottom, same habitat
Sub Reef Dives	8/23/2001	Clelia 599	23-VIII-01-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?							0		0	0					Tennessee Bioherm #2, peak 420 ft, base 699 ft, rock pavement, stylaster; 0 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	8/23/2001	Clelia 599	23-VIII-01-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	213	826	Ro	H	10.0	0			0	0					on bottom, rock pavement slope, sediment veneer, stylaster, sponges
Sub Reef Dives	8/23/2001	Clelia 599	23-VIII-01-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?		911	Ro, Co	H		0			0	0					top ridge, dense stylaster, rock pavement w/ sediment veneer, sparse sponges
Sub Reef Dives	8/23/2001	Clelia 599	23-VIII-01-1	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?		921	Ro, Co	H		0			0	0					off bottom
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?							0		0	0					Tennessee Bioherm #2, peak 420 ft, base 699 ft, rock pavement; 0 Chaceon, 0 Red shrimp, 1 blueline tilefish, 2 burrows
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	198	1724	Ro	H	13.6	0			0	0					on bottom, rock pavement, sediment veneer, sparse biota

Data Source	Date (mm/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	198	1731	Ro	H			0		0	0			1		50 cm blueline tilefish, rock pavement, 1 ft ledges, fish by hole in rock
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	198	1735	S	S			0		0	0				Bu	1 m diam depression w/ burrow, no fauna
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	189	1744	Ro, Ru	H			0		0	0				Bu	1-2 m diam pile of rock cobble (10-25 cm) with burrow hole, tilefish?
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	152	1817	Co, Ro, Ru	H			0		0	0					terrace, rock pavement with dense live styalster, styalster rubble, sponges, styalster field, 100% cover
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	144	1819	Co, Ro, Ru	H	15.9		0		0	0					peak of pinnacle, same habitat, current 1+ kn
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	184	1834	Co, Ro, Ru	H			0		0	0					slope, same habitat
Sub Reef Dives	8/23/1999	JSL II-3182	23-VIII-99-2	Reed 347	Pourtales Terrace, Tennessee Bioherm #2, HAPC?	166	1905	Co, Ro, Ru	H			0		0	0					off bottom, same habitat
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?							0		0	0					Pourtales Terrace, Alligator Lithoherm, 1046 ft base, 394 ft relief, transect up slope and peak; 0 Chaceon, 0 Red shrimp, 1- blueline tilefish
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	257	1027	Ro	H	14.7		0		0	0					on bottom, thin sediment veneer on rock pavement, rock outcrops, ledges, 20 dg slope, dense sponges, styalster coral, gorgonians, snowy grouper
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	298	1045	Ro	H			0		0	0					flank of reef, 100% rock pavement, 1-2 ft ledges, boulders, 2 large grouper- yellowedge? and misty?, one striped, one all gray
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?		1103					0		0	0					snowy grouper
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	287	1104	Ro	H			0		0	0					fishing line or longline on bottom
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?		1138	Ro	H			0		0	0					large grouper- Red?
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	237	1159	Ro	H			0		0	0					large grouper, slit shells
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?		1234	Ro	H			0		0	0					2 alfonsio Beryx
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	178	1259	Ro	H			0		0	0					large green moray, red striped fish, near top, habitat the same, rock pavement, low ledges, dense sponge, styalster, small gorgonians
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	179	1301	Ro	H			0		0	0					jacks, snowy grouper, near top, moray eel; near peak, same habitat
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?		1311	Ro	H			0		0	0					dense small reef fish, anthids, dense styalster
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	173	1320	Ro	H			0		0	0			1		2 ft blueline tilefish (verify), snowy, and Beryx
Sub Reef Dives	5/30/2004	JSL I-4675	30-V-04-1	Reed 346	Pourtales Terrace, Alligator Bioherm #1, North Peak; HAPC?	173	1323	Ro	H			0		0	0					off bottom, peak of pinnacle
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?							0		0	0					Lithoherm, 333 ft peak, 922 ft north base, 40-80 dg slope, series of terraces with thin crusts and undercut ledges, dense fields of styalster coral, 0 Chaceon, 12+ striped shrimp, 0 tilefish
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	294	824	Ro, S	H	13.4		0		0	0					on bottom, rock pavement, sediment veneer, styalster and rock rubble, sponges, styalster
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	281	836	Ro	H			0		0	0					40 dg rock pavement, styalster, sponges common, some vertical rock faces
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	264	903	Ro	H			0		0	0					rock pavement, dense biota, sponges, styalster, smooth rock slope, no large fish, no large macro mollie inverts
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	208	939	Ro	H			0		0	0					rock ledge, echinoids, small fish, sponges, small reef fish, spider crab, series of 1-2 m ledges at this depth
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	208	950	Ro	H			0		0	12					ledges, barrelfish?, Beryx red fish, school of red shrimp with white dorsal stripe, 10 cm long under ledge, Plesionika? sp.
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?		954					0		0	0					
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	211	1008	Ro, Ru	H			0		0	0					thick layers of styalster rubble, styalster, sponges, slit shell, 45 dg rock pavement slope
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	207	1016	Ro, Ru	H			0		0	0					1-2 ft grouper, 80 dg rock slope, anthids, spider crab
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	203	1027	Ro	H			0		0	0					9 ft green moray, 50 cm snowy grouper, 80 dg rock slope, some ledges, sponges, styalster, no obvious gorgonians
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	185	1036	Ro, Ru	H			0		0	0					fields of styalster, very dense cover
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	182	1042	Co, Ru	H	16.7		0		0	0					Lophelia, 1 ft live, flatter terrace, dense styalster, 100% cover styalster and styalster rubble, school greater amberjack
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	167	1055	Co, Ru	H			0		0	0					flat terrace, peak, 100% cover styalster, sponges, amberjack, echinoids, black cluster coral
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	167	1118	Co, Ru	H			0		0	0					Dendrophyllia?, snowy grouper, two 6 ft sharks
Sub Reef Dives	6/9/2007	JSL II-3596	9-VI-07-1	Reed 313	Pourtales Terrace, Lithoherm, north slope; HAPC?	167	1118	Co, Ru	H			0		0	0					off bottom, peak of lithoherm, 100% cover styalster, styalster rubble, sponges

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?							0		0	0					Lithoherm, 428 ft tall rock pinnacle, 45 to 80 dg slope, transect west slope and peak, rock surface; stylaster, sponges, Dendrophyllum coral, Madracis, Enallopsammia?, 0 Chaceon, 2 Red shrimp, 0 tilefish
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	311	1622	Ro, S	H		9.2	0		0	0					on bottom, hard rock pavement, thin veneer sediment, rock cobble, sparse biota
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	305	1625	Ro	H			0		0	0					45 dg slope, rock ledge, 3 ft relief, rock pavement, small stylaster, sponges common, Leiodermatium, 10-12 cm and one smaller red shrimp inside Leiodermatium hard sponge; stylaster, rock pavement 45-70 dg slope, may be pair of them, shrimp id- Heterocarpus sp. or Parapandalus sp. (pers. comm. - Tammy Frank)
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	297	1631	Ro	H		9.3	0		0	2					45-80 dg smooth rock pavement, pockmarked sfc, vertical erosion grooves, sparse sponges, stylaster, rosefish, asteroids
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	301	1643	Ro	H			0		0	0					near vertical rock wall, pavement, pockmarked, barren
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	274	1655	Ro	H			0		0	0					same habitat, 45-60 dg slope, dense sponges, stylaster, no fish
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	233	1701	Ro	H		13.6	0		0	0					crab size of Chaceon, but red crab; same habitat, series of vertical grooves in rock, every 50 ft or so, tops ridges w/ dense biota, grooves erosional and more barren.
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?		1723					0		0	0					
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	214	1747	Ro	H			0		0	0					fishing lure, same habitat, very dense sponges, stylaster, no obvious gorgonians
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	201	1753	Ro	H			0		0	0					large school amberjack, hundreds?, habitat same
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	185	1757	Ro	H			0		0	0					Dendrophyllum? Coral, colony white, dead?
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	180	1802	Ro	H			0		0	0					spider crab 10 cm carapace, habitat same, flatter, 10-20 dg slope, dense biota
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	177	1817	Co	H			0		0	0					collect Dendrophyllum? Coral, cluster of coral polyps, all white, dead?; lots of stylaster debris along with live stylaster, sponges
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?		1821					0		0	0					
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	176	1822	Co	H			0		0	0					red white stripe butterfly fish, same habitat, 10-20 dg slope, dense biota
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	168	1832	Co	H			0		0	0					white hard coral, 6" maybe Enallopsammia, blurry
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	167	1834	Co	H			0		0	0					thickets of 1 ft tall Madracis asperula?, white, very dense, 20 ft diam thicket, stylaster thickets nearly 80% cover, dense all over, slit shell, may be peak of pinnacle
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	165	1850	Co	H			0		0	0					Chaetodon aya?, amberjacks.
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	161	1854	Co	H			0		0	0					6" Enallopsammia?
Sub Reef Dives	6/9/2007	JSL II-3597	9-VI-07-2	Reed 311, peak 2	Pourtales Terrace, Priscilla Pinnacle, Lithoherm peak 2, west slope and peak; HAPC?	155	1903	Co	H			0		0	0					off bottom, top of pinnacle, 100% cover stylaster, sponges, rounded flat top
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?							0		0	0					Deep-water Sinkhole B, Pourtales Terrace, transect on bottom and east wall; top edge 912 ft, bottom 1356 ft.; 3 Chaceon, 0 Red shrimp, 1 Golden Tilefish
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	411	825	Ru, Ro	H		10.4	0		0	0					on bottom, 100% cover rock rubble, petrified dugong bones, areas exposed rock pavement with cracks, rock ledges 2-3 m relief, beardsfish, gorgonians; bottom of sinkhole, 700 ft to WP at center of sinkhole
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	410	850	Ro	H			0		0	0					55 gal oil drum on bottom, rock ledges, boulders, rock and bone rubble, bivalve shells, sparse biota
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	413	855	Ru, S	S			0		0	0					sediment sample, 100% pteropod shells and brachiopod shells
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	406	905	Ro	H		10.4	1	229	0	0					rock outcrop, 1-2 m relief, base of hole; sparse biota; Chaceon on rock face
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	394	911	Ro, Ru, S	H			0		0	0					mora codling Laemonema, drift piles of coarse sediment, rock slabs, boulders
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	396	919	Ro, Ru	H			0		0	0					Junonia gastropod, sediment, 1-2 ft boulders, broken pavement, piece of cloth, few fish, stylaster and encrusters on rock, rockfish, brittlestar, gorgonian, several sp fish, beardsfish, Laemonema, slope getting steeper 45 dg
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	379	928	Ro	H			0		0	0					irregular rock outcrops and vertical rock, sparse sponges, gorgonians, Beryx.

Data Source	Date (mm/dy/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu?= probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	373	934	Ro	H			0		0	0					vertical rock wall, very irregular surface, arches overhangs, sponges, gastropods, rock encrusted with 1-3 cm fauna, sparse large biota, black coral
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	350	950	Ro	H		10.7	1	67	0	0					Chaceon? not good close up, on 70 dg rock wall of shinkhole
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	339	953	Ro	H			1		0	0					Transcript- 725 cm crab, not in video; 70 dg rock wall, fairly barren of large biota, stump of large black coral
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	317	959	Ro	H			0		0	0					4.5 ft black coral, rock wall, sparse biota, sparse fish, galatheid crab, rosefish?, Beryx? In rock hole, Coronaster? Starfish
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	290	1013	Ro	H		10.8	0		0	0	1				45 dg smooth rock slope, burrow hole in rock with numerous small fish, anemones, Laemonema, several galatheids in burrow Eumunida picta; lasers at angle but depth of body (behind gills- 322 mm; body length would estimate >1 m but just a guess), burrow
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	289	1018	Ro	H			0		0	0					gorgonian, brittlestars, starfish, rock wall, near top edge, echinoid, pieces of 1-2 cm pipe, 2 m long on bottom
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	281	1029	Ro	H			0		0	0					top edge of hole, smooth rock, sparse biota, sponge, gorgonians, asteroids, near flat
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	282	1054	Ro, S	H			0		0	0					top edge of hole, north edge, smooth rock, sediment veneer, sparse biota, sponge, gorgonians, asteroids, near flat
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	281	1105	Ro, S	H			0		0	0					spider crab Rochinia? Sp.: transect around edge, very smooth flat rock pavement, very sparse biota
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	286	1111	Ro	H			0		0	0					gorgonians, Laemonema codling, asteroid, ophiuroids, galatheid crab, blackbelly rosefish, small rock outcrops
Sub Reef Dives	6/6/2007	JSL II-3590	6-VI-07-1	Reed 380	Pourtales Terrace, Sinkhole B, HAPC?	286	1119	Ro	H			0		0	0					off bottom
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?							0		0	0					Lithoherm, 184 ft relief, peak 1536 ft, southwest slope, rock pavement 50 dg slope, 0.25 to 2 m diam rock slabs, boulders; 3 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	477	1631	Ro	H		7.6	0		0	0					on bottom, rock cobble, slabs, boulders 25 cm to 2 m diam, 1-2 ft relief, 90% cover, sponges, gorgonians, stylaster, galatheids, dense biota
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	474	1654	Ro	H		7.5	1	199	0	0					Chaceon appears to be eating detritus, rock pavement, cobble, boulders, dense sponges, gorgonians, stylaster
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	470	1657	Ro	H			0		0	0					near peak, rock slabs, boulders, 3 ft relief ledges, very dense biota, 1-2" small fish
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	471	1741	Ro	H			1		0	0					Chaceon walking on rock pavement, captures and eats something 1-2 cm, by rock cobble
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?		1748					0		0	0					
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	505	1800	Ro	H		7.3	1		0	0					Chaceon on rock boulder, walking down vertical rock, sponges, gorgonians, black coral, stylaster
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	537	1818	Ro	H			0		0	0					habitat same, dense school 1" fish
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	516	1853	Ro	H			0		0	0					habitat same, 4 ft black coral, transect upslope
Sub Reef Dives	6/8/2007	JSL II-3595	8-VI-07-2	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, west slope and peak; HAPC?	475	1915	Ro	H			0		0	0					off bottom, habitat same
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?							0		0	0					Lithoherm, 184 ft relief, peak 1536 ft, east slope, rock pavement 35 dg slope, 0.25 to 2 m diam rock slabs, boulders, sponges, gorgonians, stylaster, black coral common, few Lophelia, Solenostmilia coral; 1 Chaceon, 0 Red shrimp, 0 tilefish
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	550	830	S	S		6.7	0		0	0					on bottom, flat sediment, sparse bioturbation, east base of reef, sparse biota, core sample- no hard bottom
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	549	840	Ro, S	H			0		0	0					start hard bottom, base of reef, 80% rock pavement, 1-3 ft diam boulders, 1 ft relief, sparse, sponges, stylaster, black coral, gorgonians, several 1-3 ft black coral, several spp. fish sparse
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	535	851					0		0	0					1 ft Lophelia, live attached to gorgonian skeleton; rock boulders, pavement, biota dense, gorgonians, sponges, stylaster
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	526	957	Ro	H			0		0	0					same habitat, 1 ft live Lophelia, large primnoids, galatheids,
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	524	1005	Ro	H		7.4	1		0	0					Chaceon, 35 dg rock pavement slope w/ 1-2 m diameter rock boulders, veneer sediment on pavement, dense sponges, gorgonians, 3 ft black coral
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	524	1011	Ro	H			0		0	0					1 ft Solenostmilia?, quick video but appears to have bifurcate tips; rosefish, sparse fish
Sub Reef Dives	6/8/2007	JSL II-3594	8-VI-07-1	Reed 384	Pourtales Terrace, Lithoherm, Site UM #23, east slope; HSAPC?	503	1108	Ro	H			0		0	0					off bottom, rock slabs, boulders, 1-2 ft relief, dense sponges
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall							0		0	0					90' ft escarpment wall, top 2715 ft, base 3000 ft; part rock, partly consolidated clay, sparse biota, 2 Red crab? 0 Chaceon, 2 Red shrimp, 0 tilefish
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	921	904	S, Ro	S			0		1	0					on bottom, sediment, scattered 1-2 m rock slabs or boulders, at base of wall; red shrimp (no scale, maba 10 cm) swimming upside down near bottom, some large bioturbation, 1 m diam depressions, can not see burrows

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	914	910	Ro	H	S	5.9	0	0	0	0	0	0	0	base of rock wall, irregular surface, covered with layer of fine silt; ledges outcrops, and rock slabs, vertical rock with 5 cm pockmarks, fairly smooth, horizontal layering or ledges, sparse biota.	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	901	923	Ro	H	S	5.9	0	0	0	0	0	0	0	eel? On vertical wall, wall is actually consolidated clay, able to puncture with spikes of sub; some areas appear as rock and some as white clay.	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	893	925	Ro	H	S	5.9	0	0	0	0	0	0	0	brown vertical rock, sponges, gorgonians, sparse, varies for vertical, to 80 dg mud slope, to ledges and undercuts several 1 ft eels, black coral Bathypathes	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	861	959	Ro	H	S	5.9	0	0	0	0	0	0	0	Chaceon? (no clear, maybe other spp), near vertical smooth rock wall, Bathypathes, Isididae common (look like Chrysogorgia)	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	828	1008	S	S	S	5.9	0	0	0	0	0	0	0	Chaceon? (may be red crab) on mud slope, top of wall, barren; moderate large bioturbation ~25-50 cm (no scale) mounds depressions, Hyalonema	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	820	1019	S	S	S	5.9	0	0	0	0	0	0	0	on top of wall, sediment slope, moderate bioturbation	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	818	1021	S	S	S	5.9	0	1	0	0	0	0	0	red shrimp on mud (no scale ~10 cm?), id- Pleioticus sp. or Plesiopeanae sp. (pers. comm. - Jammy Frank)	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	817	1023	S	S	S	5.9	0	0	0	0	0	0	0	red crab, mud slope at top of escarpment, dense bioturbation 10-50 cm (no scale), can not see burrows in depressions, sparse biota	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	892	1037	Ro	H	S	5.9	0	0	0	0	0	0	0	back on wall, 90 dg consolidated clay? With pockmarks	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	885	1044	Ro	H	S	5.9	0	0	0	0	0	0	0	25 cm hollow rock tube coming out of wall, petrified burrow?, sampled	
Sub Reef Dives	6/4/2007	JSL II-3587	4-VI-07-1	Reed 378	Tortugas Valley Escarpment, Site 1, north wall	820	1124	S	S	S	5.9	0	0	0	0	0	0	0	off bottom, sediment top of wall	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall							0	0	0	0	0	0	0	300 ft tall escarpment, rock, consolidated clay, base 2907, top 2617 ft, sparse biota; 2-3 Chaceon, 1 red crab, 1 red shrimp, 5 shrimp, 0 tilefish	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	879	1653	S				0	0	1	0	0	0	0	on bottom, flat sediment, moderate bioturbation, mounds and depressions, sparse biota, 5 cm shrimp, rattail fish	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	879	1657	S	S	S	5.8	0	1	0	0	0	0	0	red shrimp (~10 cm) (Pleioticus?) on soft mud sediment, sparse biota	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	878	1706	Ro	H	S	5.8	0	0	0	0	0	0	0	10 ft boulder on sediment slope, rachiopods	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	875	1720	Ro	H	S	5.8	0	0	0	0	0	0	0	rock wall, irregular surface, ledges, ridges, jumbled boulders, slabs, mud slopes, sparse biota, sponges, gorgonians	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	876	1728	Ro	H	S	5.8	1	0	0	0	0	0	0	red crab, rock boulder, sponge, stylaster	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	876	1742	Ro	H	S	5.8	0	0	1	0	0	0	0	light red shrimp?, in crevice	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	888	1802	Ro	H	S	5.8	0	0	1	0	0	0	0	white shrimp, 8-10 cm?, rock slope	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	888	1803	Ro	H	S	5.8	1	76	0	2	0	0	0	Chaceon?, 10 cm, 2 white shrimp 10 cm	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	886	1807	Ro	H	S	5.8	0	0	0	0	0	0	0	tripod fish, scattered rock boulders 1-2 m, black crust white interior, sediment, eel	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	880	1809	Ro, S	H	S	5.8	0	0	0	0	0	0	0	base of vertical wall, talus at base, jumbled irregular boulders.	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	876	1810	Ro, S	H	S	5.8	1	0	0	0	0	0	0	Chaceon (verified) on steep rock slope, boulders, sediment, sparse biota	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	870	1812	Ro	H	S	5.8	0	0	0	0	0	0	0	vertical rock wall, sediment veneer on horizontal layering, barren	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	870	1814	Ro	H	S	5.8	0	0	1	0	0	0	0	small red shrimp, ~6 cm swimming along face of vertical wall, sea whip, sparse sponges, galatheid, eel	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	848	1822	Ro	H	S	5.8	0	0	0	0	0	0	0	vertical wall continuous, see dark brown surface rock and eroded underlying surface appears as white consolidated clay or carbonate rock, very sparse biota, horizontal layering less apparent, vertical erosion grooves	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	808	1830	Ro	H	S	5.8	0	0	0	0	0	0	0	Some biota, gorgonians Chrysogorgia, Isididae, 60 dg rock slope, boulders, sediment, nylon rope or net wrapped around rock, crinoid on gorgonian	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	799	1855	Ro, S	H	S	5.8	0	0	0	0	0	0	0	10-20 ft ghost net, near top edge of wall, rock boulders, gorgonian wrapped in net, pile of longline beside it	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	796	1858	S, Ro	S	S	5.8	0	0	0	0	0	0	0	top of wall, 45 dg slope, mostly sediment, few boulders, flattens out at 2600 ft, sediment, scattered rubble	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	792	1900	S, Ro	S	S	5.8	0	0	0	0	0	0	0	top of wall, sediment, pile of long line, may be rock under sediment veneer, some gorgonians	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	792	1914	S	S	S	5.8	0	0	0	0	0	0	0	Bathynomus isopod, sparse bioturbations; weird rattail fish with long filaments under chin; fine clay sediment, Hyalonema w small galatheid, 10-25 cm mounds a	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	792	1920	S	S	S	5.8	0	0	0	0	0	0	0	1 m diam irregular depression, some 5 cm burrows, soft clay, moderate bioturbation	
Sub Reef Dives	6/4/2007	JSL II-3588	4-VI-07-2	Reed 379	Tortugas Valley Escarpment, Site 2, east wall	792	1920	S	S	S	5.8	0	0	0	0	0	0	0	off bottom, 100% sediment	
PIPELINE CABLE SURVEYS																				
Seafarer Pipeline Survey																				
Seafarer	3/1/2006	JSL I-4936		Seafarer Pipeline	Straits of Florida							0	0	0	0	0	0	0	0	Series of coral ridges, sediment in valleys between; sparse standing coral; 0 Chaceon, 0 Red crab, 0 tilefish
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	785	843	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	On bottom, 5-8% VLS 50 FT, 34.9 SAL, CUR 0, 10-2 FR 145 DG, 1800 FT 350 DG TO T1; LIVE BOTTOM, STANDING CORAL, GORGONIANS, mostly sediment, patchy coral rubble, patchy standing coral 1 ft tall, mostly dead, <1% live, Enallapsammia
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	785	851	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	LIVE BOTTOM, STANDING CORAL, GORGONIANS
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	785	853	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	LIVE ENALLAPSAMMIA PROFUNDA; 1000 FT TO T1, 5 FT MOUND W/ LIVE BOTTOM
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	783	901	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	6-10 FT KNOLLS, 30% COVER CORAL RUBBLE, STANDING CORAL, SPONGES, GORGONIANS
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	782	905	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	300 FT 380 DG TO T1; SERIES OF 5 FT RIDGES; SIDE AND TOPS 50-100% CORAL RUBBLE, STANDING CORAL, HEXACTINELLIDS, PRIMNOIDS
Seafarer	3/1/2006	JSL I-4936		To Seafarer Pipe	Straits of Florida	782	908	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	HD 270 DG TO T2, SOG 0.5 KN
Seafarer	3/1/2006	JSL I-4936		Seafarer Pipeline	Straits of Florida	782	910	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	
Seafarer	3/1/2006	JSL I-4936		Seafarer Pipeline	Straits of Florida	784	915	S, Ru, Co	H	S	6.8	0	0	0	0	0	0	0	0	

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; Rg= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	782	918	S, Ru, Co	H					0	0					AT 12: S-1 SEDIMENT SAMPLE, SOFT SEDIMENT, CORAL RUBBLE
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	782	920	S, Ru, Co	H					0	0					UNDERWAY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	782	922	S, Ru, Co	H					0	0					SAND, ARAEOSOMA URCHIN, TORPEDO RAY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	781	925	S	S					0	0					HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	926	S	S					0	0					5 FT RIDGE, CORAL RUBBLE, PRIMNOIDS, GORGONIANS, EEL, ARAEOSOMA
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	927	S, Ru, Co	H					0	0					RIDGE, CORAL RUBBLE, OR PARAMURICID, PRIMNOID
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	928	S, Ru, Co	H					0	0					20 CM FISH, SERRANID?
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	930	S, Ru, Co	H					0	0					RIDGE, LIVE BOTTOM, STANDING CORAL, GORGONIANS, SPONGES
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	783	932	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	933	S	S					0	0					3 FT RIDGE, CORAL RUBBLE, LIVE BOTTOM
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	783	935	S, Ru, Co	H					0	0					2 FT RIDGE, CORAL RUBBLE, SPARSE LIVE ENALLOPSAMMIA CORAL
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	784	937	S, Ru, Co	H					0	0					series of coral ridges, sediment in valleys between: sparse standing cora
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	786	939	S, Ru, Co	H	6.7				0	0					3 FT RIDGE, 1' LIVE ENALLOPSAMMIA CORAL
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	785	945	S, Ru, Co	H					0	0					CORAL RUBBLE, SPARSE PRIMNOID, PARAMURICID, HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	948	948	S, Ru, Co	H					0	0					RIDGE, STANDING CORAL, PARAMURICID, PRIMNOID, HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	950	950	S, Ru, Co	H					0	0					3 FT RIDGE, DENSE STANDING DEAD CORAL, HEXACTINELLIDS, KERATOISIS FLEXIBILIS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	954	954	S, Ru, Co	H					0	0					BAMBOO CORAL, PRIMNOID, DOGFISH?, RIDGES W/ 5-10 DG SLOPE
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	956	956	S, Ru, Co	H					0	0					RIDGE, CORAL RUBBLE, LIVE CORAL, HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	957	957	S, Ru, Co	H					0	0					STOP, DEPTH OVERLAY ON VIDEO NOT WORKING, STUCK ON 2577', CURRENT 0.2 KN
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	786	1007	S, Ru, Co	H					0	0					DEPTH FROM HEISE GAUGE, RIDGE, CORAL RUBBLE, SOME LIVE CORAL, HD 270 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1008	1008	S	S					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	785	1009	S, Ru, Co	H					0	0					15 FT RIDGE, CORAL RUBBLE, 1-2' STANDING DEAD CORAL, HEXACTINELLID, sparse live coral,
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1012	1012	S, Ru, Co	H					0	0					HD 300 DG, SAND, STANDING CORAL
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1013	1013	S, Ru, Co	H					0	0					CORAL RUBBLE, SPARSE GORGONIANS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	783	1014	S	S					0	0					3 FT RIDGE, CORAL RUBBLE
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	783	1015	S, Ru, Co	H					0	0					HEISE DEPTH, SAND VALLEY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	783	1018	S, Ru, Co	H					0	0					3 FT RIDGES, CORAL RUBBLE, PRIMNOIDS, PARAMURICID, HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1020	1020	S, Ru, Co	H					0	0					CORAL RUBBLE, STANDING CORAL, HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1021	1021	S, Ru, Co	H					0	0					CORAL RUBBLE, SPARSE GORGONIANS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1023	1023	S, Ru, Co	H					0	0					STOP, CHECK TRACKING
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1033	1033	S, Ru, Co	H					0	0					CURRENT 0.2-0.3 FR 270 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1034	1034	S	S					0	0					RESUME TRANSECT, RIDGE
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1036	1036	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1037	1037	S	S					0	0					3 FT RIDGE, CORAL RUBBLE, STANDING CORAL, PARAMURICID, PRIMNOID, ZOANTHIDS ON STALKS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1038	1038	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1039	1039	S	S					0	0					3-5 FT RIDGE, CORAL RUBBLE, ZOANTHIDS, PARAMURICIDS, NO STANDING CORAL, PHAKELLIA FAN SPONGES
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1040	1040	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1044	1044	S	S					0	0					3-5 FT RIDGE, CORAL RUBBLE, STANDING CORAL, HETEROTELLA, ZOANTHIDS, DEMOSPONGES, PRIMNOIDS, ANTHOMASTUS, PHAKELLIA
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	789	1045	S, Ru, Co	H					0	0					SAND, HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1046	1046	S	S					0	0					HEISE DEPTH, RIDGE, CORAL RUBBLE, PARAMURICID, ZOANTHIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1047	1047	S, Ru, Co	H					0	0					SAND VALLEY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1048	1048	S	S					0	0					RIDGE, CORAL RUBBLE, ZOANTHIDS ON STALKS, NO STANDING CORAL,
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1049	1049	S, Ru, Co	H					0	0					SAND VALLEY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1050	1050	S	S					0	0					RIDGE, CORAL RUBBLE, ZOANTHIDS, PRIMNOIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1051	1051	S, Ru, Co	H					0	0					SAND VALLEY, HD 300 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1052	1052	S, Ru, Co	H					0	0					CORAL RUBBLE, 10-15 CM PRIMNOIDS, PARAMURICIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1055	1055	S, Ru, Co	H					0	0					FLAT CORAL RUBBLE AND SEDIMENT, SPARSE PRIMNOIDS, 15 CM OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1057	1057	S, Ru, Co	H					0	0					3 FT RIDGES, CORAL RUBBLE, SPARSE STANDING CORAL, 20 CM PARAMURICIDS, PRIMNOIDS, COMATULID CRINOIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1100	1100	S, Ru, Co	H					0	0					RIDGE, STANDING CORAL, PHAKELLIA, GORGONIANS, 20 CM OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1101	1101	S, Ru, Co	H					0	0					STANDING DEAD CORAL, PHAKELLIA FAN SPONGES, HD 275 DG
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1102	1102	S, Ru, Co	H					0	0					25 FT TALL CORAL MOUND, STANDING CORAL, SPARSE LIVE ENALLOPSAMMIA CORAL, 30 DG SLOPE,
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1104	1104	S	S					0	0					PHOTOS SERIES UP FLANK AND PEAK OF MOUND; 2' KERATOISIS FLEXIBILIS BAMBOO CORAL, PHAKELLIA FAN SPONGE, PRIMNOIDS, OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1106	1106	S, Ru, Co	H					0	0					WEST BASE OF MOUND; SAND VALLEY
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1107	1107	S, Ru, Co	H					0	0					RIDGE, CORAL RUBBLE, ZOANTHIDS, PRIMNOIDS, PARAMURICIDS, PLEXAURIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1109	1109	S	S					0	0					CORAL RUBBLE, ZOANTHIDS, PU PLEXAURIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1110	1110	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1111	1111	S, Ru, Co	H					0	0					25 CM OR PARAMURICEA SP.
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1113	1113	S, Ru, Co	H					0	0					RIDGE, CORAL RUBBLE, SPARSE STANDING CORAL, ZOANTHIDS, PARAMURICIDS, PRIMNOIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	786	1115	S, Ru, Co	H					0	0					RIDGE, 1-2' STANDING CORAL, CORAL RUBBLE, PRIMNOIDS, HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1116	1116	S	S					0	0					W, SLOPE OF RIDGE
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	1117	1117	S, Ru, Co	H					0	0					SAND
Seafarer	3/1/2006	JSL 14936		Seafarer Pipeline	Straits of Florida	785	1118	S	S					0	0					RIDGE, CORAL RUBBLE, GORGONIANS, FEW PHAKELLIA
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	773	1640	S	S	6.5				0	0					END OF TRANSECT, SAND VALLEY, S-2 SEDIMENT SAMPLE, OFF BOTTOM
Seafarer	3/1/2006	JSL 14937		To Seafarer Pipe	Straits of Florida	773	1640	S	S	6.5				0	0					Series of coral mounds; 0 Chaseon, 0 Red crab, 0 tilefish.
Seafarer	3/1/2006	JSL 14937		To Seafarer Pipe	Straits of Florida	786	1642	S	S	6.4				0	0					Added by SFR - start of tape 1
Seafarer	3/1/2006	JSL 14937		To Seafarer Pipe	Straits of Florida	785	1647	S	S	6.4				0	0					DEPTH OVERLAY ON VIDEO OK, ON BOTTOM; 6.44C, 34.9 SAL, VIS 50', CURRENT 0.1-0.2 FR 180 DG; 700' 330 DG TO 110; FLAT SAND, CORAL RUBBLE
Seafarer	3/1/2006	JSL 14937		To Seafarer Pipe	Straits of Florida	785	1648	S, Ru	H					0	0					HD TO 110
Seafarer	3/1/2006	JSL 14937		To Seafarer Pipe	Straits of Florida	779	1650	S, Ru, Co	H											

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	780	1659	S, Ru, Co	H			0		0	0					RIDGE, CORAL RUBBLE, 1 FT STANDING CORAL MOSTLY DEAD, SPARSE LIVE ENALLOPSAMMA PROFUNDA, HETEROTELLA; SOG 0.6 KN
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	782	1700	S	S			0		0	0					FLAT SAND
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	782	1702	S, Ru	H			0		0	0					SAND, SPARSE CORAL RUBBLE, PARAMURICIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	783	1704	S, Ru	H			0		0	0					FLAT SAND, CORAL RUBBLE, HYALONEMA, ZOANTHIDS, PARAMURICIDS, SCORPAENID (BLACK BELLY ROSEFISH?)
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	784	1708	S, Ru	H			0		0	0					1-2 FT RIDGE, CORAL RUBBLE, GORGONIANS, HYALONEMA
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	784	1709	S, Ru	H			0		0	0					LOW RIDGE, STANDING CORAL, HEXACTINELLID, ZOANTHIDS, PRIMNOIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1710	S, Ru	H			0		0	0					AT T12, HD 290 DG, SERIES OF 1-2 FT CORAL RUBBLE RIDGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1711	S	S			0		0	0					SAND VALLEY BETWEEN LOW CORAL RIDGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1712	S, Ru	H			0		0	0					RIDGE, CORAL RUBBLE, PRIMNOIDS, 20 CM OR PARAMURICIA SP.
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1714	S, Ru	S			0		0	0					SAND
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1715	S, Ru	H			0		0	0					SAND, RIDGE, CORAL RUBBLE, HYALONEMA, PARAMURICID, PRIMNOIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	785	1717	S, Ru	H			0		0	0					AT T13: 14 FT RIDGE, CORAL RUBBLE, PARAMURICIDS, HYALONEMA, PRIMNOIDS, SAND
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	778	1718	S	S			0		0	0					9 FT RIDGE, CORAL RUBBLE, 1-2' STANDING CORAL, SPARSE LIVE ENALLOPSAMMA CORAL, HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida		1719	S, Ru	H			0		0	0					WEST BASE OF RIDGE, SAND
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	784	1720	S, Co	H			0		0	0					SAND, SPARSE CORAL RUBBLE, GORGONIANS,
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	784	1722	S	S	6.4		0		0	0					AT T14, SAND
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	784	1723	S	S			0		0	0					RIDGE, CORAL RUBBLE, SAME, [3-5 foot low ridge, hyalonema, zoanthid]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	782	1724	S, Ru	H			0		0	0					RIDGE, CORAL RUBBLE, SAME: HD 280 DG (PARAMURICIA 5-10 foot ridges)
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	782	1725	S, Ru	H	6.4		0		0	0					SERIES OF 5-10 FT RIDGES, CORAL RUBBLE [gorgonians]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	783	1727	S, Ru	H			0		0	0					T15; SAND, HD 280 DG [2852P1 - Ridge, 1-2 foot tall, 3-4 feet wide, orange primoid gorgonians, hyalonema, zoanthids]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	780	1730	S, Ru, Co	H			0		0	0					RIDGE, STANDING CORAL 1-2' TALL, 3-4' LONG, OR PARAMURICIA, PRIMNOIDS, HYALONEMA, ZOANTHIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	773	1732	S, Ru, Co	H			0		0	0					RIDGE, CORAL RUBBLE, 20-30 CM GORGONIANS, SAND BETWEEN RIDGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	773	1733	S, Ru	H			0		0	0					SAND RIDGE
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	774	1735	S	S			0		0	0					SAND VALLEY
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	775	1735	S	S			0		0	0					10 FT RIDGE, SAND, CORAL RUBBLE, HYALONEMA [Scattered Primnoids]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1737	S, Ru	H	6.4		0		0	0					[CHANGES TAPES]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1738	S	S			0		0	0					SAND VALLEY
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1739	S, Ru, Co	H			0		0	0					AT T16: HD 290 DG [Same Bottom, Coral Ru, larger live bottom, 2-4 ft stndg dead coral, hexactinella sponges, live anaplasaria, Hard Flj]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1741	S	S			0		0	0					RIDGE, 2-3' STANDING CORAL, SPARSE LIVE CORAL, LARGE FRILLY HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	775	1742	S	S			0		0	0					SAND VALLEY [5-8 foot 30 degree drop to sand valley]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	775	1743	S, Ru	H			0		0	0					LOW RIDGE [3-5 feet], CORAL RUBBLE
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	774	1744	S, Ru	H			0		0	0					CORAL RUBBLE, OR PARAMURICID, PRIMNOIDS, HEXACTINELLIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	773	1745	S, Ru	H			0		0	0					5 FT RIDGE [purple gorgonians, fan PHAKELLIA sponge]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	773	1746	S	S			0		0	0					1-2' CABLE (change course to S15, pass T17 to T18)
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	772	1746	S	S			0		0	0					PURPLE GORGONIAN, PHAKELLIA FAN SPONGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	772	1746	S	S			0		0	0					SAND, CORAL RUBBLE, AT T17 [primoids]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	772	1748	S, Co	H			0		0	0					5 FT MOUND, STANDING CORAL, SPONGES, HEXACTINELLIDS, OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1751	S, Ru	H			0		0	0					5 FT RIDGE, CORAL RUBBLE, 30 CM OR PARAMURICIDS, WH DEEP WATER WHITE LOBSTER- Acanthacaris caeca [large gorgonians]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	770	1752	S, Ru, Co	H			0		0	0					AT T18: RIDGE, CORAL RUBBLE, STANDING CORAL, [orange PARAMURICIA] GORGONIANS, SPONGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	774	1754	S	S			0		0	0					SAND, ARAEOSOMA? URCHIN
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1756	S, Ru, Co	H			0		0	0					RIDGE, CORAL RUBBLE, STANDING CORAL, HEXACTINELLIDS, OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	770	1758	S, Ru	H			0		0	0					AT T19, RIDGE, HD 325 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	771	1800	S, Ru	H			0		0	0					SAND [and coral rubble]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida		1800	S, Ru, Co	H			0		0	0					RIDGE, CORAL RUBBLE, DEBRIS, PARAMURICIDS, PU PLEXAURIDS, DEMOSPONGES, HEXACTINELLIDS, WH PLEXAURIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida		1803	S, Ru	H			0		0	0					AT T20: RIDGE, CORAL RUBBLE, OR PARAMURICIDS, HD 270 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	770	1805	S	S			0		0	0					5 FT RIDGE, CORAL RUBBLE, HYALONEMA, ZOANTHIDS, OR PARAMURICIDS, WH WHITE LOBSTER- Acanthacaris caeca
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1806	S, Ru	H			0		0	0					RIDGE, CORAL RUBBLE, SAME
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1809	S, Ru	H			0		0	0					FLAT SAND, SPARSE CORAL RUBBLE, 5-10 CM WH GORGONIANS, FEW PHAKELLIA FANS 10 CM, PRIMNOIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1812	S, Ru	H			0		0	0					AT T21: CORAL RUBBLE, SAME, FEWER LOWER RIDGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1814	S, Ru, Co	H			0		0	0					1 FT STANDING CORAL, FAN HEXACTINELLIDS, GORGONIANS, HD 310 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1815	S, Ru, Co	H			0		0	0					RIDGE, STANDING CORAL, RUBBLE, HEXACTINELLIDS, 2' CIRRHIPATHES BLACK CORAL; HD 340 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1818	S, Ru, Co	H			0		0	0					STOP: RIDGE, CORAL RUBBLE, STANDING CORAL, HEXACTINELLIDS; CHANGE HD TO 060 DG, 200' TO T22
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1823	S, Ru	H			0		0	0					SAND, CORAL RUBBLE, SMALL GORGONIANS, COMATULID CRINOIDS; STOP FOR TRACKING
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1827	S, Ru	H			0		0	0					RESUME TRANSECT, HD 200 DG TO T22?
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1828	Sm Ru	H			0		0	0					SERIES OF LOW RIDGES, CORAL RUBBLE
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1830	S, Ru, Co	H			0		0	0					LOW RIDGE, STANDING CORAL, PETROSID TUBE SPONGE, HEXACTINELLIDS, OR PARAMURICID
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1831	S	S			0		0	0					STOP: TRACKING PROBLEMS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1833	S	S			0		0	0					RESUME, HD 310 DG TO T23
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1834	S	S			0		0	0					RIDGE, SEVERAL 30 CM OR PARAMURICIDS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	769	1835	S, Ru	H			0		0	0					RIDGES, <3 FT, CORAL RUBBLE, SPONGES, SKATE
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1838	S, Ru	H			0		0	0					RIDGE, CORAL RUBBLE, PHAKELLIA FAN, OR PARAMURICID, HD 330 DG; 20 CM B/W EELS
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	767	1839	S, Ru, Co	H			0		0	0					AT T23: RIDGE, CORAL RUBBLE, STANDING CORAL, HD 310 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1840	S	S			0		0	0					SAND, 5 CM WH GORGONIANS, 5 CM FAN SPONGES, RATTAIL FISH
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	768	1843	S	S			0		0	0					[Chimeria]
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	767	1845	S, Ru	H			0		0	0					1-3 FT RIDGE, CORAL RUBBLE, 20 CM PHAKELLIA FAN, 20 CM OR PARAMURICID, HYALONEMA, WH ZOANTHIDS; NO LARGE RIDGES >2 M

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	766	1848	S, Co	H			0	0	0	0	0	0	0	0	3 FT RIDGE, 1-2' STANDING CORAL, DENSE LIVE, PHAKELLIA, HEXACTINELLIDS, OR PARAMURICEIDS; HD 310 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	766	1851	S, Ru	H			0	0	0	0	0	0	0	0	RIDGE, CORAL RUBBLE, OR PARAMURICEID
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	766	1853	S, Ru	H			0	0	0	0	0	0	0	0	AT T25, <3 FT RIDGE, CORAL RUBBLE, GORGONIANS, SPONGES; HD 310 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	764	1858	S, Ru	H			0	0	0	0	0	0	0	0	3 FT RIDGE, CORAL RUBBLE, GORGONIANS, SPONGES
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	764	1900	S, Ru	H			0	0	0	0	0	0	0	0	CORAL RUBBLE, 30 CM OR PARAMURICEID
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida	764	1901	S, Ru	H			0	0	0	0	0	0	0	0	SAND, SPARSE CORAL RUBBLE, 5 CM GORGONIANS; END TRANSECT; OFF BOTTOM; CURRENT 0.1 KN FR 180 DG
Seafarer	3/1/2006	JSL 14937		Seafarer Pipeline	Straits of Florida		1937					0	0	0	0	0	0	0	0	RECOVERED
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida							0	0	0	0	0	0	0	0	Low relief ridges with coral rubble and sediment; 1 Chaceon, 0 Red crab, 0 tilefish
Seafarer	3/2/2006	JSL 14938		To Seafarer Pipe	Straits of Florida	743	848					0	0	0	0	0	0	0	0	Start of tape
Seafarer	3/2/2006	JSL 14938		To Seafarer Pipe	Straits of Florida	765	850	S, Ru	H	6.4		0	0	0	0	0	0	0	0	ON BOTTOM; 6.44C, 34.9 SAL, 40' VIS, CURRENT 0.1 KN FR 175 DG; 350 DG 150 FT TO T26
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	764	902	S, Ru	H			0	0	0	0	0	0	0	0	AT T26; START TRANSECT, HD 300 DG, SOG 0.5 KN
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	764	904	S, Ru	H	6.4		0	0	0	0	0	0	0	0	FLAT SAND, CORAL RUBBLE, OR PARAMURICEID, WH PLEXAURID, 10-20 CM PHAKELLIA FAN SPONGE, STYLASTER, COMATULID CRINOID, ARAEOSOMA? URCHIN, SKATE, 20 CM PRIMNOIDS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	764	908	S, Ru	H			0	0	0	0	0	0	0	0	OR PARAMURICEA, PRIMNOIDS (crinoids)
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	911	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND, THALASSIA DEBRIS, ARAEOSOMA? URCHINS, NO GORGONIANS, NO SPONGES; TRACKING PROBLEM, HD 190 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	914	S	S	0		0	0	0	0	0	0	0	0	STOP; CHECK TRACKING
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	916	S	S	0		0	0	0	0	0	0	0	0	S-1 SEDIMENT SAMPLE, FIRM FLAT SAND, NO HARD BOTTOM (grab penetrated but was not soft mud)
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	919	S	S	0		0	0	0	0	0	0	0	0	RESUME TRANSECT, 135 DG 230 FT TO Y27
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	763	926	S, Ru	H			0	0	0	0	0	0	0	0	AT Y27, FLAT PATCH CORAL RUBBLE, SAND, OR PARAMURICEIDS, WH GORGONIANS, 5-10 CM FAN SPONGESK
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	764	927	S	S	0		0	0	0	0	0	0	0	0	HD 313 DG, FLAT SAND, BARREN, 1-2' M PATCHES OF CORAL RUBBLE W/ 10 CM FAN SPONGES, 10 CM GORGONIANS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	763	930	S, Ru	S	0		0	0	0	0	0	0	0	0	CORAL RUBBLE, FAN SPONGES
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	932	S	S	0		0	0	0	0	0	0	0	0	SAND, 15 CM TORPEDO RAY
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	934	S	S	0		0	0	0	0	0	0	0	0	SOG 0.7 KN
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	936	S	S	0		0	0	0	0	0	0	0	0	STOP, TRACK PROBLEMS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	762	943	S	S	0		0	0	0	0	0	0	0	0	S-2= SAMPLE 2' BRYOZOA; PULL HYDROPHONE ON STAZA TOWER; STOP VIDEO
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	761	1003	S	S	0		0	0	0	0	0	0	0	0	RESUME TRANSECT, 190 FT 270 DG TO T28; FLAT SAND, 1' BRYOZOA, ARAEOSOMA?
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	761	1006	S	S	0		0	0	0	0	0	0	0	0	SOG 0.75 KN; 2' BRYOZOA, -1-5M2, THALASSIA DEBRIS, 20 CM EEL
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	761	1013	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND, SMALL PATCHES OF CORAL RUBBLE, PHAKELLIA FANS, GORGONIANS; HD 300 DG, SOG 0.7 KN
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	760	1015	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND, BRYOZOA; SKATE, 1-2' M PATCHES OF CORAL RUBBLE AND GORGONIANS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	760	1019	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	759	1023	S	S	0		0	0	0	0	0	0	0	0	HD 310 DG, PATCHES OF SAND WAVES, 2-3 CM TALL, WAVE LENGTH ~10 CM
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1026	S	S	0		0	0	0	0	0	0	0	0	1' N-S CABLE; HD 300 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1027	S	S	0		0	0	0	0	0	0	0	0	HD 180 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1029	S	S	0		0	0	0	0	0	0	0	0	SAME CABLE
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1030	S	S	0		0	0	0	0	0	0	0	0	STOP, TRACKING
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1032	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND, THALASSIA DEBRIS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1034	S	S	0		0	0	0	0	0	0	0	0	HD 310 DG, ARAEOSOMA? URCHINS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1037	S	S	0		0	0	0	0	0	0	0	0	N-S SAND RIPPLES, 2-3 CM; NO CORAL RUBBLE, NO LIVE BOTTOM, PU ARAEOSOMA?; 20' WIDE
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1041	S	S	0		0	0	0	0	0	0	0	0	FLAT AREAS, THEN ZONE OF SAND WAVES ALTERNATING
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	756	1043	S	S	0		0	0	0	0	0	0	0	0	SAND WAVES; HD 180 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	757	1045	S	S	0		0	0	0	0	0	0	0	0	ALTERNATING SAND WAVES AND FLAT SAND, ~30-50' WIDE ZONES; TORPEDO RAY
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	755	1045	S	S	0		0	0	0	0	0	0	0	0	SAND WAVES, ARAEOSOMA?, THALASSIA DEBRIS, 1' BRYOZOA; HD 310 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	755	1051	S	S	6.4	1	0	0	0	0	0	0	0	0	SAND, GOLDEN CRAB CHACEON FENNERI (Off to right of video); FLAT SAND
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	754	1054	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND; HD 310 DG, SOG 0.9 KN
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	753	1057	S	S	0		0	0	0	0	0	0	0	0	2' METAL (Lamonometa) FISH, HD 270 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	752	1059	S	S	0		0	0	0	0	0	0	0	0	1' CABLE, N-S
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	752	1100	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	751	1103	S	S	0		0	0	0	0	0	0	0	0	STOP, TRACKING
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	751	1105	S	S	0		0	0	0	0	0	0	0	0	RESUME TRANSECT, 330' 290 DG TO T35
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	751	1108	S	S	0		0	0	0	0	0	0	0	0	SAND WAVES; BEER CAN; SERIES OF WAVE ZONES 20' WIDE; HD 310 DG
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	749	1111	S	S	0		0	0	0	0	0	0	0	0	CABLE NEAR T35; FLAT SAND
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	749	1115	S	S	0		0	0	0	0	0	0	0	0	FLAT SAND
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	748	1116	S	S	0		0	0	0	0	0	0	0	0	SAND RIPPLES, SKATE; FLAT SAND, THALASSIA DEBRIS, ARAEOSOMA?
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	748	1117	S	S	0		0	0	0	0	0	0	0	0	STOP, TRACKING PROBLEMS
Seafarer	3/2/2006	JSL 14938		Seafarer Pipeline	Straits of Florida	748	1121	S	S	0		0	0	0	0	0	0	0	0	STOP, END TRANSECT, CURRENT 0.1 FR 190 DG; OFF BOTTOM
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida							0	0	0	0	0	0	0	0	Missing Video tapes; annotations from original dive; all soft bottom, 2 Chaceon, 0 Red crab, 0 tilefish.
Seafarer	3/2/2006	JSL 14939		To Seafarer Pipe	Straits of Florida		1634					0	0	0	0	0	0	0	0	ON BOTTOM; 6.4C, 40' VIS, CURRENT 0.2-0.3 FR 160 DG
Seafarer	3/2/2006	JSL 14939		To Seafarer Pipe	Straits of Florida		1633					0	0	0	0	0	0	0	0	230 FT 195 DG TO T35
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida		1639					0	0	0	0	0	0	0	0	
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	749	1640	S	S	0		0	0	0	0	0	0	0	0	1' CABLE, MOSTLY BURIED
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	748	1644	S	S	0		0	0	0	0	0	0	0	0	HD 230 DG; FLAT SAND, THALASSIA DEBRIS, FEW SKATES AND URCHINS
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	747	1645	S	S	0		0	0	0	0	0	0	0	0	
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	747	1646	S	S	0		0	0	0	0	0	0	0	0	
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	744	1651	S	S	0		0	0	0	0	0	0	0	0	SAME, LITTLE BIOTA, LITTLE BIOTURBATION
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	742														

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	725	1721	S	S			0	0	0						HD 292 DG; SAND VERY LITTLE BIOTURBATION, LITTLE BIOTA, FEW SHRIMP, SKATES, ARAEOSOMA? URCHINS, LIZARD FISH
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	717	1728	S	S			0	0	0						SAME
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	715	1730	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	714	1732	S	S			1	0	0						GOLDEN CRAB CHACEON FENNERI
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	712	1734	S	S			0	0	0						SAME
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	712	1734	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	708	1737	S	S			0	0	0						SEA ROBIN, CHIMAERA FISH
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	706	1741	S	S			0	0	0						SAND, LITTLE BIOTA
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	703	1745	S	S			0	0	0						SKATE, ARAEOSOMA?, 2-3 CM EEL
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	701	1747	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	696	1753	S	S			1	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	696	1753	S	S			0	0	0						GOLDEN CRAB CHACEON FENNERI
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	695	1758	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	695	1757	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	695	1759	S	S			0	0	0						S-1 SEDIMENT SAMPLE, FINE CLAY MUD
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	695	1801	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	692	1805	S	S			0	0	0						SAND, ARAEOSOMA?, 5 CM EEL
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	686	1815	S	S			0	0	0						SAND, 100 FT N OF T48
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	685	1816	S	S			0	0	0						SAND, LITTLE BIOTA, FEW SHRIMP, URCHINS, SOME THALASSIA DEBRIS
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	685	1817	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	681	1821	S	S			0	0	0						SEA ROBIN, SMALL EEL
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	680	1825	S	S			0	0	0						PAST T49
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	678	1830	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	676	1833	S	S			0	0	0						SKATE, URCHIN, SAND
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	675	1835	S	S			0	0	0						SEA ROBIN, SKATE
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	674	1838	S	S			0	0	0						20" TRIANGULAR RAY
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	674	1839	S	S			0	0	0						WH DEEP WATER WHITE LOBSTER- Acanthacaris caeca
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	673	1840	S	S			0	0	0						SKATE, URCHINS; SAND
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	670	1845	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	669	1846	S	S			0	0	0						SAND, LITTLE BIOTURBATION, RAY, SKATE, URCHIN, WHITE LOBSTER- Acanthacaris caeca S
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	664	1855	S	S			0	0	0						
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	661	1900	S	S			0	0	0						SKATE
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida	659	1905	S	S			0	0	0						WHITE DEEP WATER LOBSTER- Acanthacaris caeca IN BURROW
Seafarer	3/2/2006	JSL 14939		Seafarer Pipeline	Straits of Florida		1906					0	0	0						OFF BOTTOM
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida							0	0	0						Missing Video tapes; annotations from original dive: all soft bottom; 6 Chaceon, 0 Red crab, 0 tilefish. ON BOTTOM; 6.81C, 34.9 SAL, VIS 35', CURRENT 0.3 KN FR 190 DG; MUD SAND, VERY LITTLE BIOTURBATION, THALASSIA DEBRIS
Seafarer	3/3/2006	JSL 14940		To Seafarer Pipe	Straits of Florida	661	838	S	S			0	0	0						SAND; ARAEOSOMA? URCHINS, 25 CM FISH
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	661	847	S	S			0	0	0						1" CABLE, BLACK JACKET, N-S
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	659	848	S	S			0	0	0						STOP, TRACKING; SKATE, EEL
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	658	852	S	S			0	0	0						CURRENT 0.3-0.4; HD TO T55
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	658	903	S	S			0	0	0						STOP; FLAT SAND, LITTLE BIOTA
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	657	907	S	S			0	0	0						RATTAILS, GOLDEN CRAB CHACEON FENNERI; WH DEEP WATER WHITE LOBSTER- Acanthacaris caeca IN BURROW
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	655	915	S	S			1	0	0						SAND
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	654	916	S	S			0	0	0						EEL, URCHINS
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	652	920	S	S			0	0	0						WHITE LOBSTER- Acanthacaris caeca BURROW, SMALL EELS
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	651	921	S	S			0	0	0						FLAT SAND
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	646	927	S	S			0	0	0						SCORPAENID FISH, GOLDEN CRAB
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	645	931	S	S			1	0	0						RATTAIL, EELS, BARREN SAND SPARSE THALASSIA DEBRIS
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida		933					0	0	0						URCHIN
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	640	940	S	S			0	0	0						SAME
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	638	945	S	S			0	0	0						URCHIN, SKATE
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	637	946	S	S			0	0	0						STOP FOR TRACKING; SHRIMP
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida		951					0	0	0						
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	634	952	S	S			0	0	0						RATTAIL, WHITE LOBSTER- Acanthacaris caeca BURROW
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida		952					0	0	0						FLAT SAND
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	630	1000	S	S			0	0	0						BATFISH, URCHIN
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	627	1006	S	S			0	0	0						SAME
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	623	1012	S	S			0	0	0						URCHIN, RATFISH
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	622	1015	S	S			0	0	0						SHRIMP, SKATE
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	621	1014	S	S			0	0	0						SAME
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	617	1024	S	S			0	0	0						
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	615	1027	S	S			0	0	0						
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	614	1030	S	S			0	0	0						URCHINS, RATTAILS
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	614	1030	S	S			0	0	0						
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida		1035					0	0	0						GOLDEN CRAB CHACEON FENNERI
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	607	1041	S	S			1	0	0						FLAT SAND, SPARSE THALASSIA DEBRIS, RATTAIL, SMALL EELS, URCHINS, GOLDEN CRAB
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	606	1045	S	S			0	0	0						
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	604	1048	S	S			1	0	0						SAME, GOLDEN CRAB, SKATE
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	603	1050	S	S			0	0	0						1-2" CABLE, E-W, BLACK JACKET
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	601	1054	S	S			1	0	0						GOLDEN CRABS; WHITE LOBSTER- Acanthacaris caeca; URCHIN, RATTAIL; BATTERY TRACKS FROM JSL 14935
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	598	1100	S	S			0	0	0						S-1 SEDIMENT SAMPLE, FINE CLAY MUD, GOOD PENETRATION WITH SCOOP, NO HARD BOTTOM
Seafarer	3/3/2006	JSL 14940		Seafarer Pipeline	Straits of Florida	598	1104	S	S			0	0	0						CURRENT 0.2-0.3 KN FR 200 DG, OFF BOTTOM
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida															

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:MM)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
Seafarer	2/28/2006	JSL 14935		To Seafarer Pipe	Straits of Florida	524	1815	S	S		7.3	0	0	0	0	0	0	0	ON BOTTOM: FLAT FINE WHITE SAND; 40 DG 400' TO 1-88
Seafarer	2/28/2006	JSL 14935		To Seafarer Pipe	Straits of Florida	524	1820	S	S		7.3	0	0	0	0	0	0	0	PHOTOS BOTTOM- MANUAL MODE, 1/125 S, 4.5; VIDEO- WIDE ANGLE, ~45 DG ANGLE, ~2 M WIDE VIEW, 25 CM LASERS; VISUAL FIELD OF VIEW ~ 30 FT; STILL PHOTOS- ~ 45 DG ANGLE, 10 CM BOTTOM HORIZONTAL LASERS
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	525	1827	S	S		7.3	0	0	0	0	0	0	0	START TRANSECT, HEADING 110 DG, ~0.8 KN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	526	1830	S	S		7.3	0	0	0	0	0	0	0	HD 135 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	527	1832	S	S		7.3	0	0	0	0	0	0	0	FLAT SAND
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	529	1836	S	S		7.3	0	0	0	0	0	0	0	20 CM CHAIN DOGFISH
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	530	1837	S	S		7.3	0	0	0	0	0	0	0	T-96: FLAT SAND, HD 125 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	532	1840	S	S		7.3	0	0	0	0	0	0	0	SAME
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	532	1842	S	S		7.3	0	0	0	0	0	0	0	T-95: SCORPAENID FISH
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	533	1845	S	S		7.3	0	0	0	0	0	0	0	T-94: SAME
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	535	1848	S	S		7.3	0	0	0	0	0	0	0	5-10 CM PITS AND MOUND BIOTURBATION; 15 CM RED/WH SHRIMP; 15 CM ARAEOSOMA URCHINS, CHLOROPHTHALMUS 3' FISH
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	538	1854	S	S		7.3	0	0	0	0	0	0	0	T-93: 108 DG; SAME; ARAEOSOMA
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	542	1859	S	S		7.3	0	0	0	0	0	0	0	T-92
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	543	1900	S	S		7.3	0	0	0	0	0	0	0	T-90: 95 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	546	1909	S	S		7.3	0	0	0	0	0	0	0	TAPE 2, BATFISH, 25 CM SKATE?
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	548	1913	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	549	1915	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	550	1916	S	S		7.3	0	0	0	0	0	0	0	T-89: SAME
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	553	1921	S	S		7.3	0	0	0	0	0	0	0	T-88: SAMPLE 1- SEDIMENT, FINE CLAY, PENETRATE 15 CM, NO HARD BOTTOM
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	556	1926	S	S		7.3	0	0	0	0	0	0	0	UNDER WAY
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	556	1929	S	S		7.3	0	0	0	0	0	0	0	ARAEOSOMA URCHIN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	557	1930	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	557	1932	S	S		7.3	0	0	0	0	0	0	0	T-87
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	558	1934	S	S		7.3	0	0	0	0	0	0	0	120 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	558	1937	S	S		7.3	0	0	0	0	0	0	0	ARAEOSOMA URCHIN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	558	1938	S	S		7.3	0	0	0	0	0	0	0	T-86: SAME, FLAT SEDIMENT
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	560	1941	S	S		7.3	0	0	0	0	0	0	0	25 CM SHARK
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	561	1943	S	S		7.3	0	0	0	0	0	0	0	T-85: SAME, FLAT SEDIMENT
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	562	1945	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	564	1949	S	S		7.3	0	0	0	0	0	0	0	2' N-S CABLE ON BOTTOM; T-84
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	564	1950	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	568	1951	S	S		7.3	0	0	0	0	0	0	0	BATFISH
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	568	1953	S	S		7.3	0	0	0	0	0	0	0	T-83
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	570	1957	S	S		7.3	0	0	0	0	0	0	0	BUD BEER CAN; HD 110 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	570	1957	S	S		7.3	0	0	0	0	0	0	0	20 CM RATTAIL
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	571	2000	S	S		7.3	0	0	0	0	0	0	0	T-82
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	574	2004	S	S		7.3	0	0	0	0	0	0	0	T-81: TEST SEDIMENT, DIG MANIPULATOR AT LEAST 15 CM INTO SEDIMENT, NO APPARENT HARD BOTTOM, CLAY SEDIMENT; HD 30 DG
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	577	2011	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	577	2013	S	S		7.3	0	0	0	0	0	0	0	TAPE 3
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	579	2015	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	580	2017	S	S		7.3	0	0	0	0	0	0	0	T-79: FLAT SEDIMENT; BIOTURBATION MOUNDS 10-25 CM DIAM; ARMORED SEAROBIN?, 5 CM OCTOPIUS
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	582	2024	S	S		7.3	0	0	0	0	0	0	0	T-78: FLAT SEDIMENT; BEER CAN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	585	2025	S	S		7.3	0	0	0	0	0	0	0	T-77: FLAT SEDIMENT; THALASSIA DETRITUS; MOUNDS, 10 CM ARAEOSOMA; 10 CM SHRIMP; SPEED 0.8 KN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	589	2030	S	S		7.3	0	0	0	0	0	0	0	
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	589	2035	S	S		7.3	0	0	0	0	0	0	0	T-76
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	592	2041	S	S		7.3	0	0	0	0	0	0	0	15 CM SCORPAENID; RATTAIL, NEZUMIA SP, 10 CM WH CRAB, 5 GAL BUCKET; 10 CM ACTINARIA
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	595	2045	S	S		7.3	0	0	0	0	0	0	0	T-75: GALATHEIDAE, ARAEOSOMA, BEER BOTTLE
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	596	2047	S	S		7.3	0	0	0	0	0	0	0	SCORPAENID
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	599	2053	S	S		7.3	0	0	0	0	0	0	0	T-74: FLAT SEDIMENT; NEZUMIA SP, 8 CM EEL
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	599	2057	S	S		7.3	0	0	0	0	0	0	0	T-73: STOP TRANSECT; NEZUMIA, SQUID, PLASTIC BAG; CURRENT- 0-0.1 KN
Seafarer	2/28/2006	JSL 14935		Seafarer Pipeline	Straits of Florida	599	2057	S	S		7.3	0	0	0	0	0	0	0	OFF BOTTOM
Calypso Pipeline																			
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	Start Leg 2 at MP 0, heading west; Camera- changed setting to Fine compression from Superfine to double number of photos (total at start 618)
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	Launch; surface current 2.5 kn
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	On bottom; ~1/2 mile east of MP0 [Did not start recording video]
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		776	1416					0	0	0	0	0	0	0	flat mud with small tubes thl, raised rippled sand bottom.
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	end of dive; cable on tether management system jammed. Cable was not wound tight enough on drum.
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	Launch- restart dive
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	Took about two hours to rewind winch and reposition ROV on bottom at MP0.
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		779	1759					0	0	0	0	0	0	0	ROV ~1000ft N of ship position
CalypsoPipeline	5/11/2006	TONGS		MP 0 W								0	0	0	0	0	0	0	on Bottom ~ 200ft north of pipeline rte. ~200ft east of milept 0
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		778	1801					0	0	0	0	0	0	0	flat sediment, sim 1cm tubes on surface - dead lophelia w sponge on top, coral rubble, either enal?? Or lophelia? live coral.
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		777	1803					0	0	0	0	0	0	0	standing coral 1 ft tall, sparse live branches, sponges - dem, hexact, snake eel, enal?? No flared calices live bottom
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		778	1804					0	0	0	0	0	0	0	flat sed in btw coral, little bioturb We are at MP0 in east west, maybe 100ft north of r
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		778	1805					0	0	0	0	0	0	0	whitire urchin
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		778	1805					0	0	0	0	0	0	0	coral rubble, sed, live bottom, zoanthids
CalypsoPipeline	5/11/2006	TONGS		MP 0 W		778	1807					0	0	0	0	0	0	0	sonar showing reef targets on 50 m scale

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1807				0	0	0						standing dead coral 1 ft tall, some live branches, crinoid, hex, standing coral <2ft tall, typical deep water community < 10% alive
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1809				0	0	0						standing coral, enallopsammia/lophelia?(calices appear to be enallopsammia), dropoff, coral thicket, farrea, gorg, hex, bamboo, cerictousus lex, red maybe soft coral alci??, far, hex, 80 % cover standing coral <1% alive
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1810				0	0	0						coral thicket, gorg, hex, hag fish?, typical 1 live btm deep water reef
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1813				0	0	0						sed, standing dead coral, primarily sponges, ee
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1816				0	0	0						sed, 1-2cm tubes, sonar showing reef ridge 25m away
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1818				0	0	0						sed, torpedo ray, sparse bioturb
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1819				0	0	0						10m to the starboard (North) we are passing a reef target
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1820				0	0	0						coral rubble, sed
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1821				0	0	0						reef targets to the north and south of us. Right here is flat sediment
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1822				0	0	0						flat sed w/ asymmetrical ripples 10-15cm wavelength, 5cm tall
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1823				0	0	0						standing dead coral, urchin aereosoma??
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1824				0	0	0						15ft vertical relief from 2545-2560 ft variation in depth, 10-15ft mounds and ridges of live bottom
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1825				0	0	0						east base of reef ridge, eel, sed, 2557 at base, coral rubble, standing coral, 1-2ft standing dead coral, sparse live coral, demo and hex sp
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1826				0	0	0						2549 at top, 2 ft across coral head colonies, hya spg, gorg, bick coral?? 2555 on w base
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1828				0	0	0						back on sed, coral rubble, numerous reef targets on sonar 50m scale
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1829				0	0	0						tracking slightly north of pipeline, west of milepost C
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1830				0	0	0						flat sed, coral rubble intermixed in sed, short 1cm tubes
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1831	S, Ru, Co	H		0	1	0						red shrimp, white shrp, coral rubble standing coral, large Crimson Red Shrimp 10-20cr
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1833				0	0	0						hard reef target 30m to the north, torpedo ray, sed w/ possible coral rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1835				0	0	0						sed, possible coral rubble, numerous reef targets on sonar, coral rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1836				0	0	0						slight rise, sed w/ asymmetrical sand ripples
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1837				0	0	0						flat sed, coral rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1838				0	0	0						6in rise, finer sed w/ asym ripples, no coral rubble. Now off ripple zone back to flat sed. Appears to be linear ribbons on ripple zone ~50ft wide. Alternating areas
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1840				0	0	0						coral rubble, sparse stamind coral, sed, th, sm standing coral, hex sp, hetero??
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1840				0	0	0						reef 1-2 ft standing coral, sea whip crimp, bick coral,
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1841				0	0	0						std dead crl, gorg, bmb, 3-5ft thickets, enl
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1842				0	0	0						back in ripples, total relief of reef 3ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1843				0	0	0						sed and coral rubble, approaching lrg reef 30m out
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1844				0	0	0						we are on e side of coral ridge, sed coral rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1845				0	0	0						std coral live and dead, sponges, live and bmb?? Hex 2557 on top
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1847				0	0	0						now on west base of ridge (left relief) ridges appear to be n-s linear, ~30 -50 ft wide in a series as we head west, in between ridges is flat sed w/ coral rubble and ribbons of fine sed with ripples
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1847				0	0	0						end of tape 8
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1847				0	0	0						start of tape 9, approaching low to moderate relief coral ridge
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1848				0	0	0						standing coral, numerous reef. Std coral, enl, hex 2553, white urchin eriosoma, std coral 1-2 ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1849				0	0	0						surrounding by smooth sed 2551ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1850				0	0	0						1-2 ft crl thickets, farrea
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1851				0	0	0						sea pen, reef std crl, hex's, crinoid comatulid
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1852				0	0	0						eel 20cm, coral rubble, sed, standing coral, octocoral, lrg coral ticket, bmb, 2557 f
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1852				0	0	0						numerous coral thickets on sonar
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1853				0	0	0						right on pipeline rt ~1/3 MILE west of MP6
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1853				0	0	0						lrg reef 30m to North
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1854				0	0	0						lrg eel - hag fish???
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1855				0	0	0						flat sed, sparse coral rubble, sea urchin, numerous reef targets on sonar
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1856				0	0	0						e side of reef ridge, sed coral rubble. Std coral. Coral tickets, 2553ft, 2551 ft, eel, sponge hex, 2549 on top, 2547 on top, sparse live enl, tickets of stnd dead coral
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	777	1858				0	0	0						sponge, eel, farrea, lrg 20cm farrea hex,
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1859				0	0	0						hydroid, bmb, cariolosis, dense coral and sponges, 2560 ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1859				0	0	0						west base of reef 2564 ft, total relief 2547, on top, 17 ft relief. ~East West width of reef is 200ft wide
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1900				0	0	0						off reef on flat sed with coral rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1903				0	0	0						flat sand w/ rubble alternating with ribbons of sed ripples
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1905				0	0	0						flat sed w/ rubble alternating zones, sed w/ ripples. Right on track pt ~0.5MF
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1906				0	0	0						e base of reef, flat sed, coral rubble, sm ridge
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1907				0	0	0						std coral, dirk object, enl, aereosoma urchin, hex, farrea
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	778	1908				0	0	0						crl tickets 1-2 ft tall, 2557 2558 2560 ft at west base of reef. Total relief is 5ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1910				0	0	0						sed coral rubble, sparse stnd coral, ratt tail fish? Hex, 1-2 ft stnd crl 25-60 ft. 5ft relief
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1914				0	0	0						flat sed, sparse coral rubble. Right on transect line.
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1915				0	0	0						SOG ~0.6 knots, HD 260 degrees
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1915				0	0	0						rock cobble 10-20cm rounded rock boulders, sparse sponges, no coral, phk
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1917				0	0	0						numerous reef targets on sonar, flat sed, coral rubble lrg reef to the south
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1918				0	0	0						at e base of reef ridge, linear over 50m in length
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1919				0	0	0						CRL RUBBLE. STD Crl, sed, 2555 ft,
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1920				0	0	0						std crl 1-2 ft, sparse live enl, white urchin, hex, farrea, 2557 ft, crl rubble, now coming down west flank
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1921				0	0	0						2560, 2562 at west base. 5-7ft total relief.
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1923				0	0	0						reef ridge approaching, sed w/ ripple
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	779	1924				0	0	0						east base of rise, crl rubble, sed, stnd crl, 2555 ft, crl thickets, hex, live enl, hex 2553ft
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1924				0	0	0						phacelia, 1-2 ft crl, eel 20cm, smooth sed surrounding tickets
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1925				0	0	0						coming off west side of reef, total relief is 9ft max
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1928				0	0	0						sed w/ ripples
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1930				0	0	0						benthobatis torpedo ray
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1932				0	0	0						Flat sand, rock rubble 10-15cm rounded rock boulders, very clean, no sponges, lrg boulder 20-30cr
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1933				0	0	0						Numerous coral targets on sonar
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1933				0	0	0						sea urchin, clean sed w/ ripples alternating flat sed w/ rubble
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	781	1935				0	0	0						close to pipeline track, ~MP 0.75, alternating flat sed w/ zones of ripples
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780</													

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1943					0	0	0	0					same sed bottom
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1944	S, Ru, Co	H			0	0	0	0					red/pink shrimp ~10cm, sparse coral rubble and stnd coral
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1946					0	0	0	0					end of tape 9
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	1947					0	0	0	0					start of tape 10
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1948					0	0	0	0					LEG 2 tape 10. Approaching MP 1, flat sed, coral rubble, alternating w asymmetrical coral ripple
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1950					0	0	0	0					rustled can, flat sed, alternating w rippled sed tape 10 now recording (forgot to hit record) - gap in time btw 9 and 10 of ~4 mins. Track is slightly north of pipeline. 1/10 mile east of MP1
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1952					0	0	0	0					650ft from MP 1, no hard targets on sonar
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	782	1955					0	0	0	0					eel. 50 ft north of pipeline route. No reef targets in site
CalypsoPipeline	5/11/2006	TONGS			MP 0 W	780	2000					0	0	0	0					100ft north of MP1, slightly n of trackline. HD 277, sog 1 knot. Sed w asym ripples. No hard targets on sonar. GO J & B!
CalypsoPipeline	5/15/2006	TONGS			North MPOW							0	0	0	0					NOTE - THIS TRANSECT BEGAN AS S-0-W, BUT STRONG CURRENT MOVED US NORTH; TRANSECT WAS RUN ALONG N0 0W LINE. Running 150ft north corridor line from MP0 to MP1
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1428					0	0	0	0					Weakly lineated sed w scat v fine coral twigs or prone tubes? (narrower than laser dot diam. 1-2 cm long)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1430					0	0	0	0					same btm, ben, scat sm tan soft branched growths <8cm
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1432					0	0	0	0					same weakly lineated btm w scat tiny twigs or prone tubes? Moving v slowly
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1434					0	0	0	0					same btm, weak lineations now diagonal across field of view
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1436					0	0	0	0					same btm, few widely scat sm tan growths; twigs? still oriented up & down in field of view (lighting effect?)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1438					0	0	0	0					same btm; sm low scat irreg lumps, sm tan growth - monoplax
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1440					0	0	0	0					same btm; no relief on either side cameras or sonar
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1442					0	0	0	0					same btm, eel, hatchling; ob RS raised a few cm above flat sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1444					0	0	0	0					ob RS, back on weakly lineated sed w tiny tubes? We have seen very little obvious bioturbation - just a few mounds <8cm across, no distinct depressions or trails
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1446					0	0	0	0					lineations weaker, more v sm discolored lumps (fecal casts?); sm tubes?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1448					0	0	0	0					lineations weak, sm discolored lumps
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1449					0	0	0	0					same btm, crin (feather star or shadow of Democricrus crown, crab?)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1450					0	0	0	0					same btm; tiny rock? (~8cm)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1451					0	0	0	0					few scat coral rub frags?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1452					0	0	0	0					moving to same raised ob RS (few inches)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1453					0	0	0	0					back on weakly lineated sed w tiny tubes? & sm irreg discolored lumps
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1454					0	0	0	0					same btm
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1455					0	0	0	0					sm patch veneered rub w sm hex; moving into few patches of coral rub; sm dead thicket ~0.5 m across,
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1456					0	0	0	0					sm thickets, several sm spo, few tiny living branches, scat cor rub
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1457					0	0	0	0					back on weakly lineated sed w tiny tubes? & sm irreg discolored lumps
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1458					0	0	0	0					sm cor thicket rings, some spos, eel, cor rub, each thicket no more than 0.5 m across
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1459					0	0	0	0					lin sed w scat bits of cor rub, slight barren sed rise in left camera
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1500					0	0	0	0					scat sm patches of rub on lin sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1501					0	0	0	0					araeosoma on lin sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1502					0	0	0	0					lin sed w scat tiny twigs?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1503					0	0	0	0					sm pen? (<8 cm); cor rub
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1504					0	0	0	0					scat cor rub, back on lin sed, sm patch ob RS
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1505					0	0	0	0					weakly lin sed,
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1506					0	0	0	0					ob RS, eel, flat sed alt w ob RS, feather star (Ate?)
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1507					0	0	0	0					ob RS
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1508					0	0	0	0					ob RS alt w flat sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1510					0	0	0	0					weakly lin sed w discolored slightly darker lumps & scat tiny tubes?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1512					0	0	0	0					some sm <8cm depressions; btm otherwise similar
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1514					0	0	0	0					moving back to ob RS; back to flat sed w tiny tubes? Oph
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1515					0	0	0	0					sm dead coral thickets & rub, shr, back on sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1516					0	0	0	0					back on ob RS; alt w flat sed w little scat cor rub
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1517					0	0	0	0					cor rub, sm thickets, bmb, few sm spo & octo; perhaps 1-2 sm living twigs
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1518					0	0	0	0					back on sed, little cor rub, araeosoma
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1519					0	0	0	0					TRANSECT CLOSER TO N 0-1 TRANSECT LINE THAN TO S 0-1
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1520					0	0	0	0					sed w tiny tubes? V weak lineations, sm tan growth?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1521					0	0	0	0					eel in photo on sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1522					0	0	0	0					same flat btm, ~4m coral colony?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1523					0	0	0	0					SONAR SHOWS FIELD OF SMALL RETURNS AHEAD
CalypsoPipeline	5/15/2006	TONGS			North MPOW	778	1524					0	0	0	0					pen, gal (not in photo); thicket w aphro
CalypsoPipeline	5/15/2006	TONGS			North MPOW	778	1525					0	0	0	0					dead thickets w 1-2 perh live branches, Hyalonemas, coral rub & sm dead thickets
CalypsoPipeline	5/15/2006	TONGS			North MPOW	778	1526					0	0	0	0					sm dead thickets surrounded by thin cor rub & smooth sed, scorp, bmb, bmb on dead cora
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1527					0	0	0	0					back on smooth sed; sm thickets, Hyatella
CalypsoPipeline	5/15/2006	TONGS			North MPOW	778	1528					0	0	0	0					scat sm dead thickets w thin rub, hex, thickets more numerous
CalypsoPipeline	5/15/2006	TONGS			North MPOW	778	1529					0	0	0	0					leaving thickets; smooth sed w tiny tubes? Araeosoma, eel; back on dead thickets
CalypsoPipeline	5/15/2006	TONGS			North MPOW	779	1530					0	0	0	0					thickets w 1-2 sm live twigs alt w areas of smooth sed & cor rub
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1532					0	0	0	0					ob RS alt w smooth sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1534					0	0	0	0					flat slightly lumpy sed w tiny tubes?
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1536					0	0	0	0					same btm
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1538					0	0	0	0					same btm
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1539					0	0	0	0					ob RS
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1540					0	0	0	0					Alt flat sed w tiny tubes? & ob RS
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1541					0	0	0	0					sm lumps, few clumps of cor rub, hex, eel
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1542					0	0	0	0					few low rocks, sm rock rub, sm phk, eel, irregularities same color as sediment
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1543					0	0	0	0					ob RS & flat sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1544					0	0	0	0					skate, same btm, sm lumps, some coral rub, coral thickets, hexs, few sm living branches
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1545					0	0	0	0					skate, flat sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1546													

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:MM)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1550					0	0	0	0	0	0	0	0	All flat sed w tiny tubes? & ob RS, shr
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1551					0	0	0	0	0	0	0	0	rub, rocks to 15 cm, same color as sed, flat smooth sed alt w ob RS, eel, shr
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1552					0	0	0	0	0	0	0	0	ob RS alt w smooth sed, araeosoma
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1553					0	0	0	0	0	0	0	0	same btm, araeosoma, sm pale rock rub
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1554					0	0	0	0	0	0	0	0	araeosoma, pair of isolated rocks 0.5 m across in depression, bare, smooth sed
CalypsoPipeline	5/15/2006	TONGS			North MPOW	781	1555					0	0	0	0	0	0	0	0	ob RS, shr, flat sed, barren
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1556					0	0	0	0	0	0	0	0	ob RS alt w flat sed, barren
CalypsoPipeline	5/15/2006	TONGS			North MPOW	780	1557					0	0	0	0	0	0	0	0	edge of sand wave ~8 in high
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1600					0	0	0	0	0	0	0	0	All flat sed & ob RS
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1603					0	0	0	0	0	0	0	0	same bottom
CalypsoPipeline	5/15/2006	TONGS			North MPOW	782	1605					0	0	0	0	0	0	0	0	100% soft sed, asymmetrical ripples. Occasional meters sized sand dunes
CalypsoPipeline	5/15/2006	TONGS			North MPOW	774	1607					0	0	0	0	0	0	0	0	end of north corridor transect. Stop tape ~150 ft north of north corridor of MP1
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1158					0	0	0	0	0	0	0	0	flat sediment, skate, sediment onto of ro rub, some coral rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1159					0	0	0	0	0	0	0	0	dead coral thicket, lpp
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	1200						0	0	0	0	0	0	0	0	Difficult to maneuver against 3.5 kt current
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1201					0	0	0	0	0	0	0	0	dead coral thicket on smooth sed;
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	1202						0	0	0	0	0	0	0	0	Moving very slowly
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1203					0	0	0	0	0	0	0	0	edge of sm thicket w possible single live twig
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1204					0	0	0	0	0	0	0	0	araeosoma, skate, off bottom
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1206					0	0	0	0	0	0	0	0	sm thicket w hyatella - sm live twigs, phk, scat coral rub on smooth sed
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1207					0	0	0	0	0	0	0	0	smooth sed w tiny cor rub bits or perhaps worm tubes
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1208					0	0	0	0	0	0	0	0	smooth sed w tiny cor rub bits or perhaps worm tubes
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1209					0	0	0	0	0	0	0	0	same btm, moving very slowly
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1210					0	0	0	0	0	0	0	0	same btm, no thickets vis on side cameras
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1213					0	0	0	0	0	0	0	0	same btm: v fine tiny coral bits in smooth sed, araeosoma
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	1214						0	0	0	0	0	0	0	0	off bottom
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1217					0	0	0	0	0	0	0	0	back on btm, smooth sed w tiny tubes?
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1218					0	0	0	0	0	0	0	0	raftalt, same btm
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1219					0	0	0	0	0	0	0	0	sm patch of dead coral ~15 cm across, off btm
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1221					0	0	0	0	0	0	0	0	scat dead coral thickets, Hyatella, above btm
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1222					0	0	0	0	0	0	0	0	smooth sed w tiny tubes?
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1223					0	0	0	0	0	0	0	0	smooth sed w few sm growths
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1224					0	0	0	0	0	0	0	0	smooth sed, eel, dead coral thickets on sed mounds in side camera; cor rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1225					0	0	0	0	0	0	0	0	cor rub & sm dead thicket back on smooth sed
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1226					0	0	0	0	0	0	0	0	smooth sed, hermit, scat fine cor rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1227					0	0	0	0	0	0	0	0	sm thickets w few living twigs, Hyatella, chimaera, separated by areas of sed, bmb, araeosoma, scat coral rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1228					0	0	0	0	0	0	0	0	dead thickets w few live twigs (ditl) separated by areas of thin rub & smooth sec
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1229					0	0	0	0	0	0	0	0	smooth sed, shr
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1230					0	0	0	0	0	0	0	0	sm ditl, Hyatella, bmb, dead thickets w few live twigs
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1231					0	0	0	0	0	0	0	0	Hyalonema in side camera; sm ditl, bmb
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1232					0	0	0	0	0	0	0	0	smooth & ob RS ditl, red obg, stalk
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1233					0	0	0	0	0	0	0	0	sed w faint lineations, sm tubes? Skate,
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1234					0	0	0	0	0	0	0	0	sm ditl, sed, coral rub, phk,
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1235					0	0	0	0	0	0	0	0	scat low patches of cor rub w some dead standing branches,
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1236					0	0	0	0	0	0	0	0	irreg low mumpy btm w scat coral rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1237					0	0	0	0	0	0	0	0	irreg low mumpy btm w scat coral rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1238					0	0	0	0	0	0	0	0	same btm, sm phk, scat sm coral rub, crossing pipeline track
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1239					0	0	0	0	0	0	0	0	same btm, few sm stalks (few cm tall), eel,
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1240					0	0	0	0	0	0	0	0	fewer lumps, still not smooth, scat sm coral rub - tiny twigs, lumpy again & discolored, araeosoma
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1241					0	0	0	0	0	0	0	0	low lumpy bottom w dark discolored patches, little or no coral rub; irreg flat lumps do not look like typical
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1242					0	0	0	0	0	0	0	0	bioturb mounds, of which there are 1 or 2
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1243					0	0	0	0	0	0	0	0	same btm, passed south EV transect line, some cor rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1244					0	0	0	0	0	0	0	0	same btm
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	781	1244					0	0	0	0	0	0	0	0	sm irreg lumpy btm, Hyalonema, coral rub
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1245					0	0	0	0	0	0	0	0	almost smooth, slightly lumpy btm w scat sm cor rub - tiny twigs
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1246					0	0	0	0	0	0	0	0	discolored lumps, back on almost smooth sed; sm dead thicket w hex, bmb, Hyatella, araeosoma, Hyalonema
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1247					0	0	0	0	0	0	0	0	patch of denser cor rub, discolored lumpy patch, crownless Hyalonema
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1248					0	0	0	0	0	0	0	0	cor rub, discolored lumpy area, Democricus x2, scat cor rub, back on almost smooth sec
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1249					0	0	0	0	0	0	0	0	almost smooth sed, sm unident stalk, tiny tubes?
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	779	1250					0	0	0	0	0	0	0	0	almost smooth sed w tiny tubes?, skate
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	778	1251					0	0	0	0	0	0	0	0	same btm, dead thickets, sm stalk, hexs, few sm live twigs
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	778	1252					0	0	0	0	0	0	0	0	dead thickets, hexs, eel, scat cor rub, several thickets in side cameras
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	780	1253					0	0	0	0	0	0	0	0	almost smooth sed
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1254					0	0	0	0	0	0	0	0	same btm: fine ob RS (v short ripples - like beach sand), raised ~20 cm above surrounding btm
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1255					0	0	0	0	0	0	0	0	same ob RS; back on to almost smooth sed w tiny tubes? (all tiny tubes appear to be laying down parallel w our course - a lighting effect?)
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1256					0	0	0	0	0	0	0	0	same almost smooth sed; back on ob RS
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	782	1257					0	0	0	0	0	0	0	0	Alternating smooth slightly lineated sed & raised ~20cm high areas of ob RS
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	1258						0	0	0	0	0	0	0	0	~1000 ft south of transect line; stopping to
CalypsoPipeline	5/15/2006	TONGS			MP 0-1 N-S	1259						0	0	0	0	0	0	0	0	STOPPING TAPE TO MOVE TO E-W MP 0-1 TRANSECT
CalypsoPipeline	5/15/2006	TONGS			South MP 1E							0	0	0	0	0	0	0	0	Running 150 ft south corridor line from MP1 to MP0
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1600						0	0	0	0	0	0	0	0	Attempting to reposition ship to w end of S-MP1
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1642						0	0	0	0	0	0	0	0	still attempting to reposition
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1726						0	0	0	0	0	0	0	0	~ 600 ft W of starting point; start recording video
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1726						0	0	0	0	0	0	0	0	100% sed w asymmetrical ripples
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1776	1748					0	0	0	0	0	0	0	0	reef, sdc 1-2ft, anal, lpx, sparse live anal, net, now 2535. ~500 ft sw of the South MP1, 10ft relief reef
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1749						0	0	0	0	0	0	0	0	back on sed
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1778	1754					0	0	0	0	0	0	0	0	sed, asymmetrical ripples, skates. ~300-400 south of SMP1
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1779	1756					0	0	0	0	0	0	0	0	sed, c rub, prm, fishing line, sm sdc w het - 2549
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	1778	1757													

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	782	1759					0	0	0	0	0	0	0	0	back in sed. asymmetrical ripples
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1801					0	0	0	0	0	0	0	0	~300 ft south of south corridor line moving slowly to the northeast. Crossing 50-100ft wide zones of slightly raised ripples zones. Alternating with flat sed zones with no ripples
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	782	1805					0	0	0	0	0	0	0	0	100% sed w/ asymmetrical ripples. ~200ft south of SMP1
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	781	1807					0	0	0	0	0	0	0	0	aer/sosoma
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1810					0	0	0	0	0	0	0	0	100% soft sed. asym ripples. On south corridor track
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1815					0	0	0	0	0	0	0	0	same sed. On south corridor line
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	781	1817					0	0	0	0	0	0	0	0	rock cobble
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1820					0	0	0	0	0	0	0	0	Close to center corridor line. ~MP0.5
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1822					0	0	0	0	0	0	0	0	sd, eels, hell, het, c rub
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	781	1823					0	0	0	0	0	0	0	0	back in sed
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1825					0	0	0	0	0	0	0	0	20 cm snake eels
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1826					0	0	0	0	0	0	0	0	end tape 72
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1827					0	0	0	0	0	0	0	0	1-2ft sdc, hex, sparse live enal. cans. 2555 ft
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	778	1828					0	0	0	0	0	0	0	0	back in sed. About on north corridor track line
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1835					0	0	0	0	0	0	0	0	sed ripples
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1836					0	0	0	0	0	0	0	0	sd. 5m patch reef
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	777	1838					0	0	0	0	0	0	0	0	sd. 1ft sdc, sparse live, hex, het, c rub
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	776	1837					0	0	0	0	0	0	0	0	on north corridor track line
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	778	1838					0	0	0	0	0	0	0	0	off reef
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	777	1839					0	0	0	0	0	0	0	0	thicket
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	778	1840					0	0	0	0	0	0	0	0	back in sed. North of north corridor line
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	778	1841					0	0	0	0	0	0	0	0	hex. 2ft sdc thickets with live branch tips
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	778	1844					0	0	0	0	0	0	0	0	thicket, sdc live tips
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1847					0	0	0	0	0	0	0	0	few gorgonians, mostly hex
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1848					0	0	0	0	0	0	0	0	~600 ft west of NMP0. Fairly extensive reef area. No more than 5ft relief on most of these mounds
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1853					0	0	0	0	0	0	0	0	patch reef, low relief 3-5ft. Hex dominate macrofauna
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1854					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1855					0	0	0	0	0	0	0	0	patch reef. ~300ft west of North MP0. 3-5ft relief patch reefs
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	779	1858					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1902					0	0	0	0	0	0	0	0	all sed 100%. Right at N MP0. ~0.5 knot SE current at bottom
CalypsoPipeline	5/15/2006	TONGS			South MP 1E	780	1905					0	0	0	0	0	0	0	0	off bottom. End dive!!
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2003					0	0	0	0	0	0	0	0	ob RS.
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	782	2005					0	0	0	0	0	0	0	0	eel, flatter sed
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	781	2007					0	0	0	0	0	0	0	0	alternating flat sandy sediment and ob RS with little signs of life, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2008					0	0	0	0	0	0	0	0	larger shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2009					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2010					0	0	0	0	0	0	0	0	same bottom, sand occ shrimp, alternating with low relief RS
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2011					0	0	0	0	0	0	0	0	sand wave of ob RS.
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2012					0	0	0	0	0	0	0	0	big pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2013					0	0	0	0	0	0	0	0	two diff sediments, sand wave of ob RS.
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2014					0	0	0	0	0	0	0	0	2 eels.
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2015					0	0	0	0	0	0	0	0	RS sand waves in side cameras are elevated above flat sediment in narrow strips between the sand waves
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2016					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2018					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2019					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2020					0	0	0	0	0	0	0	0	ob RS alternating with flat sediment and lag separating them, occ shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2023					0	0	0	0	0	0	0	0	larger shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2024					0	0	0	0	0	0	0	0	benthobatis
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2025					0	0	0	0	0	0	0	0	eel.
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2026					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2027					0	0	0	0	0	0	0	0	small benthobatis
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2028					0	0	0	0	0	0	0	0	shrimp x2
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2029					0	0	0	0	0	0	0	0	sand mound, eel, benthobatis
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	777	2030					0	0	0	0	0	0	0	0	ob RS, eel some trails, signs of bioturbation, and shrimp, changing course to check out something fun (turned out to be nothing)
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2032					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2033					0	0	0	0	0	0	0	0	ob RS, depression then back onto RS, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	779	2034					0	0	0	0	0	0	0	0	2 shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2035					0	0	0	0	0	0	0	0	shrimp, more trails in sed, half way to MP 1
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2036					0	0	0	0	0	0	0	0	alternating between RS and flat sed with more signs of bioturbation, small holes, trails
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2038					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	780	2039					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	781	2040					0	0	0	0	0	0	0	0	ob RS, with small holes and trails, occ shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2041					0	0	0	0	0	0	0	0	pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	778	2042					0	0	0	0	0	0	0	0	eel, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	776	2043					0	0	0	0	0	0	0	0	eel, skate x2, benthobatis, unident sessile
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	776	2044					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	776	2045					0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	777	2046					0	0	0	0	0	0	0	0	small fish, low sand ripples, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	777	2048					0	0	0	0	0	0	0	0	anemone, eel
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	774	2049					0	0	0	0	0	0	0	0	eel, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	774	2050					0	0	0	0	0	0	0	0	low relief RS, alternating with flat sediment, signs of bioturb, small holes, eel, shrimp, changing to tape 11

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2100					0	0	0	0					ob RS, alternating with flat sediment, signs of bioturbation, shrimp, occ fish, pink ecf
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2101					0	0	0	0					shrimp, larger fish possibly a rattail
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2102					0	0	0	0					shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2103					0	0	0	0					skate on flat sediment
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	772	2104					0	0	0	0					4 shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2105					0	0	0	0					shrimp on flat sediment, scattered debris, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2106					0	0	0	0					Charles the Crinoid Kid Messing subing for Jess while she eats, smooth non-bioturbated bottom
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2107					0	0	0	0					scattered debris, thalassa, possible worm tubes
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	772	2108					0	0	0	0					ob RS, plant debris, synphobranchid eel, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2109					0	0	0	0					smooth textured sediment, small polychaete tubes?, trail, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	771	2110					0	0	0	0					flat sediment, occ mound or depression, fine tubes, doesn't appear to be coral debris, large shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	770	2111					0	0	0	0					large longlegged shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	770	2112					0	0	0	0					same flat textured bottom, possible small burrows, side cameras show flat bottom
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	769	2114					0	0	0	0					same bottom, barren flat finely textured sediment, very little bioturbator
CalypsoPipeline	5/11/2006	TONGS			MP 1 W	768	2115					0	0	0	0					shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2116					0	0	0	0					smooth textured bottom, very little bioturbation, shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	767	2117					0	0	0	0					same bottom
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2118					0	0	0	0					shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2119					0	0	0	0					skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2120					0	0	0	0					skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2121					0	0	0	0					anemone, ob RS
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2122					0	0	0	0					rattail, ob RS, flat sediment alternating with ob RS
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	768	2123					0	0	0	0					ben, same alternating bottom, few mounds and burrows
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	765	2124					0	0	0	0					flat bottom as previous, 2 shrimps, ane?
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	764	2127					0	0	0	0					flat textured bottom with little bioturbation, ane? ee
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	763	2128					0	0	0	0					red oph, side cameras still showing flat bottom and no echos
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	763	2130					0	0	0	0					flat textured sediment, very little bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	760	2132					0	0	0	0					shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	759	2134					0	0	0	0					same flat bottom with scattered debris
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	757	2136					0	0	0	0					going up slope, same flat bottom, occ mound, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2137					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2138					0	0	0	0					lg pink ech, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2139					0	0	0	0					ane, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2140					0	0	0	0					lg pink ech, flat textured sediment, debris
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2142					0	0	0	0					eel
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2144					0	0	0	0					still barren, ane, lg pink ech, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	756	2145					0	0	0	0					urchin in side camera, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	755	2146					0	0	0	0					shr, ane, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	754	2147					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	754	2149					0	0	0	0					eel, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	753	2150					0	0	0	0					floating jelly, flat textured bottom, scattered debris, occ small mound/depression, little bioturbation, sm fish
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	752	2152					0	0	0	0					interesting something
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	752	2152					0	0	0	0					end of tape 11, switching to tape 12
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	752	2153					0	0	0	0					ane, start of tape 12, currently on WP 2W, flat sediment with texture and debris, skate, skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	751	2155					0	0	0	0					undent piece of manmade something
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	751	2156					0	0	0	0					skate, shr, fish
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	750	2157					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	750	2158					0	0	0	0					shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	750	2159					0	0	0	0					shr, skate, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	749	2200					0	0	0	0					ane, flat textured sediment with debris, occ small mound/depression
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	747	2201					0	0	0	0					shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	748	2203					0	0	0	0					ane, lg pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	746	2205					0	0	0	0					shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	746	2207					0	0	0	0					ane, same flat textured sed, occ small cones and mounds, skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	745	2208					0	0	0	0					skate, skate, eel, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	744	2209					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	744	2210					0	0	0	0					same flat bottom, texture, debris, occ small mound, depression
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	744	2211					0	0	0	0					2 shr, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	743	2212					0	0	0	0					skate, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	743	2213					0	0	0	0					ane, skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	743	2214					0	0	0	0					large skate bigger than field of view
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2216					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	742	2217					0	0	0	0					shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	742	2218					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2219					0	0	0	0					shr, ane, eel, 2 ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2220					0	0	0	0					same bottom, eel, flat with scattered debris and texture, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2221					0	0	0	0					ane, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2222					0	0	0	0					undent creature came off bottom
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	741	2223					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	739	2224					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	739	2225					0	0	0	0					shr, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	739	2226					0	0	0	0					skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	739	2227					0	0	0	0					shr, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	739	2228					0	0	0	0					fish, ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	737	2230					0	0	0	0					ane, same flat bottom, texture and debris, small mounds, sr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	737	2231					0	0	0	0					skate
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	736	2234					0	0	0	0					shr, shr, fish (rattail?)
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	735	2236					0	0	0	0					skate x2, shr
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	737	2237					0	0	0	0					ane
CalypsoPipeline	5/11/2006	TONGS			MP 2 W	738	2238					0	0	0	0					end of way point 2 W

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement, ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	735	2238					0	0	0	0	0	0	0	0	begin way point 3-W
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2239					0	0	0	0	0	0	0	0	eel
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	734	2240					0	0	0	0	0	0	0	0	flat bottom with texture and debris, small tiny mounds, occ shr and ane, ans
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	733	2242					0	0	0	0	0	0	0	0	pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	733	2243					0	0	0	0	0	0	0	0	undident little critter, eel
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	732	2245					0	0	0	0	0	0	0	0	eel, same bottom, skate, ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2246					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	732	2247					0	0	0	0	0	0	0	0	fish
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2248					0	0	0	0	0	0	0	0	ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	730	2249					0	0	0	0	0	0	0	0	pale ech, skate, pink pale ech
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	730	2250					0	0	0	0	0	0	0	0	same bottom
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2252					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	729	2253					0	0	0	0	0	0	0	0	ane, shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2254					0	0	0	0	0	0	0	0	end of tape 12, switch to tape 13
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	729	2255					0	0	0	0	0	0	0	0	start tape 13, going west on WP 3, flat sediment bottom with texture and scattered debris, tiny occ mounds
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	729	2256					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	729	2256	S		S		0	0	0	0	0	0	0	0	bore hole (tilefish?) two burrows, not tilefish
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	728	2258					0	0	0	0	0	0	0	0	2 ane, fish
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2259					0	0	0	0	0	0	0	0	ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	728	2300					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2301					0	0	0	0	0	0	0	0	shr, ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	726	2303					0	0	0	0	0	0	0	0	ane on flat, textured sediment
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2304					0	0	0	0	0	0	0	0	ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	725	2305					0	0	0	0	0	0	0	0	2 shr, shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	725	2307					0	0	0	0	0	0	0	0	sm skate, ane, ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	724	2309					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	724	2310					0	0	0	0	0	0	0	0	shr, same flat textured bottom with debris and small mounds
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2311					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	723	2313					0	0	0	0	0	0	0	0	pink ech x2, ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	723	2316					0	0	0	0	0	0	0	0	pink ech, pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	721	2317					0	0	0	0	0	0	0	0	skate, pink ech
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	721	2319					0	0	0	0	0	0	0	0	shr, pale ech
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	721	2320					0	0	0	0	0	0	0	0	tail of large shrimp or lobster
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	721	2321					0	0	0	0	0	0	0	0	rock, shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	721	2322					0	0	0	0	0	0	0	0	skate, eel
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	719	2324					0	0	0	0	0	0	0	0	flat sediment
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	720	2327					0	0	0	0	0	0	0	0	possible excavation (8 cm hole), ane
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	719	2329					0	0	0	0	0	0	0	0	cable
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	719	2330					0	0	0	0	0	0	0	0	shr, same flat bottom sediment with texture and debris, small mounds, occ depressor
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	719	2331					0	0	0	0	0	0	0	0	pink ech, rock
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	718	2332					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 3 W	718	2333					0	0	0	0	0	0	0	0	pink ech, seastar
CalypsoPipeline	5/11/2006	TONGS			MP 3 W		2334					0	0	0	0	0	0	0	0	end of WP 3W
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	716	2335					0	0	0	0	0	0	0	0	begin way point 4-W
CalypsoPipeline	5/11/2006	TONGS			MP 4 W		2336					0	0	0	0	0	0	0	0	shr, skate
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	716	2337					0	0	0	0	0	0	0	0	rock off to right
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	716	2338	S		S		0	0	0	0	0	0	0	0	pink ech, poss tilefish excavation, ane, Burrow with 2 entrances, probable Acanthacaris not tile fish
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	715	2340					0	0	0	0	0	0	0	0	flat sediment, occ small irregularities or depressions, barren
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	715	2341					0	0	0	0	0	0	0	0	smaller excavated burrows, shr, small rock
CalypsoPipeline	5/11/2006	TONGS			MP 4 W		2342					0	0	0	0	0	0	0	0	trattail
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	714	2343					0	0	0	0	0	0	0	0	small exc burrow, fish
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	714	2344					0	0	0	0	0	0	0	0	shr
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	714	2345					0	0	0	0	0	0	0	0	shr, shr, ane
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	714	2346					0	0	0	0	0	0	0	0	more exc burrows
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	713	2347					0	0	0	0	0	0	0	0	fish, eel
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	714	2349					0	0	0	0	0	0	0	0	eel, excavatgion
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	712	2350					0	0	0	0	0	0	0	0	textured bottom, flat, with occ excavations
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	712	2351					0	0	0	0	0	0	0	0	pink ech, big hole, fish
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	712	2353					0	0	0	0	0	0	0	0	excavation, shr, pale ech, eel
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	718	2354					0	0	0	0	0	0	0	0	more signs of boturbation, depression
CalypsoPipeline	5/11/2006	TONGS			MP 4 W		2355					0	0	0	0	0	0	0	0	end of tape 13, switching to tape 14
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	710	2356					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	710	2358					0	0	0	0	0	0	0	0	flat btm, textured tubes, few mounds and crater burrows side cameras show flat btm
CalypsoPipeline	5/11/2006	TONGS			MP 4 W	710	2359					0	0	0	0	0	0	0	0	sm eel
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	710						0	0	0	0	0	0	0	0	same btm, little boturbation, no trails, texted bottom, skate, sm tube, small mounds and craters ~10 CM
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	708						0	0	0	0	0	0	0	0	acanthacaris in burrow, eel,
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	710						0	0	0	0	0	0	0	0	pairs of small crater tunnels, >8 cm across
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	708						0	0	0	0	0	0	0	0	same btm w tunnels
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	709						0	0	0	0	0	0	0	0	paired crater tunnels, eel
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	708						0	0	0	0	0	0	0	0	paired crater tunnels more numerous, shrimp, large pink echinothuid
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	707	821	S		S		1	128	0	0	0	0	0	0	golden crab, same btm, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	708						0	0	0	0	0	0	0	0	2 echinothuids, crater burrows, crater burrows more numerous
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	707														

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CalypsoPipeline	5/12/2006	TONGS			MP 4 W	704						0	0	0	0					bathypterois, same bottom
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	703						0	0	0	0					eel, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	704						0	0	0	0					skate, acanthacaris, excavation
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	703						0	0	0	0					echinothuid, shrimp, eel
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	703						0	0	0	0					crater tunnel, eel, btm texture smoother still with scattered burrows and crater tunnels
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	702						0	0	0	0					acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	702						0	0	0	0					eel, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	701						0	0	0	0					eel, shallower, btm smooth textured sed with scattered bioturb, burrows, crater tunnels, most of Irq appear to be acanth burrows, rat tail
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	701						0	0	0	0					chaunax, excavation, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	701						0	0	0	0					skate ?
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	701						0	0	0	0					fish ? , numerous crater tunnels
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	700						0	0	0	0					echinothuid
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	700						0	0	0	0					eel
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	700						0	0	0	0					crater and crater tunnels, scattered burrows, textured sed., shrimp, ee
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	699						0	0	0	0					eel, rat tail, crustacean?, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	700						0	0	0	0					eel, same btm, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	698						0	0	0	0					fewer tunnels, vary in abundance
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	699						0	0	0	0					eel x2, more numerous area of crater tunnels
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	698						0	0	0	0					sea pen?, have yet to see stalks like that on side cameras
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	697						0	0	0	0					same bottom, area of numerous crater tunnels and cluster burrows otherwise the same
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	697						0	0	0	0					same btm, crater tunnels, burrows, eel, rat tail, small mounds, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	695						0	0	0	0					same btm, eel
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	695						0	0	0	0					same btm, oph., shrimps
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	695						0	0	0	0					echinothuid, oph
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	693						0	0	0	0					shrimps, same btm.
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	691						0	0	0	0					acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	693						0	0	0	0					chaunax ? Possible peristedion
CalypsoPipeline	5/12/2006	TONGS			MP 4 W	693						0	0	0	0					change tape
CalypsoPipeline	5/12/2006	TONGS			MP 4 W							0	0	0	0					BEGINNING MILE MARKER 6; MISSED POINT OF MM 5 (26 13.0652610, 79 38.4019564)
CalypsoPipeline	5/12/2006	TONGS			MP 5 W							0	0	0	0					No data in original annotations
CalypsoPipeline	5/12/2006	TONGS			6 W	691						0	0	0	0					same btm, rat tail, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	691						0	0	0	0					acanthacaris, peristedion ?
CalypsoPipeline	5/12/2006	TONGS			6 W	690						0	0	0	0					eel, rat tail, crater burrows, taller cones, echinothuid
CalypsoPipeline	5/12/2006	TONGS			6 W	691						0	0	0	0					more numerous burrows
CalypsoPipeline	5/12/2006	TONGS			6 W	689	104	S		S		1	133	0	0					same btm w/ scattered burrows, golden crab, crater tunnels
CalypsoPipeline	5/12/2006	TONGS			6 W	687						0	0	0	0					echinothuid, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	687						0	0	0	0					echinothuid, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					same flat btm, burrows, some cones, shrimp, crater burrows
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					feather star, echinothuid, cruter burrows, crater tunnels, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					Irq eel (notacanth ?), oph
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					sm black fish, peristedion?, oph, crater burrows with adjacent cone
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					same btm, rat tail
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					echinothuid, eel
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					eel, crater tunnels, same btm, shrimp, rat tail, oph
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					same bottom, cer (sm white), feather star, eel x2
CalypsoPipeline	5/12/2006	TONGS			6 W	686						0	0	0	0					eel, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	685						0	0	0	0					eel, oph, feather star, side cameras still show flat bottom with cones and burrows
CalypsoPipeline	5/12/2006	TONGS			6 W	685						0	0	0	0					same btm, shrimp, echinothuids x 2, oph, skate off camera
CalypsoPipeline	5/12/2006	TONGS			6 W	685						0	0	0	0					shrimp, dragging on bottom
CalypsoPipeline	5/12/2006	TONGS			6 W	684						0	0	0	0					skate in side camera, feather star, same btm
CalypsoPipeline	5/12/2006	TONGS			6 W	682						0	0	0	0					same btm, echinothuid, feather star, oph x 2, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	682						0	0	0	0					crater burrows with cones, oph, cluster burrows, crater tunnels, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	682						0	0	0	0					oph x2,
CalypsoPipeline	5/12/2006	TONGS			6 W	682						0	0	0	0					oph small tubes still vis, oph
CalypsoPipeline	5/12/2006	TONGS			6 W	682						0	0	0	0					fish in depression, peristedion, large fish ?
CalypsoPipeline	5/12/2006	TONGS			6 W	681						0	0	0	0					Irq shallow depression--vis portion 1m across, shrimps, same btm
CalypsoPipeline	5/12/2006	TONGS			6 W	680						0	0	0	0					same btm w/ crater burrows and cones, crater tunnels, texture sed, sm mounds, shrimp
CalypsoPipeline	5/12/2006	TONGS			6 W	680						0	0	0	0					AT MILE MARKER 7
CalypsoPipeline	5/12/2006	TONGS			7 W	680						0	0	0	0					same btm, shr
CalypsoPipeline	5/12/2006	TONGS			7 W	678						0	0	0	0					acanthacaris, peristedion
CalypsoPipeline	5/12/2006	TONGS			7 W	678						0	0	0	0					Irq spider crab (?) in depression, oph,
CalypsoPipeline	5/12/2006	TONGS			7 W	678						0	0	0	0					crossed narrow cable, eel x2
CalypsoPipeline	5/12/2006	TONGS			7 W	678						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			7 W	677						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			7 W	676						0	0	0	0					same btm, crater burrows with cone, cluster burrows, crater tunnels, eel x2, oph
CalypsoPipeline	5/12/2006	TONGS			7 W	676						0	0	0	0					oph, eel, cer
CalypsoPipeline	5/12/2006	TONGS			7 W	674						0	0	0	0					same btm, notacanth x2, sm cer (?)
CalypsoPipeline	5/12/2006	TONGS			7 W	674						0	0	0	0					acanth, nota
CalypsoPipeline	5/12/2006	TONGS			7 W	674						0	0	0	0					acanth in crater burrow x2,
CalypsoPipeline	5/12/2006	TONGS			7 W	674						0	0	0	0					acanth on btm x2, oph
CalypsoPipeline	5/12/2006	TONGS			7 W	674						0	0	0	0					acanth in crater, sm cer, numerous craters, circ cluster burrows
CalypsoPipeline	5/12/2006	TONGS			7 W	673						0	0	0	0					nota
CalypsoPipeline	5/12/2006	TONGS			7 W	673						0	0	0	0					feather star, oph, eel
CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					passed area of bioturb to smooth area and now back to area with cruter burrows, text sed, acanth, oph
CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					change tape 15
CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					same btm

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CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					same btm, fanned octopod (gimpoteuthis?)
CalypsoPipeline	5/12/2006	TONGS			7 W	671						0	0	0	0					numerous cluster burrows, craters and cones, nota (?)
CalypsoPipeline	5/12/2006	TONGS			7 W	669						0	0	0	0					barren patch
CalypsoPipeline	5/12/2006	TONGS			7 W	669	203	S		S		0	0	0	1					acanth, shrimp, rat tail, golden crab (?)
CalypsoPipeline	5/12/2006	TONGS			7 W	669	203	S		S		1	120	0	0					acanth x2, shrimp
CalypsoPipeline	5/12/2006	TONGS			7 W	669						0	0	0	0					rat tail, same btm, acanth
CalypsoPipeline	5/12/2006	TONGS			7 W	668						0	0	0	0					shr x2, numerous burrows
CalypsoPipeline	5/12/2006	TONGS			7 W	668						0	0	0	0					oph x3
CalypsoPipeline	5/12/2006	TONGS			7 W	668						0	0	0	0					lrg depression, sed textured, numerous craters tubes
CalypsoPipeline	5/12/2006	TONGS			7 W	666						0	0	0	0					same btm, oph, side camera shows flat bottom, acanth
CalypsoPipeline	5/12/2006	TONGS			7 W	665						0	0	0	0					same btm, cluster burrows, crater burrows and tunnels, cones, nota
CalypsoPipeline	5/12/2006	TONGS			7 W	664						0	0	0	0					peri
CalypsoPipeline	5/12/2006	TONGS			7 W	664						0	0	0	0					oph, same btm
CalypsoPipeline	5/12/2006	TONGS			7 W	664						0	0	0	0					same btm
CalypsoPipeline	5/12/2006	TONGS			7 W	663						0	0	0	0					same btm, empty, same burrows, cluster burrows, no vis fauna
CalypsoPipeline	5/12/2006	TONGS			7 W	663						0	0	0	0					oph, peri, fish in burrow
CalypsoPipeline	5/12/2006	TONGS			7 W	663						0	0	0	0					scorpion fish, shr
CalypsoPipeline	5/12/2006	TONGS			7 W	661						0	0	0	0					fish ?
CalypsoPipeline	5/12/2006	TONGS			7 W	662						0	0	0	0					oph nota
CalypsoPipeline	5/12/2006	TONGS			7 W	662						0	0	0	0					AT MILE MARKER 8
CalypsoPipeline	5/12/2006	TONGS			8 W	661						0	0	0	0					same btm w crater burrows, cones, cluster burrow, fish in depression
CalypsoPipeline	5/12/2006	TONGS			8 W	660						0	0	0	0					nota
CalypsoPipeline	5/12/2006	TONGS			8 W	660						0	0	0	0					crater tunnel, crater burrows, cer (red)
CalypsoPipeline	5/12/2006	TONGS			8 W	659						0	0	0	0					same bottom, barren except bioturb
CalypsoPipeline	5/12/2006	TONGS			8 W	658						0	0	0	0					peri, same bottom
CalypsoPipeline	5/12/2006	TONGS			8 W	658						0	0	0	0					more sparse bioturbation, nota, oph
CalypsoPipeline	5/12/2006	TONGS			8 W	657						0	0	0	0					same bottom, few cones, fewer crater burrows, few cluster burrows, no vis fauna
CalypsoPipeline	5/12/2006	TONGS			8 W	657						0	0	0	0					passed area of more burrows, now back to sparse bioturb, acantha
CalypsoPipeline	5/12/2006	TONGS			8 W	656						0	0	0	0					oph, spider crab ? in depression
CalypsoPipeline	5/12/2006	TONGS			8 W	655						0	0	0	0					shr, scattered bioturb, peri
CalypsoPipeline	5/12/2006	TONGS			8 W	654						0	0	0	0					oph, leather star, dark cer, trash in depression (?)
CalypsoPipeline	5/12/2006	TONGS			8 W	656						0	0	0	0					same btm
CalypsoPipeline	5/12/2006	TONGS			8 W	655						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			8 W	655						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			8 W	653						0	0	0	0					shrimp
CalypsoPipeline	5/12/2006	TONGS			8 W	652						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			8 W	652						0	0	0	0					cluster burrows increasing
CalypsoPipeline	5/12/2006	TONGS			8 W	651						0	0	0	0					oph
CalypsoPipeline	5/12/2006	TONGS			8 W	650						0	0	0	0					shr
CalypsoPipeline	5/12/2006	TONGS			8 W	651						0	0	0	0					change tape, peri
CalypsoPipeline	5/12/2006	TONGS			8 W	651						0	0	0	0					peri, cluster burrows, cone burrows, crater
CalypsoPipeline	5/12/2006	TONGS			8 W	648						0	0	0	0					nota
CalypsoPipeline	5/12/2006	TONGS			8 W	648						0	0	0	0					eel
CalypsoPipeline	5/12/2006	TONGS			8 W	649						0	0	0	0					acanth in crater
CalypsoPipeline	5/12/2006	TONGS			8 W	648						0	0	0	0					same btm
CalypsoPipeline	5/12/2006	TONGS			8 W	647						0	0	0	0					pink urchin
CalypsoPipeline	5/12/2006	TONGS			8 W	647						0	0	0	0					eel
CalypsoPipeline	5/12/2006	TONGS			8 W	647						0	0	0	0					skate
CalypsoPipeline	5/12/2006	TONGS			8 W	646						0	0	0	0					eel
CalypsoPipeline	5/12/2006	TONGS			8 W	645						0	0	0	0					less bioturbation in area, crater burrow with cone
CalypsoPipeline	5/12/2006	TONGS			8 W	646						0	0	0	0					photo of crater tunnel
CalypsoPipeline	5/12/2006	TONGS			8 W	645						0	0	0	0					no vis macrofauna, barren
CalypsoPipeline	5/12/2006	TONGS			8 W	644						0	0	0	0					rat tail
CalypsoPipeline	5/12/2006	TONGS			8 W	644						0	0	0	0					photo of eel
CalypsoPipeline	5/12/2006	TONGS			8 W	644						0	0	0	0					photo of sed
CalypsoPipeline	5/12/2006	TONGS			8 W	643						0	0	0	0					smooth texture btm, scattered crater burrows, irreg excav, sm cluster burrows, no vis fauna
CalypsoPipeline	5/12/2006	TONGS			8 W	643						0	0	0	0					shr
CalypsoPipeline	5/12/2006	TONGS			8 W	642						0	0	0	0					pale crab, acanth
CalypsoPipeline	5/12/2006	TONGS			8 W	641						0	0	0	0					Chaunax. Still textured sediment with small clusters of fine tufts
CalypsoPipeline	5/12/2006	TONGS			8 W	641						0	0	0	0					same btm
CalypsoPipeline	5/12/2006	TONGS			8 W	640						0	0	0	0					circular cluster burrows
CalypsoPipeline	5/12/2006	TONGS			8 W	640						0	0	0	0					pale crab, bioturbation is sparser - chiefly cluster burrows and scattered crater burrows with cones; also small mounds
CalypsoPipeline	5/12/2006	TONGS			8 W	640						0	0	0	0					slender black cerianthid
CalypsoPipeline	5/12/2006	TONGS			8 W	640						0	0	0	0					bioturb textured btm, crater burrows, crater cone, crater tunnels, cluster burrows, no vis fauna
CalypsoPipeline	5/12/2006	TONGS			8 W	639						0	0	0	0					acantha, same btm
CalypsoPipeline	5/12/2006	TONGS			8 W	639						0	0	0	0					PASSING MM 9
CalypsoPipeline	5/11/2006	TONGS			MP 9W	637						0	0	0	0					same btm, Chaunax
CalypsoPipeline	5/11/2006	TONGS			MP 9W	637						0	0	0	0					Collapsed lobster tunnel
CalypsoPipeline	5/11/2006	TONGS			MP 9W	637						0	0	0	0					shrimp, euc(echinoid) pancake urchin
CalypsoPipeline	5/11/2006	TONGS			MP 9W	636						0	0	0	0					possible spider crab in burrow, galatheid? in burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	636						0	0	0	0					Bathynomus (not in photo)
CalypsoPipeline	5/11/2006	TONGS			MP 9W	636						0	0	0	0					Moderate bioturbation - cluster burrows, crater burrows, galatheid?, Chaunax
CalypsoPipeline	5/11/2006	TONGS			MP 9W	635	358					0	0	0	0					JR MP take over
CalypsoPipeline	5/11/2006	TONGS			MP 9W	634	400					0	0	0	0					Tracking right on pipeline heading west. Fine silt clay bottom. Dense bioturb, cluster burrows 1cm in diameter. Excavation burrows 20cm in diameter
CalypsoPipeline	5/11/2006	TONGS			MP 9W	634	402					0	0	0	0					end of tape 17
CalypsoPipeline	5/11/2006	TONGS			MP 9W	634	402					0	0	0	0					start of tape 18 continuing transect 2
CalypsoPipeline	5/11/2006	TONGS			MP 9W	632	404					0	0	0	0					double burrows - 2 burrows connected by tunnel probably acanth. Yes ACANTH sitting at burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	633	407					0	0	0	0					fishing line, 10cm mottled green and gray fish

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 9W	632	408					0		0	0					armored sea robin - peri
CalypsoPipeline	5/11/2006	TONGS			MP 9W	631	410					0		0	0					track right on pipeline. 100% soft sed. Cluster burrows 1 cm diameter. Lgr collapsed burrows are acanth. NO evidence of sand waves or ripple - low current. Acanth burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	631	413					0		0	0					Outboard camera showing a pile of line
CalypsoPipeline	5/11/2006	TONGS			MP 9W	630	414					0		0	0					Acanth burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	630	416					0		0	0					Acanth? Or gal? Clusters and mounds 10-15cm. Toad fish - chaunax, nota ee
CalypsoPipeline	5/11/2006	TONGS			MP 9W	629	417					0		0	0					10cm mottled gray little fish
CalypsoPipeline	5/11/2006	TONGS			MP 9W	629	418					0		0	0					same bottom - cluster burrows and lgr burrow and acanth burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	628	419					0		0	0					8cm mottled green fish - chlorophthalmus??
CalypsoPipeline	5/11/2006	TONGS			MP 9W	628	420					0		0	0					50 ft north of pipeline estimated visually. 1/3 mile W of waypt MP9. Same bottom. 100% soft sed w/ mounds. Pits and burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	628	421					0		0	0					lrg 10cm urchin. Aerosoma? Peri - armored sea robin. Several acanth burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	628	423					0		0	0					Few small pink shrimp. Acanth in burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	627	424					0		0	0					Nota eels - 2, pink shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 9W	626	425					0		0	0					right on pipeline route. Approaching MP 9.5. Cluster burrows and acanth burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	626	427					0		0	0					Acanth in burrow. Surface layer is fine organics layer w/ planktonic material from fl current. Skate. Cluster burrows ~1cm.
CalypsoPipeline	5/11/2006	TONGS			MP 9W	626	429					0		0	0					8cm pink shrimp. Appears to be slight current perpendicular to our direction. Slight current to north ~ 1/10 knot.
CalypsoPipeline	5/11/2006	TONGS			MP 9W	625	430					0		0	0					peri
CalypsoPipeline	5/11/2006	TONGS			MP 9W	625	431					0		0	0					Acanth in burrow
CalypsoPipeline	5/11/2006	TONGS			MP 9W	625	432					0		0	0					same bottom
CalypsoPipeline	5/11/2006	TONGS			MP 9W	626	433					0		0	0					Numerous burrows. cluster of acanth burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	621	441					0		0	0					same bottom, cluster burrows, Acanth burrows
CalypsoPipeline	5/11/2006	TONGS			MP 9W	620	442					0		0	0					peri
CalypsoPipeline	5/11/2006	TONGS			MP 9W	619	444					0		1	0					nota eel, red shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 9W	619	445	S	S			0		0	1					same, very close to pipeline [shrimp at 04:45:48 on lower left near eel
CalypsoPipeline	5/11/2006	TONGS			MP 9W	617	448					0		0	0					nota
CalypsoPipeline	5/11/2006	TONGS			MP 9W	617	449	S	S			0		1	0					burrow mound combination
CalypsoPipeline	5/11/2006	TONGS			MP 9W	616	450					0		0	0					red (called pink on video) shrimp @ 04:49:19
CalypsoPipeline	5/11/2006	TONGS			MP 9W	615	452					0		0	0					same, pits, burrows, mounds
CalypsoPipeline	5/11/2006	TONGS			MP 9W	615	454	S	S			0		1	0					Acanth in burrow, 1500 ft e of MP 10
CalypsoPipeline	5/11/2006	TONGS			MP 9W	615	456	S	S			0		1	0					Acanth in burr, red shrimp,acanth,eel.
CalypsoPipeline	5/11/2006	TONGS			MP 9W	614	457					0		0	0					eel, red shrimp (04:56:16), acanth burrows, acanth in burr
CalypsoPipeline	5/11/2006	TONGS			MP 9W	614	458					0		0	0					ROV 1500 ft NE of ship
CalypsoPipeline	5/11/2006	TONGS			MP 9W	613	459					0		0	0					retail fish; burr, pits,
CalypsoPipeline	5/11/2006	TONGS			MP 9W	613	500					0		0	0					cancer crab; 2 acanth
CalypsoPipeline	5/11/2006	TONGS			MP 9W	612	501					0		0	0					same; eel
CalypsoPipeline	5/11/2006	TONGS			MP 9W	612	502	S	S			0		1	0					red shrimp @05:02:20. >8cm
CalypsoPipeline	5/11/2006	TONGS			MP 9W	611	503					0		0	0					acanth in burr, acanth
CalypsoPipeline	5/11/2006	TONGS			MP 9W	611	504					0		0	0					cha
CalypsoPipeline	5/11/2006	TONGS			MP 9W	609	505					0		0	0					same bott
CalypsoPipeline	5/11/2006	TONGS			MP 9W	608	507	S	S			1	152	1	0					red shrimp (and Chaceon)
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	509					0		0	0					right on pipeline rite crossing MP 10
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	510					0		0	0					2 acanth in burrow, aerosoma urchin
CalypsoPipeline	5/12/2006	TONGS			MP 10W	606	511					0		0	0					MP 10W
CalypsoPipeline	5/12/2006	TONGS			MP 10W	605	512					0		0	0					sm gal 6cm associated w/ acanth burrow, skate. Moving across bottom over 1 knot
CalypsoPipeline	5/12/2006	TONGS			MP 10W	606	513					0		0	0					acanth burrow, 10 cm rock
CalypsoPipeline	5/12/2006	TONGS			MP 10W	605	514	S	S			0		1	0					acanth in burrow, red shrimp, same bot, target 25 m off to starboard on sonar - 10-15 m long
CalypsoPipeline	5/12/2006	TONGS			MP 10W	604	515					0		0	0					right on pipeline track. Target 10m out. Numerous lrg burrows, eel 1989. Trying to slow down to cross target. Target ~10-15m long in sonar no visual confirmation
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	516					0		0	0					boat stopped hit bottom. ROV all over bottom. Did not see target. Dragging bottom
CalypsoPipeline	5/12/2006	TONGS			MP 10W	601	520					0		0	0					same bottom right on pipeline ft. Approaching waypt 10.5.MF
CalypsoPipeline	5/12/2006	TONGS			MP 10W	602	522					0		0	0					difficulty maneuvering ship, ROV dragging bottom. Loss of video due to clouding. Changing course to return to target's location heading due east
CalypsoPipeline	5/12/2006	TONGS			MP 10W	581	524					0		0	0					Off bottom, appears to be fishing line or siphonophore tentacle on ROV no video of bottom. Continuing returning to target.
CalypsoPipeline	5/12/2006	TONGS			MP 10W		527					0		0	0					Off bottom
CalypsoPipeline	5/12/2006	TONGS			MP 10W		530					0		0	0					Continuing east toward target. Off bottom
CalypsoPipeline	5/12/2006	TONGS			MP 10W		535					0		0	0					Continuing toward target. Off bottom. Stop video
CalypsoPipeline	5/12/2006	TONGS			MP 10W	608	755					0		0	0					back on bottom, 2hr delay while ship repositioned to come on target we saw earlier. Close to waypt 10 MF
CalypsoPipeline	5/12/2006	TONGS			MP 10W	608	757					0		0	0					Bottom is 100% sed, fine silt clay, pits, burrows and mounds. Acanth in burrow.
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	802					0		0	0					Switching watch to Beth and Jess, bottom sediment with burrows, small mounds, and depression
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	804					0		0	0					acanth burrow.
CalypsoPipeline	5/12/2006	TONGS			MP 10W	606	806					0		0	0					peri.
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	808					0		0	0					acanth burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	810					0		0	0					same clay sediment with clusters of small mounds, probably acanthacaris burrows, depressions
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	811					0		0	0					peri
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	812					0		0	0					target site, 60m due north
CalypsoPipeline	5/12/2006	TONGS			MP 10W	607	813					0		0	0					peri, large burrow, target appears to be a larger rectangular object 180 ft long, directly on the pipeline route
CalypsoPipeline	5/12/2006	TONGS			MP 10W	606	814					0		0	0					larger burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	605	816					0		0	0					
CalypsoPipeline	5/12/2006	TONGS			MP 10W	604	818					0		0	0					shrimp and burrows.
CalypsoPipeline	5/12/2006	TONGS			MP 10W	604	819					0		0	0					tiny little skulls, fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	603	820					0		0	0					same flat bottom with burrows and mounds, occ clusters of smaller burrows together
CalypsoPipeline	5/12/2006	TONGS			MP 10W	602	821					0		0	0					striped fish.
CalypsoPipeline	5/12/2006	TONGS			MP 10W	601	823					0		0	0					acanthacaris in burrow, fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	601	824					0		0	0					larger burrow with acanth, fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	601	825					0		0	0					acanth in burrow, switching to tape 20

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CalypsoPipeline	5/12/2006	TONGS			MP 10W	600	826					0	0	0	0	0	0	0	0	silty sand with burrows, occ acanthacaris burrows, fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	600	827					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/12/2006	TONGS			MP 10W	600	828					0	0	0	0	0	0	0	0	striped fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	600	829					0	0	0	0	0	0	0	0	acanthacaris burrow, acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	600	830					0	0	0	0	0	0	0	0	same habitat as before, sandy flat bottom with burrows, depressions, and burrows, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 10W	599	831					0	0	0	0	0	0	0	0	acanthacaris in burrow, acanthacaris in very large burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	598	832					0	0	0	0	0	0	0	0	acanth in burrow, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	598	833					0	0	0	0	0	0	0	0	acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	598	834					0	0	0	0	0	0	0	0	nota, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 10W	598	835					0	0	0	0	0	0	0	0	acanth, octopus, 2 acanth, nota, 3 acanth burrows
CalypsoPipeline	5/12/2006	TONGS			MP 10W	597	836					0	0	0	0	0	0	0	0	4 acanthacaris burrows, nota, acanthacaris burrow, striped fish, 2 acanthacaris burrows
CalypsoPipeline	5/12/2006	TONGS			MP 10W	596	837					0	0	0	0	0	0	0	0	chaunax
CalypsoPipeline	5/12/2006	TONGS			MP 10W	595	840					0	0	0	0	0	0	0	0	100% sandy silt sediment, burrows usually occupied with acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 10W	593	841					0	0	0	0	0	0	0	0	large depression, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	592	842					0	0	0	0	0	0	0	0	3 acanthacaris burrows
CalypsoPipeline	5/12/2006	TONGS			MP 10W	592	844					0	0	0	0	0	0	0	0	striped fish, acanth in large burrow, unident little critter
CalypsoPipeline	5/12/2006	TONGS			MP 10W	590	845					0	0	0	0	0	0	0	0	3 acanthacaris in burrows
CalypsoPipeline	5/12/2006	TONGS			MP 10W	590	846					0	0	0	0	0	0	0	0	acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	589	847					0	0	0	0	0	0	0	0	peri, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	589	848					0	0	0	0	0	0	0	0	very small skate, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP 10W	588	849					0	0	0	0	0	0	0	0	acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 10W	589	850					0	0	0	0	0	0	0	0	large crab, 100% soft substrate small burrows, occ large excavations, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 10W	588	852					0	0	0	0	0	0	0	0	peri, acanthacaris burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	587	853					0	0	0	0	0	0	0	0	acanthacaris in burrow, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 10W	587	854					0	0	0	0	0	0	0	0	acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP 10W	587	855					0	0	0	0	0	0	0	0	larger crab possibly cancer
CalypsoPipeline	5/12/2006	TONGS			MP 10W	586	856					0	0	0	0	0	0	0	0	very small skate, acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	587	857					0	0	0	0	0	0	0	0	acanthacaris by large burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	587	859					0	0	0	0	0	0	0	0	acanthacaris burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	586	900					0	0	0	0	0	0	0	0	same habitat, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 10W	585	901					0	0	0	0	0	0	0	0	seastar
CalypsoPipeline	5/12/2006	TONGS			MP 10W	586	903					0	0	0	0	0	0	0	0	large burrow with 3 acanthacaris, acanthacaris burrow
CalypsoPipeline	5/12/2006	TONGS			MP 10W	586	904					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/12/2006	TONGS			MP 10W	585	906					0	0	0	0	0	0	0	0	striped fish, skate
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10							0	0	0	0	0	0	0	0	Shipwreck target from ROV transect MP10W. Observed on ROV sonar but could not get to it previously,
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	607						0	0	0	0	0	0	0	0	target site, 60m due north
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10							0	0	0	0	0	0	0	0	Launch
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	601						0	0	0	0	0	0	0	0	On bottom; soft sediment
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	602	511					0	0	0	0	0	0	0	0	flat sed w/ bioturb, pits, mounds and burrows, acanth burrows
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	602						0	0	0	0	0	0	0	0	On bottom; soft sediment
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	606						0	0	0	0	0	0	0	0	Still unable to get within 50m of target. Bottom depth is 1989, target is strongest on sonar at 1940 ft.
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	603	640	S		S		1	0	0	0	0	0	0	0	Target is sitting off the bottom about 50ft
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	604						0	0	0	0	0	0	0	0	golden crab
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10							0	0	0	0	0	0	0	0	Tongs print in the sand NO - another track not tongs
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	605						0	0	0	0	0	0	0	0	25m away
CalypsoPipeline	5/15/2006	TONGS			Shipwreck site near MP 10	605						0	0	0	0	0	0	0	0	rocks - no target; 1 ft boulders over 20 ft area; no wreck!!!!!!!
CalypsoPipeline	5/12/2006	TONGS			MP11W	586	908					0	0	0	0	0	0	0	0	on pipeline rte crossing MP 11, passing 200 yards south
CalypsoPipeline	5/12/2006	TONGS			MP11W	586	909					0	0	0	0	0	0	0	0	aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP11W	586	910					0	0	0	0	0	0	0	0	nota, same soft substrate with burrows, mounds, and acanthacaris excavations
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	912					0	0	0	0	0	0	0	0	acanthacaris burrow, skate, acanthacaris in burrow, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	914					0	0	0	0	0	0	0	0	acanthacaris, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	916					0	0	0	0	0	0	0	0	2 acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	918					0	0	0	0	0	0	0	0	depression/ledge with a large looks like spider crab
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	919					0	0	0	0	0	0	0	0	acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	920					0	0	0	0	0	0	0	0	same flat sandy silty substrate with mounds and burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	923					0	0	0	0	0	0	0	0	acanthacaris, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	924					0	0	0	0	0	0	0	0	acanthacaris in burrow, striped fish, acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	925					0	0	0	0	0	0	0	0	small fish, acanthacaris out of burrow, acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	926					0	0	0	0	0	0	0	0	switching to tape 21
CalypsoPipeline	5/12/2006	TONGS			MP11W	585	927					0	0	0	0	0	0	0	0	aerosoma, striped fish, skate large aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	928					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	929					0	0	0	0	0	0	0	0	striped fish, acanthacaris burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	930					0	0	0	0	0	0	0	0	100% sandy soft substrate with burrows, small mounds and occasional larger excavations, acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	931					0	0	0	0	0	0	0	0	acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	932					0	0	0	0	0	0	0	0	acanthacaris in burrow,
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	933					0	0	0	0	0	0	0	0	acanthacaris in burrow,
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	934					0	0	0	0	0	0	0	0	acanthacaris in burrow, nota
CalypsoPipeline	5/12/2006	TONGS			MP11W	584	935					0	0	0	0	0	0	0	0	larger pit off to left, nota, acanthacaris, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP11W	582	936					0	0	0	0	0	0	0	0	striped fish, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	583	937					0	0	0	0	0	0	0	0	large depression, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	582	938					0	0	0	0	0	0	0	0	nota, rattail?, chaunax?
CalypsoPipeline	5/12/2006	TONGS			MP11W	582	939					0	0	0	0	0	0	0	0	large acanthacaris in burrow, 2 acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	582	940					0	0	0	0	0	0	0	0	aerosoma, same habitat, rattail
CalypsoPipeline	5/12/2006	TONGS			MP11W	580	941					0	0	0	0	0	0	0	0	striped fish, slight depression/ledge occupied by an acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	581	942					0	0	0	0	0	0	0	0	larger excavation with an acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	580	943					0	0	0	0	0	0	0	0	acanthacaris in depression/burrow, 3 acanthacaris
CalypsoPipeline	5/12/2006	TONGS			MP11W	580	944					0	0	0	0	0	0	0	0	nota, skate, acanthacaris, skate
CalypsoPipeline	5/12/2006	TONGS			MP11W	579	946					0	0	0	0	0	0	0	0	striped fish, shrimp
CalypsoPipeline	5/12/2006	TONGS			MP11W	579	947					0	0	0	0	0	0	0	0	nota, 2 acanthacaris in burrows
CalypsoPipeline	5/12/2006	TONGS			MP11W	579	948					0	0	0	0	0	0	0	0	striped fish, nota skate

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	579	949					0		0	0					nota
CalypsoPipeline	5/12/2006	TONGS			MP11W	578	950					0		0	0					100% soft sandy substrate, mounds and burrows, acanthacaris in burrows, occasional fish, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	577	951					0		0	0					2 nota
CalypsoPipeline	5/12/2006	TONGS			MP11W	576	952					0		0	0					nota, aerosoma, 2 acanthacaris in burrows,
CalypsoPipeline	5/12/2006	TONGS			MP11W	576	953					0		0	0					acanthacaris in burrow,
CalypsoPipeline	5/12/2006	TONGS			MP11W	575	954					0		0	0					striped fish, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP11W	575	956					0		0	0					skate, striped fish,
CalypsoPipeline	5/12/2006	TONGS			MP11W	574	957					0		0	0					coming back onto line 11, we were 200 yards south perviously, acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	573	958					0		0	0					acanthacaris in burrow, skate
CalypsoPipeline	5/12/2006	TONGS			MP11W	573	959					0		0	0					acanthacaris in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	573	1000					0		0	0					skate, aerosoma, 2 ane, same soft substrate with burrows, mounds, excavations, ane, nota
CalypsoPipeline	5/12/2006	TONGS			MP11W	573	1001					0		0	0					skate, ane
CalypsoPipeline	5/12/2006	TONGS			MP11W	572	1002					0		0	0					skate, skate, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	572	1003					0		0	0					ane
CalypsoPipeline	5/12/2006	TONGS			MP11W	572	1004					0		0	0					skate, acanth, ane
CalypsoPipeline	5/12/2006	TONGS			MP11W	571	1005					0		0	0					large depression, fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	570	1006					0		0	0					acanth in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	570	1007					0		0	0					ane, 2 ane, aero
CalypsoPipeline	5/12/2006	TONGS			MP11W	570	1008					0		0	0					acanth, striped fish, acanth, ane, skate, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W	568	1009					0		0	0					nota, skate
CalypsoPipeline	5/12/2006	TONGS			MP11W	569	1010					0		0	0					same bottom, flat sediment with occ burrow and acanth occupying, sometimes deeper depressions,
CalypsoPipeline	5/12/2006	TONGS			MP11W	568	1011					0		0	0					acanth
CalypsoPipeline	5/12/2006	TONGS			MP11W	568	1012					0		0	0					ane, skate, striped fish, nota
CalypsoPipeline	5/12/2006	TONGS			MP11W	568	1013					0		0	0					ane
CalypsoPipeline	5/12/2006	TONGS			MP11W	568	1013					0		0	0					2 ane, 2 acanth in burrow
CalypsoPipeline	5/12/2006	TONGS			MP11W	567	1014					0		0	0					striped fish
CalypsoPipeline	5/12/2006	TONGS			MP11W		1015					0		0	0					just passed MP 12, ane's
CalypsoPipeline	5/12/2006	TONGS			MP11W							0		0	0					
CalypsoPipeline	5/12/2006	TONGS			MP11W							0		0	0					making second 12 spreadsheet because something went wrong
CalypsoPipeline	5/12/2006	TONGS			MP12W	567	1016					0		0	0					ane, skate
CalypsoPipeline	5/12/2006	TONGS			MP12W	565	1017					0		0	0					skate, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP12W	566	1019					0		0	0					ane, 2 ane, skate
CalypsoPipeline	5/12/2006	TONGS			MP12W	565	1020					0		0	0					striped fish, 4 ane, same bottom habitat of flat sediment, sandy and silty with occ burrows and excavations (acanth burrows)
CalypsoPipeline	5/12/2006	TONGS			MP12W	564	1021					0		0	0					striped fish x2
CalypsoPipeline	5/12/2006	TONGS			MP12W	565	1022					0		0	0					4 ane, striped fish, 2 ane, acanth in burrow, poss cha
CalypsoPipeline	5/12/2006	TONGS			MP12W	564	1023					0		0	0					acanthi in depression, pic of crab, peni
CalypsoPipeline	5/12/2006	TONGS			MP12W	565	1024					0		0	0					ane, poss brittle star, several ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	562	1025					0		0	0					a few ane's, skate, 5 acanth in burrow, aerosoma on side cam
CalypsoPipeline	5/12/2006	TONGS			MP12W	563	1026					0		0	0					shr, skate
CalypsoPipeline	5/12/2006	TONGS			MP12W	564	1027					0		0	0					shr, end of tape 21, switch to tape 22
CalypsoPipeline	5/12/2006	TONGS			MP12W	562	1028					0		0	0					begin tape 22, soft sandy bottom with small mounds and burrows, excavated by acanth, skate, sh
CalypsoPipeline	5/12/2006	TONGS			MP12W	561	1029					0		0	0					acanth in burrow, acanth, acanth in burrow, 2 ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	561	1030					0		0	0					aerosoma, same habitat, ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	561	1031					0		0	0					2 ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	560	1032					0		0	0					acanth in burrow, acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	559	1033					0		0	0					3 acanth, 3 acanth plus crab on rock, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	559	1034					0		0	0					striped fish, several ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	558	1035					0		0	0					sev ane's, acanth in depression, shr
CalypsoPipeline	5/12/2006	TONGS			MP12W	558	1036					0		0	0					striped fish, skate
CalypsoPipeline	5/12/2006	TONGS			MP12W	557	1037					0		0	0					fish, ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	557	1038					0		0	0					depression, ane, skate, striped fish, ane, depression with acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	556	1039					0		0	0					2 striped fish, occ ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	556	1040					0		0	0					nota, same habitat soft sandy sediment, spattered with burrows and excavations, mostly acanth, ane, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	555	1041					0		0	0					shrimp, 3 ane, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	554	1042					0		0	0					skate, depression, shrimp, irregular bottom, ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	554	1043					0		0	0					depression in the side cam, striped fish, shrimp, ane,
CalypsoPipeline	5/12/2006	TONGS			MP12W	553	1044					0		0	0					depression, ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	553	1045					0		0	0					shr, burrow, acanth, bottom irregular; poss sed that was dug up;
CalypsoPipeline	5/12/2006	TONGS			MP12W	552	1046					0		0	0					irregular bottom with acanth and rock in it
CalypsoPipeline	5/12/2006	TONGS			MP12W	552	1047					0		0	0					2 acanth in depression, skate, fuzz a poss hydroid growth? [=FINE GRAVEL], ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	551	1048					0		0	0					ratial, striped fish, cha
CalypsoPipeline	5/12/2006	TONGS			MP12W	550	1049					0		0	0					4 ane, shr, striped fish, depression with irregular bottom
CalypsoPipeline	5/12/2006	TONGS			MP12W	550	1050					0		0	0					same bottom habitat, sandy sediment with burrows, occ depression with growth[=GRAVEL]?, depression with 3 acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	550	1051					0		0	0					nota
CalypsoPipeline	5/12/2006	TONGS			MP12W	550	1052					0		0	0					7 ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	549	1053					0		0	0					nota, ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	548	1054					0		0	0					ratial, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	548	1055					0		0	0					several ane, acanth seem to be thinning out
CalypsoPipeline	5/12/2006	TONGS			MP12W	547	1056					0		0	0					striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	547	1057					0		0	0					shr
CalypsoPipeline	5/12/2006	TONGS			MP12W	547	1058					0		0	0					shr, burrows, 20 cm poss dogfish?
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1059					0		0	0					depression with acanth, nota, irregular bottom patch, poss fan sponge?
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1100					0		0	0					seeing some irregular topography, burrow
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1101					0		0	0					irregular depression, shr, standing coral rubble/rock, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1102					0		0	0					depression, ane's, striped fish, acanth in depression
CalypsoPipeline																				

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1106					0	0	0					3 acanth in depression, more irregular bottom
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1107					0	0	0					burrows and ane's, rock with acanth and ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1108					0	0	0					standing organism, striped fish, acanth in rock by depression
CalypsoPipeline	5/12/2006	TONGS			MP12W	546	1109					0	0	0					ane's, striped fish, irreg bottom, ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1110					0	0	0					depression, nota, same sandy bottom habitat, occ irreg bottom, ane, acanth more scarce, burrowed out excavations
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1111					0	0	0					shr, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1113					0	0	0					acanth, shr, striped fish, cha
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1114					0	0	0					irregular bottom in depression with acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1115					0	0	0					poss rattail, striped fish, acanth in depression
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1116					0	0	0					ane, irreg bottom, acanth, 2 ane, burrow
CalypsoPipeline	5/12/2006	TONGS			MP12W	545	1117					0	0	0					lg fish, depression, fish, acanth, striped fish, 5 ane, acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	544	1118					0	0	0					acanth in depression, 4 ane, nota, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	544	1119					0	0	0					skate, ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	544	1120					0	0	0					acanth are in reality gal
CalypsoPipeline	5/12/2006	TONGS			MP12W	543	1121					0	0	0					exposed fine pebbles, coral debris, cha, ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	543	1122					0	0	0					striped fish, ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	543	1124					0	0	0					burrows and ane's
CalypsoPipeline	5/12/2006	TONGS			MP12W	542	1125					0	0	0					striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	542	1127					0	0	0					ane, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	542	1129					0	0	0					striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	541	1130					0	0	0					acanth
CalypsoPipeline	5/12/2006	TONGS			MP12W	541	1131					0	0	0					shell on same bottom, 2 striped fish, ane, soft sandy bottom with occ burrows, depressions
CalypsoPipeline	5/12/2006	TONGS			MP12W	540	1132					0	0	0					2 gal in depression, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP12W	540	1133					0	0	0					2 ane, shr
CalypsoPipeline	5/12/2006	TONGS			MP12W	540	1134					0	0	0					ane
CalypsoPipeline	5/12/2006	TONGS			MP12W	539	1135					0	0	0					2 striped fish, shr, gal, irregular bottom on left hand side of screen
CalypsoPipeline	5/12/2006	TONGS			MP12W	539	1136					0	0	0					seastar, end of tape 22, begin tape 23, just passed MP 13, switching spreadsheet
CalypsoPipeline	5/12/2006	TONGS			MP13W	539	1137					0	0	0					nota, rattail
CalypsoPipeline	5/12/2006	TONGS			MP13W	539	1138					0	0	0					irregular bottom, ane
CalypsoPipeline	5/12/2006	TONGS			MP13W	539	1139					0	0	0					same habitat bottom, flat silty sediment with occ burrows and excavations, gal/acanth, seastar, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	539	1140					0	0	0					fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	539	1141					0	0	0					aerosoma, ane, irreg bottom, huge shark on side camera
CalypsoPipeline	5/12/2006	TONGS			MP13W	538	1142					0	0	0					aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP13W	537	1144					0	0	0					same flat bottom
CalypsoPipeline	5/12/2006	TONGS			MP13W	537	1145					0	0	0					ane's, several ane
CalypsoPipeline	5/12/2006	TONGS			MP13W	536	1147					0	0	0					3 striped fish, shr, ane
CalypsoPipeline	5/12/2006	TONGS			MP13W	536	1148					0	0	0					ane, unident critter
CalypsoPipeline	5/12/2006	TONGS			MP13W	536	1149					0	0	0					striped fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	535	1150					0	0	0					same bottom, sandy sediment with occ burrows and excavations, little gal/acanth. Most ane and striped fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	535	1151					0	0	0					striped fish, acanth/gal
CalypsoPipeline	5/12/2006	TONGS			MP13W	535	1152					0	0	0					ane, shr
CalypsoPipeline	5/12/2006	TONGS			MP13W	533	1153					0	0	0					unident squishy
CalypsoPipeline	5/12/2006	TONGS			MP13W	533	1156					0	0	0					irreg bottom, acanth/gal, striped fish, several ane's, irreg bottom, acanth/gal, shr
CalypsoPipeline	5/12/2006	TONGS			MP13W	532	1157					0	0	0					shr, irreg bottom, ane's, fish, acanth/gal, striped fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	529	1158					0	0	0					attacking swordfish, depression with irreg, critters
CalypsoPipeline	5/12/2006	TONGS			MP13W	531	1200					0	0	0					same flat bottom sediment with occ burrows/excavations but in fewer numbers, striped fish, scattered
CalypsoPipeline	5/12/2006	TONGS			MP13W	529	1201					0	0	0					ane's, gal/acanth
CalypsoPipeline	5/12/2006	TONGS			MP13W	531	1202					0	0	0					acanth, sev shr, acanth
CalypsoPipeline	5/12/2006	TONGS			MP13W	529	1203					0	0	0					ane
CalypsoPipeline	5/12/2006	TONGS			MP13W	529	1205	S	S			1	143	0	0				same btm flat btm, golden crab, no bioturb, fine dark spot, gal
CalypsoPipeline	5/12/2006	TONGS			MP13W	528	1206					0	0	0					gal in bowl, few sm burrows, sm orange org ~4cm across, fish (?) ~6-8 cm, sm org in cave, shr, common chlorophth?
CalypsoPipeline	5/12/2006	TONGS			MP13W	528	1208					0	0	0					deep burrow gal? , crn
CalypsoPipeline	5/12/2006	TONGS			MP13W	526	1209					0	0	0					few burrows, sm crater tunnels, depression with gal, patches of sm drk spots? Fine rub/gravel? Shr, sm orange org.
CalypsoPipeline	5/12/2006	TONGS			MP13W	526	1210					0	0	0					1/2m lrg depression w/ gal, fine drk rub/gravel?
CalypsoPipeline	5/12/2006	TONGS			MP13W	525	1211					0	0	0					lrg bowl depression w/ gal, chlorophth?
CalypsoPipeline	5/12/2006	TONGS			MP13W	525	1212					0	0	0					1m crater, crater tunnel, common sm orange org
CalypsoPipeline	5/12/2006	TONGS			MP13W	524	1213					0	0	0					small orange org
CalypsoPipeline	5/12/2006	TONGS			MP13W	524	1214					0	0	0					lg depression with black gravel? x2, gal
CalypsoPipeline	5/12/2006	TONGS			MP13W	523	1215					0	0	0					lg depression, same smooth btm, widely scattered bioturb
CalypsoPipeline	5/12/2006	TONGS			MP13W	523	1216					0	0	0					abund fine gravel, sm orange org, depressions with gravel pile (more than one per min.), sm crater tunnel
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1217					0	0	0					same btm, fine gravel on surface, lg depression w/ gravel to one side, sm orange org
CalypsoPipeline	5/12/2006	TONGS			MP13W	521	1218					0	0	0					chaunax, gravel depression
CalypsoPipeline	5/12/2006	TONGS			MP13W	521	1219					0	0	0					ecu, rat tail, lg depression w/ gal
CalypsoPipeline	5/12/2006	TONGS			MP13W	521	1220					0	0	0					very fine, more rub, photo of bottom
CalypsoPipeline	5/12/2006	TONGS			MP13W	519	1221					0	0	0					gal, fine rub, gravel-sized sticks and bits, chaunax.
CalypsoPipeline	5/12/2006	TONGS			MP13W	519	1222					0	0	0					gal x2, scattered sm unident stalks ~6cm, gal in depression, white fine coral rub?, sed btm w/ much more
CalypsoPipeline	5/12/2006	TONGS			MP13W	519	1224					0	0	0					fine gravel-sized rub, depression with gal, rat tail
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1225					0	0	0					side cameras show flat btm,
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1227					0	0	0					sm rock attacked org on rock, chaunax, chlor x2, rat tail, smooth btm, bowl depression 1/2 m across
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1228					0	0	0					photos of fine rub/gravel in sed
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1228					0	0	0					sm orange org, chlor
CalypsoPipeline	5/12/2006	TONGS			MP13W	517	1229					0	0	0					scattered pale stalks, chaunax, depression with rubble, ga
CalypsoPipeline	5/12/2006	TONGS			MP13W	517	1230					0	0	0					shr x2, depression with gal x2, chlor
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1231	S, Ru	H			1	0	0					golden crab? in side camera, sm stalks, sm phak?
CalypsoPipeline	5/12/2006	TONGS			MP13W	516	1232					0	0	0					crab off side camera,

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish	
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1233					0	0	0	0	0	0	0	0	fine rubble btm, few scattered, sm stalks, gal in bowls, phak? chlor, shr	
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1234					0	0	0	0	0	0	0	0	gal, stalks, rat tail	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1235					0	0	0	0	0	0	0	0	sm prim (plumarella?), sm orange stalk, sm prim more common	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1236					0	0	0	0	0	0	0	0	gal, coral rubble, sm phak, shr	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1237					0	0	0	0	0	0	0	0	smooth bottom, little bioturb, widely scattered rubble bits, sm phak, return to coral rut	
CalypsoPipeline	5/12/2006	TONGS			MP13W	513	1238					0	0	0	0	0	0	0	0	fine rub in sed, little bioturb, gal, chlor,	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1239					0	0	0	0	0	0	0	0	unknown org, sm orange org (3-4cm), sm stalk	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1240					0	0	0	0	0	0	0	0	lg bowl w/ gravel rat tail, chlor	
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1241					0	0	0	0	0	0	0	0	sparse bib, less gravel rub in sed, shr	
CalypsoPipeline	5/12/2006	TONGS			MP13W	513	1242					0	0	0	0	0	0	0	0	more gravel, TAPE 23 RAN OUT -10 MIN AGO; ROV track is ~900 ft south of pipeline route at this point	
CalypsoPipeline	5/12/2006	TONGS			MP13W	516	1243					0	0	0	0	0	0	0	0	BRINGING UP ROV TO DOWNLOAD IMAGES AT MILE MARKER 14; WILL BACKTRACK WHEN WE RE-DEPLOY.	
CalypsoPipeline	5/12/2006	TONGS			MP13W							0	0	0	0	0	0	0	0	REDEPLOYED ROV ~0.5 MILE EAST OF MP 14; rerunning the last ~1500 ft of previous dive where ROV got several hundred ft S of pipeline route.	
CalypsoPipeline	5/12/2006	TONGS			MP13W							0	0	0	0	0	0	0	0	On bottom, sediment w/ sparse c rub, 2000ft east of MP 10. Tape not recording yet - having problems	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1705					0	0	0	0	0	0	0	0	Something wrong with tape #24. Tape not used - discarded	
CalypsoPipeline	5/12/2006	TONGS			MP13W		1708					0	0	0	0	0	0	0	0	Dive #3 starting here w/ tape 25. Sub redeployed btw MP 13 & 14. Flat sed w/ blk c rub probably fossil	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1709					0	0	0	0	0	0	0	0	lpp w/ phosphoric coating.	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1711					0	0	0	0	0	0	0	0	several chloroptalmus fish? 100 ft North of pipeline, ~.5 mile east of waypt 14 MP	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1712					0	0	0	0	0	0	0	0	chloroptalmus? sed, c rub	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1713					0	0	0	0	0	0	0	0	skate - 15cm, same bottom, slight bioturb, pits and burrows	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1715					0	0	0	0	0	0	0	0	starfish, same bottom, ~.25 knot current to north.	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1716					0	0	0	0	0	0	0	0	severl sm sea stars - pentagonal thick arms	
CalypsoPipeline	5/12/2006	TONGS			MP13W	522	1717					0	0	0	0	0	0	0	0	c rub or ro rub, rat tail fish. Rubble 2-3cm	
CalypsoPipeline	5/12/2006	TONGS			MP13W	520	1719					0	0	0	0	0	0	0	0	peri, chlor appear to be dominate fish. Same bottom, lrg urchin 16 cm diameter, fine filaments on bottom,	
CalypsoPipeline	5/12/2006	TONGS			MP13W	520	1720					0	0	0	0	0	0	0	0	gal in burrow, cluster pits. No live coral or sponges.	
CalypsoPipeline	5/12/2006	TONGS			MP13W							0	0	0	0	0	0	0	0	ROV 1100 ft to the north of the ship	
CalypsoPipeline	5/12/2006	TONGS			MP13W	520	1722					0	0	0	0	0	0	0	0	More rubble - c rub or rock rub??? Hard to tell. Majority seems to be c rub. Fine filamentous material on	
CalypsoPipeline	5/12/2006	TONGS			MP13W	519	1724					0	0	0	0	0	0	0	0	bottom. 10-30% RUBBLE cover. Occasional orange object on bottom - octocoral??? Chlor (2)	
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1725					0	0	0	0	0	0	0	0	gal, lrg fish 20cm heavy body. At foot of Miami terrace escarpment. 200 ft N of pipeline. Ga	
CalypsoPipeline	5/12/2006	TONGS			MP13W	518	1726	S, Ru	H			0	114	0	0	0	0	0	0	0	RAT tails nezumia?, chlor even 10-20 ft. More c rub - 30% cover, sed.
CalypsoPipeline	5/12/2006	TONGS			MP13W	517	1728					0	0	0	0	0	0	0	0	0	1m diameter depression - fish excavation? Sling ray? Same bottom, chlor, Cha fen (golden crab
CalypsoPipeline	5/12/2006	TONGS			MP13W	516	1729					0	0	0	0	0	0	0	0	0	30 sec previously cha, sed, c rub, 8 cm white shrimp, rat tail fish
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1731					0	0	0	0	0	0	0	0	0	sponges growing on bottom - denser hard bottom, possible gorgonian, 50% cover exposed c rub, gal,
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1733					0	0	0	0	0	0	0	0	0	chlor
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1734					0	0	0	0	0	0	0	0	0	sed, c rub, chlor
CalypsoPipeline	5/12/2006	TONGS			MP13W	515	1734					0	0	0	0	0	0	0	0	0	PHK fan sponges
CalypsoPipeline	5/12/2006	TONGS			MP13W	514	1735					0	0	0	0	0	0	0	0	0	appears to be some octocoral maybe zoan
CalypsoPipeline	5/12/2006	TONGS			MP13W	513	1738					0	0	0	0	0	0	0	0	0	dense c rub, sed, zoan, sm sponges - 5cm
CalypsoPipeline	5/12/2006	TONGS			MP13W	513	1739					0	0	0	0	0	0	0	0	0	off bottom, 100ft north of pipeline
CalypsoPipeline	5/12/2006	TONGS			MP13W	512	1740					0	0	0	0	0	0	0	0	0	gorgonians, hya w/ zoan on stalk, cap net!
CalypsoPipeline	5/12/2006	TONGS			MP13W	512	1741					0	0	0	0	0	0	0	0	0	sm sponges, gal X 2
CalypsoPipeline	5/12/2006	TONGS			MP13W	512	1742					0	0	0	0	0	0	0	0	0	square bottom bottles
CalypsoPipeline	5/12/2006	TONGS			MP13W	511	1744					0	0	0	0	0	0	0	0	0	pulled off bottom - sqg ~ 2 knots, 200ft north of pipeline. Surface current 2.9 knots
CalypsoPipeline	5/12/2006	TONGS			MP13W	511	1747					0	0	0	0	0	0	0	0	0	back on bottom, dense c rub with sed, sm pieces sdc 5-10 cm, phk, nph, sm gorgs 10 cm tall, chlor,
CalypsoPipeline	5/12/2006	TONGS			MP13W	510	1748					0	0	0	0	0	0	0	0	0	shrimp
CalypsoPipeline	5/12/2006	TONGS			MP13W	509	1749					0	0	0	0	0	0	0	0	0	having trouble staying on bottom w/ ship speed. Height of video is varying
CalypsoPipeline	5/12/2006	TONGS			MP13W	510	1748					0	0	0	0	0	0	0	0	0	fishing line or cable 16m diameter, lrg phk? 13 cm
CalypsoPipeline	5/12/2006	TONGS			MP13W	509	1749					0	0	0	0	0	0	0	0	0	ledge undercut w/ c rub, gal, x 2, burrows scanth?
CalypsoPipeline	5/12/2006	TONGS			MP13W	510	1750					0	0	0	0	0	0	0	0	0	hya stalk coated w/ zoan, chlor
CalypsoPipeline	5/12/2006	TONGS			MP13W	510	1750					0	0	0	0	0	0	0	0	0	lrg urchin 15 cm, bottom current picking up, >.25 knot, aerosoma, sed c-rub patches of dense c rub. Very
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	545	1112					0	0	0	0	0	0	0	0	0	close to MP 14, 90 ft north of MP 14. Swithe
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	542	1149					0	0	0	0	0	0	0	0	0	end of tape 57, switching to tape 58. Waiting to get onto northern transect
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	541	1151					0	0	0	0	0	0	0	0	0	~300 ft N of north transect line heading W, just east of MP 13
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	542	1154					0	0	0	0	0	0	0	0	0	Smooth sed w crater burrows, depressions w fine rock gravel dug up by gal
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	541	1155					0	0	0	0	0	0	0	0	0	Off bottom
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	541	1156					0	0	0	0	0	0	0	0	0	Smooth sed w fine tufts; possible tiny Democrius
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	540	1157					0	0	0	0	0	0	0	0	0	smooth sed w sm craters, scat sm mounds & depressions
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	540	1158					0	0	0	0	0	0	0	0	0	same btm, tiny orange undident blobs, burrows, chlor
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	539	1159					0	0	0	0	0	0	0	0	0	crater tunnel, burrows, scat fine grav.
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	539	1200					0	0	0	0	0	0	0	0	0	tiny stalk (~5 cm)
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	539	1201					0	0	0	0	0	0	0	0	0	squid on btm, smooth, tiny or blobs ~2 cm, chlor, tiny tufts, depression w grave
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	539	1202					0	0	0	0	0	0	0	0	0	scat craters, burrows, gal, bowl 0.5 m across w grav, chlor
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	539	1203					0	0	0	0	0	0	0	0	0	bowl w grav, shr, crater burrow, tiny or blobs,
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	538	1205					0	0	0	0	0	0	0	0	0	cat shark, sm urch, scat fine grav,ast
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	538	1204					0	0	0	0	0	0	0	0	0	tiny stalk
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	537	1206					0	0	0	0	0	0	0	0	0	bowl w grav dug up on one side as previous, sm scat burrows, crater tunne
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	537	1208					0	0	0	0	0	0	0	0	0	0.75-m bowl w grav on one side, sm orange blob
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	536															

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	533	1219					0	0	0	0	0	0	0	0	lg bowl w grav. shr. chlor, scat burrows & sm crater tunnels, cat shark
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	532	1220					0	0	0	0	0	0	0	0	photos incl sm crater tunnel & bowl;
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	532	1221					0	0	0	0	0	0	0	0	same smooth btm, sm stalk, area of sm mounds, scat tiny grav
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	531	1222					0	0	0	0	0	0	0	0	sm or blobs, gal, rattail?
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	529	1224					0	0	0	0	0	0	0	0	off bottom
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	529	1226					0	0	0	0	0	0	0	0	on btm, gal in bowl, sm or blobs, scat fine grav
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	529	1227					0	0	0	0	0	0	0	0	ben. bowl w grav, swordfish
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	528	1228					0	0	0	0	0	0	0	0	crater tunnels, bowl w grav, shr
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	528	1230					0	0	0	0	0	0	0	0	crin (Ate)? spread on btm
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	527	1231					0	0	0	0	0	0	0	0	gals in bowls w grav x2
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	526	1233					0	0	0	0	0	0	0	0	off & back on btm
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	525	1234					0	0	0	0	0	0	0	0	bowl w gal, grav & fine coral twigs, shr
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	524	1236					0	0	0	0	0	0	0	0	fine scat cor rub (twigs), gal, shr
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	525	1237					0	0	0	0	0	0	0	0	scat fine grav & cor rub, sm rock w gal
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	524	1239					0	0	0	0	0	0	0	0	bowl w grav, scat fine grav, far fewer burrows or sm crater tunnels
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	523	1240					0	0	0	0	0	0	0	0	bowl w grav & gal, sm or blobs
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	522	1242					0	0	0	0	0	0	0	0	same btm
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	522	1244					0	0	0	0	0	0	0	0	araeosoma, abund fine grav, gal in bowl w grav
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	520	1246					0	0	0	0	0	0	0	0	abund fine grav, tiny rock, tiny fan spo, gal
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	519	1247					0	0	0	0	0	0	0	0	scat sm rocks 8-15 cm, off btm
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	519	1248					0	0	0	0	0	0	0	0	abund fine coral grav (twigs), lg bowl w grav & gal
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	518	1250					0	0	0	0	0	0	0	0	abund fine coral grav, sm phk, shr
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	517	1252					0	0	0	0	0	0	0	0	abund fine coral grav, occas sm stalk or poss tiny octo <8 cm
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	517	1253					0	0	0	0	0	0	0	0	cor grav, gal, sm phk, few sm octo?
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	516	1254					0	0	0	0	0	0	0	0	abund coral rub, sm phk, sm ball spo
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	516	1255					0	0	0	0	0	0	0	0	sm phk, scat bioturb, gal in bowl
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	515	1256					0	0	0	0	0	0	0	0	coral rub, sm octo, rochinia side camera
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	512	1257					0	0	0	0	0	0	0	0	sm phk
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	514	1258					0	0	0	0	0	0	0	0	coral rub, sm hex, chlor, tiny stalk
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	514	1259					0	0	0	0	0	0	0	0	sm octo (<8 cm) rattail, gal, sm phk
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	514	1300					0	0	0	0	0	0	0	0	coral rub, sm phk, few sm octos
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	512	1302					0	0	0	0	0	0	0	0	araeosoma
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	513	1303					0	0	0	0	0	0	0	0	grav & coral rub, sm stalk,
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	511	1304					0	0	0	0	0	0	0	0	dense cor rub, sm prm? sm phk, sm octo
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	510	1305					0	0	0	0	0	0	0	0	sm octo, dense cor rub, sm phk, sm prima (Flumarella), sm octo
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	511	1306					0	0	0	0	0	0	0	0	less rub, sm phk, Polymixia, gal, scat grav
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	510	1307					0	0	0	0	0	0	0	0	chaunax, gals, back in cor rub, sm prims, hex cup,
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	509	1308					0	0	0	0	0	0	0	0	cor rub, sm prims, back on sparse grav w no cor rub, araeosoma, bowl w grav
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	510	1309					0	0	0	0	0	0	0	0	abund grav, almost no coral rub, bowls
CalypsoPipeline	5/14/2006	TONGS			N-MP13W	509	1310					0	0	0	0	0	0	0	0	cor rubble, sm prims, shr, sm hex,
CalypsoPipeline	5/14/2006	TONGS			N-14W	509	1313					0	0	0	0	0	0	0	0	grav & some cor rub, bowl, tiny gorg
CalypsoPipeline	5/14/2006	TONGS			N-14W	509	1314					0	0	0	0	0	0	0	0	abund grav, some bowls, no vis cor rub, tiny ball spo, chlor
CalypsoPipeline	5/14/2006	TONGS			N-14W	509	1315					0	0	0	0	0	0	0	0	grav, gal in bowl, sm or blob, tiny octo
CalypsoPipeline	5/14/2006	TONGS			N-14W	508	1316					0	0	0	0	0	0	0	0	grav, bowl, few tiny octo (~5 cm)
CalypsoPipeline	5/14/2006	TONGS			N-14W	508	1317					0	0	0	0	0	0	0	0	fine grav, rocks up to 0.5 m, grav becoming veneered pav? Scat rocks, sm Lophelia on rock
CalypsoPipeline	5/14/2006	TONGS			N-14W	508	1318					0	0	0	0	0	0	0	0	grav on sed w some bioturb, orange bumpy octo stalk, sm phk, ga
CalypsoPipeline	5/14/2006	TONGS			N-14W	507	1319					0	0	0	0	0	0	0	0	cor rub & grav, gal, occas rock to 0.5,
CalypsoPipeline	5/14/2006	TONGS			N-14W	507	1320					0	0	0	0	0	0	0	0	dense grav, gal, occas rock
CalypsoPipeline	5/14/2006	TONGS			N-14W	506	1321					0	0	0	0	0	0	0	0	grav/rub w occas rocks, scat burrows, fan spo, blu spo, orange octo stalk
CalypsoPipeline	5/14/2006	TONGS			N-14W	507	1322					0	0	0	0	0	0	0	0	sm phk, sm rocks, octo, sm prim, dense grav btm, rocks more abund, phk, scorp, bmb
CalypsoPipeline	5/14/2006	TONGS			N-14W	506	1323					0	0	0	0	0	0	0	0	dense grav btm, rocks w hyd, sm prim
CalypsoPipeline	5/14/2006	TONGS			N-14W	506	1324					0	0	0	0	0	0	0	0	grav & rocky flat btm, ane, gorg, phk,
CalypsoPipeline	5/14/2006	TONGS			N-14W	506	1325					0	0	0	0	0	0	0	0	gravelly pav w scat rocks up to 1m, gal
CalypsoPipeline	5/14/2006	TONGS			N-14W	504	1326					0	0	0	0	0	0	0	0	sm phk, off btm
CalypsoPipeline	5/14/2006	TONGS			N-14W	503	1328					0	0	0	0	0	0	0	0	dense coral rub, few sm phk, wht detached coral twig
CalypsoPipeline	5/14/2006	TONGS			N-14W	503	1329					0	0	0	0	0	0	0	0	dense coral rub, sm phk, sm octo, chaunax,
CalypsoPipeline	5/14/2006	TONGS			N-14W	503	1330					0	0	0	0	0	0	0	0	dense coral rub, sm octos, sm phk, sm hex,
CalypsoPipeline	5/14/2006	TONGS			N-14W	508	1330					0	0	0	0	0	0	0	0	HOLDING POSITION TO TRANSFER CREW
CalypsoPipeline	5/14/2006	TONGS			N-14W	499	1346	Ru	H			1	0	0	0	0	0	0	0	~500 ft N of transect line, Chaeson fennel on flat coral rub bottom
CalypsoPipeline	5/14/2006	TONGS			N-14W	492	1416					0	0	0	0	0	0	0	0	RETURNING TO TRANSECT AFTER CHANGING CREW
CalypsoPipeline	5/14/2006	TONGS			N-14W	492	1420					0	0	0	0	0	0	0	0	Dense grav, rock rub btm w scat larger rocks, macrofauna v sparse,
CalypsoPipeline	5/14/2006	TONGS			N-14W	491	1421					0	0	0	0	0	0	0	0	irreg coral rub, wht gog, sm prims
CalypsoPipeline	5/14/2006	TONGS			N-14W	491	1422					0	0	0	0	0	0	0	0	flat rock rub, scorp, sm phk, off bottom
CalypsoPipeline	5/14/2006	TONGS			N-14W	481	1423					0	0	0	0	0	0	0	0	lg slabs & low outcrops w rock rub, sm phk, bmb,
CalypsoPipeline	5/14/2006	TONGS			N-14W	491	1424					0	0	0	0	0	0	0	0	few tiny gorgs, crab, rocks to 30 cm, rock rub, bmb
CalypsoPipeline	5/14/2006	TONGS			N-14W	489	1425					0	0	0	0	0	0	0	0	above btm,
CalypsoPipeline	5/14/2006	TONGS			N-14W	490	1426					0	0	0	0	0	0	0	0	rock rub & rocks to 15 cm,
CalypsoPipeline	5/14/2006	TONGS			N-14W	489	1427					0	0	0	0	0	0	0	0	bmb, rocks & slabs to 0.5 m, dense rock rub, above btm
CalypsoPipeline	5/14/2006	TONGS			N-14W	488	1428					0	0	0	0	0	0	0	0	rock grav & rub, few sm octo
CalypsoPipeline	5/14/2006	TONGS			N-14W	489	1429					0	0	0	0	0	0	0	0	coral rub & grav, sm phk,
CalypsoPipeline	5/14/2006	TONGS			N-14W	489	1430					0	0	0	0	0	0	0	0	rock rub & grav alternating with coral rub, sm phk, orange knobby stalk
CalypsoPipeline	5/14/2006	TONGS			N-14W	488	1431					0	0	0	0	0	0	0	0	rock grav, rub & cobbles to 30 cm, v sparse macrofauna
CalypsoPipeline	5/14/2006	TONGS			N-14W	487	1432					0	0	0	0	0	0	0	0	same btm, bmb, bmb
CalypsoPipeline	5/12/2006	TONGS			MP14W	509	1751					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			MP14W	509	1752					0	0	0	0	0	0	0	0	scorpion fish-black belled rose fish??, gal, long line or cable
CalypsoPipeline	5/12/2006	TONGS			MP14W	509	1753					0	0	0	0	0	0	0	0	trg clumps of c rub, nph, gorgs, gorginacae
CalypsoPipeline	5/12/2006	TONGS			MP14W	509	1754					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			MP14W	509	1755					0	0	0	0	0	0	0	0	fish burrow, can see depression, c rub, .25 knot current, chlor, 1m scoured depressions, aereosoma
CalypsoPipeline	5/12/2006	TONGS			MP14W	508	1756					0	0	0	0	0	0	0	0	ro rub, sm cobble 3-4cm intermixed w c rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	508	1757													

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			MP14W	506	1801					0	0	0	0	0	0	0	0	phk, golden paramuricia - Echinomuricia?
CalypsoPipeline	5/12/2006	TONGS			MP14W	506	1802					0	0	0	0	0	0	0	0	20 cm oval depression w/ gal - make .5m depression w/ burrow off to side
CalypsoPipeline	5/12/2006	TONGS			MP14W	506	1803					0	0	0	0	0	0	0	0	right on pipeline rte
CalypsoPipeline	5/12/2006	TONGS			MP14W	506	1805					0	0	0	0	0	0	0	0	phk, zoan on hya stalk, dense c rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	505	1807					0	0	0	0	0	0	0	0	long line
CalypsoPipeline	5/12/2006	TONGS			MP14W	504	1807					0	0	0	0	0	0	0	0	phk, prm?, c rub, sm sdc
CalypsoPipeline	5/12/2006	TONGS			MP14W	504	1809					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			MP14W		1810					0	0	0	0	0	0	0	0	end tape 25
CalypsoPipeline	5/12/2006	TONGS			MP14W	504	1810					0	0	0	0	0	0	0	0	start tape 26, 100% c rub, occasional phk, prm
CalypsoPipeline	5/12/2006	TONGS			MP14W	503	1811					0	0	0	0	0	0	0	0	giant isopod bathynomius or octopus?? aerosome
CalypsoPipeline	5/12/2006	TONGS			MP14W	502	1812					0	0	0	0	0	0	0	0	gal burrow, chlor, nph, hydroids
CalypsoPipeline	5/12/2006	TONGS			MP14W	503	1813					0	0	0	0	0	0	0	0	phk
CalypsoPipeline	5/12/2006	TONGS			MP14W	502	1815					0	0	0	0	0	0	0	0	100% cvr c rub, nph, phk, zoan
CalypsoPipeline	5/12/2006	TONGS			MP14W	502	1816	Ru	H		1	58	0	0	0	0	0	0	0	golden crab? Chaceon fenneri
CalypsoPipeline	5/12/2006	TONGS			MP14W	500	1820					0	0	0	0	0	0	0	0	gal, denser c rub, phk, nph, prm? 30ft south of pipeline. 1/3 mile west of MP 14
CalypsoPipeline	5/12/2006	TONGS			MP14W	500	1822					0	0	0	0	0	0	0	0	hex vase sponges, c rub, chlor, gal in burrow
CalypsoPipeline	5/12/2006	TONGS			MP14W	498	1825					0	0	0	0	0	0	0	0	100% c rub, nph, prm?, hex
CalypsoPipeline	5/12/2006	TONGS			MP14W	497	1830					0	0	0	0	0	0	0	0	same bottom, c rub, south of pipeline 50ft not quite halfway btw mp 14 and 15, phk, nph, prm? 80% cover c rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	497	1831	Ru	H			0	0	0	0	0	0	0	0	red and white shrimp <8cm, chlor.
CalypsoPipeline	5/12/2006	TONGS			MP14W	495	1835					0	0	0	0	0	0	0	0	50ft south of pipeline, c rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	493	1838					0	0	0	0	0	0	0	0	few phk, c rub, chlor
CalypsoPipeline	5/12/2006	TONGS			MP14W	483	1839					0	0	0	0	0	0	0	0	more clumps of sdc 5-10cm intermixed w c rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	494	1840					0	0	0	0	0	0	0	0	zoan on hya stalk, phk, nph, occasionally 5-5cm cluster of sdc
CalypsoPipeline	5/12/2006	TONGS			MP14W	492	1845					0	0	0	0	0	0	0	0	100% c rub, zoan on hya stalks, chlor, nph. Current slowed down btw 1/10 and 1/4 knot. Sog ~ 6 knots
CalypsoPipeline	5/12/2006	TONGS			MP14W	492	1846					0	0	0	0	0	0	0	0	first rock boulders, now on escarpment, phos cobble, 10-20-30cm, nph, little growth, smooth rock, occasional ro pavement
CalypsoPipeline	5/12/2006	TONGS			MP14W	492	1848					0	0	0	0	0	0	0	0	gonnaster star, bmb keritosis
CalypsoPipeline	5/12/2006	TONGS			MP14W	492	1849					0	0	0	0	0	0	0	0	ANE, bmb 2ft ker flex, hex, nph, ane
CalypsoPipeline	5/12/2006	TONGS			MP14W	492	1850					0	0	0	0	0	0	0	0	chor
CalypsoPipeline	5/12/2006	TONGS			MP14W	491	1852					0	0	0	0	0	0	0	0	bmb, phk, ane
CalypsoPipeline	5/12/2006	TONGS			MP14W	491	1853	Ru, Ro	H		1	104	0	0	0	0	0	0	0	Chaceon Fenneri, Lae
CalypsoPipeline	5/12/2006	TONGS			MP14W	490	1854					0	0	0	0	0	0	0	0	lrg c rub, sdc, lrg fan sponges. Out of rock boulder zone, lpp or ent rubble
CalypsoPipeline	5/12/2006	TONGS			MP14W	490	1855					0	0	0	0	0	0	0	0	back in to boulder cobble zone
CalypsoPipeline	5/12/2006	TONGS			MP14W	490	1858					0	0	0	0	0	0	0	0	more bol/cobble, sdc, c rub, sdc, phk, nph. Right on pipeline track, lrg clumps sdc ! ffinintermixed w c rub, rock pavement, lrg bmb
CalypsoPipeline	5/12/2006	TONGS			MP14W	489	1900					0	0	0	0	0	0	0	0	c rud, sds, 15 cm phk, prm, skate, nph
CalypsoPipeline	5/12/2006	TONGS			MP14W	488	1901					0	0	0	0	0	0	0	0	hya w/ zoan, nph
CalypsoPipeline	5/12/2006	TONGS			MP14W	488	1902					0	0	0	0	0	0	0	0	bmb's, rock slab
CalypsoPipeline	5/12/2006	TONGS			MP14W	488	1903					0	0	0	0	0	0	0	0	noz, different feature on sonar
CalypsoPipeline	5/12/2006	TONGS			MP14W	487	1904					0	0	0	0	0	0	0	0	lrg lpp thicket more on outboard camer 2-3 ft tall sdc. lpp/enl??
CalypsoPipeline	5/12/2006	TONGS			MP14W	484	1905					0	0	0	0	0	0	0	0	1.8 knots. 100 ft north of pipeline approaching MP15 off bottom
CalypsoPipeline	5/12/2006	TONGS			MP14W	487	1906					0	0	0	0	0	0	0	0	ridge on sonar, bol, cob, bmb 2ft, ro slab 2-3m
CalypsoPipeline	5/12/2006	TONGS			MP14W	487	1908					0	0	0	0	0	0	0	0	bol, slabs, depression w/ hole maybe tile fish burrow, hor, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP14W	487	1910					0	0	0	0	0	0	0	0	100 ft north of pipeline sog 1knot. Current dropped off to <1/10 knot. End tape 2f
CalypsoPipeline	5/12/2006	TONGS			MP14W	486	1911					0	0	0	0	0	0	0	0	start of tape 2f. Approaching w/pt 15MP, bmb, c rub, ro rub
CalypsoPipeline	5/12/2006	TONGS			MP14W	486	1912	Ru	H		1	0	0	0	0	0	0	0	0	chaceon fenneri, hya, c rub, patches of sdc with thin encrusting yellow sponge, chlor
CalypsoPipeline	5/12/2006	TONGS			MP14W	486	1913					0	0	0	0	0	0	0	0	back in 20-30cm bol and cobble
CalypsoPipeline	5/12/2006	TONGS			MP14W	486	1914					0	0	0	0	0	0	0	0	bmb, hor, boulders, blk coral??, bmb. Finsh MP14, 150 north of MP1E
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	510	1000					0	0	0	0	0	0	0	0	back onto ro rub and coral rub covered by layer of sediment, gal, prm, overls
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1001					0	0	0	0	0	0	0	0	hya stalk
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1002					0	0	0	0	0	0	0	0	c rub
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1003					0	0	0	0	0	0	0	0	2 gal
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1005					0	0	0	0	0	0	0	0	burrow, shr
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1006					0	0	0	0	0	0	0	0	lae
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1007					0	0	0	0	0	0	0	0	c rub, prm
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1008					0	0	0	0	0	0	0	0	hya, gal
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1009					0	0	0	0	0	0	0	0	burrows
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1010					0	0	0	0	0	0	0	0	constant underlying pavement of ro/c rub, covered by thicker veneer of sediment, occ burrow, mound, chaunax
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1011					0	0	0	0	0	0	0	0	end of tape 56, begin tape 57
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1012					0	0	0	0	0	0	0	0	hya
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1014					0	0	0	0	0	0	0	0	textured sediment, shr, chlor
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1016					0	0	0	0	0	0	0	0	textured sediment with mounds and burrows, heli, chau, depressor
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1018					0	0	0	0	0	0	0	0	ro/c rub covered by a thicker layer of sediment, depression
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1019					0	0	0	0	0	0	0	0	depressions, mounds, burrows
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1020					0	0	0	0	0	0	0	0	underlying pavement covered by thicker veneer of sediment, mounds, burrows, depressions, chau
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1023					0	0	0	0	0	0	0	0	gal in excavation, textured sediment overlying pavement
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1024					0	0	0	0	0	0	0	0	burrows, mounds
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1025					0	0	0	0	0	0	0	0	pic
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1026					0	0	0	0	0	0	0	0	gal in depression
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1027					0	0	0	0	0	0	0	0	chlor, tracks/bioturb
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1029					0	0	0	0	0	0	0	0	gal in burrow, shr
CalypsoPipeline	5/14/2006	TONGS			S-MP14E		1030													

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	532	1039					0	0	0	0				skate, burrow, chlor, chau/per?	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	532	1040					0	0	0	0				sandy sediment, little texture, eel, mounds, burrows, pits, gal in burrow	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	533	1041					0	0	0	0				aerosoma, rattail	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	533	1042					0	0	0	0				more burrows, peri	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	534	1043					0	0	0	0				gal, series of small mounds	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	535	1044					0	0	0	0				gal in depression, shr, chlor	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	535	1045					0	0	0	0				3 gals in burrows	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	536	1047					0	0	0	0				aerosoma, shr	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	537	1049					0	0	0	0				aerosoma	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	537	1050					0	0	0	0				shadow of swimming isopod, shr, gal/acanth, chau, burrows, pits, mound in thick sandy sediment	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	539	1051					0	0	0	0				gal	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	537	1052					0	0	0	0				chauunax, chlor, gal in burrow	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	539	1054					0	0	0	0				prim stalk?	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	540	1055					0	0	0	0				crab	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	540	1056					0	0	0	0				cluster of smaller mounds	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	541	1057	S		S		1	0	0	0				skate, golden crab, shr, stalk	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	542	1058					0	0	0	0				seastar, chlor	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	542	1059					0	0	0	0				2 gal in depression, shr, rattail	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	542	1100					0	0	0	0				flat sediment with scattered mounds, burrows, depressions, small unident orange things on sanc	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	542	1101					0	0	0	0				rattail, chau, chau	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	543	1103					0	0	0	0				chlor	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	543	1104					0	0	0	0				2 gal in depression	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	545	1106					0	0	0	0				chlor	
CalypsoPipeline	5/14/2006	TONGS			S-MP14E	545	1109					0	0	0	0				tracking comp froze, reached the end of transect, crossed MP 13	
CalypsoPipeline	5/12/2006	TONGS			MP15W	485	1915					0	0	0	0				ro bol, sdc, c rub. New heading more sw 233 degrees	
CalypsoPipeline	5/12/2006	TONGS			MP15W	485	1917					0	0	0	0				hya w/ zoan. Bmb??? Or mdr??? On rock bol	
CalypsoPipeline	5/12/2006	TONGS			MP15W	483	1919					0	0	0	0				iae x2, c rub, alternating bol and cobble w/ c rub zones. Now hitting sed just a patch. Lrg fr fan sponges, bmb, aerosoma	
CalypsoPipeline	5/12/2006	TONGS			MP15W	483	1920					0	0	0	0				north of pipeline 155ft. Lr rock bol 1m across	
CalypsoPipeline	5/12/2006	TONGS			MP15W	483	1922					0	0	0	0				cable sw ne 1 in across. Columbus 2 segment A cable on chart. 2 in diameter, hei	
CalypsoPipeline	5/12/2006	TONGS			MP15W	482	1923	S, Ru, Ro		H		1	0	0	0				prm, hya, ro bol and pavement, bmb, chaecon ferri, hex	
CalypsoPipeline	5/12/2006	TONGS			MP15W	482	1925					0	0	0	0				ro rub/cobble/bol, prm, fan sponges, bmb. 150ft north of pipeline	
CalypsoPipeline	5/12/2006	TONGS			MP15W	481	1927					0	0	0	0					
CalypsoPipeline	5/12/2006	TONGS			MP15W	481	1928					0	0	0	0				bol zone, ro rub, bol, bmb x 2	
CalypsoPipeline	5/12/2006	TONGS			MP15W	479	1929					0	0	0	0				trial	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1930					0	0	0	0				pulled off bottom	
CalypsoPipeline	5/12/2006	TONGS			MP15W	479	1931					0	0	0	0				back on bottom, ro bol/rub, fan sponge, bmb	
CalypsoPipeline	5/12/2006	TONGS			MP15W	479	1934					0	0	0	0				tile fish burrow - cobble and c rub piled up	
CalypsoPipeline	5/12/2006	TONGS			MP15W	479	1935					0	0	0	0				ro bol, sponges, cobble	
CalypsoPipeline	5/12/2006	TONGS			MP15W	478	1937					0	0	0	0				pulled off bottom	
CalypsoPipeline	5/12/2006	TONGS			MP15W	478	1940					0	0	0	0				back on bottom, prm, ro rub, nez	
CalypsoPipeline	5/12/2006	TONGS			MP15W	478	1942	Ru, Ro		H		1	139	0	0				peri, golden crab bmb	
CalypsoPipeline	5/12/2006	TONGS			MP15W	479	1943					0	0	0	0				iae, s anthomastis, ro slab, or, prm, hydroid, bol field, hor	
CalypsoPipeline	5/12/2006	TONGS			MP15W	478	1947					0	0	0	0				bmb, fan spg, ro rub/cob. Back on pipeline rte. 1/3 mile west wypt 15MF	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1948					0	0	0	0				bmb, hor, ngh	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1950	S, Ro, Ru, Co		H		1	166	0	0				ro bol 20-30 cm, golden crab, c rub	
CalypsoPipeline	5/12/2006	TONGS			MP15W	476	1952	S, Ru		H		1	82	0	0				ro bol, coral?? Bmb, chlor, golden crab	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1954					0	0	0	0				sed, ro rub, fan sponges, ro outcrops	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1955	S, Ro		H		1	98	0	0				ro bol, Ro slabs, golden crab, on pipeline rt. Sog. 5 knots. Current downslope 1/10 kno	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	1958					0	0	0	0				ro bol slabs, lrg bmb, lpp at base?? Hor, prm	
CalypsoPipeline	5/12/2006	TONGS			MP15W	474	2000					0	0	0	0				50ft north of pipeline. Halfway btw MP 15 & 16. HD 249 degrees SOG 1 knot. RO Rub/Pav/Bol/Cob.	
CalypsoPipeline	5/12/2006	TONGS			MP15W	473	2003					0	0	0	0				Bmb, sponges. Change guard! To Beth and Jess	
CalypsoPipeline	5/12/2006	TONGS			MP15W	473	2005					0	0	0	0				Pausing tape while we get back down to depth	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2006					0	0	0	0				Unpausing seastar, ro rub, chlor, bottom	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2007					0	0	0	0				changed to sandy briefly, but now back to ro rub, large dead coral live at tips possibly lpi	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2008					0	0	0	0				ro rub cobble, bol	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2009					0	0	0	0				ro slab, fish with forked tail, lae	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2010	S, Ru		H		0	0	0	0			Bu? (75 cm)	ro rub, cob, and occasional larger boulders, ane, passed a line, tilefish burrow / Sandtite?, scattered coral, hor. Maximum depth for sand tile fish is 153m	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2011					0	0	0	0				bamboo coral, changing to tape 28 while we fly away from the bottom, stopping until we reach bottom again	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2024					0	0	0	0				Back on the bottom	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2025					0	0	0	0				ro rub cob bol, hor	
CalypsoPipeline	5/12/2006	TONGS			MP15W	471	2026					0	0	0	0				coral rub	
CalypsoPipeline	5/12/2006	TONGS			MP15W	471	2027					0	0	0	0				bamboo coral, lifting off bottom, pausing tape	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2030					0	0	0	0				resuming tape, bamboo coral, ro rub cob bol, ane, red fish	
CalypsoPipeline	5/12/2006	TONGS			MP15W	472	2031					0	0	0	0				seastar	
CalypsoPipeline	5/12/2006	TONGS			MP15W	474	2033					0	0	0	0				tiny white standing gorgs?, hor, hya, fan sponge	
CalypsoPipeline	5/12/2006	TONGS			MP15W	473	2034					0	0	0	0				golden crab, hya stalk, hya	
CalypsoPipeline	5/12/2006	TONGS			MP15W	474	2035					0	0	0	0				hya, skate, chlor, sediment bottom with sparser ro rub/cob	
CalypsoPipeline	5/12/2006	TONGS			MP15W	474	2036					0	0	0	0				chlor, hor, hex	
CalypsoPipeline	5/12/2006	TONGS			MP15W	475	2037					0	0	0	0				rose fish	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	486	848					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			South MP15E	486	850					0	0	0	0				low relief exposed ro rub/cob occ bol, occ coral rub, bmb, gorg, ane, lith	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	486	851					0	0	0	0				gorg, poss burrow	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	486	852					0	0	0	0				edl, fan sponge, ane, hor	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	487	853					0	0	0	0				iae, bmb, c rub	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	489	855					0	0	0	0				hor, bmb	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	489	856					0	0	0	0				bmb	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	489	857					0	0	0	0				bmb, hex, lae	
CalypsoPipeline	5/14/2006	TONGS			South MP15E	489	858					0	0	0	0				seastar, coral rub, hya, rattail	

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			South MP15E	489	859													hya.
CalypsoPipeline	5/14/2006	TONGS			South MP15E	488	900					0	0	0	0					same ro pav with sand veneer, low relief exposed ro rub/cob/occ bol, occ coral rub, bmb, sponges
CalypsoPipeline	5/14/2006	TONGS			South MP15E	490	901					0	0	0	0					hor, lae
CalypsoPipeline	5/14/2006	TONGS			South MP15E	490	902					0	0	0	0					prim, bmb
CalypsoPipeline	5/14/2006	TONGS			South MP15E	490	903					0	0	0	0					currently on center pipeline, moving to correct to southern transect
CalypsoPipeline	5/14/2006	TONGS			South MP15E	490	904					0	0	0	0					lae, rattail, bmb, swimming gal
CalypsoPipeline	5/14/2006	TONGS			South MP15E	490	905					0	0	0	0					geo?, bmb, lae, still on exposed ro rub probably pav covered with sediment veneer, occ cob/bol
CalypsoPipeline	5/14/2006	TONGS			South MP15E	491	906					0	0	0	0					some coral rub, fan sponge, hya stalk
CalypsoPipeline	5/14/2006	TONGS			South MP15E	491	907					0	0	0	0					hya stalk?, bmb,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	491	908					0	0	0	0					fan sponge, skate or benthobats?, hor,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	492	909					0	0	0	0					bmb,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	492	910					0	0	0	0					still on consistent ro pav covered by thin sediment veneer, hell, exposed ro is rub/cob/with occ bol sized, have been seeing bmb, ane, sponges, gorg
CalypsoPipeline	5/14/2006	TONGS			South MP15E	493	912					0	0	0	0					hya stalk, nph?, bmb, blue sponge,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	493	913					0	0	0	0					coral rub
CalypsoPipeline	5/14/2006	TONGS			South MP15E	493	915					0	0	0	0					fan sponges, hya stalk, hex?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	493	916					0	0	0	0					zone of coral rub,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	493	917					0	0	0	0					zone of coral rub, fan sponge
CalypsoPipeline	5/14/2006	TONGS			South MP15E	494	919					0	0	0	0					zone of coral rub, gorg
CalypsoPipeline	5/14/2006	TONGS			South MP15E	495	920					0	0	0	0					area of coral and ro rub, earred octopus, gorg, sponges
CalypsoPipeline	5/14/2006	TONGS			South MP15E	494	921					0	0	0	0					fan sponge, hex possibly aphro
CalypsoPipeline	5/14/2006	TONGS			South MP15E	494	922					0	0	0	0					bol, crab,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	496	923					0	0	0	0					RCV pulled up from bottom for a bit,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	495	924					0	0	0	0					bottom coming back into view, still on ro and coral rub,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	495	925					0	0	0	0					rattail, vase hex,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	496	927					0	0	0	0					still ro and coral rub, gorg
CalypsoPipeline	5/14/2006	TONGS			South MP15E	496	928					0	0	0	0					prim, dark red ane?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	497	929					0	0	0	0					hya, prim, chaunax?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	496	930					0	0	0	0					hya, still on consistent ro pav covered by a thin sediment veneer, exposed ro and coral rub, seeing small gorg, hex, and sponges
CalypsoPipeline	5/14/2006	TONGS			South MP15E	497	931					0	0	0	0					gal
CalypsoPipeline	5/14/2006	TONGS			South MP15E	498	932					0	0	0	0					eel,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	498	933					0	0	0	0					ro pav covered with thin veneer of sed,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	498	935					0	0	0	0					prim,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	500	936					0	0	0	0					fan sponge,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	501	937					0	0	0	0					blue sponge, 2 gal, area of coral rub, prim, large isopod?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	500	938					0	0	0	0					rattail, prim, hya stalk, chaunax, prim, hya
CalypsoPipeline	5/14/2006	TONGS			South MP15E	502	939					0	0	0	0					burrow, blue sponge?, small shrimp, prim, chaunax x2
CalypsoPipeline	5/14/2006	TONGS			South MP15E	501	940					0	0	0	0					lae, still on consistent ro pav covered by a thin sediment veneer, exposed ro and coral rub, seeing small gorg, prim, occ hex, and occ sponge
CalypsoPipeline	5/14/2006	TONGS			South MP15E	502	941					0	0	0	0					prim
CalypsoPipeline	5/14/2006	TONGS			South MP15E	503	942					0	0	0	0					fan sponge, rattail, gal in burrow
CalypsoPipeline	5/14/2006	TONGS			South MP15E	505	943					0	0	0	0					prim
CalypsoPipeline	5/14/2006	TONGS			South MP15E	505	944					0	0	0	0					lae, still on ro pav covered with thin sediment veneer, coral rub
CalypsoPipeline	5/14/2006	TONGS			South MP15E	505	945					0	0	0	0					prim,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	505	946					0	0	0	0					chaunax, hya, prim, depressions, small mounds and burrows in sediment
CalypsoPipeline	5/14/2006	TONGS			South MP15E	507	947					0	0	0	0					gal in burrow, small mounds around excavated burrow
CalypsoPipeline	5/14/2006	TONGS			South MP15E	507	948					0	0	0	0					excavated burrow, golden crab, shrimp, gorgs, prim,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	508	949					0	0	0	0					large slab, rock rub, w some coral rub,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	508	950					0	0	0	0					bmb, rock rub & grav, chlor, rocks to 20 cm, skate
CalypsoPipeline	5/14/2006	TONGS			South MP15E	508	951					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			South MP15E	507	952					0	0	0	0					gal?, aerosoma,
CalypsoPipeline	5/14/2006	TONGS			South MP15E	510	953					0	0	0	0					chaunax, more textured sand
CalypsoPipeline	5/14/2006	TONGS			South MP15E	510	954					0	0	0	0					vase hex? burrows, large swimming isopod?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	509	955					0	0	0	0					depression, sediment covering has become thicker, lae
CalypsoPipeline	5/14/2006	TONGS			South MP15E	510	956					0	0	0	0					lae, coral rub has seemed to have ended
CalypsoPipeline	5/14/2006	TONGS			South MP15E	510	957					0	0	0	0					shrimp?
CalypsoPipeline	5/14/2006	TONGS			South MP15E	511	958					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			South MP15E	510	959					1	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			N-15W	488	1432					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			N-15W	487	1433					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			N-15W	487	1434					0	0	0	0					mixed rock grav & coral rub, sm phk, cannot tell if any of the preceding grav/rub btm is consolidated at all
CalypsoPipeline	5/14/2006	TONGS			N-15W	486	1435					0	0	0	0					ben, sm phk, sm octo, still v sparse macrofauna, areosoma, lg or anemone
CalypsoPipeline	5/14/2006	TONGS			N-15W	486	1441					0	0	0	0					slabs, rub, knobby or octo stalk, ant?, Polymyxa, rub & rocks to 30 cm
CalypsoPipeline	5/14/2006	TONGS			N-15W	486	1437					0	0	0	0					sm hex, rock rub & grav, bmb, ast
CalypsoPipeline	5/14/2006	TONGS			N-15W	486	1438					0	0	0	0					rock grav & rub, sm prim, sm wht gorg., sm phk
CalypsoPipeline	5/14/2006	TONGS			N-15W	485	1439					0	0	0	0					dense rock grav/rub btm, Hyalonema w or zoa [knobby orange stalks have been crownless sm Hyalonema]
CalypsoPipeline	5/14/2006	TONGS			N-15W	485	1440					0	0	0	0					grav, sm tilted slabs, chlor, rocks to 25 cm
CalypsoPipeline	5/14/2006	TONGS			N-15W	485	1441					0	0	0	0					low relief grav/rub or veneered pav, sm phk, sm octo
CalypsoPipeline	5/14/2006	TONGS			N-15W	483	1442					0	0	0	0					Hyalonema, sm phk, sparser grav/rock rub in sed, ane, sm orange knobby stalk, skate
CalypsoPipeline	5/14/2006	TONGS			N-15W	484	1443					0	0	0	0					Hyalonema w or zoa, 1-m bol, some coral rub, sm phk, cannot tell if btm is consolidated or no
CalypsoPipeline	5/14/2006	TONGS			N-15W	482	1444					0	0	0	0					Hyalo, sm wht gorg, rock/coral rub/grav, sm phk, cable
CalypsoPipeline	5/14/2006	TONGS			N-15W	482	1445					0	0	0	0					bmb, low rocks, slabs, rock rub, bmb, barren bol, veneered pav
CalypsoPipeline	5/14/2006	TONGS			N-15W	480	1446	S, Ro				1	0	0	0					Added by SFR
CalypsoPipeline	5/14/2006	TONGS			N-15W	480	1446	S, Ru				1	0	0	0					veneered pav, large irreg outcrops & bol, veneered pav, ane, phk, Chaceon
CalypsoPipeline	5/14/2006	TONGS			N-15W	480	1447					0	0	0	0					bmb, sm phk, low relief rocks, bmb, lg or ane, grav, bmb, rocks & grav in sediment
CalypsoPipeline	5/14/2006	TONGS			N-15W	480	1448					0	0	0	0					grav & rub in sed, larger rocks, sm tilted slabs, lg or ane, macrofauna v sparse
CalypsoPipeline	5/14/2006	TONGS			N-15W	479	1449					0	0	0	0					coral rub w low outcrops & slabs, Hyalo, lg or ane, irreg outcrops bmb
CalypsoPipeline	5/14/2006	TONGS			N-15W	479	1450					0	0	0	0					sm phk, ane, rocks, tilted slabs, grav, sm Lophelia? Bmb, sm wht gorg,
CalypsoPipeline	5/14/2006	TONGS			N-15W	478	1451					0	0	0	0					scat rocks, slabs, bmb, hex, sm phk, ?cemented coral rub, phks, prim

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			N-15W	478	1452					0	0	0	0					coral rub, sm prims, sm phk, slabs, rocks, cup hex, sm phk, coral rub in sed w sm to med rocks
CalypsoPipeline	5/14/2006	TONGS			N-15W	477	1453					0	0	0	0					grav, rocks, cobbles, to 25 cm, sm octo,
CalypsoPipeline	5/14/2006	TONGS			N-15W	478	1454					0	0	0	0					bmb, grav, rocks, coral rub scat in sed, araeosoma, anti?, fan spos on cobbles, sm octos
CalypsoPipeline	5/14/2006	TONGS			N-15W	476	1455					0	0	0	0					ast, sm phk, macrofauna still widely scat, sm phks, coral rub
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1456					0	0	0	0					cup hex, Bathynomus, sm phks, veneered pav? W coral rub, sm octo
CalypsoPipeline	5/14/2006	TONGS			N-15W	476	1457					0	0	0	0					lg or ane, grav, rock rub, coral rub in sed, few larger rocks,
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1458					0	0	0	0					low rocks & rub, bmb, grav, bmb, bold, slabs w several bmb, back on grav/coral rub, cup hex, skate, crin
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1459					0	0	0	0					grav in sed (consolidated?), low relief outcrops
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1500					0	0	0	0					slab w bmb & spo, hex, grav/cor rub in sed, dense grav field, wht gorg, sm octo
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1501					0	0	0	0					grav/rock rub, low slabs w bmb
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1502					0	0	0	0					grav/rock rub, sm anti? Hyalo w zoa, laemo, sm Hyalo, sm octo
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1503					0	0	0	0					grav/rock rub (consolidated?), veneered pav? V sparse macrofauna
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1504					0	0	0	0					sm phk, veneered pav? Scat coral rub, shr, sm gorg, phk, coral rub, sm phk,
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1505					0	0	0	0					coral rub in sed, few sm octos, larger rocks to 30 cm, sm anti, phk, lg fan spo, or ane, sm Hyalo, few dead
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1506					0	0	0	0					whl Loph twigs on sed
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1507					0	0	0	0					coral rub w grav & rock rub, rocks to 30 cm
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1508					0	0	0	0					rocks/rub, lg or ane, coil of cable
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1508					0	0	0	0					rocks/grav/rub in sed, bmb, lg or ane, paramuriceid fan?
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1509					0	0	0	0					grav/rocks/rub in sed, bmb, sm slabs, sm octo? Sm phk
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1510					0	0	0	0					rocks to 30 cm, rub/grav in sed, bmb, lg or ane,
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1511					0	0	0	0					scat coral rub, sm octo?, tilted slab, flat rocks to 0.5 m, bmb
CalypsoPipeline	5/14/2006	TONGS			N-15W	475	1512	S	S			113	0	0	0					Chaeseo, rocks, grav mounds, sm anti?, Hyalo, lg or ane,
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1513					0	0	0	0					Living lpp on side of isolated thicket ~1 m across, rocks, grav, tilted sm slab
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1514					0	0	0	0					cup hex, dead lpp? Sm gorg,
CalypsoPipeline	5/14/2006	TONGS			N-15W	473	1515					0	0	0	0					boulder w spos & Madrepora?, rocks, grav, coral rub, sm tilted slabs, chlor
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1516					0	0	0	0					coral rub, sm rocks, grav, Chaeseo, low relief outcrops, sm lpp twigs, prim, sm phk, bmb, grav
CalypsoPipeline	5/14/2006	TONGS			N-15W	474	1517					0	0	0	0					rock rub in sed, sm plumarella, consolidated? Grav fields
CalypsoPipeline	5/14/2006	TONGS			N-15W	473	1518					0	0	0	0					bmb, bol w sm lpp, coral rub, sm phk, lg or ane, bol w lg or ane
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1519					0	0	0	0					bmb, sm tilted slab, pav & occas bold, cup hex, lg or ane, rocks to 25 cm, bmb, grav in sed, sm prim, bmb
CalypsoPipeline	5/14/2006	TONGS			N-15W	473	1520					0	0	0	0					bol w lpp, lg or ane, chiefly grav & rock rub in sed, bmb, octo fan
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1521					0	0	0	0					coral rub, rocks, lg or ane on cobbles, bmb
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1522					0	0	0	0					rock/cobble field, bmb, ane,
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1523					0	0	0	0					rock/cobble field, veneered grav, chlor, coral rub, sm octos, sm prims,
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1525					0	0	0	0					rock/cobble field, chlor, ane, octo, ane,
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1526					0	0	0	0					rock/cobble field, 2 bmb, coral rubble, hex
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1527					0	0	0	0					bearded fish, aerosoma, bmb, small fan sponge, bmb, ane
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1528					0	0	0	0					octo, white gorg,
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1529					0	0	0	0					octo, ane, yellow sponge, ane, chlor, octo
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1530					0	0	0	0					chlor x2, ro rubble thinning to a more sandy bottom, some coral rubble, white gorg, hex, chlo
CalypsoPipeline	5/14/2006	TONGS			N-15W	472	1531					0	0	0	0					skate, ast, white gorg, lae, octo, hya stalk, crab,
CalypsoPipeline	5/14/2006	TONGS			N-15W	471	1532					0	0	0	0					hya, lae, benthobatis, crab
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2038					0	0	0	0					Passed MP 16, skate, sandy with some coral rub, mostly ro rub/coo
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2039					0	0	0	0					skate, 2 chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2040					0	0	0	0					sandy sed with ro rub/coo, seeing gorg, ane, hor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2041					0	0	0	0					2 lae, several hor on ro bol,
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	479	2042					0	0	0	0					large gorg, chlor, sandy textured bottom, ro rub
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	479	2043					0	0	0	0					chlor, lae, chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	479	2045					0	0	0	0					possibly squid thingy that left a dust trail on the left hand side of screen, bottom is sandy textured with less rock rub, lae,
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2046					0	0	0	0					hya, skate
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2047					0	0	0	0					bottom is more sandy, less ro rub, slight ripples, textured, standing gorgs?, skate, hyz
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	479	2049					0	0	0	0					chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2050					0	0	0	0					skate, bottom is more sandy with occ ro rub, slight waves in sand, scattered ane, some standing stalked gorgs?
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2051					0	0	0	0					lae, scattered ane, squid
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2052					0	0	0	0					chlor, skate, chlor, ane, sand with scattered ro rub
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2053					0	0	0	0					scattered ane, chlor, chaunax, fairly high abundance of chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2054					0	0	0	0					lae,
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2055					0	0	0	0					passed over some kind of line/cable, chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2056					0	0	0	0					same sandy substrate with scattered ro rub, ane, fish, skate
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2057					0	0	0	0					2 skates, chlor, clustering of ane
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2059					0	0	0	0					chaunax, chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	477	2100					0	0	0	0					skate, substrate more sandy with sparse ro or coral rub, acanthacaris, occasional ane, fish
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2101					0	0	0	0					ane, chaunax
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	478	2102					0	0	0	0					ane,
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	476	2103					0	0	0	0					2 chlor, numerous ane, textured slightly RS, skate, skate
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	477	2104					0	0	0	0					chlor, chaunax
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	476	2105					0	0	0	0					scattered ane, slight ripples
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2107					0	0	0	0					cha, lg str, chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2108					0	0	0	0					skate, cha
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2109					0	0	0	0					skate, multi ane
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	475	2110					0	0	0	0					sed btm, skate, ane, fish, moved out of ro rub, chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	474	2112					0	0	0	0					chlor, over RS
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	474	2113					0	0	0	0					chlor x2
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	474	2114					0	0	0	0					chlor, cha, lg str, gal
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	473	2115					0	0	0	0					chlor
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	472	2117					0	0	0	0					textured sed
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	471	2118					0	0	0	0					skate
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	471	2119					0	0	0	0					eel, skate, acanth
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	471	2120					0	0	0	0					textured sandy substrate, skate, occasional, mounds, slight depressions

Data Source	Date (m/d/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu?= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	451	2121					0	0	0	0				tape paused - off bottom	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	470	2122					0	0	0	0				resume tape, same bottom	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	469	2123					0	0	0	0				skate, chlor	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	470	2124					0	0	0	0				3 skates, skate	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	470	2125					0	0	0	0				npplv sand	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	469	2127					0	0	0	0				skate	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	467	2128					0	0	0	0				acanth, skate, end tape 28	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	465	2129					0	0	0	0				begin tape 29. Heading west from MP 16. Passed 2 cha on slightly wavy sanc	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	463	2130					0	0	0	0				skate, loosely RS	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	465	2131					0	0	0	0				peri, skate	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	464	2132					0	0	0	0				textured sediment with debris	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	463	2133					0	0	0	0				skate, small mounds, depressions	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	461	2134					0	0	0	0				chaunax, depression with debris, chlor, 2 skates	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	458	2136					0	0	0	0				chaunax, softy RS	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	458	2137					0	0	0	0				skate, benthobatis, tiny little skate, large shrimp	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	457	2138					0	0	0	0				chaunax, small chaunax	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	457	2139					0	0	0	0				skate, chlor, benthobatis, chaunax x2	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	456	2140					0	0	0	0				chaunax, slightly RS with occasional mounds and small depressions	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	454	2142					0	0	0	0				ane, octopus by an ane	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	452	2143					0	0	0	0				flat fish, ane	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	450	2144					0	0	0	0				several ane's, lae, thalassia debris, chlor, bioturbated tracks	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	449	2145					0	0	0	0				lae x2, lae x2, rock with ane, rocks aerosoma	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	447	2146					0	0	0	0				brief area of ro cob, lae, hor	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	443	2147					0	0	0	0				scorpionfish, several hor, rosefish, lae, ro cob, back onto RS sand again	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	440	2150					0	0	0	0				chaunax, 1100ft from MP17, back onto RS, bioturbation, small tracks, slight mounds and depressions	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	440	2152					0	0	0	0				occasionally	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	440	2153					0	0	0	0				pulled away from bottom briefly	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	439	2154					0	0	0	0				rattail, chaunax x2, chaunax	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	439	2155					0	0	0	0				chlor	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	439	2157					0	0	0	0				benthobatis	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	435	2159	S	S		1	0	0	0	0				possible chaunax or ray	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	435	2200	S	S		1	126	0	0	0				golden crab	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	434	2201					0	0	0	0				golden crab, softy RS sand, little bioturbation	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	432	2204					0	0	0	0				something buried	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	432	2204					0	0	0	0				obsolete RS, bioturbation, small trails, depression	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	433	2207					0	0	0	0				peel ane, skate	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	429	2208					0	0	0	0				skate, skate	
CalypsoPipeline	5/12/2006	TONGS			MP 16 W	429	2209					0	0	0	0				skate, end of transect 16W	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	475	736					0	0	0	0				Start MP16. Right on south corridor track. 150ft south of MP16. Sed, ro pav or thin veneer sed, patches of ro cobble, sm bol's	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	738					0	0	0	0				c rub, ro pav, thin veneer sed, 12 cm white gorgonian, occasional hya stalk w zoar	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	740					0	0	0	0				50ft south of south corridor. Sed w c rub, phk, white plexured gorg common, scorpion list	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	473	742					0	0	0	0				bmb	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	473	743					0	0	0	0				ro bol, cobble 10.20-30cm, 50-75% cover ro bol's, hor	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	744					0	0	0	0				patches of c rub - appears to be enl, bmb canticosis flexivelus (sp??)	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	473	747					0	0	0	0				~50ft south of pipeline south corridor, 50-100% cover ro pav. 20cm bol's. Occasional bmb, white plexaurid	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	472	748					0	0	0	0				More bmb here than further up	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	472	750					0	0	0	0				~75ft south of corridor, ro cobble, gravel, sm bol's, scorpion fish	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	473	751					0	0	0	0				hor, bmb	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	752					0	0	0	0				c rub, prm, spngs	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	473	753					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	755					0	0	0	0				south of corridor line. 100% Hard btm, ro cobble, sm bol's, low relief <1ft. Hor	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	474	758					0	0	0	0				c rub	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	475	759					0	0	0	0				ro rub, ro bol 10-30cm, patches of c rub, fan spng	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	475	800					0	0	0	0				~50ft south of corridor. Sog .9 knots	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	476	806					0	0	0	0				Watch change to Beth and Jess, ro rub	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	476	807					0	0	0	0				bmb, ane	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	808					0	0	0	0				bmb, ech?, larger high relief exposed ro bol, bmb, back to low relief exposed ro rub, ending tape 5-	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	809					0	0	0	0					
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	810					0	0	0	0				areas of exposed ro rub/cob/bol, ane, bmb, gorg.	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	811					0	0	0	0				bmb, hor	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	812					0	0	0	0				bmb, area of ro rub, rattail, heli,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	813					0	0	0	0				area of consistent low relief ro rub, most likely a large ro pav covered in a sediment veneer	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	815					0	0	0	0				larger relief exposed ro bol, gorg.	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	816					0	0	0	0				cancer, bmb,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	817					0	0	0	0				ane, consistent ro pav covered with a thin layer of sediment, size of exposed ro varies from rub/cob,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	818					0	0	0	0				stalks of hya	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	819					0	0	0	0				hex, chlor,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	820					0	0	0	0				pen,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	821					0	0	0	0				pen, bmb, vase hex, seeing stalks of hya, same ro pav covered with sediment, with exposed low relief	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	822					0	0	0	0				cob/pav occ bol	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	478	823					0	0	0	0				sm pach?, lae, hor	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	479	824					0	0	0	0				hor, bmb, 2 rattail, bmb	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	825					0	0	0	0				bmb, prim, bmb,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	826					0	0	0	0				hor,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	828	S, Ru	H			0	0	0	0				hor, hya stalks, rattail, gorg, bmb,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	828					0	0	0	0				bmb, hor, heli, lae	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	830					0	0	0	0				lae, hor, possible tilefish burrow / Sand tilefish Burrow ?	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	831					0	0	0	0				pen, more sediment, exposed ro bol/cob/rub,	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	480	830					0	0	0	0				rattail, prim, gorg, consistent underlying ro pav covered with sediment, low relief exposed ro cob/bc	
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	831					0	0	0	0					

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	832					0	0	0	0					gorg.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	833					0	0	0	0					some coral rub. hex, little benthobatis, skate
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	834					0	0	0	0					back into ro rub, chlor, possible stalks of hya, seastar.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	835					0	0	0	0					bmb, hor, larger ro cob/bol
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	837					0	0	0	0					bmb, hex, hor, prim, lae, seastar,
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	838					0	0	0	0					hell, bmb, fan sponge, bisingid?, pen.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	483	839					0	0	0	0					bmb, lae, fan sponge.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	482	840					0	0	0	0					bmb, bmb, same ro pav covered with a sediment veneer, exposed rock rub occ bo
CalypsoPipeline	5/14/2006	TONGS			South MP16E	483	841					0	0	0	0					bmb, fan sponge.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	484	842					0	0	0	0					hya stalks, saw the columbus cable.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	485	844					0	0	0	0					hor, prim, coral rub
CalypsoPipeline	5/14/2006	TONGS			South MP16E	485	845					0	0	0	0					bmb, hor
CalypsoPipeline	5/14/2006	TONGS			South MP16E	486	846					0	0	0	0					fish jettied by camera, bmb, exposed ro rub/cob, prim.
CalypsoPipeline	5/14/2006	TONGS			South MP16E	485	847					0	0	0	0					lae
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	472	1533					0	0	0	0					sandy bottom ro rub/cob, some coral rub, hell
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	473	1534					0	0	0	0					fan sponge, octo, multiple fan sponges, hex, bmb, ane, hex.
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	474	1535					0	0	0	0					yellow sponge, white gorg, ane, ast, chlor
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	474	1536					0	0	0	0					lae, chlor, chlor x2
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	475	1537					0	0	0	0					chlor, lae, bmb, sm fan sponges, hex, hya, crab, lae.
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	475	1537	S, Ru	H		1	149	0	0	0					Added by SFR
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	475	1538					0	0	0	0					chlor, hex, over more snady bottom with a few areas of weak ro rub, hex
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1539					0	0	0	0					chlor, ben, laemo, chlor,
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	477	1541	S, Ru	H		1	0	0	0	0					smooth sed, v scat coral rub, Chaceon
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	477	1541					0	0	0	0					above btm
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	477	1542					0	0	0	0					scat coral rub in sed, chlor
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1543					0	0	0	0					weak ob RS w scat grav, chlor.
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1544					0	0	0	0					rattail, weak ob RS w scat grav
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1545					0	0	0	0					weak ob RS w scat grav, ben
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1546					0	0	0	0					same btm, ben
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	476	1547					0	0	0	0					same btm, chlor, tiny or blobs
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	475	1548					0	0	0	0					same btm, Polymixia, sm wht gorg, skate, chaunax
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	475	1550					0	0	0	0					same btm, araesoma
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	472	1557					0	0	0	0					switch team, computers
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	469	1600					0	0	0	0					on north corridor track. Flat sand. Skates and chlor. Somt thl. Very little bioturt
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	467	1602					0	0	0	0					Went over rig sand dune ~10ft drop
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	465	1603					0	0	0	0					chaunax
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	462	1607					0	0	0	0					100% sed. Sog ~1 knot
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	453	1610					0	0	0	0					Right on north coridor track. 100% sed, slight ripples. Numerous chlor, chaunax, skates
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	447	1614					0	0	0	0					scattered sm ro bol 20-30cm. 20-50% cover. ~50 south of north corridor track
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	446	1615					0	0	0	0					back in sed
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	440	1620					0	0	0	0					100% sed.
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	439	1622					0	0	0	0					end of tape 61
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	436	1623					0	0	0	0					start tape 62. Same bottom
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	434	1625					0	0	0	0					On center of pipeline rte. ~150 ft south of north rte. 100% sed, sand ripples, occasional sand dunt
CalypsoPipeline	5/14/2006	TONGS			MP 16 heading toward 17	430	1626					0	0	0	0					series of dunes on sonar 5-10ft
CalypsoPipeline	5/14/2006	TONGS			North MP17W	428	1628					0	0	0	0					100% sed, sand ripples, skates, thl, slight current to the north. 1/10 to 2/10 kno
CalypsoPipeline	5/14/2006	TONGS			North MP17W	424	1632	Ro	H			0	0	0	0				Bu?	start rock. Ro bol, slabs, 1-3ft relief. Right on center line not the north corridor line. Tilefish burrow (non visible in primary video tape)
CalypsoPipeline	5/14/2006	TONGS			North MP17W	416	1635					0	0	0	0					rock is very barren
CalypsoPipeline	5/14/2006	TONGS			North MP17W	415	1636					0	0	0	0					Came up 30ft. 100% ro hard bottom
CalypsoPipeline	5/14/2006	TONGS			North MP17W	407	1638					0	0	0	0					ro cobble, gravel. Sog 0.8-1 knot
CalypsoPipeline	5/14/2006	TONGS			North MP17W	404	1640					0	0	0	0					100% hard bottom, ro slabs, bol's, 1-3 ft relief. Very barren no spngs, gorgs, cora
CalypsoPipeline	5/14/2006	TONGS			North MP17W	383	1645					0	0	0	0					bol's, slabs. Right on center coridor transect. Roc, ane, lae
CalypsoPipeline	5/14/2006	TONGS			North MP17W	376	1646					0	0	0	0					100% hard bottom, ro pav, with karst like topo. Scattered bol's 1-2m. Ane, very barrer
CalypsoPipeline	5/14/2006	TONGS			North MP17W	372	1648					0	0	0	0					geodia?, first spng 20cm spherical, hex
CalypsoPipeline	5/14/2006	TONGS			North MP17W	367	1649					0	0	0	0					demo spgs, plates 10-15cm
CalypsoPipeline	5/14/2006	TONGS			North MP17W	366	1650					0	0	0	0					fan spng
CalypsoPipeline	5/14/2006	TONGS			North MP17W	365	1651					0	0	0	0					~100ft south of north corridor line. 100% hard bottom, ro slabs, bol's, cup spngs, plate spngs, pac, lae,
CalypsoPipeline	5/14/2006	TONGS			North MP17W	366	1652					0	0	0	0					occasional trough of sand/sed
CalypsoPipeline	5/14/2006	TONGS			North MP17W	364	1654					0	0	0	0					hex, pach
CalypsoPipeline	5/14/2006	TONGS			North MP17W	360	1655					0	0	0	0					starting to flatten out. Alternating rock ridges and sand flats. 100% sed some ro rubble
CalypsoPipeline	5/14/2006	TONGS			North MP17W	354	1658					0	0	0	0					~75ft south of north corridor track. Back in ro slab. Few sm fan spngs, cup spngs, pach
CalypsoPipeline	5/14/2006	TONGS			North MP17W	352	1700					0	0	0	0					100% ro, phk, sm ear spngs, Bmb - isadella
CalypsoPipeline	5/14/2006	TONGS			North MP17W	347	1701					0	0	0	0					pach
CalypsoPipeline	5/14/2006	TONGS			North MP17W	337	1702					0	0	0	0					Rattened out. 100% ro cover, ro pav, eroded surface, low relief 1ft. Sm pns 5cm cups and plates, pach.
CalypsoPipeline	5/14/2006	TONGS			North MP17W	334	1705					0	0	0	0					On north corridor track
CalypsoPipeline	5/14/2006	TONGS			North MP17W	333	1706					0	0	0	0					2-3ft relief. Big slabs
CalypsoPipeline	5/14/2006	TONGS			North MP17W	332	1707					0	0	0	0					littistid spngs
CalypsoPipeline	5/14/2006	TONGS			North MP17W	325	1708					0	0	0	0					100% ro pav, eroded karst like ro slabs. 1-2 ft, nph
CalypsoPipeline	5/14/2006	TONGS			North MP17W	325	1709					0	0	0	0					bmb
CalypsoPipeline	5/14/2006	TONGS			North MP17W	325	1710					0	0	0	0					getting shallower. Ro cobble 5-10cm. Sm boulders, urchins asterophorida spng, 1-3ft relief boulders,
CalypsoPipeline	5/14/2006	TONGS			North MP17W	316	1713					0	0	0	0					irregular rock. 1083 ft
CalypsoPipeline	5/14/2006	TONGS			North MP17W	314	1715					0	0	0	0					rock ledge. 30ft relief. Spngs geodia
CalypsoPipeline	5/14/2006	TONGS			North-South Transect MP 17W	313						0	0	0	0					bmb caristid, yellow spng.
CalypsoPipeline	5/14/2006	TONGS			North-South Transect MP 17W	314						0	0	0	0					rugged topo
CalypsoPipeline	5/14/2006	TONGS			North-South Transect MP 17W	314						0	0	0	0					100% rock pav, eroded surface, cobble, rubble, quite a few geodia spngs, nph. Flattening out. Ane's, fan spngs
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0					2000 ft N-S transect at top edge of Miami Terrace Escarpment; selected from dive North MP 17 W; had
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0					high relief ledges S, numerous sponges; target coordinates 26 10.872N, 79 50.533W; 1064 ft
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0					Rugged irreg labyrinthine phosphoric limestone; jumbled rocks, irreg shelf spo
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0					lasers on; rub & rocks to 0.3 m, crin, sm fan spo

Data Source	Date (m/d/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blue-line Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline		TONGS			North-South Transect MP 17W	314						0	0	0	0	0	0	0	same btm, chlcr
CalypsoPipeline		TONGS			North-South Transect MP 17W	314						0	0	0	0	0	0	0	BEGIN TRANSECT; rub & rocks over pav - blk w some rusty discoloration; locally barren, fan spc
CalypsoPipeline		TONGS			North-South Transect MP 17W	314						0	0	0	0	0	0	0	irreg rugged outcrops surrounded by smooth sand
CalypsoPipeline		TONGS			North-South Transect MP 17W	313						0	0	0	0	0	0	0	moving up series of rugged ledges, mostly barren w some ane on edges; shelf spo, basketsta
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0	0	0	0	off bottom
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0	0	0	0	off btm, squid school
CalypsoPipeline		TONGS			North-South Transect MP 17W	315						0	0	0	0	0	0	0	steep rugged ledges, few spo, above smooth sand slope, crin
CalypsoPipeline		TONGS			North-South Transect MP 17W	316						0	0	0	0	0	0	0	rock/rub field, scat spo, irreg cobbles, bols, Phakellia, pav covered w rocks & rubble
CalypsoPipeline		TONGS			North-South Transect MP 17W	316						0	0	0	0	0	0	0	pach, crins, geo, pach, cid, geo
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0	0	0	0	pav w rub, crin
CalypsoPipeline		TONGS			North-South Transect MP 17W	318						0	0	0	0	0	0	0	over ledge w crin, sm spo, geo, pach crin, irreg ledges, undercuts rub
CalypsoPipeline		TONGS			North-South Transect MP 17W	318						0	0	0	0	0	0	0	sm ball spo, pach, irreg ledges, crin, ball spo, irreg karst topog, ast, crin
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0	0	0	0	geo visible on side cameras, sm fan spos, crin, sed area w irreg outcrops, boulders, oec
CalypsoPipeline		TONGS			North-South Transect MP 17W	319						0	0	0	0	0	0	0	steep rugged ledges, few spo, crins
CalypsoPipeline		TONGS			North-South Transect MP 17W	320						0	0	0	0	0	0	0	karst, crin, raspaillid, orange blob, cid, hex
CalypsoPipeline		TONGS			North-South Transect MP 17W							0	0	0	0	0	0	0	low karst relief, geo, rasp, cid, crins, some areas of gravelly sed, vel encrust spo (Spongosorites)
CalypsoPipeline		TONGS			North-South Transect MP 17W	322						0	0	0	0	0	0	0	pach, crins, cid, large slabs, sm wht ball spos, crins rub, ast, geo, pachn
CalypsoPipeline		TONGS			North-South Transect MP 17W	322						0	0	0	0	0	0	0	pach low rubly outcrops, karst, largely barren here, vel encrust, cid, large orange anemone, pacf
CalypsoPipeline		TONGS			North-South Transect MP 17W	322						0	0	0	0	0	0	0	jointed pav, ast, stalk, cid, fan spo, farrea
CalypsoPipeline		TONGS			North-South Transect MP 17W	322						0	0	0	0	0	0	0	jointed lav, pach, gon, fan spo, crin, blu spo, ech/ane, pach, crin, cid
CalypsoPipeline		TONGS			North-South Transect MP 17W	323						0	0	0	0	0	0	0	irreg slabs, karst, rub, bols, ane, sm octo?, cid fan spo
CalypsoPipeline		TONGS			North-South Transect MP 17W	323						0	0	0	0	0	0	0	Phakellia w oph, irreg pav, pach w oph, gon, big pach, edge of ledge, karst, bols
CalypsoPipeline		TONGS			North-South Transect MP 17W	323						0	0	0	0	0	0	0	low relief irreg pav, w karst, ech/ane, crin, pach, crins, low irreg pav w craters
CalypsoPipeline		TONGS			North-South Transect MP 17W	323						0	0	0	0	0	0	0	geo, pav, large orange anemone, low irreg pav, cid, chlcr
CalypsoPipeline		TONGS			North-South Transect MP 17W	324						0	0	0	0	0	0	0	jointed low relief slabs
CalypsoPipeline		TONGS			North-South Transect MP 17W	324						0	0	0	0	0	0	0	jointed pav, sm fan spos, sm ball spos, sm stalks, pink ech/ane
CalypsoPipeline		TONGS			North-South Transect MP 17W	324						0	0	0	0	0	0	0	pach, fan spos, ball spo (astrophond), pachs, irreg low ledge, rub on pav
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	rub/grav field largely barren, pach, vel encrust spo (spongosorites), red ech/ane
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	wht stalk, low irreg pav, tiny wht spo, tall stalk, AT PIPELINE CTR LINE, bmb, raspaillid, bmb, on pav
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	choristid, ech/ane's, bmb, jointed pav, bmb, irreg pac
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	over ledge, lithistids w crins, rub, karst, choristid, crin, lithist
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	over ridge, several bmb, bmb, jointed pav, crin, cid
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	jointed slabs, stalk, tiny wht spos, choristid, bmb, chor
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	jointed largely barren pav, over ledges, bol field, crin, ridge to starbd, cic
CalypsoPipeline		TONGS			North-South Transect MP 17W	326						0	0	0	0	0	0	0	karst, ech/ane, cid, bols, slabs, wht anes on edges of slabs, on pckmarked rippled sanc
CalypsoPipeline		TONGS			North-South Transect MP 17W	323						0	0	0	0	0	0	0	steep boulder slope, irreg ledges, spongosorites, crins, steep irreg slope, cid
CalypsoPipeline		TONGS			North-South Transect MP 17W	320						0	0	0	0	0	0	0	steep irreg slope, geo, crins, chor, geo, 20-ft rise, irreg ledges
CalypsoPipeline		TONGS			North-South Transect MP 17W	319						0	0	0	0	0	0	0	irreg ledges & steep slopes, over steep crevice, sponges along edges, steeply irreg karst
CalypsoPipeline		TONGS			North-South Transect MP 17W	320						0	0	0	0	0	0	0	geo, irreg karst & irreg bols
CalypsoPipeline		TONGS			North-South Transect MP 17W	319						0	0	0	0	0	0	0	onto irreg ledge, chorist, sm fan spo, tiny wht spos, crins, spongosorif, craters w sed
CalypsoPipeline		TONGS			North-South Transect MP 17W	319						0	0	0	0	0	0	0	low cratered irreg pav w mod relief, sm fan spo, bmb, sm stalks, cid, bmb w oph, irreg mod relief outcrop, bmb, bmb
CalypsoPipeline		TONGS			North-South Transect MP 17W	318						0	0	0	0	0	0	0	low relief irreg pav, bmb's, cids, crins, farrea, bmb's have been chiefly in clusters
CalypsoPipeline		TONGS			North-South Transect MP 17W	318						0	0	0	0	0	0	0	hex, bmb's, scorp, low relief irreg jointed pav, bmb's, choristids, bmb's w ophs
CalypsoPipeline		TONGS			North-South Transect MP 17W	318						0	0	0	0	0	0	0	low relief cratered pav, low relief karst topog, cid, fan spo
CalypsoPipeline		TONGS			North-South Transect MP 17W	325						0	0	0	0	0	0	0	gon, over edge w curtain sponges, basketstars, onto boulder field, down to 1062 ft
CalypsoPipeline		TONGS			North-South Transect MP 17W	331						0	0	0	0	0	0	0	irreg karst topog, up irreg sed veneered slope w labyrinthin, topog, prims
CalypsoPipeline		TONGS			North-South Transect MP 17W	336						0	0	0	0	0	0	0	irreg karst bols, slabs, tilted slabs, labyrinthin slabs & outcrops, pach, prims, jumbled slabs & bols
CalypsoPipeline		TONGS			North-South Transect MP 17W	338						0	0	0	0	0	0	0	jumbled slabs, labyrinthin slabs & outcrops, moonscape, calved straight-edged slabs
CalypsoPipeline		TONGS			North-South Transect MP 17W	341						0	0	0	0	0	0	0	same btm, crin, geo, slabs largely barren except along edges, spongosorites
CalypsoPipeline		TONGS			North-South Transect MP 17W	344						0	0	0	0	0	0	0	karst bols & slabs, crin, fan spos, blu spo, crin
CalypsoPipeline		TONGS			North-South Transect MP 17W	346						0	0	0	0	0	0	0	high relief irreg karst topog, slabs, eroded bols, sty? Ast, fan spo, cid, ane, tilted slabs
CalypsoPipeline		TONGS			North-South Transect MP 17W	349						0	0	0	0	0	0	0	same btm, spongosorites, largely barren
CalypsoPipeline		TONGS			North-South Transect MP 17W	349						0	0	0	0	0	0	0	same btm, spongosorites, largely barren
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	428	2210					0	0	0	0	0	0	0	begin transect 17-W, same bottom of RS with occ ane, small depression or mound
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	428	2212					0	0	0	0	0	0	0	lae by thalassia debris
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	428	2213					0	0	0	0	0	0	0	flatter sediment with debris, occ scattered ane, lae
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	425	2214					0	0	0	0	0	0	0	lae, target about 50 ft out, skate
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	423	2215					0	0	0	0	0	0	0	numerous ane's
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2216					0	0	0	0	0	0	0	ro rub, lg boulders, cobble, and rub, barren mostly, poss ga
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	419	2217					0	0	0	0	0	0	0	lae, underlying slab
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	419	2218					0	0	0	0	0	0	0	larger boulders, hor, slabs
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2219					0	0	0	0	0	0	0	mostly barren rocks of all sizes, occ crin/ane, lae? ledge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W							0	0	0	0	0	0	0	more cobble/boulder size, fish, blob, slab with sediment veneer, rocky bottom with lg slabs of pavement, boulder, heli
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2220					0	0	0	0	0	0	0	ech
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	416	2221					0	0	0	0	0	0	0	lae
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	415	2222					0	0	0	0	0	0	0	hardbottom, sm critter, golden crab
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2223	Ro	H			1	109	0	0	0	0	0	roch, lae, golden crab, heli
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	409	2224	Ro	H			1		0	0	0	0	0	golden crab, roch, tilefish burrow, more cobbled structures
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2225	S, Ru	H			1	131	0	0	0	0	0	golden crab, roch, tilefish burrow/sandtile?, more cobbled structures
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2225	Ro, Ru	H			1		0	0	0	0	0	heli
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	404	2226					0	0	0	0	0	0	0	still climbing up the incline, barren on slabs/boulders, fish with forked tail
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	405	2227					0	0	0	0	0	0	0	sediment coated veneer, ane
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	404	2228					0	0	0	0	0	0	0	small crab, lae, ane's, more sediment inbetween rock slabs, aerosoma, lae, end of tape 29, switch to tape 30
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	399	2230					0	0	0	0	0	0	0	2 aerosoma, rocky bottom with slab, irregular top, appears cobble like when coated with sediment
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	396	2231					0	0	0	0	0	0	0	rocks mostly barren, fan sponge, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	393	2232					0	0	0	0	0	0	0	lae, rocky bottom, seastar, fan sponge?, lae
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	392	2233					0	0	0	0	0	0	0	

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CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2234				0	0	0					lae, hell, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	386	2235				0	0	0					eel
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2236				0	0	0					pavement, fan sponge x2, several fan sponges (4)
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	382	2237				0	0	0					gorg, fan sponge x2, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2238				0	0	0					lae, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2239				0	0	0					
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	375	2240				0	0	0					fan sponge, rocky bottom, eroded pavement with occasional suture seams where boulders come together, lae, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2241				0	0	0					fan sponge, hex, demo sponge, lithi sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	370	2242				0	0	0					roch, still ascending, getting more spongy, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2243				0	0	0					pacha, hex
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	368	2244				0	0	0					fish (forked tail), looks like we're getting to the edge of the pavement
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	368	2245				0	0	0					back onto sand, then onto rocky hardbottom of eroded pavement, hex, fish, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	366	2246				0	0	0					karst topography, lithi sponge, area of sediment, prob a dip in a valley where the sediment has filled in
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2247				0	0	0					fish, mostly flat sediment with no obvious ripples, small mounds
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	364	2248	S, Ro	H		2	0	0					lithi, ane, 2 golden crab, lithi, more sponges on rocks, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	365	2249				0	0	0					sediment, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	366	2250				0	0	0					area of flat sediment, probably terrace, skate, no obvious ripples, small mounds, brittle star
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	365	2251				0	0	0					brittle star, depression
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	365	2252				0	0	0					fish, skate
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	364	2253				0	0	0					chain dogfish on side cam, back towards more rubble
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2254				0	0	0					
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	362	2255				0	0	0					passed a few dogfish, sponges, back onto rock pavement
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	361	2256				0	0	0					depth is dropping, trying to get camera back down
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	361	2257				0	0	0					ro rub, fan sponges, lae, line of sponges
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2258				0	0	0					smaller rubble, more eroded pavement, lithi, fan sponge, 2 fan sponges, eroded pavement
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	359	2259				0	0	0					pach, brief area of sediment, boulders, glass sponge, pach, hor, pavement with sediment veneer
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2300				0	0	0					a few fan sponges, rock pavement
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2301				0	0	0					fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	354	2302				0	0	0					headed downhill, pach, lae, pach
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	354	2303				0	0	0					karst topography, eroded pavement, sed inlay in divits, he
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	352	2304				0	0	0					hex, fan sponge, fan sponge, skate, ane
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	352	2305				0	0	0					field of small white sponges, sediment patch, rock
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2306				0	0	0					sponges on rocks, boulders, pach
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	346	2307				0	0	0					boulders, sponges on rocks, bisingidae?, pach
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	340	2308				0	0	0					going up a pretty steep ledge, pavement
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2309				0	0	0					sponges, thin bmb, lae, pach, small gorgs, thin bmb
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	339	2310				0	0	0					2 thin bmb, geodia
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2311				0	0	0					hor, irreg eroded pavement, bmb, pach, more bmb, finger guys
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	335	2312				0	0	0					bmb
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	335	2313				0	0	0					bmb, aerosoma
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	334	2314	S, Ro	H		1	0	0					seastar, golden crab, poss hydroid colony?
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	334	2315				0	0	0					aerosoma, seastar, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	331	2316				0	0	0					large pavement, good relief, pach, poss live coral.
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	325	2317				0	0	0					gorg, ast, rippled sand over rock, lae, bisingidae, 2 lg geodia
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	326	2318				0	0	0					hor, karst topography rock, bmb
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	326	2319	Ro	H		1	0	0					scattered bmb, golden crab, ledge with fans
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	326	2320				0	0	0					bmb, hor, hex, crinoids, pach's
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2321				0	0	0					bmb, cid, sm fish, hell
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	325	2322				0	0	0					lae, hex, brief RS, lg boulders
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	319	2323				0	0	0					ascending on large ridge, ast, nice rock outcrop
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2324				0	0	0					lithi, geodia, hor, blue sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	318	2325				0	0	0					geodia?
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2326				0	0	0					white sponge, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	317	2327				0	0	0					geodia, demo
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	316	2328				0	0	0					blue sponge, irregular karst topography, hor, seastar, ane, fan sponge
CalypsoPipeline	5/12/2006	TONGS			MP 17 W	316	2329				0	0	0					crinoids, ane, hor, hor
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2330				0	0	0					geodia, end of tape 30, switch to tape 31
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2331				0	0	0					begin tape 31, tape paused, video went offline: stop transect, blew fuse on ROV system: off bottom
CalypsoPipeline	5/12/2006	TONGS			MP 17 W		2353				0	0	0					Reset ROV system; reset camera to Compression- Normal (this increased number of available photos from 299 to 592)
CalypsoPipeline	5/13/2006	TONGS			MP 17 W						0	0	0					Restart transect
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	313					0	0	0					rugged outcrops, sm white spos ~2-3 cm, side camera spotted sword fish
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					fan spo in side camera, ane, thick fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					rugged outcrops w/ pools of sed., holding station
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					same btm, lrg geo, fan spo: flat pavement, ruged outcrop, orange ane
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					rugged outcrop w/ pools sed., most barren; fan spo, fan spo w/feather star, cid
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	316					0	0	0					same btm, white irreg spo, ane,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					lg sea star, pach spo, lith, amt?, geo ane, numerous sm white spo (~2-3 cm)
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	317					0	0	0					pavement, irreg outcrops, isid?, lg white ane, scorpion fish, sm fans?
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	316					0	0	0					same btm, sm fan spo x2, orange?, lg white spo, nep?
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					pavement, irreg outcrops, pach,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					nep, lg orange ane, ech,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	315					0	0	0					pach, nap, 70-90% H, white ane, sm pools of sed., fan spo,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					geo, orange gonastri?
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					naph, fan spo, cid, nephid
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					same btm, 70-90% pavement and low outcrops, nep, tiny white spo, fan spos
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	314					0	0	0					oph, nep's, cid,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W	313					0	0	0					white ane x2,
CalypsoPipeline	5/13/2006	TONGS			MP 17 W						0	0	0					

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CalypsoPipeline	5/14/2006	TONGS			South MP 17E	424	636							0	0	0				On south corridor track. 100% soft bottom, ripples. Rat tail fish
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	430	640							0	0	0				ro bofs, sed, scattered ro bofs, gal
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	436	645							0	0	0				~50ft south of south corridor track. Sed ripples. Ane's, thi
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	437	646							0	0	0				chaunax
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	440	650	S		S		1	103	0	0	0				~75 ft south of south corridor track. 100% soft bottom ripples. Skates, golden crab. Chaunax. No bottom current, no bioturb.
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	440	650	S		S		1	165	0	0	0				Added by SFR
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	441	652							0	0	0				approaching boulder field. Sed, 1-2ft bofs, lae, ane's. ~50ft south of pipeline corridor
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	442	653	S, Ro		H		1		0	0	0				~30% cover of bofs, golden crab
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	444	654							0	0	0				very barren, few spongs, no octocoral. Urchin, hor, scorpion fish
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	446	655							0	0	0				
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	451	656							0	0	0				
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	453	657	Co, S		S		1	92	0	0	0				end boulder field, sparse scattered cobble, ane's, rat tail fish
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	457	659							0	0	0				100% sed, ripples
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	458	700							0	0	0				~50ft south of south corridor track
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	466	705							0	0	0				100% soft sed. Close to south corridor. Squid
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	469	708							0	0	0				end of tape 53, start tape 54. 100% sed
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	469	709	S		S		1	117	0	0	0				
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	471	710	S		S				1	0	0				right on south corridor track. 100% sed, numerous 12cm skates. 15cm squid, chaunax, rat tail fish, red shrimp. Sea pens, chlor
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	475	715							0	0	0				soft bottom, ripples, ane's, sea pens. Sog, 7 knots. ~50ft north of pipeline
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	720							0	0	0				50ft north of south corridor. 100% soft sed, ripples, numerous sm pink ane's, numerous very thin sea pens - virgulana? (hard to see in video)
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	721							0	0	0				numerous 15cm skates, occasional chaunax
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	725							0	0	0				right on corridor. Soft sed, sparse ro gravel
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	477	727							0	0	0				sed 5% to gravel, dense sea pens - several (5-10) per sq meter.
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	729							0	0	0				occasional gorgonian ~10cm two or three branches - underlying rubble? Thin veneer sed over rubble? Gorgs fairly common.
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	730							0	0	0				hya stalk w zoan. More gorgs here - plexauridae 10cm sparsely branched, white
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	478	732							0	0	0				ro cobble 5-10cm, few ro bol, hor. 50% cover boulders 10-20cm. Ro pav, sed veneer, spongs, phk, lae
CalypsoPipeline	5/14/2006	TONGS			South MP 17E	475	734	S		S		1	167	0	0	0				hya w zoan on stalk, golden crab
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				low irreg pavement w pools of sed
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				neps, ophs, same btm
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	310								0	0	0				same btm, side camera show flat btm, low relief, H, fan spon
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				neps, fan spo, orange anes,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	311								0	0	0				loose cobbles and boulders anes, rattail.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				Ro/Rub, pavements, numerous neps, hermit crab, anes, fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	311								0	0	0				pavement old, gon, tiny white sps, nep, oph on whip, white ball
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	310								0	0	0				lg pool sed, dark ane/ech?, lg white ane, neps, moving off sed to hard ground, irreg outcrops, overhanging ledge.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	308								0	0	0				ast, neps, cid, tiny white spos.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	310								0	0	0				pavement w/old, common nep, lg fan spo, black coral.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	308								0	0	0				geo, white ane, sm hex?, neps, fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	307								0	0	0				moderate relief outcrops, pavement, Ro/Rub, nep, ast, geo, white ane
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	306								0	0	0				pavement, neps, cids, styl? X2, numerous neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				orange ane, same btm, white ane, neps, tiny white spos, styls, dark ech?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				pavement w pools sed, neps, white ane.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				pavement w Ro/Rub, neps, cids, black coral?, styl, white ane, fan spo,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	306								0	0	0				oph, pavement, neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	306								0	0	0				numerous sm oph on pavement, black coral/sid tree?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				pavement, neps, cids, side camera show fan spon
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				sm orange brittle stars, gast, fan spon
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				pavement, neps, pack, cid, 30% H cover,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				same btm, nep, oph on ane?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				neps, laemo, white ball spo, ane, numerous sm ophs, cids
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				lg fan spo, echinus, cids, ecd, neps, numerous sm orange ophs.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				same irreg pavement btm w sed pool, cids, neps, sm styl, fan spo w/ oph
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	302								0	0	0				same btm, fewer neps, white ane
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				ast? Ane?, styl,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				lg org ane, laemo, side camera shows low relief btm w. few scattered fan spo at wide intervals, slabs, low outcrops, scorpion fish or black belly rose fish?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				orange ane, few neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	302								0	0	0				pach.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	302								0	0	0				scorpion fish on pavement, lg pach, gon, side camera shows pach, few neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				slabs, pavement, irreg outcrops, fan spon, neps, phak, pach,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				tiny, sm styls, bottles, black coral, bottle brush
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				white anes, echinus, sm styls becoming numerous, nep
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				echinus, sm styl, sm fan spo, nep,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304								0	0	0				pink ane, sm styl only vis in left hand side of frame maybe due to lighting?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	303								0	0	0				same pavement btm w pool soft sed, cids, styls, fewer neps, eumunida, white spos w oph on edge of steep ledge. Rippled sed, but w numerous spos
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				flat slab w numerous fan spon, moderate relief, blue spo, white fan spon, unconcol sed btm, isolated boulders in side cameras
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305								0	0	0				geo, isolated slabs w numerous fan spon.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				spo on edge slabs w boulders and cobbles in vary sed
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	312								0	0	0				black coral whips, lg boulders, 1-2 feet?, crin, cid
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	314								0	0	0				same moderate relf btm, fan spo, geo, nep, white ane, moving onto sed w/ outcrops vis on side cameras
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	318								0	0	0				reg outcrops, rub field, mostly sed, increasing outcrops, cids, sm gorg, phak,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	318								0	0	0				sed w/ scattered rub, mostly sed in view w/ H, ob RS

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CalypsoPipeline	5/13/2006	TONGS			MP 18 W	318						0	0	0	0	0	0	0	0	ob RS, cid, photo of tubes, shr.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	319						0	0	0	0	0	0	0	0	rub/ cobble field, cid, fan spo w/ oph.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	319						0	0	0	0	0	0	0	0	back on boulders w/ nep, fan spo w/ ech, phak, sm rocks in open sed, h scattered, crus?, raised slab w/ ane and spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	321						0	0	0	0	0	0	0	0	areas of sed separating slabby outcrops, geo, back on sed, limited vis on side cameras
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	320						0	0	0	0	0	0	0	0	ane, black coral, fan spo, low white outcrops (maybe just expo?), laemo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	321						0	0	0	0	0	0	0	0	mostly sed w/ scattered rub, few spo on side camera, veneer pavement, exposed white outcrop
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	320						0	0	0	0	0	0	0	0	rub, low white outcrops or pavement, fan spo vis, back on slabs and rub, neps, pach, gravelel field
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	320						0	0	0	0	0	0	0	0	styls, fan spo, pavement and low outcrops, back on phosph limesome, hex, white ane, laemo, scattered boulders
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	320						0	0	0	0	0	0	0	0	low outcrops, slabs and boulders.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	314						0	0	0	0	0	0	0	0	off bottom above slabs, boulders, outcrops, lg upend slab, fan spo, tiny white spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	above bottom, lg boulders and slabs
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	moving up steep slope above geo, line of white fan spo on side camera, ast
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	298						0	0	0	0	0	0	0	0	numerous white spo on edge of irreg outcrops, irreg outcrops, orange ane, neps, ane, white spo on edge
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	298						0	0	0	0	0	0	0	0	nep, ane, pavement
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	299						0	0	0	0	0	0	0	0	pavement, neps, anes, sm spo, anti, white ane, fan spo w/ oph, fly trap
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	298						0	0	0	0	0	0	0	0	flat pavement on side cameras w/ scattered fan spo, pavement divided by reg fractures, nep, fan spo, tiny white spos
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	cobbles, slabs, fan spo, neps, raised pavement.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	298						0	0	0	0	0	0	0	0	phak, numerous neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	298						0	0	0	0	0	0	0	0	same btm, black coral, anes, numerous nep, pach, blue encrusting spo, irreg outcrops, scorpion fish
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	low relief pavement w/ pools of sed, pachs, neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	same btm, white anes
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	297						0	0	0	0	0	0	0	0	numerous sm orange oph, more relief, raised pavement, back on low relief pavement, numerous neps
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	295						0	0	0	0	0	0	0	0	low relief in side camera, pavement, neps, orange ane, white ane
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	295						0	0	0	0	0	0	0	0	pavement, neps, fan spos, chair in side camera, edges of slabs do not have same abundance of spos as earlier, lg ane, blue spo.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	gravel, neps
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	295						0	0	0	0	0	0	0	0	white ane, neps, fan spo, lg fan spos.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	scorpion fish, gon, fan spo, anti?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	295						0	0	0	0	0	0	0	0	same low relief pavement btm, neps, white anes, more white anes on edge, styls
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	296						0	0	0	0	0	0	0	0	fly trap, styls, same btm, neps, blue spo.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	295						0	0	0	0	0	0	0	0	rub and gravel on outcrops and pavement, neps, fan spos, sm fishes
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	293						0	0	0	0	0	0	0	0	1-2 feet thick pavement, orange ane, neps, blue spo, echinus, ast, styls, sm fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	same btm, same fauna, cids, white ane, fan spo, poss lg anti in side camera, white anes
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	solid pavement, 3-4 foot edge, ridge w/ numerous fan spo, lg geo, vert relief 3-4ft., boulders numerous
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	pale orange fan spo, moving up steep slope
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304						0	0	0	0	0	0	0	0	numerous boulders and cobble, rub and cobbles in sed, styl, gon, lots of gravel, cob, rub, neps, fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305						0	0	0	0	0	0	0	0	hex?, dense rub and cobble field, talus slope, neps, blue spo, cable
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305						0	0	0	0	0	0	0	0	rubble talus slope, fan spo, looks as if could be solid, fan spo, m lg black coral tree in side camera
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	304						0	0	0	0	0	0	0	0	still over rub gravel talus slope, white ane, neps, sm styl.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305						0	0	0	0	0	0	0	0	talus field, lg sea pen, shr, sm stalks, neps, cids
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305						0	0	0	0	0	0	0	0	same rub btm, bit more sparse, neps, fan spo, styl, ane, white veneer pavement, fan spon on side camera
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	305						0	0	0	0	0	0	0	0	more of veneer white pavement w/ fine coral gravel poss?, anes, cids, lg fan spo
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	302						0	0	0	0	0	0	0	0	sed btm w/ sm low veneer slabs and outcrops, gravel, some nipples, sm burrow?, something embeded in sed?
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	302						0	0	0	0	0	0	0	0	fan spo on boulders, brisnged, areas of sed among boulders, lg boulders
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	292						0	0	0	0	0	0	0	0	irreg substr, blue spo, outcrops, slabs, pavement w/ styl, ane, neps
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	293						0	0	0	0	0	0	0	0	bamboo coral, irreg outcrops and boulders, mod to low relief, black coral, bottle brush, sm white stalks, rub gravel btm.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	side cameras show flat btm w/ rub and sed, glass spo, nep, numerous sm burrows in sed in gravel!
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	scattered pavement, outcrops, neps.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	rip sand, scattered rub, neps, sm stalk, coming up on H, lg anti, pena, neps, anes, anti, gon, white anes,
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	alternating gravel, sand, outcrops, skate, cid.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	same btm, outcrops, geo x 2, styls, anes, tiny white spos.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	LAST PHOTO, low relief outcrops, rub, areas of sed.
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	low relief outcrops, partly buried, ane, laem, flytrap, white ane, nep, white stalk, styl
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	293						0	0	0	0	0	0	0	0	same btm, partly buried low relief outcrops, anes, glass spo, anti bush on side camera
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	293						0	0	0	0	0	0	0	0	same btm, fan spo, cid, scorpion fish, orange ane
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	irreg rock, pavement, lg fan spo, anes, styl, anti bottle brush, lg sea star, white stalks, nep
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	same btm, ecd, white ane, nep, passing over open sed w/ rippled sand
CalypsoPipeline	5/13/2006	TONGS			MP 18 W	294						0	0	0	0	0	0	0	0	CAMERA MEMORY CARD FULL, BRINGING ROV UP--MILE MARKER 19
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	313						0	0	0	0	0	0	0	0	irreg cratered pav w low ledges, cid, nphs, tiny wht spos, red urcline?
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	314						0	0	0	0	0	0	0	0	irreg cratered pav w low ledges, pach, geo
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	313						0	0	0	0	0	0	0	0	cratered pav, hex?, tiny wht spos, scop, pach, stalk/ anti?
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	316						0	0	0	0	0	0	0	0	same btm, bmb? Pachs, gon, bmb
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	315						0	0	0	0	0	0	0	0	cratered pav, cid, ast, macrofauna v scat, no nphs in a while.
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	315						0	0	0	0	0	0	0	0	cratered pav w low ledges 0.5-1 ft, tiny wht spos, thin fan spo.
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	316						0	0	0	0	0	0	0	0	same btm, gon
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	318						0	0	0	0	0	0	0	0	pachs, bmb, sm wht stalks, tilted slabs, irreg 1-2 ft relief hardbottom
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	316						0	0	0	0	0	0	0	0	irreg cratered pav w low tilted ledges, sm stalks, sm wht spos
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	317						0	0	0	0	0	0	0	0	irreg cratered low relief pav w tilted ledges, geo, lg pachs w crins
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	317						0	0	0	0	0	0	0	0	irreg massive slabs, boulders, back on lower relief cratered partly buried sed

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledge; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	325						0	0	0	0	0	0	0	0	bmb, cratered pav w low ledge, geo, rock/rub field
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	324						0	0	0	0	0	0	0	0	up over massive slab 6-8 ft high several m across w wht sponges along edges; jumbled field of rocks, bols, slabs, geo, yel spo?
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	325						0	0	0	0	0	0	0	0	over ledge, cluster of several bmb on top of ledge
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	324						0	0	0	0	0	0	0	0	over another steep ledge to bol field, ane, crm bmb, ast, sm hex, fan spo w crm
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	330						0	0	0	0	0	0	0	0	irreg outcrops, bols, slabs, rocks, ast, geo, pach,
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	333						0	0	0	0	0	0	0	0	irreg boulders, rocks, crm, back on jointed pav.
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	334						0	0	0	0	0	0	0	0	irreg pav & outcrops, tiny wht spo, ane, bmb, prim? Fan spo
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	334						0	0	0	0	0	0	0	0	encrusting pale yel spo, bmb, bmb, anti?
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	336						0	0	0	0	0	0	0	0	same btm, bmb, hex, bmb, tiny wht spos, cid
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	337						0	0	0	0	0	0	0	0	low relief cratered pav, bmb,
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	340						0	0	0	0	0	0	0	0	irreg ledges & cratered hardbottom, cid, pach, bmb, ball hex, styl, ledge
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	341						0	0	0	0	0	0	0	0	irreg boulders, rocks, cauliflower spo, slabs, on sed slope
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	350						0	0	0	0	0	0	0	0	smooth sed area w tiny tufts, scat rub, gravel, back on irreg slabs & pav w gravel, pach, fan spc
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	351						0	0	0	0	0	0	0	0	irreg low relief pav, fan spo, tiny wht spos, cid, ophs, sty
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	351						0	0	0	0	0	0	0	0	irreg cratered pav, hex,
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	353						0	0	0	0	0	0	0	0	pach, same btm, fan spo
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	354						0	0	0	0	0	0	0	0	low pavement, pach, lg curtain spo
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	356						0	0	0	0	0	0	0	0	irreg pav, slab, phk, curtain spo, numerous sm fan spos, pach, ledge w boulders, wht ball spos
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	360						0	0	0	0	0	0	0	0	sed slope changing to partly buried pavement
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	360						0	0	0	0	0	0	0	0	MEMORY CARD FULL: GRAVEL FIELD, RECOVERING ROV TO DOWNLOAD
CalypsoPipeline	5/14/2006	TONGS			South MP 18E							0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			South MP 18E							0	0	0	0	0	0	0	0	Launch; to cont, transect where left off, Camera settings: Manual, 1/200, F4.0, Large Resolution, Normal compression- 1388 images to start
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	351	538					0	0	0	0	0	0	0	0	On Bottom, on center pipeline track
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	358	540					0	0	0	0	0	0	0	0	100% hard bottom, rsl, bol, eroded karst like topo, 1-3ft relief, lithistid spg, fan spg, hex vase, pach spngs
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	359	543					0	0	0	0	0	0	0	0	started video, geodia, fan spgs, lae
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	359	544					0	0	0	0	0	0	0	0	repositioning ship to the south to the south corridor track
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	359	549					0	0	0	0	0	0	0	0	starting transect to the east. On southern corrdor track, HD 75 degrees. Sand and sm cobble ~3cm
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	359	550					0	0	0	0	0	0	0	0	ro pav, thin veneer sed, chlor, pac plates
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	361	554					0	0	0	0	0	0	0	0	sand bottom approaching ro pav, numerous chlor on sand bottom, skate
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	362	555					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	363	556					0	0	0	0	0	0	0	0	sand troughs and ro slabs
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	363	557					0	0	0	0	0	0	0	0	ro pav bol 1-2 ft relief. Narrow bands of rock outcrops separated by smooth flat sand depth 1199 - trough
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	363	559					0	0	0	0	0	0	0	0	ro pav - pach cups and plates, 1-3ft relief
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	365	600					0	0	0	0	0	0	0	0	back in sand
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	374	605					0	0	0	0	0	0	0	0	lrg ro outcrops, 1-3ft ro slabs, bol 1-2m
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	379	607					0	0	0	0	0	0	0	0	End tape 52, start tape 53
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	381	608					0	0	0	0	0	0	0	0	100% hard bottom, pav slabs, sparse spgs, scorpion fish
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	385	610					0	0	0	0	0	0	0	0	100ft north of south corridor track, 100% hard bottom pav slabs, sparse spg
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	397	613					0	0	0	0	0	0	0	0	roc spider crab. Lrg ro slabs, 1-2ft relief. Broken bol 1-2ft, hor, eels
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	400	615					0	0	0	0	0	0	0	0	100ft north of pipeline south corridor
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	405	618					0	0	0	0	0	0	0	0	continuing ro slabs, bol 1-2ft relief. Very sparse epifauna
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	405	619					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	405	620					0	0	0	0	0	0	0	0	~100ft north of south corridor line. 100% cover 1-2ft bol, 5-10ft rock slabs, 1-2 relief
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	414	624					0	0	0	0	0	0	0	0	100% cover of rock cobble 3-5cm
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	414	625					0	0	0	0	0	0	0	0	rock slabs, 100ft north of south corridor track
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	416	626					0	0	0	0	0	0	0	0	going down a series of terraces, stepping down 10ft increments
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	421	630					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	424	633					0	0	0	0	0	0	0	0	sand ripples
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	424	635					0	0	0	0	0	0	0	0	right on south corridor track, Sand ripples 100% soft bottom, Skate, chlor
CalypsoPipeline	5/14/2006	TONGS			South MP 18E	424	636					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	312	1717					0	0	0	0	0	0	0	0	At north corrdor MP18W. Right on line. 100% ro pav, eroded surface, 1-2ft relief. Nph, pach plates
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	310	1720					0	0	0	0	0	0	0	0	same btm. Hor, urchins, pach spngs
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	314	1724					0	0	0	0	0	0	0	0	end tape 62
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	304	1725					0	0	0	0	0	0	0	0	start tape 63, same btm. Sparse biota
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	302	1730					0	0	0	0	0	0	0	0	sam btm 100% ro pav, slabs, nph, few spngs
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	302	1734					0	0	0	0	0	0	0	0	lrg dropoff here. 986 on top drops off to the west side - another ledge. Now at 102f
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	312	1735					0	0	0	0	0	0	0	0	series of 90 degree steps. Now at 1047. drop off of 26 ft. Total relief of all drops 60ft relief
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	320	1736					0	0	0	0	0	0	0	0	100% sed
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	320	1737					0	0	0	0	0	0	0	0	line
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	322	1740					0	0	0	0	0	0	0	0	sed w occasional ro bol. Ro rubble/pav slabs now, fan spngs, ane's
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	291	1741					0	0	0	0	0	0	0	0	50 cm perimurced orange. Ledge - 1040, 20ft rise escarpment
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	294	1743					0	0	0	0	0	0	0	0	going up ledge. Fan spgs
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	298	1744					0	0	0	0	0	0	0	0	nph
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	298	1745					0	0	0	0	0	0	0	0	right on north corrdor rte.
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	295	1750					0	0	0	0	0	0	0	0	on top of a big ledge. Very rugged topo. Lrg slabs, caves, overhangs
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	294	1752					0	0	0	0	0	0	0	0	nph, fan spngs
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	293	1754					0	0	0	0	0	0	0	0	pach, black coral ~2ft, 100% rock cover, ane's, dense nph, hor
CalypsoPipeline	5/14/2006	TONGS			North MP 18W	293	1755					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 18W</															

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	299	1816				0	0	0					Sed, low relief ro outcrops, cobble, sea pen, aphrocholis, ecd, scorpion fish. ~50% cover hard bottom
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	301	1818				0	0	0					hor
CalypsoPipeline	5/14/2006	TONGS			North MP 19W		1821				0	0	0					
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	305	1824				0	0	0					end tape 63
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	304	1825				0	0	0					start tape 64. ~50ft south of north corridor line
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	302	1830				0	0	0					mostly sed w/ ro cobble and occasional boulder. Ripples. Occasional patches of hard bottom. Phk, starfish, ane's,urchins
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	305	1834				0	0	0					mostly sed
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	305	1835				0	0	0					sediment, asym ripples, sparse rock cobble, sea pen.
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	303	1840				0	0	0					mostly sed, sea pens. Asymmetrical ripples. Occasional ro pav
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	303	1841				0	0	0					phk, urchins on ro pav
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	303	1842				0	0	0					back to sed
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	299	1845				0	0	0					right on track of north corridor. ~90% sed, scattered ro cobble. < 5% cover
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	295	1850				0	0	0					<50% cover, ro outcrops, cobble, bol's, w/ sed in btw. Rt on N corridor pipeline, nph, ane's, ecc
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	294	1851				0	0	0					ledge coming up
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	297	1852				0	0	0					Rt ro outcrop, geodia, sand on back side. About 12 ft drop
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	298	1853				0	0	0					back in sed
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	305	1855				0	0	0					100% sed, sand ripples
CalypsoPipeline	5/14/2006	TONGS			North MP 19W	288	1856				0	0	0					back into rock pavement, karst like topo, low relief ro pavement
CalypsoPipeline	5/13/2006	TONGS			MP 19W						0	0	0					Launch: camera set up to 1rg resolution, fine compression, starting at 700 photos
CalypsoPipeline	5/13/2006	TONGS			MP 19W	288	432				0	0	0					on bottom after re-launch. Starting at MP19 rdwest. Phosphoric limestone pav, pockets of sed, hor, fan sponges
CalypsoPipeline	5/13/2006	TONGS			MP 19W	290	434				0	0	0					landed 300ft south of MP19. Moving north to get online. Pac sponges, ro col, broken pav, nph, 1rg pac fan
CalypsoPipeline	5/13/2006	TONGS			MP 19W	290	436				0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 19W		437				0	0	0					six photos testing camera
CalypsoPipeline	5/13/2006	TONGS			MP 19W	291	438				0	0	0					ech, 1rg pac
CalypsoPipeline	5/13/2006	TONGS			MP 19W	291	439				0	0	0					Just south of pipeline, slightly east of MP19. Starting transect to the west
CalypsoPipeline	5/13/2006	TONGS			MP 19W		440				0	0	0					~50-90% cover of hard bottom, ro pav, bol, blue sponges.
CalypsoPipeline	5/13/2006	TONGS			MP 19W	291	441				0	0	0					ane, heli
CalypsoPipeline	5/13/2006	TONGS			MP 19W	292	443				0	0	0					right on pipeline rt - ~200ft east MP19, Ro, Karst topography, ane
CalypsoPipeline	5/13/2006	TONGS			MP 19W	293	444				0	0	0					pac's, bmb
CalypsoPipeline	5/13/2006	TONGS			MP 19W	294	445				0	0	0					fan sponges or gorgonians w/ brittle stars stretched out on edges of it. Patchy bottom, varies ~50% cover
CalypsoPipeline	5/13/2006	TONGS			MP 19W	293	446				0	0	0					hard bottom
CalypsoPipeline	5/13/2006	TONGS			MP 19W	293	448				0	0	0					gorgonian - plumerella
CalypsoPipeline	5/13/2006	TONGS			MP 19W		449				0	0	0					crossing MP19. Ro pav, karst, ane's, ecu
CalypsoPipeline	5/13/2006	TONGS			MP 19W	296	450				0	0	0					all hard bottom, same bottom. Skate
CalypsoPipeline	5/13/2006	TONGS			MP 19W	296	451				0	0	0					more sed, ro pav, thin veneer sed, 1rg spngs sticking up through sed. Pav under sed, 20cm spgs, phk
CalypsoPipeline	5/13/2006	TONGS			MP 19W	297	452				0	0	0					ro pav, ro cobble, thin veneer sed, ane's, occasional fan spg, phk, nph, heli. 20cm sea pen
CalypsoPipeline	5/13/2006	TONGS			MP 19W	297	453				0	0	0					1rg pen, soft sed/w/ ro cobble
CalypsoPipeline	5/13/2006	TONGS			MP 19W		454				0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 19W	294	455				0	0	0					ROV is surging up and down to due surface swell - video variable
CalypsoPipeline	5/13/2006	TONGS			MP 19W	301	459				0	0	0					100ft north of pipeline, ro pav, rub. 1rg hex, ecd, fan spgs, stilo urchins, lae
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	501				0	0	0					heli, quite a few sea fans
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	503				0	0	0					more sed, ro cobble, skate
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	504				0	0	0					ane, nph, out of 1rg bol/ro slabs. Sed and 5-10cm ro cobble. Starfish, ane dominate fauna, sea per
CalypsoPipeline	5/13/2006	TONGS			MP 19W		505				0	0	0					several 1rg sea pens pennatulacea 20-25cm
CalypsoPipeline	5/13/2006	TONGS			MP 19W	302	506				0	0	0					lae, heli, nph, pen
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	508				0	0	0					cideroid urchin, skate, ane's, sea pens, fan sponge, sed w/ 10-30% ro cobble
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	509				0	0	0					more ro pav and more exposed rock. Phk, pac's
CalypsoPipeline	5/13/2006	TONGS			MP 19W	301	510				0	0	0					~200ft south of pipeline.
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	512	S, Ro	H	1	0	0	0					golden crab, starfish, sea pen, karst rock pav, nph
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	513				0	0	0					back in sed w/ 8cm ro cobble. Good sized surges
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	515				0	0	0					mostly sed, <5% ro cobble, hex, nph
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	517				0	0	0					mostly sed, <5% ro cobble
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	518				0	0	0					occasional fan sponge and skate
CalypsoPipeline	5/13/2006	TONGS			MP 19W	302	519				0	0	0					more ro pav w/ thin veneer sed, 20cm phk, heli, phk
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	520				0	0	0					back on pipeline after vering 200ft south. Ro pav, thin veneer sec
CalypsoPipeline	5/13/2006	TONGS			MP 19W		521				0	0	0					patches of sand w/ asymmetrical ripples, lae
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	523				0	0	0					sed and cobble, ane, ROV surging 3-4 ft up and down
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	524				0	0	0					cideroid
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	525				0	0	0					fishing line
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	527				0	0	0					mostly sed, <5% ro cobble, lae, ane's on rock
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	530				0	0	0					mostly sed, sparse cobble <5% cover, a few ane's, right on pipeline track
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	532				0	0	0					sea pen. End of tape 33.
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	533				0	0	0					start tape 34. Mostly sed w/ <5% cover ro cobble, occasional sea pen, cideroid urchin, scorpion fish.
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	534				0	0	0					Human artifact, some sort of bag
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	535				0	0	0					1rg sea pen
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	536				0	0	0					sed w/ ro rubble bottom
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	537				0	0	0					current dropped down to zero
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	538				0	0	0					pen, lae
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	539				0	0	0					all sed w/ asymmetrical ripples. A few hard sonar targets off in the distance. Looks like sed over ro pav
CalypsoPipeline	5/13/2006	TONGS			MP 19W		540				0	0	0					b/c some ane, spgs sticking through sed
CalypsoPipeline	5/13/2006	TONGS			MP 19W		542				0	0	0					piece of plastic
CalypsoPipeline	5/13/2006	TONGS			MP 19W	302	540				0	0	0					100ft south of pipeline. Sed to sed over ro pav and cobble. Mostly sed through here. Cideroid, ane, pen
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	542				0	0	0					skate
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	545				0	0	0					mostly sed, sparse ro cobble. ~100 ft south of line. Sea pens, hydroids, ane's
CalypsoPipeline	5/13/2006	TONGS			MP 19W	301	546				0	0	0					

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	# Shrimp	# Golden Tilefish	# Sand Tilefish	# Blue-line Tilefish	Tilefish Burrow (Bu?= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			MP 19W		547				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 19W	301	550				0	0	0	0					sed, <5% ro cobble, skate, cideroid urchin, ane, 100ft south of pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 19W	300	551				0	0	0	0					first bmb in a while - isidella
CalypsoPipeline	5/13/2006	TONGS			MP 19W	296	554				0	0	0	0					more exposed ro pav, close to pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 19W		555				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 19W		556				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 19W	294	557				0	0	0	0					back into ro pav. ~50% cover, nph, venus flytrap ane. Nice ridge on outboard camera. Karst topo. 4-5 ft dropoff ledge. Back in sand
CalypsoPipeline	5/13/2006	TONGS			MP 19W	298	558				0	0	0	0					now in sed zone. 100% sed, slight nipples - 988 depth now
CalypsoPipeline	5/13/2006	TONGS			MP 19W	303	559				0	0	0	0					sand bowl or valley here
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	600				0	0	0	0					100% soft sed, asymmetrical nipples. 150ft north of pipeline. Zig zagging down pipeline. Alternating 200ft either way
CalypsoPipeline	5/13/2006	TONGS			MP 19W	304	601				0	0	0	0					few hundred ft east of MP 20, sea pens
CalypsoPipeline	5/13/2006	TONGS			MP 19W	295	605				0	0	0	0					100% sed but showing ro ridge on sonar, here it is. Karst topo, ro pav, slabs, nph, spgs, phk, close to pipeline, ane's. 500ft east of MP 20
CalypsoPipeline	5/13/2006	TONGS			MP 19W	293	606				0	0	0	0					come up 30ft., ecd, phk
CalypsoPipeline	5/13/2006	TONGS			MP 19W	293	607				0	0	0	0					ro pav, pockets of sed. Ro pav with thin veneer sed.
CalypsoPipeline	5/13/2006	TONGS			MP 19W	291	608				0	0	0	0					ridge, mostly rock, karst
CalypsoPipeline	5/13/2006	TONGS			MP 19W	290	609				0	0	0	0					lae. 50-75% exposed rock, ro pav, karst topo, occasional fan spg. Another ridge all hard bottom, numerous phk
CalypsoPipeline	5/13/2006	TONGS			MP 19W	288	610				0	0	0	0					right on pipeline rte, slightly east of MP20, nph
CalypsoPipeline	5/13/2006	TONGS			MP 19W	287	611				0	0	0	0					venus flytrap
CalypsoPipeline	5/13/2006	TONGS			MP 19W		612				0	0	0	0					go to MP20
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					low relief irreg outcrops, rub, anti, vft, styl, nph, pen, geo, scorp
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					ane irreg outcrops, nph, basketstar, relief 30 cm
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					blue encrust spo, styl, ecd, ane, gon, euryalid, cid, tiny wht spos, fan spo, ant
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					tilted ledges, ane, gon, fan spo, blue spo, cid, stalk, ane, bty, gec
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	293					0	0	0	0					geo, ast, rub field, ane, nph, back on outcrops, ball hex, fan spo, nphs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	295					0	0	0	0					rub on ob RS, back on outcrops, sm stalk, sm pen, nph, blu spo, ane, back on rub/grave
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					irreg outcrops, cids, ane, laemo, blu spo, relief 0.5 m, ane, vft, cid, ecd, ast
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	291					0	0	0	0					irreg outcrops, pav, geo, fan spo, steep ledge ~3 m, tilted slabs, outcrops, boulders, narrow tilted outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303					0	0	0	0					ecd, anti? Or pen?
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	305					0	0	0	0					ecd, fan spo, partly buried pav, rub, slabs, blu spo, ane, nph, fan spos, cic
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304					0	0	0	0					gravel field, cid, ast, nph, ecd
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304					0	0	0	0					gravel field, fan spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304					0	0	0	0					geo, dense grav/rub field, ane, vft, partly buried pav, back on irreg low relief outcrops, fan spc
CalypsoPipeline	5/12/2006	TONGS			South MP 19E						0	0	0	0					1-5? m relief, massive outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					irreg pav, nphs, anes, blu spos.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					massive irreg pav & slabs, skate, ane, nphs, blu spo, tiny white spos, anem?
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					ledges, irreg outcrops, cid, nphs, anes, fan spo, blu spo, cid, irreg slabs, bols, ane,
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					Cids, fan spos, slabs, nphs, rub among pav, styl
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	296					0	0	0	0					irreg pav, lg orange ane, nphs, ast, vft, styl, lg irreg wht spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	296					0	0	0	0					nphs, irreg jointed pav, skate, tiny wht spos.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	296					0	0	0	0					Jointed low relief pav, vft, nphs, styls, tiny wht spos, numerous nphs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					edge of ledge ~3 m drop over ledge, ledges, slabs, ane, basketstar
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	294					0	0	0	0					massive slabs & ledges 1-2 m relief, nphs, cids, styl, anes, gon, jointed pav, fan spc
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	297					0	0	0	0					lg or ane, cids, nphs, wht ane, blue spo, gon, irreg slabs, gec
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	298					0	0	0	0					lg irreg slabs, pav, nphs, sm hex, numerous nphs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	298					0	0	0	0					pav w numerous nphs, gon, ane, scorp blu spo.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	299					0	0	0	0					pav, numerous nphs, cids, ane, tiny wht spos, ophs, lg anti bush, raitail?, low relief irreg slabs & pav w pools of sed
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	300					0	0	0	0					irreg slabs & jointed pav, numerous nphs, blu spo, ane, cids, low edge of slab leading to boulder field
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	299					0	0	0	0					back on pav, fan spos, nphs, ane, irreg low relief outcrops, slabs, tiny wht spos.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	301					0	0	0	0					irreg pav, nphs, lg orange ane, slabs, nphs, lg wht ane, cids
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	301					0	0	0	0					ledge w crin, nphs, echinus, ane, irreg outcrops 1-2 ft relief, cids, blu spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	300					0	0	0	0					geo, irreg low outcrops. Long thin curtain spo, massive slab, thin fan spo, nphs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	300					0	0	0	0					massive jointed slabs, pav, hex, numerous nphs, tiny wht spos, cid
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	299					0	0	0	0					same btm, 1-2 ft relief, cid, fan spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	300					0	0	0	0					edge of ledges, sponges along ledge edge. ~1 m relief
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	306					0	0	0	0					cobbles, bols, slabs below ledges, back on irreg slabs, bols, fan spos.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	309					0	0	0	0					irreg slabs, rocks, boulders, fan spos, crin, Plumarella? on edge of overhangin stat.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	314					0	0	0	0					Numerous fan sponges on edge of boulder, boulder field, steep sed slope with rocks, bols
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	317					0	0	0	0					fan spos on lg bols, rub/rock field, nph, blu spo, styls, ane, fan spo w crin
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	322					0	0	0	0					gravel field, nphs, blu spo, styls, fan spos w crin.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	321					0	0	0	0					sm slabs, pach? Partly buried pav, rocks in sed slope, squid, cids
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	321					0	0	0	0					nph, fan spo, ane, hex, rock/rub field on sed slope, blu spo, fan spo.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	320					0	0	0	0					smooth sed w scal rub, some v tiny tufts, v weak ob RS
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	319					0	0	0	0					cid, irreg rocky outcrops in sed, nph, fan spo, irreg outcrops, nphs.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	318					0	0	0	0					irreg low-relief outcrops <0.5 m, ob RS, sm majia?
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	318					0	0	0	0					cid, boulder w fan spo, nph on irreg rocks & outcrops in ob RS, crin, echinus.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	318					0	0	0	0					scat sm rocks & outcrops in ob RS, ane.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	318					0	0	0	0					scat sm rocks to 0.3 m on ob RS, cid, nph, ecd, prim? Partly buried low relief outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	316					0	0	0	0					fan spos on boulders in sed, low irreg slabs & bols, fan spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	308					0	0	0	0					above bottom several m due to upcoming lg outcrop, massive slabs & outcrops visible with litte attached
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	301					0	0	0	0					tauna, few fan sponges, vertical relief ~70 ft
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303					0	0	0	0					massive slabs, low relief irreg outcrops & pav, tiny wht sponges, nph, cid
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303					0	0	0	0					cids, nphs, blu spo, low irreg jointed outcrops, echinus.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303					0	0	0	0					low relief irreg outcrops, cid, fan spo, tiny wht spo, nph.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	302					0	0	0	0					nph, low relief massive irreg outcrops, bty, nph, styls.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	302					0	0	0	0					jointed low relief pav & slabs, nph, ane, nphs.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303					0	0	0	0					same btm, nphs, echinus, cid.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303						0	0	0	0					same btm. cid, nphs. some pale fan rub. spo
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303						0	0	0	0					nph, more irreg btm - low-relief irreg outcrops & slab, anti?, back on jointed pav, styls, cid, echinus
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	302						0	0	0	0					vfl, blu spo, irreg pav w sed pools, nphs, anti.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	302						0	0	0	0					low-relief pav, cids, nphs.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303						0	0	0	0					low relief irreg pav, nphs, cid, fan spo, urchinae?, lg orange ane, pach
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	303						0	0	0	0					pav w low 1-2 ft ledges, pach, nphs, jointed pav.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	302						0	0	0	0					jointed pav, nphs, cid, sm red ophs, sm fan spo.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304						0	0	0	0					same btm, tiny wht spms, sm red ophs, nph, sm fan spo, pach, phk w/ ophs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304						0	0	0	0					continuous pav, cid, nph, sm phk, laemo.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304						0	0	0	0					continuous jointed pav, macrofauna v scat, nphs, lg orange ane.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	305						0	0	0	0					same btm, nphs, sm anti?, cid, wht ane
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	305						0	0	0	0					btv, overlapping slabs, nphs, jointed pav, wht ane (appear to prefer edges of slabs & pav)
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	304						0	0	0	0					jointed pav, nphs, sm red ophs, cids
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	306						0	0	0	0					sm red ophs, nph, cid, jointed continuous low-relief pav, macrofauna scat here, skate
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	305						0	0	0	0					same btm, nphs, urchinae?
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	306						0	0	0	0					pav more irreg, still low relief, overlapping slabs, fan spo w ophs, nphs, lg wht ane, clusters of nphs
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	306						0	0	0	0					jointed pav, nphs, little pools of sed in pav.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	307						0	0	0	0					same btm, numerous patchy nphs, urchinae?
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	306						0	0	0	0					jointed pav, ledge ~2-3 ft, slabs, bols, back on irreg pav, nphs, ant tree
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	308						0	0	0	0					irreg pav, nphs, gon, ast, jointed pav
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	308						0	0	0	0					jointed pav, nphs, some pools of sed in pav, wht ane.
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	308						0	0	0	0					same btm, nphs, pav more irreg w sm ledges
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	309						0	0	0	0					pav w ledges 1-2 ft, nphs, slabs, cid, skate, fan spo, echinus
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	309						0	0	0	0					irreg pav w low ledges, nphs, macrofauna v sparse, tiny wht spms, scat nph
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	311						0	0	0	0					fan spo, wht ane, pav w low ledges, cid, sm pools of sed in irreg pav, ane
CalypsoPipeline	5/12/2006	TONGS			South MP 19E	312						0	0	0	0					irreg cratered pav w low ledges, nph, tiny wht spms.
CalypsoPipeline	5/13/2006	TONGS			MP 20W	287	612					0	0	0	0					100% cover ro pav, karst, pockets of wht
CalypsoPipeline	5/13/2006	TONGS			MP 20W	286	615					0	0	0	0					fly trap ane, 50-75% cover ro pav, karst topo. Right on pipeline rte
CalypsoPipeline	5/13/2006	TONGS			MP 20W	285	616					0	0	0	0					low phk, venus fly trap ane. More pav and cobble, nph's, ane's, fishing line
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	620					0	0	0	0					on pipeline rte. 100% cover ro pav, karst topo, ane's, nph's starfish, pac
CalypsoPipeline	5/13/2006	TONGS			MP 20W	622						0	0	0	0					multi arm starfish - brisingidae
CalypsoPipeline	5/13/2006	TONGS			MP 20W	279	624					0	0	0	0					more pac spgs, lae, several starfish - gonaster. Cideroid urchins
CalypsoPipeline	5/13/2006	TONGS			MP 20W	279	625					0	0	0	0					hex, same bottom, ro pav. Just north of pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 20W	278	628					0	0	0	0					fan spgs, lg gorgonian prm? 100% cover ro pav, karst like topo. 50-100ft north of pipeline. Lae. Not much relief < 1ft. Pac
CalypsoPipeline	5/13/2006	TONGS			MP 20W	629						0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	630					0	0	0	0					approaching a sharp ridge on sonar. Ro pav, low relief
CalypsoPipeline	5/13/2006	TONGS			MP 20W	276	632					0	0	0	0					geodia, pen, geodia
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	633					0	0	0	0					end of tape 34
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	634					0	0	0	0					start tape 35. Transect across top edge miami terrace. Flat pav, low relief, karst like topo, < 1ft relief, sideroid urchins, phk, nph, lae, ane's. 100 ft north of pipeline rte. ROV 450 ft behind ship to north. Hd 222, sog, 6 knots
CalypsoPipeline	5/13/2006	TONGS			MP 20W	276	635					0	0	0	0					scorpion fish
CalypsoPipeline	5/13/2006	TONGS			MP 20W	276	636					0	0	0	0					more sed here
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	638					0	0	0	0					bol, rock outcrops, venus flytrap, bmb, christid spp, pac, ecd
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	639					0	0	0	0					sound trough here
CalypsoPipeline	5/13/2006	TONGS			MP 20W	279	640					0	0	0	0					approaching more rocks. Just north of pipeline. R bol, sed
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	641					0	0	0	0					scorpion fish, hell, sed w ro cobble
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	642					0	0	0	0					ridges appear to be going north south. Drop off deeper to westward side. 100% Sed here approaching ridge
CalypsoPipeline	5/13/2006	TONGS			MP 20W	278	643					0	0	0	0					outboard camera sees exposed rock
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	644					0	0	0	0					on top. Came up 15ft
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	645					0	0	0	0					ro pav, w/ thin veneer sed, low relief <1ft, sideroid, nph, ane, pac. 50 ft north of pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	646					1	0	0	0					golden crab, tape ends at 6:33:00
CalypsoPipeline	5/13/2006	TONGS			MP 20W	277	647					0	0	0	0					prm
CalypsoPipeline	5/13/2006	TONGS			MP 20W	276	648					0	0	0	0					low relief ro pav, several 20cm fan spgs sideroids, prm, nph. 100ft north of rte
CalypsoPipeline	5/13/2006	TONGS			MP 20W	276	650					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 20W	279	654					0	0	0	0					SEA PEN Scorpion fish
CalypsoPipeline	5/13/2006	TONGS			MP 20W	279	655					0	0	0	0					sed, ro pav, cobble, phk
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	658					0	0	0	0					on pipeline. Ro pav, low relief, phk, intermixed w/ patches of sed and cobble
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	700					0	0	0	0					ro pav, phk
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	701					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	704					0	0	0	0					prm, bmb, low relief ro pav, karst topo, phk, sideroid urchin, ecd. 50 north of pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	706					0	0	0	0					bmb, several phk, ro ledges
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	709					0	0	0	0					fishing line across bottom, phk 10-15cm prm, ane's. Low relief ro pav, karst topo. 100ft north of pipeline
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	710					0	0	0	0					pen,
CalypsoPipeline	5/13/2006	TONGS			MP 20W	281	712					0	0	0	0					mostly sed w/ ro bolpav
CalypsoPipeline	5/13/2006	TONGS			MP 20W	280	716					0	0	0	0					sed, sparse exposed rock. Go to mp21
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	286						0	0	0	0					OUTCROPPING BROKEN - NO AUDIBLE
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	289						0	0	0	0					Partly buried low-relief pav, nph, zoa, ane
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	291						0	0	0	0					Partly buried low-relief pav, cid, fan spo, ast
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	292						0	0	0	0					ane on low-relief outcrops, nph, crab, cid.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	292						0	0	0	0					Substrates quite barren, laemo.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	294						0	0	0	0					mod relief bol, pavements, pen, ane, cid, areas of sediment.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	294						0	0	0	0					low-relief slabs, cids, laemo.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	295						0	0	0	0					same btm, ane, pen, fan spo, cid, lg ane, laemo, boulders, ane, zoa, bmb
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	296						0	0	0	0					pen, fan spo, ob RS among outcrops & pav, bmb, ane, rub, flytrap
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	296						0	0	0	0					slabs, low partly buried outcrops, pavement, ob RS, zoa, ane, cid
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	297						0	0	0	0					photos of cables, fan spo, ane, pen, irreg outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	298						0	0	0	0					ob RS, cids, scat rub
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	299						0	0	0	0					sm rub on ob RS, outcrops blk & wht, cids, ane on sed

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	298						0	0	0	0	0	0	0	0	sm rub. sm outcrop, cids, ast. more rub. sm outcrop.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	299						0	0	0	0	0	0	0	0	sm irreg outcrops scat rub, ob RS, anc. scorp. zoa, hex.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	300						0	0	0	0	0	0	0	0	scat rub, partly buried outcrops & pav. cids.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	300						0	0	0	0	0	0	0	0	ane, same low-relief btm, laemo, cid
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	301						0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	302						0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	303						0	0	0	0	0	0	0	0	
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	300						0	0	0	0	0	0	0	0	START RECORDING sea pen, zoa
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	303						0	0	0	0	0	0	0	0	scat rub on ob RS, nph?, eel, sm partly buried outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	303						0	0	0	0	0	0	0	0	ball spo, cids, cat shark, sm hex. more outcrops, back on scat rub, ane
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	303						0	0	0	0	0	0	0	0	ben, scat rub, fan spo, some white rocks, cid, phk, stalk, phk, zoa
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	scat sm rub on ob RS, cid, phk, chiefly barren.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	field of sm rub, cid, hyd?, some white rocks among dk rub, ob RS
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	303						0	0	0	0	0	0	0	0	field of sm rub, ast, cid, ben, ast
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	ob RS, oph, sm rub, ophs, numerous ophs.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	scat sm rub, cid, ane, cat shark.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	sm rub, sea pen, skate, hyd?, ane, sm hex?, lg anes.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	sm scat rub on ob RS, skate, pen, ane, hyd? Sm white rocks, crat
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	cat shark, ane, ast, cid ane.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	antit bush?, scat sm rub, echinus, cids, phk, larger rocks
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	low relief outcrops, boulders, fan spo, ane, anti tree?, ast ane, scat rub
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	ane, sm scat rub, cid, red urch, laemo.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	sm rub on ob RS, sm spo, sm white rocks among dk rub, cid, nph, hex, scorp, cid, pen, fan spo, ane
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	cids, hermit, fan spo w ophs, sm rub on ob RS, sm anti? Ane
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	sm hex, sm anti bottlebrush?, pen, anti, ecd, cid.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	pen, scat rub, partly buried pav, fan spos, more outcrops, low pav, ane, fan spos
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	pav, bmb, fan spos, anti?, ane, fan spos more common, ecd
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	low-relief irreg outcrops & rub, some white rocks, ecd, ane, cid
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	fan spo, ecd, stalk, rub, nph, ane, nph, wht ane, cid, sm hex
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	fan spo, rub & rocks, ane, nph, wht & blk rocks & rub, ast, nph, ecd, lg ane, fan spo
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	305						0	0	0	0	0	0	0	0	nph, pen, B&W rub, ben, fan spo, pen, ane, sm hex.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	B&W rub, ane, nph, fan spo, lg orange ane, back on outcrops, bo. & pav, fan spo, ane, cids, styl, ecd.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	304						0	0	0	0	0	0	0	0	lg slabs, outcrops, geoid, ecds, sm styls, wht ane, rub piles.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	302						0	0	0	0	0	0	0	0	pen, styls, sm anti, nph, ast, fan spos, scorp, lg fan spos
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	302						0	0	0	0	0	0	0	0	fan spos, styls, gon, pavement, fan spos, nph, pave bottom
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	300						0	0	0	0	0	0	0	0	fan spo, gon, anes, ecd, low outcrops & pav, styls, nph, echinus, 30-cm rocks
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	300						0	0	0	0	0	0	0	0	irreg outcrops, fan spo, nph, now on rub, ast, nphs, hex, bmb, back on pav & outcrops
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	299						0	0	0	0	0	0	0	0	low outcrops, pav, ane, nph, skate, echinus, styls, anti, laemo, ecd.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	299						0	0	0	0	0	0	0	0	partly buried pav & outcrops, nph, lg fan spo w ophs, ast, styls, ecd.
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	298						0	0	0	0	0	0	0	0	nph, anti, outcrops passing to rub, tall bottlebrush anti, cid, fan spo, nph, skate, wire?, cic
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	299						0	0	0	0	0	0	0	0	hex, anti, fan spo, ecd, bold, more massive outcrops, tilted slabs, rub, ane, pav, ane, ast
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	298						0	0	0	0	0	0	0	0	hex, partly buried pav, low outcrops, fan spo, rub, vlt, rub field, ane, hex, back on tilted slabs
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	297						0	0	0	0	0	0	0	0	pav. & irreg outcrops, styls, geoid, vlt, ane, ecd, tilted slabs, bol, fan spo, wht ane
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	296						0	0	0	0	0	0	0	0	low outcrops, ecd, laemo, pach, geoid, higher relief ledge 0.75 r
CalypsoPipeline	5/12/2006	TONGS			South MP 20 E	292						0	0	0	0	0	0	0	0	irreg mod relief outcrops, geoid, hex, basket star, ast, tilted slabs, ane, sty
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	286	1900					0	0	0	0	0	0	0	0	On N MP20W, 100% cover hard bottom, nph, cideroid urchins, starfish.
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	283	1905					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	280	1910					0	0	0	0	0	0	0	0	~100ft south of north corridor track, ro pav w karst topo, sea pens, goniaster starfish. Cideroid urchin,
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	280	1912					0	0	0	0	0	0	0	0	nph, ane's, scorpion fish
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1917					0	0	0	0	0	0	0	0	same ro pav
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	276	1920					0	0	0	0	0	0	0	0	patchy rock pavement karst-like topo
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	279	1922					0	0	0	0	0	0	0	0	Patchy ro, <50% cover
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	281	1923					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	281	1924					0	0	0	0	0	0	0	0	mostly sed here, box, some sort of 8ft rod
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1925					0	0	0	0	0	0	0	0	patchy <50% cover hard bottom, geodia. Right on pipeline rte
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	278	1926					0	0	0	0	0	0	0	0	end of tape 64, start tape 65
CalypsoPipeline	5/14/2006	TONGS			North MP 20W		1927					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1928					0	0	0	0	0	0	0	0	lrg fan sponge
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1929					0	0	0	0	0	0	0	0	pm's
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1930					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	277	1931					0	0	0	0	0	0	0	0	hex
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	276	1932					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W		1934					0	0	0	0	0	0	0	0	off bottom. Lost positioning of ship
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	280	1935					0	0	0	0	0	0	0	0	back on bottom
CalypsoPipeline	5/14/2006	TONGS			North MP 20W		1936					0	0	0	0	0	0	0	0	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	282	1937					0	0	0	0	0	0	0	0	~150ft north of north corridor track. Repositioning ship to get back online. ~50% cover hard bottom
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	283	1938					0	0	0	0	0	0	0	0	phk, ecd, stylaster, ane
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	283	1939					0	0	0	0	0	0	0	0	hd due south
CalypsoPipeline	5/14/2006	TONGS			North MP 20W</															

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			North MP 20W		2004					0	0	0	0				RS, ane, pen, cid.	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	281	2005					0	0	0	0				RS, trails in sand, bioturbation, small areas of exposed rock	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	281	2006					0	0	0	0				ane, benthoabits.	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	281	2007					0	0	0	0				areas of exposed ro rub/cob/bol, ane, gorg.	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	280	2008					0	0	0	0				RS, ast, ane, small areas of exposed rock rub, gorg	
CalypsoPipeline	5/14/2006	TONGS			North MP 20W	280	2009					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	280	719					0	0	0	0				start MP21. Mostly sed, sparse ro cobble, exposed ro bol <10% hard bottom	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		721					0	0	0	0				hd 234. Sog 1 knot. Phk, crab, ane's, eel, prm	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	280	723					0	0	0	0				steel plate	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	280	724					0	0	0	0				mostly sed, rock outcrop, 1ft relief, pac, sea fan, bmb, ane, ecd, cideroid. Right on pipeline	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	726					0	0	0	0				low relief, ro rubble/cobble. Right on pipeline. phk, cideroid urchin, sea pen	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	729					0	0	0	0				right on pipeline. Thin veneer sed over ro pav, low relief ro outcrops, bmb, ane, phk	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	280	730					0	0	0	0				gal munda?	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	731					0	0	0	0				venus flytrap, bmb-isadella, scorpion fish, prm	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	732					0	0	0	0				sandy bottom, smooth sand	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	282	733					0	0	0	0				hex aphrocalisites? End of tape 35	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	734					0	0	0	0				start tape 36. Patchy ro cobble/pav low relief karst topo. Sea pen, ane, phk, ecd. Right on pipeline	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	282	735					0	0	0	0				exposed metal showing rust. No current. Phk w/ brittle stars on upper edges filter feeding	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	738					0	0	0	0				ro cobble, mostly sed. Right on pipeline	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		739					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	282	740					0	0	0	0				right on pipeline. Sed <20% cover ro cobble.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	741					0	0	0	0				hex, phk, ro cobble/bol	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	742					0	0	0	0				100% sed, asymmetrical ripples. Back into cobble zone. 3-5cm ro cob, cideroid urchins, echinoid urchin, sea pen	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	745					0	0	0	0				flat sed w/ sparse ro cobble	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	746					0	0	0	0				entering hard bottom zone, ro pav 20-30cm bol, low relief, hex, phk fan, nph, budweiser cideroid, pac vase, helcinacian. 50-80% cover hard bottom	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	748					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	278	750					0	0	0	0				ira geodid conical, low relief rock bol/pav. Geodid	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	751					0	0	0	0				extensive rock here. 1-2 ft ledges, ro pav, karst topo, bmb, farrea hex	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	753					0	0	0	0				fairly dense rock. Right on pipeline, 50% cover low relief rock. 20-30 cm phk	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	754					0	0	0	0				scorpion fish, bmb-isadella, nph. 75% rock pav, thin veneer sed	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		756					0	0	0	0				100% cover, numerous spgs in outboard camera, phk, geodid, pac primarily	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		757					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	800					0	0	0	0				50 ft north of pipeline. Hd 234, sog, 5 knots. 100% cover low relief pav, karst topo	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		801					0	0	0	0				Both and Jess taking over the watch	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	802					0	0	0	0				pach.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	803					0	0	0	0				flat ro pav, scattered fan and pach sponges	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	804					0	0	0	0				larger pach	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	805					0	0	0	0				bmb, bmb,	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	806					0	0	0	0				hor, more fan sponges, ech	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		807					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	808					0	0	0	0				pach, bmb, fan sponges, possible glass sponge, cid,	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	809					0	0	0	0				iae.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	810					0	0	0	0				ech, same low relief pro pav, scattered fan sponges, cid, ane	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	811					0	0	0	0				ech, larger pach, hor, cid.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	812					0	0	0	0				iae, more sand patch, back onto ro pav	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	813					0	0	0	0				cid, sandy patch with RS	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	276	814					0	0	0	0				hor, scattered ro pav visible with overlying sediment in between	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		815					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	816					0	0	0	0				cid, hor, fan sponge, cid, asteroid	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	277	817					0	0	0	0				pach, ane, lae, cid.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	278	818					0	0	0	0				hor, lae, thin bmb, cid, lae	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	278	819					0	0	0	0				fan sponge.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	820					0	0	0	0				unlying constant ro pav covered with sand sediment RS, scattered, ane, bmb, fan sponges	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	280	821					0	0	0	0				iae	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	822					0	0	0	0				hor, heli, 2 cid, large fan sponge	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	824					0	0	0	0				cid, ech, lae, bmb.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	279	825					0	0	0	0				ech, scattered ro pav.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		826					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	827					0	0	0	0				gorg, cid.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	828					0	0	0	0				fish (possibly grouper) went into the hole in the rock we took a photo of, pac?	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		829					0	0	0	0				ecd worms, hor, lae, hya?	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	281	830					0	0	0	0				heli, bmb, heli, cid, same ro pav covered by sediment, occ larger ro bol with karst formation, fan sponges	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	283	831					0	0	0	0				and pach prominent	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	283	832					0	0	0	0				larger bmb, cid, cid, fan sponge	
CalypsoPipeline	5/13/2006	TONGS			MP 21W		833					0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			MP 21W		834					0	0	0	0				larger massive sponge, ech, ecd, ending tape 36	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	283	835					0	0	0	0				cid, ecd, ane, lae, hor, seastar, seastar, large ecd.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	836					0	0	0	0				poss aphrocalisites definitely a glass sponge.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	837					0	0	0	0				ech, another poss aphro, glass sponge	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	838					0	0	0	0				cid.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	839					0	0	0	0				ech, ecd.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	840					0	0	0	0				roughly the same habitat sand covering a ro pav with ro rub/cob/bol protruding though, seeing mostly ane	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	284	841					0	0	0	0				cid, pach, fan sponges, glass sponges	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	286	844					0	0	0	0				ech, 1000ft from next MP, hex, aphro, bmb	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	286	845					0	0	0	0				aphro, ecd	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	285	846					0	0	0	0				aphro, patch of more sand than exposed hard bottom, aphro, larger forked tail fish fusiform in shape	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	286	848					0	0	0	0				bmb, cid, fan sponge, patch of dominant sand, ech.	
CalypsoPipeline	5/13/2006	TONGS			MP 21W	286	849					0	0	0	0				ech, ecd, ane, cid.	

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			MP 21W	287	850					0	0	0	0	0	0	0		sand, with exposed ro rub/cob/bol, ech, seeing fan sponges, ane, ecd, cid, gorg
CalypsoPipeline	5/13/2006	TONGS			MP 21W	287	852					0	0	0	0	0	0	0		going over a larger sandy patch between the rock, ech, bmb, hex
CalypsoPipeline	5/13/2006	TONGS			MP 21W	286	853					0	0	0	0	0	0	0		lae, fan sponges,
CalypsoPipeline	5/13/2006	TONGS			MP 21W	287	854					0	0	0	0	0	0	0		bmb,
CalypsoPipeline	5/13/2006	TONGS			MP 21W	287	855					0	0	0	0	0	0	0		bmb, cid, ecd, ane, ech, sandy patch
CalypsoPipeline	5/13/2006	TONGS			MP 21W	288	858					0	0	0	0	0	0	0		2 hor
CalypsoPipeline	5/13/2006	TONGS			MP 21W	288	859					0	0	0	0	0	0	0		ane, hor, gorg, sponge,
CalypsoPipeline	5/13/2006	TONGS			MP 21W	287	900					0	0	0	0	0	0	0		more sand than the exposed pavement, seeing mostly ane, cid, various sponges, occ bmb, lae
CalypsoPipeline	5/13/2006	TONGS			MP 21W	288	901					0	0	0	0	0	0	0		brown fuzz on rocks, not quite sure what it is, possibly hydroid or nph?
CalypsoPipeline	5/13/2006	TONGS			MP 21W	288	903					0	0	0	0	0	0	0		RS area between ro,
CalypsoPipeline	5/13/2006	TONGS			MP 21W	289	905					0	0	0	0	0	0	0		lae, hor
CalypsoPipeline	5/13/2006	TONGS			MP 21W	289	906					0	0	0	0	0	0	0		ob RS area between the ro,
CalypsoPipeline	5/13/2006	TONGS			MP 21W	288	907					0	0	0	0	0	0	0		colony of fuzzy stuff, possible hydroid or nph, too far to tel
CalypsoPipeline	5/13/2006	TONGS			MP 21W	289	910					0	0	0	0	0	0	0		2 pen, larger area of ob RS, lae,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2115					0	0	0	0	0	0	0		Heading east towards MP20. Mostly rippled sed w/ exposed areas of low relief ro bol
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2116					0	0	0	0	0	0	0		More area of rippled sed, bioturb
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2117					0	0	0	0	0	0	0		cid/rod, ane's on sim exposed rocks
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	283	2120					0	0	0	0	0	0	0		Mostly rippled sed w/ occasional areas of exposed boulders w/ ane's, sea per
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	283	2121					0	0	0	0	0	0	0		2 sea pens, field of sea pens, some exposed rock, ane's
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	285	2122					0	0	0	0	0	0	0		exposed line
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	283	2123					0	0	0	0	0	0	0		sea pen, txrd slightly wavy flat sed
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	283	2124					0	0	0	0	0	0	0		more exposed hard bottom, nph, weathered karst topo, hex
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2125					0	0	0	0	0	0	0		more exposed to bol/nav spgs, ane's, 1sq fan spg
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	282	2126					0	0	0	0	0	0	0		More consistent exposed pav, cid/rods, fan spgs, nph, hex
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	282	2127					0	0	0	0	0	0	0		geo,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	282	2128					0	0	0	0	0	0	0		fan sponge, ast, large gorg,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	282	2130					0	0	0	0	0	0	0		area of exposed ro bol/cob/rub, interspersed with areas of RS, anes and sponges on rocks, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2131					0	0	0	0	0	0	0		crab (possible rock), hor, cid, fan sponge
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2132					0	0	0	0	0	0	0		pavement covered more with sand, not as exposed as before
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2133					0	0	0	0	0	0	0		fan sponge, cid, large area of sand, back to rocks, nph
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2134					0	0	0	0	0	0	0		exposed ro is weather karst with ane, interspersed with slightly RS
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2135					0	0	0	0	0	0	0		gorg, cid
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2136					0	0	0	0	0	0	0		lae, small gorg, cid
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2137					0	0	0	0	0	0	0		cid, skate
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2138					0	0	0	0	0	0	0		flat fish
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2139					0	0	0	0	0	0	0		geo, ast
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2140					0	0	0	0	0	0	0		sandy sediment covering ro pav, see alternating between sand and low relief karst pav, mounds and
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2142					0	0	0	0	0	0	0		burrows in sand, on exposed ro pav seeing ane, cid, occasional hex, gorg
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2143					0	0	0	0	0	0	0		cid, ast, ane, gorg, fan sponge, ending tape 48
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2144					0	0	0	0	0	0	0		area of ro pav covering by sand, occ exposed rock bol
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2145					0	0	0	0	0	0	0		flat fish, heli, ast
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2146					0	0	0	0	0	0	0		gorg, ast,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2147					0	0	0	0	0	0	0		pen, hex, gorg, pen, ane,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2148					0	0	0	0	0	0	0		poss tiny geo? smaller patches of exposed rock, pen
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2149					0	0	0	0	0	0	0		cid, heli, aphro, cid,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2149					0	0	0	0	0	0	0		ech, larger exposed karst slab
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2150					0	0	0	0	0	0	0		larger area of exposed pavement
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2151					0	0	0	0	0	0	0		interspersed sand is flat with signs of bioturbation, large fan sponge, pen
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2152					0	0	0	0	0	0	0		flat fish
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2153					0	0	0	0	0	0	0		cid, ane, nph, heli, fan sponge, large slab of exposed ro pav
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2154					0	0	0	0	0	0	0		hya, catshark, fan sponge
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2155					0	0	0	0	0	0	0		little higher relief on the exposed rock, fan sponges, ane, fan sponge, heli, cik
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	277	2156					0	0	0	0	0	0	0		exposed ro in slabs of pav, nph, ane, fan sponges, fan sponge, lae
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2157					0	0	0	0	0	0	0		nph, fan sponge, nph, dark ane, ech?, large area of exposed ro pav, with fissures
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	278	2158					0	0	0	0	0	0	0		pen, nph, forked tail fusiform fish, geo
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2159					0	0	0	0	0	0	0		dark ane
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2200					0	0	0	0	0	0	0		areas of exposed pav covered by a thin veneer of sediment, ecd, ane, hex, ech, nph, seastar, fan sponge
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2201					0	0	0	0	0	0	0		cid
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2202					0	0	0	0	0	0	0		hex, ane, hor, ech,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2203					0	0	0	0	0	0	0		ecd, cid, fan sponge, nph, pen, ledge opening to sand, cid
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2204					0	0	0	0	0	0	0		ro rub, larger pav slab, covered with thin veneer of sand
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2205					0	0	0	0	0	0	0		ro rub, exposed karst ro pav, ast, cid, a little more relief in the rock, ane nph, fan sponge, pach
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2206					0	0	0	0	0	0	0		cid, ane, dark purple ane, pen, ast, pach
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	280	2207					0	0	0	0	0	0	0		seastar, dark purple ane, cid, exposed ro pav, occ bol, fan sponge
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	279	2208					0	0	0	0	0	0	0		cid, ecd, dark purple ane, little geo, fan sponge, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2209					0	0	0	0	0	0	0		little geo, dark purple ane, nph, poss hex, conaster, per
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2210					0	0	0	0	0	0	0		fan sponge, heli, primnoid, fairly consistent ro pav with higher areas of relief, karst topography, covered
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2211					0	0	0	0	0	0	0		with a thin layer of sand, seeing ane, sponges, heli, ane, ech, pen
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	281	2212					0	0	0	0	0	0	0		ane, nph,
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	282	2213					0								

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Bluefin Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			South MP 21E	290	2222					0	0	0					fan sponge, cid.
CalypsoPipeline	5/13/2006	TONGS			South MP 21E		2223					0	0	0					memory card full, pulling up ROV TONGS to download pics, passed MP 20, tape pause
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2010					0	0	0					RS with small areas of exposed ro rub/cob/bol, ane, burrows.
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2011					0	0	0					cid, ane, crab,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2012					0	0	0					ast, bmb, cid, larger exposed rock bol
CalypsoPipeline	5/14/2006	TONGS			MP 21 W		2013					0	0	0					shlvocr, ast, lae, fan sponge, heli,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2015					0	0	0					ech, bmb, cid, pen, fan sponge
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2016					0	0	0					area of larger exposed bol/slab, hex possibly aphro, ane, bmb, cid, fan sponge
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2017					0	0	0					fan sponge, pach, ecd, large fan sponges
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2018					0	0	0					ecd, ech, lae, field of fan sponges, dark purple ane, cid, ane, fan sponges
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2019					0	0	0					aerosolman sponges, pach
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2020					0	0	0					pen, fan sponges, probably underlying ro pav covered with sand, exposed areas are cob/bol/slat
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2021					0	0	0					went over a ledge in the rock, now onto sediment
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2022					0	0	0					back onto large exposed ro bol/slab, ast, pach, blue sponge, flat sediment
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2024					0	0	0					flat sediment, ane, small exposed ro rub, ech, cid, cable, pen, ech, ro rub, cid
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2025					0	0	0					chlor, cids, ane, hex, cid,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2026					0	0	0					ech,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2027					0	0	0					scattered ro bol with ane, pen, blue sponge, larger bol high relief, ro cob
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2028					0	0	0					RS, large bol, high relief, blue sponge, ane, fan sponge, changing to tape 6f
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2029					0	0	0					larger ro bol, hex, pach,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2030					0	0	0					still in area of larger ro bol, slab, high relief, ecd, fan sponges, RS, ast, lae, pen
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2031					0	0	0					RS scattered with high relief ro bol, ast, ast, pen, flat fish
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2032					0	0	0					RS, larger exposed ro bol/slab, lae, ast, ast, pen, lae, RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2033					0	0	0					in an area of RS, cid, pen
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2034					0	0	0					flat sediment, small mounds, bioturbation, ast, trails in sand, cid
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2035					0	0	0					flat fish, flat sediment, small mounds, cid, brittle star, moving onto RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2036					0	0	0					on RS now, sediment is fairly barren
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2037					0	0	0					seastar, RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2038					0	0	0					RS,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2039					0	0	0					flat sediment, ech,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2040					0	0	0					over flat sediment, has a little debris, occ sm mound, flat fish, ast, a high relief ledge of exposed ro pav,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2041					0	0	0					karst
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2042					0	0	0					karst/eroded exposed ro pav with sediment on it, fan sponge, pach, ane
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2043					0	0	0					ane, ecd, heli, cid,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2043					0	0	0					pach, cid, dark ane, ane
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	276	2044					0	0	0					constant pavement, some high relief boulders with scattered fan sponges, pach, ane, pach
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2045					0	0	0					karst pavement with thin sand veneer, ech, pach, fan sponges
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2046					0	0	0					hya, hya, ech, large exposed pavement with consistent covering of fan sponges/pach/ane
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2047					0	0	0					lithi?, heli, cid, thin area of sand covering has tiny burrows
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2048					0	0	0					bmb, exposed karst pavement, thin layer of sand between, occ larger boulder, cid, ane, ast, fan sponge,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2049					0	0	0					pach
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	276	2050					0	0	0					sand has trails/bioturbation/flat, fan sponge on large boulder
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	277	2052					0	0	0					still on area of exposed pavement, layer of sand seems to be thicker in some areas, larger and higher relief boulders exposed
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	278	2053					0	0	0					lae, exposed rock slabs/boulders, fan sponge, cid,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	278	2055					0	0	0					layer of sand thicker, some ripples, exposed ro rub/bou, cid
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	278	2056					0	0	0					cid, RS, ane, bmb, fan sponge
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2056					0	0	0					karst pavement, hex, hya, ane
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2057					0	0	0					thicker layer of RS, areas of exposed ro rub/boulder, ane, ast, lithi, fan sponge
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2058					0	0	0					fan sponge, cid, large boulders, neph
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2059					0	0	0					pach, RS, flatfish, karst exposed pavement, boulders
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	279	2100					0	0	0					scat low irreg outcrops, ane, nep, phk, scorp, ob RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2101					0	0	0					smooth sed w tiny tufts, actinus, weak ob RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2102					0	0	0					pen, ob RS, cid, scat rubble w ane,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	286	2103					0	0	0					scat rub, flatfish, ane, ob RS, tiny tufts on smooth sed
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2104					0	0	0					smooth sed w tiny tufts, cid,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	280	2105					0	0	0					onto ledge 5ft relief, lg slabs, back on smooth sed then onto low scat outcrops & rub, vft, ane, hyd, zoa
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2106					0	0	0					scat rub, ane, smooth sed, cid, scat rocks to 30 cm, rub, zoa,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2107					0	0	0					sm rocks, hyd, phk, wht ane, on scat rocks & irreg low relief outcrops, Aphro, phk, more rocks
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2108					0	0	0					low outcrops, irreg outcrops low relief, phk, ane, zoa, vft, nep, ast, cids, ob RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	282	2109					0	0	0					sm partly buried outcrops & slabs, phk, cid, vft, several phk vis at once, nep, ecd, ane, zoa, phk
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	281	2110					0	0	0					scat low irreg outcrops, bmb, phk, nep, slabs,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2111					0	0	0					scat rub, rocks, pav, scorp, ane, cluster of nph, phk, vft
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2112					0	0	0					scat rocks, sm irreg outcrops, vft, nph, bmb, ecd, lg flat rock 0.75 m across,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	283	2113					0	0	0					phk, low irreg outcrops, slabs, vft, ecd, laemo, nph, cid, ane
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	284	2114					0	0	0					low irreg outcrops, ob RS, phk, zoa, ob RS, ben, ane, laemo, nph, sm v scat rub
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	285	2115					0	0	0					phk, slab, vft on low outcrops, slabs, ast, nph, phk, aphro, ecd, ane, hermit, scat sm rub
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	284	2116					0	0	0					ane, scat sm rub, zoa, back on low relief scat outcrops, rub, outcrops, nph,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	286	2117					0	0	0					low irreg outcrops, zoa, cid, sm octo, ast, nph,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	286	2118					0	0	0					low irreg outcrops, ecd, phk, smooth sed, partly buried pav, slab, smooth sed w tiny tufts
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	287	2119					0	0	0					cid, smooth sed, ast, cid, tiny tufts,
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	286	2120					0	0	0					smooth sed, virtually no bioturb, cid
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	286	2121					0	0	0					smooth sed, virtually no bioturb, chlor, returning to irreg outcrops
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	287	2122					0	0	0					passed over low irreg outcrop onto smooth sed w scat rub, irreg slab, rub, phk, back on to smooth sed w
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	287	2123												

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	289	2128					0	0	0					ob RS, nphs, low scat outcrops, ane, ecd
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	290	2129					0	0	0					ob RS, trails, nph, chlor, scat sm low outcrops, partly buried slabs
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	290	2130					0	0	0					ob RS, ane, scat rub, sm low irreg outcrops, ob RS again.
CalypsoPipeline	5/14/2006	TONGS			MP 21 W	289	2131					0	0	0					vft, few sm rocks on ob RS
CalypsoPipeline	5/14/2006	TONGS			MP 21 W							0	0	0					END TRANSECT, END TAPE, DUE N OF MP 22
CalypsoPipeline	5/14/2006	TONGS			Airplane site ~2000 ft SW of MP 22							0	0	0					Airplane target in Calypso Port Side Scan chart
CalypsoPipeline	5/14/2006	TONGS			Airplane site ~2000 ft SW of MP 23	283						0	0	0					Could not find target on ROV sonar, flat sand bottom
CalypsoPipeline	5/14/2006	TONGS			Airplane site ~2000 ft SW of MP 24		2237					0	0	0					end dive; off bottom
CalypsoPipeline	5/14/2006	TONGS			Airplane site ~2000 ft SW of MP 25							0	0	0					Recover ROV
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	911					0	0	0					starting the north leg of the 3 pass coverage between MP22 and MP23
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	914					0	0	0					lots of ob RS, not very much exposed ro pav
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	915					0	0	0					a little area of exposed ro pav, covered with ane, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	917					0	0	0					lae, hor,
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	918					0	0	0					lae,
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	919					0	0	0					larger area of ob RS, occ scattered ro, dead on the center pipeline that we do not want to be or marked difference in sediment, more relief in the sand RS darker in color, a little bit of exposed ro cob/bol covered with ane
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	922					0	0	0					more consistent scattered ro rub with attached ane, pen, back to slightly RS
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	924					0	0	0					cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	927					0	0	0					ane's on rock, trying to move more to the north transect line, hovered for a bit over one ane:
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	928					0	0	0					ane's on sand
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	929					0	0	0					ob RS, with ane occ ro cob exposed, at a kind of standstill as we move to the north line
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	930					0	0	0					bit of hard bottom with ane's and gorg.
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	932					0	0	0					pen,
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	933					0	0	0					benthobatis
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	935					0	0	0					ane, ending tape 37
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	936					0	0	0					starting tape 38, geo, sandy substrate with occ ane and exposed ro rub/cot
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	937					0	0	0					ech, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	938					0	0	0					ech, small area of exposed ro cob/bol, lae, hor, ech
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	939					0	0	0					2 cid, fan sponge, ech
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	940					0	0	0					small gorg, hor, reaching north transect, sandy bottom, with occ exposed ro cob/bol with ane and urchins, bit of exposed rock, but back onto sand
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	941					0	0	0					2 cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	942					0	0	0					small patch of exposed ro pav, bmb, geo
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	290	944					0	0	0					coming onto exposed eroded ro pav, fan sponge, poss pen?, little more relief on the exposed areas
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	945					0	0	0					back onto flat sed, ech, back to more exposed ro pav, fan sponges, bmb, ast, ane
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	946					0	0	0					fan sponge, bmb, cid, area of sed, bmb
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	947					0	0	0					3 ech, cid,
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	948					0	0	0					area of flat sed, lae,
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	949					0	0	0					lae, area of exposed rock pav, fan sponge, ane, ech, bmb
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	950					0	0	0					more flat sandy sed, then areas of exposed rock cob with ane and fan sponges, cic
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	951					0	0	0					ech, fan sponges, ech, patch fan sponge, possible small gorg earlier
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	291	952					0	0	0					bmb, glass sponge, ane, fan sponge
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	953					0	0	0					cid, fan sponges, ane, ecd, lae, chlor
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	954					0	0	0					cid, more consistent exposed ro cob/bol/eroded pav, seastar, ech, separated by areas of sanc
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	956					0	0	0					cid, fan sponge, ane, ecd, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	957					0	0	0					bmb, ecd, ane
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	958					0	0	0					cid, ast, ast
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	959					0	0	0					bmb, cid, sand area, ane, lae
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	1000					0	0	0					sand separating area of exposed ro pav/cob/bol, rock covered with ane, sponges, occ bmb, and urchins
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	292	1001					0	0	0					a bit north of the transect line but coming back to it, ech
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1002					0	0	0					sand, exposed eroded pavement, ane, fan sponge
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1003					0	0	0					lae, cid, bmb, 3 ech, sandy patch bw, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1004					0	0	0					rock with patch ane, gorg, lae, ech, ech, bmb colony, ane on rock
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1005					0	0	0					chlor, ecd, cid, fish, hor
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1006					0	0	0					hor, hell, lae, chlor, ane's
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1007					0	0	0					cid, lg sandy area of softly RS
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1008					0	0	0					lae, ro bou with numerous ane's
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1009					0	0	0					exposed ro rub with numerous ane's
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1010					0	0	0					sandier bottom inbetween rocks, rocks covered with numerous ane's, skate, chlor, sand is weakly rippled
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1011					0	0	0					aphro
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1014					0	0	0					lae, rock with ane's, cid, aerosoma, RS
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1015					0	0	0					orange sponge
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1016					0	0	0					larger area of sand, sonar cleaning out
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1017					0	0	0					brittle star
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1018					0	0	0					benthobatis
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1019					0	0	0					brittle star, ane's, cid, ane, chlor, brittle star
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1020					0	0	0					more sediment bottom with weak ripples, scattered ane, appears as boulders are gone, sonar clea
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1022					0	0	0					scattered ane, weakly rippled sediment
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1023					0	0	0					chlor
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1024					0	0	0					change in bottom sed from RS to flat, back to RS, chlor
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1026					0	0	0					sand with debris, poss fuzzy growth, scattered ane's, back to RS
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1028					0	0	0					ane, RS, chlor
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1029					0	0	0					cid, RS on left, flat on right, prob sand wave, aerosoma, pen
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1030					0	0	0					ob RS, prob on top of a sand wave, flat fish, buried fish

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; leges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1032					0	0	0					pen, currently on center pipeline, correcting course back to northern transect (wind has picked up), chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1033					0	0	0					2 skate	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1034					0	0	0					end of sand wave, cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1035					0	0	0					chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1036					0	0	0					cid, trails in sand, end of tape 38, switching to tape 39	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1037					0	0	0					weakly rippled sediment, occ. ane, cid, but it's pretty barren	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1038					0	0	0					striped guy a little transparent on left	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1040					0	0	0					ob RS, barren	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1043					0	0	0					flat sediment, little debris, chlor, ech?	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1046					0	0	0					ane, cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1047					0	0	0					an area of flat sediment inbetween the areas of RS	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1049					0	0	0					pale pen, fusiform fish with forked tail	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1050					0	0	0					sediment bottom, moving towards RS, sand waves, occ signs of life, back onto N transect	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1051					0	0	0					skate, bioturbation trails, chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1052					0	0	0					benthobatis, chlor, chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1053					0	0	0					pen, pen	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1054					0	0	0					small ray (ben)	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1057					0	0	0					RS, small scuttling shrimp, ech	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1059					0	0	0					chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	297	1100					0	0	0					RS, occ hole or trail as bioturbation, v small	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1105					0	0	0					RS, no organisms	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1107					0	0	0					cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1109					0	0	0					cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1110					0	0	0					ob RS, dominantly barren	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1111					0	0	0					crab (cancer?), cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1112					0	0	0					ane?	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1113					0	0	0					changing from RS to flat with debris/growth, back to RS, sand wave	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1114					0	0	0					pen, chlor	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1115					0	0	0					brittle star	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1116					0	0	0					crab	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1117					0	0	0					ane	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1118					0	0	0					RS, ane	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1119					0	0	0					cid, gal??, brittle?, cid	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	294	1120					0	0	0					ane, sand waves, alt b/w RS and areas of flat sediment covered with debris/growth	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	296	1122					0	0	0					trail, gal, skate	
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1123					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1124					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			North MP 22W	295	1125					0	0	0					just passed WP 23	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	290	2022					0	0	0					hor, exposed rock interspersed with ob RS	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	289	2023					0	0	0					ast, hex	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	290	2024					0	0	0					crab	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	288	2025					0	0	0					aphro, pen	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	288	2026					0	0	0					more abundantly scattered exposed rock, ane, fan sponges, gorg, pen, heli	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	288	2027					0	0	0					cid, hor, aphro?	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	287	2028					0	0	0					cid, bmb, sponge, bmb	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	286	2029					0	0	0					pach, cid	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	286	2030					0	0	0					more area of exposed ro rub/cob/boI interspersed with sand, ane, cid, pach, bmt	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	286	2031					0	0	0					possible tiny geo?, aphro,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	284	2032					0	0	0					nph, aphro, ecd,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	285	2033					0	0	0					nph, urchins, cid, glass sponges, aphro, fan sponges, ane, hermit crab, seastar, large gec	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	283	2034					0	0	0					areas of exposed ro bol/pav, pach, fan sponge, bmb, ro cob with ane	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2035					0	0	0					large pach, cid, lae	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2036					0	0	0					aphro, geo, hex, benthobatis, fan sponge, nph on larger exposed bol, crab, aphro, bmb	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2037					0	0	0					hex, nph, fan sponge, heli, lithi	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	280	2038					0	0	0					geo, aphro, hex, pach, nph, cid, hex, fan sponge, cid	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2039					0	0	0					cid, hex, fan sponge,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	280	2040					0	0	0					sand is usually RS, fan sponge, exposed larger ro bol/pav, seeing most nph fan sponges, hex	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	280	2041					0	0	0					fan sponge, crab, heli, gorg?	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	279	2042					0	0	0					nph, fan sponge/ending tape 47	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	277	2043					0	0	0					exposed ro pav with areas of RS, rocks covered with nph, fan sponges, ane	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2045					0	0	0					cid, fan sponges, unident whiteness, fish,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	279	2046					0	0	0					cid, bmb, aphro, pen	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	278	2047					0	0	0					fan sponge, large exposed ro pav, covered with areas of flat sediment	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	278	2048					0	0	0					pach, fan sponges, weathered karst ro pav, ane, bright orange seastar, nph	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	277	2049					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	277	2050					0	0	0					bmb, heli, more area of exposed ro pav covered by thin veneer of sand, common organisms are fan sponges, pach, ane, bmb	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	277	2051					0	0	0					seastar, bmb, brisingid, bmb	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	277	2052					0	0	0					more consistently exposed ro pav, aphro, nph, bmb, aphro, pach, ast, hor, dark purple ane	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2053					0	0	0					heli, large ledge dropping into a hole of sand	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2054					0	0	0					cid, cid, sand is a bit more coarse, pen	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2055					0	0	0					cid, some bits of exposed ro, mostly RS, heli, seastar	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2056					0	0	0					ast, ob RS, scattered ro rub	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2057					0	0	0					ane, cid, ob RS with a few burrows/mounds	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2058					0	0	0					occasional exposed rock, cid, ast, cid	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	283	2059					0	0	0					a bit more exposed ro rub/cob, pen, lae	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2100					0	0	0					flat sediment with exposed small ro cob/boI, seeing ane, cid, occ sponge, hyl	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	283	2101					0	0	0					urchin with numerous spines?, seastar,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	283	2102					0	0	0					2 pen, flat fish, cid, fan sponge	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	282	2103					0	0	0					area of more consistently exposed ro cob, bmb, fan sponges, ane,	
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern Transect	281	2104					0	0	0					bol, blue spo, spo on lg bol,	

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reed Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? probable, burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	280	2105					0	0	0	0	0	0	0	0	blue spo, aphro, sandy btm. neps, fya.
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	280	2106					0	0	0	0	0	0	0	0	laemo, fya, pach, bamboo, fan spo,
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	281	2107					0	0	0	0	0	0	0	0	anes on rocks, cids, sed patch, laemo, ast, aerosoma
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	281	2108					0	0	0	0	0	0	0	0	sea pens x4
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	280	2109					0	0	0	0	0	0	0	0	aerosoma, fan spo on rock, more sed b/w rocks, weakly rip,
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	281	2110					0	0	0	0	0	0	0	0	over scattered exposed rock (rub/cob/bol), heli, sand btm, anes on rock
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	280	2111					0	0	0	0	0	0	0	0	lg exposed rock pav.
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	281	2112					0	0	0	0	0	0	0	0	ane, sea pen, sm chlor, cid tails in sand, bioturb, laemo.
CalypsoPipeline	5/13/2006	TONGS			MP 22E Southern transect	281	2113					0	0	0	0	0	0	0	0	asts, anes, sm gor, strongly rip sed,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	295	1126					0	0	0	0	0	0	0	0	starting MP 23W, RS
CalypsoPipeline	5/13/2006	TONGS			North MP 23W		1127					0	0	0	0	0	0	0	0	trails, some bioturbation, cancer
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	293	1130					0	0	0	0	0	0	0	0	sediment, RS waves interspersed by areas of flat sediment with debris/growth, occ small mounds signs of
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	294	1134					0	0	0	0	0	0	0	0	bioturbation, not much gon on
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	293	1135					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1137					0	0	0	0	0	0	0	0	skate, sed more mounded, brittle star
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	293	1138					0	0	0	0	0	0	0	0	brittles, end of tape 39, switch to tape 40
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1139					0	0	0	0	0	0	0	0	wavey sediment
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	293	1140					0	0	0	0	0	0	0	0	brittle x2
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1141					0	0	0	0	0	0	0	0	RS, separated by areas of flat sediment with small mounds and debris
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1142					0	0	0	0	0	0	0	0	obs RS, and we're off of it
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1143					0	0	0	0	0	0	0	0	brittle
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1144					0	0	0	0	0	0	0	0	cid
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1145					0	0	0	0	0	0	0	0	brittle, brittle's prob more abundant on the bottom, you can only really see them once you get close or the
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	292	1146					0	0	0	0	0	0	0	0	move
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	291	1148					0	0	0	0	0	0	0	0	drifting back towards center pipeline, changing course
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	290	1150					0	0	0	0	0	0	0	0	cid, flatfish
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	291	1153					0	0	0	0	0	0	0	0	gal, skate in forward camera
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	290	1156					0	0	0	0	0	0	0	0	skate, still on sandy bottom, RS alternating with areas of flat that have fine debris/growth, small mounds
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	290	1157					0	0	0	0	0	0	0	0	or trails (bioturb and infauna)
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	290	1200					0	0	0	0	0	0	0	0	2 crabs, prob can
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	291	1201					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	289	1202					0	0	0	0	0	0	0	0	barron, ob RS btm, area of fine smooth tufts, minor bioturb on mounds
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	289	1205					0	0	0	0	0	0	0	0	ob RS w/ sm mounds alternating w/ fine sed w/ sm tufts, otherwise barrer
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	288	1207					0	0	0	0	0	0	0	0	same btm, tiny spider crab
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	288	1210					0	0	0	0	0	0	0	0	skate
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	288	1213					0	0	0	0	0	0	0	0	same btm
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	289	1214					0	0	0	0	0	0	0	0	same btm
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	288	1216					0	0	0	0	0	0	0	0	ob RS, skate
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	287	1219					0	0	0	0	0	0	0	0	ob RS w/ narrow strips of sed w/ tufts, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	287	1221					0	0	0	0	0	0	0	0	laemo
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	287	1223					0	0	0	0	0	0	0	0	smooth btm w/ scattered tiny mounds, some fine tufts, loss the ripples at the momen
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1224					0	0	0	0	0	0	0	0	same flat btm, very few weak rips, flat fish
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1225					0	0	0	0	0	0	0	0	alternating flat and ob RS
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1226					0	0	0	0	0	0	0	0	tiny tubes vis in flat sed
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1227					0	0	0	0	0	0	0	0	still sed, have yet to see H
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1228					0	0	0	0	0	0	0	0	photo taken
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	286	1228					0	0	0	0	0	0	0	0	sm isolated rocks, sm outcrops in sed, isolated rock
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	285	1229					0	0	0	0	0	0	0	0	sm rocks, sm slabs, low outcrops, laemo, more abundant, numerous rocks, partly buried outcrop, low
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	285	1230					0	0	0	0	0	0	0	0	relief, octo
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	285	1231					0	0	0	0	0	0	0	0	ecd, ane, sed b/w outcrop areas, sm spos, nep, octo, fly trap, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	283	1232					0	0	0	0	0	0	0	0	lat prim x2, white spo, anes, sm white anes, ast,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	283	1233					0	0	0	0	0	0	0	0	same btm, low relief rocks/cobbles sep by areas of sed, laemo, ecd, aphro, anes
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	283	1234					0	0	0	0	0	0	0	0	same btm, cid, aphro, ecd,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	281	1235					0	0	0	0	0	0	0	0	cheffy sed, isolated cobble, fish
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	282	1236					0	0	0	0	0	0	0	0	sed w/ few rocks in side camera, flat fish, sea pen?, sm rocks, back in scattered H, anes, nep,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	281	1237					0	0	0	0	0	0	0	0	rub, rocks, bol, partly buried outcrops, anes, ecd, white anes
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	281	1238					0	0	0	0	0	0	0	0	prim, sr bol, laemo,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1239					0	0	0	0	0	0	0	0	cid, nep, aphro, ane, bmb?, ecd, widely scattered rub, sm outcrops
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	281	1240					0	0	0	0	0	0	0	0	aphro, ane, bmb, cid, nep, crab,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	281	1241					0	0	0	0	0	0	0	0	low relief partly varied outcrops, rub, bol, cid, ecd, white and orange anes, change tape
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1242					0	0	0	0	0	0	0	0	areas of rub, sm outcrops partly buried sep by sed, edu, aphro, cid, laemo, sm ant
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1243					0	0	0	0	0	0	0	0	echinus, fan spo on bol,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1244					0	0	0	0	0	0	0	0	low relief outcrops, rub, ast, white ane, cid,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1245					0	0	0	0	0	0	0	0	low relief outcrops, rub separated by sed, anes, ecd, aphro, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1246					0	0	0	0	0	0	0	0	fly trap, same btm, lg white vase spo,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	279	1247					0	0	0	0	0	0	0	0	unident crab, same btm,
CalypsoPipeline	5/13/2006	TONGS			North MP 23W	280	1248					0	0	0	0	0	0	0	0	partly buried pav, outcrops, aphro, ecd, cid, anes,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	1923					0	0	0	0	0	0	0	0	nep, anes, ecd, aphro, flytrap,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	296	1926					0	0	0	0	0	0	0	0	biroti sed

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; leges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	296	1950					0	0	0						-50ft south of south corridor line. 100% sed alternating flat sed w/ no bioturb and zones of sed w/ asymmetrical ripples w/ cer and sea pens
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	296	1955					0	0	0						Right on south corridor line. 100% soft sed, cer, asymmetrical ripples
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		1956					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		1957					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		1958					0	0	0						
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	1959					0	0	0						Changing watch to Beth and Jessi (who ROCK)
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	2000					0	0	0						cid, ob RS with scattered cer, fish, ast
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	2001					0	0	0						pen
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	2002					0	0	0						scattered rock cob, abundant ane, some gorg, large rock with ane and fist
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	295	2003					0	0	0						lae, cid, more consistently scattered rock
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2004					0	0	0						ech, lae, cid, exposed ro, ane
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2005					0	0	0						hex, ech, lae
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2006					0	0	0						possible bmb, large ro bol with ane,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		2007					0	0	0						exposure ro pav, more consistent, bmb, hor
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2008					0	0	0						large patch?, benthobatis
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2009					0	0	0						lae, hor, cid, hell,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	294	2010					0	0	0						ech, back onto a more sand with scattered exposed ro pav, ane, sponges, small gorgs
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	293	2011					0	0	0						lae
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		2012					0	0	0						back onto sand, cid,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	291	2013					0	0	0						larger exposed ro bol/pav, fan sponges, bmb
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	292	2014					0	0	0						cid, bmb, fan sponge, cid, more exposed ro bol/pav, flat sed in between rocks, ast, pach, hell, cid, ane,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	292	2015					0	0	0						her
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		2016					0	0	0						cid, ech, lae, fan sponge, cid,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E		2017					0	0	0						pen, fan sponge,
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	291	2018					0	0	0						exposed ro bol/pav, lae, large sand area, pen
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	291	2019					0	0	0						pen, lae, pen, pen, RS
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	291	2020					0	0	0						hermit crab, pen, little ane all in a row
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	292	2020					0	0	0						rsa pen, gone over an area of exposed ro bol, now seems to be back onto RS with occasional exposed bol with ane
CalypsoPipeline	5/13/2006	TONGS			South MP 23E	290	2021					0	0	0						more exposed ro bol, lots of ane, gorg
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1248					0	0	0						alternating rip sed and flat sed tufts,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1249					0	0	0						outcrops, flytrap, neps, ecds, aphros, anes, sm octos?
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1250					0	0	0						ane, ecd
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	290	1251					0	0	0						expanse sed,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1252					0	0	0						still on flat sed w/ scattered bioturb, mounds, depressions, H vis in sonar 25-37 m to N
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1253					0	0	0						isolated rocks, low outcrops, anes,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1254					0	0	0						scattered h, back on sed
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1255					0	0	0						isolated patch of h, nep, patch of h w/ anes,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1256					0	0	0						flat sed, no h vis, leaving mapped area of h
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1257					0	0	0						flat sed w/ fine tufts, scattered sm mounds and dep, ast,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	280	1258					0	0	0						slightly elevated ob SR, strips of flat sed
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1259					0	0	0						ast x2
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1300					0	0	0						flat weakly btb sed w tiny tubes & tufts, alternating ob RS, tiny gal or spider crab
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1302					0	0	0						tiny spider crab, lg isolated rock (1/2-1m across) w/ fan spo, anes
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	279	1304					0	0	0						cancer?, cid,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	278	1305					0	0	0						cid, same btm, sm gal
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	277	1306					0	0	0						flat weakly btb sed w tiny tubes & tufts
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	278	1307					0	0	0						same btm, ast,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	277	1310					0	0	0						same btm, no rip,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	276	1311					0	0	0						isolated rock w/ hyd
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	275	1312					0	0	0						flat sed, ast,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	277	1313					0	0	0						sm rock w/ fish off left, isolated rock, ben, scattered veneered low relief outcrops,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	276	1314					0	0	0						back on flat sed
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	276	1315					0	0	0						same btm, flat sed w/ weak bioturb, chiefly barren; now inside mapped h area but no vis ?
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	276	1316					0	0	0						ane, ast, flat sed w/ fine tufts, ophs,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	275	1317					0	0	0						pink ecu, isolated sm rock, hermit crab,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	274	1318					0	0	0						same btm, h returns vis in sonar beyond 25 m
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	274	1319					0	0	0						ben, rub, low outcrops, anes, neps, cids, sm octos, white anes, lg bol, sm fish
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	273	1320					0	0	0						same btm, expanse of sed, asts,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	272	1321					0	0	0						sed w/ tufts and tubes, ast, sm rocks and rub, low outcrops, anes, ecd
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	272	1322					0	0	0						aphros, ast, back on sed, hermit crab,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	271	1323					0	0	0						widely scattered rub, few sm outcrops, low relief, neph, anes, asts
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	271	1324					0	0	0						sed, numerous tiny tufts, sm rock w/ anes
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	270	1325					0	0	0						ben, back in area of flat partly buried outcrops, ecd, anes, rochnia
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	270	1326					0	0	0						patches of flat outcrops and rub separated by expanse of tufted sed, cancer
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	269	1327					0	0	0						low outcrops, anes, nep, ecd, ast x 3, open sed begins,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	270	1328					0	0	0						rub and flat partly buried outcrops, ane, cids, ecd,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	269	1329					0	0	0						open sed begin, tufts and tubes, back on low outcrops and lg slab, white anes, cid
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	270	1330					0	0	0						back on sed, back on h
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	270	1331					0	0	0						chiefly open sed, ast
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	269	1332					0	0	0						cable, alternating areas of sed, H, anes,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	268	1333					0	0	0						ecn, pav partly buried, ecd, bam x2, scorpion fish?
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	268	1334					0	0	0						asts, prim x2, anes, ecd, zoa,
CalypsoPipeline	5/13/2006	TONGS			North MP 24W	267	1335					0	0	0						prim on sm rock, ecd, scattered rub,

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Bottom Temp (°C)	Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			North MP 24W		1343				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			North MP 24W		1344				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			North MP 24W		1345				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			North MP 24W		1346				0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		281	1841			0	0	0	0					100ft past MP24E. End of tape 45.
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		281	1842			0	0	0	0					start tape 46. Within hard bottom zone of side scan sonar chart
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		281	1843			0	0	0	0					roc
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		281	1844			0	0	0	0					caritoisss bmb, more hard bottom, nph, scorpion fish, low relief <1ft
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		282	1845			0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		282	1846			0	0	0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		283	1850			0	0	0	0					100ft north of south corridor, rock pav, low relief ro outcrops, hex, nph, scorpion fish, bty crab
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		284	1851			0	0	0	0					150ft north of south corridor, soft sed alternating w patches of low relief hard bottom
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		286	1855			0	0	0	0					rock outcrop, bmb
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		288	1900			0	0	0	0					~100ft north of south corridor, mostly soft sed w asymmetrical ripples, brittle stars on sediment
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		290	1907			0	0	0	0					out to hard bottom zone on side scan chart. 100% soft bottom, sparse bioturb, asymmetrical ripples
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		291	1910			0	0	0	0					~130ft north of southern corridor line. 100% soft sed, very barren, very little bioturb, few asymmetrical
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		293	1915			0	0	0	0					ripples, very little biota, occasional cer and ast
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		294	1920			0	0	0	0					sm gal, 100% sed, sm starfish, gal
CalypsoPipeline	5/13/2006	TONGS			South MP 24E		295	1921			0	0	0	0					~100ft north of south corridor, 100% soft sed
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		266	1343			0	0	0	0					Getting close to south corridor, 100% soft bottom, asymmetrical ripples, very little bioturb
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		266	1344			0	0	0	0					BTY
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		266	1345			0	0	0	0					sed w scattered patches h, rub, prim, ast.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		266	1346			0	0	0	0					ast x2, gon, prim, ecn
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		265	1346			0	0	0	0					open sed, no vis h, ast, abundant tufts on sed, weak bioturb.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1347			0	0	0	0					patches of h, rub, anes, ast, ecd, bamboo?, white spo, prim
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1348			0	0	0	0					lg area of slabs and low relief pav, rock w few spos, prim.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1349			0	0	0	0					areas of low relief rocks, rub, slabs, pav alternating w expanses of tufted sed
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1350			0	0	0	0					open sed.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1351			0	0	0	0					back on rub and low relief outcrops, fan spo, ast, ecd, geo, white anes.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1352			0	0	0	0					sm patch of rub, anes, back on sed, ast
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1353			0	0	0	0					open sed, bamboo x4, no exposed sed vis, back on rub, ecd, ane
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1354			0	0	0	0					prim, back on sed
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1355			0	0	0	0					rub, rocks, bamboo, fan spo, prim, ball spo, ecds, nep.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		264	1356			0	0	0	0					prim, fan spo, bamboo coral x 3, rub, anes
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		262	1357			0	0	0	0					very low relief, rub, rocks, veneered outcrops, prim, rub field, scorpion fish, ecd, nep
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		263	1358			0	0	0	0					rub, sm outcrops, low relief ant? Bamboo, anes, ben
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		263	1359			0	0	0	0					rub field, rocks, octo? expanse of sed
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		262	1400			0	0	0	0					rub, anes, rub field, few lg bol to 1/2 m across, low outcrops
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		261	1401			0	0	0	0					edge of rub field, open sed.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		259	1402			0	0	0	0					partly buried outcrops, numerous bamboos, slabs, fly trap ane, low relief rock, rub, bo
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1403			0	0	0	0					ro rub, slabs, back on sed, nep, sm stalks, ane
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1404			0	0	0	0					partly buried pav, anes, spos, cid, ecd, bamboo, rochinia, cor(depth 844)
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1405			0	0	0	0					prim, white spo, cor, ecd
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1406			0	0	0	0					plumes, bamboo, anes, spo, cluster burrows, ast.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1407			0	0	0	0					partly buried pav, bamboo coral, expanse sed, zoa, neps, spc
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1408			0	0	0	0					low relief h, lg gal, moderate relief, lg raised slabs, back on sed, cor
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		259	1409			0	0	0	0					tufted flat sed, ast, cor, leaving mapped area of h.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		259	1410			0	0	0	0					weakly btb sed, cor, ane, aste, several small coiled wires
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		259	1411			0	0	0	0					cor, fine tufts.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		259	1412			0	0	0	0					same sed btm, tufted sed, sm spider crab, sm coiled wire ant.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1413			0	0	0	0					cor.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1414			0	0	0	0					patch of rub and low rocks, bamboo.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1415			0	0	0	0					patch of rub inside camera, ast, anes, aphro.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1416			0	0	0	0					rub patch, ecd, cor
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		258	1417			0	0	0	0					switched to normal photos from fine. 433 images left instead of 233
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1418			0	0	0	0					fish, patches of rub w ane.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1419			0	0	0	0					weakly btb sed w tufts, prim?, patch of rub, ecd, anes.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		257	1420			0	0	0	0					back on sed, ben, sm rocks, anes, sm outcrops, ecd.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		256	1421			0	0	0	0					patch of buried h, sm rocks, ant?, zoas.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		255	1422			0	0	0	0					sed w tufts.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		255	1423			0	0	0	0					sm bits of rub off right, ~30 cm rock w sm fishes
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		255	1424			0	0	0	0					sm rub field w sm outcrops, ame, cnc.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		255	1425			0	0	0	0					1/2 m rock w hyd.
CalypsoPipeline	5/13/2006	TONGS			North MP 25W		255	1426			0	0	0	0					area of rub and sm outcrops, still chiefly tufted sed, rock w hyd
CalypsoPipeline	5/13/2006	TONGS			North MP 25E		271	1800			0	0	0	0					weakly btb tufted sed, few sm partly buried slabs
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		275	1427			0	0	0	0					sm rub patches w ben, anes, sm stalks, ecd.
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		269	1742			0	0	0	0					start south corridor MP25E. Mostly sed, some ro pav, low relief
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		269	1743			0	0	0	0					nph, ane's, prm 883 ft
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		269	1751			0	0	0	0					ro sed, rop outcrops low relief, ane's, nph
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		269	1755			0	0	0	0					50ft north of south corridor line. Same bottom, alternating w patches of low relief bol, ane's, nph's, ecd.
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		271	1800			0	0	0	0					occasional prm, no hard coral, very few sponges. Soq 0.9 knots
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		272	1801			0	0	0	0					soft bott
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		272	1805			0	0	0	0					prm w brittle stars
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		272	1806			0	0	0	0					right on south corridor track. On eastern edge of side scan sonar hard bottom zone
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		272	1806	S, Ro	H	0	0	0	0	81 cm S				bathobatis torpedo ray, helli, lae, confirmed sighting of golden tilefish. Marker 29 on ROV video system
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		274	1810			0	0	0	0					just passed out of hard bottom on side scan sonar chart on south corridor. Soft bottom, some bioturb, 2
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		276	1815			0	0	0	0					3cm filaments sticking out of sed
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		277	1818			0	0	0	0					50 ft north of south corridor line. 100% sed. 8cm flounder, sparse bioturb, occasional starfish
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		277	1820			0	0	0	0					echinoid urchin
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		279	1826			0	0	0	0					right on track of south corridor, 100% soft sed
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		279	1830			0	0	0	0					right on south corridors, 100% soft bottom, het crab, aerosoma urchin
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		279	1830			0	0	0	0					100% SOFT SED, right on pipeline re

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (H:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H), Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	281	1834				0		0	0					bty. 100% sed. Couple hundred ft away from starting hard bottom on side scan sonar. bathibatis torpedo ray
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	280	1835				0		0	0					right at western edge of hard bottom. WE are hitting hard bottom - ro cob, sm bol. 300ft west of MP24.
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	281	1837				0		0	0					Roc, now back in sed
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	281	1838				0		0	0					more hard bottom, low relief <1ft, rock outcrops, nph, lae, black coral 20-30cm, ane's
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	281	1839				0		0	0					hermit crab in a top shell (callostoma?), ane's
CalypsoPipeline	5/13/2006	TONGS			South MP 25E	280	1840				0		0	0					hydroid, stolidarus, geodia sponge. Right on south border of pipeline, cm, scorpion fish
CalypsoPipeline	5/13/2006	TONGS			South MP 25E		1841				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			North MP 26W	253	1428				0		0	0					sed w/ cor, weak bioturb
CalypsoPipeline	5/13/2006	TONGS			North MP 26W	252	1430				0		0	0					smooth weakly bioturb sed, barren, cm.
CalypsoPipeline	5/13/2006	TONGS			North MP 26W	253	1431				0		0	0					ast, fewer tufts
CalypsoPipeline	5/13/2006	TONGS			North MP 26W	252	1432				0		0	0					same btm, cm, ast
CalypsoPipeline	5/13/2006	TONGS			North MP 26W	251	1433				0		0	0					cm, same btm, ast, lost tufts,
CalypsoPipeline	5/13/2006	TONGS			North MP 26W						0		0	0					END OF WESTWARD TRANSECT
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1540				0		0	0					BEGINNING EASTBOUND SOUTHERN TRANSECT. sed btm, cm, fine tufts rub, sm mounds and depressions
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1542				0		0	0					cm.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1543				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	256	1545				0		0	0					Flat sed btm w/ fine tufts, scat weak btb - sm mounds & depressions
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1547				0		0	0					same btm, cm
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1548				0		0	0					gal?, same btm.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	255	1549				0		0	0					same btm, ast.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	257	1550				0		0	0					bty.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	257	1552				0		0	0					bty, same btm, some lg (~15 cm) depressions, ast, gal.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	257	1555				0		0	0					same btm, barren.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	257	1557				0		0	0					same btm, very few depressions, scattered sm mounds, tufts still present, barren
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1558				0		0	0					ast, same btm, sm gal?
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	257	1559				0		0	0					bty, ast
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1600				0		0	0					passed MP26. On southern transect of MP26 heading east. At least 200ft south of transect. HD 116, sog 7 knots. Flat sed w/ 1cm tubes or filaments sticking out of sed. 100% soft sed. Cm
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1605				0		0	0					A few hundred ft west of hardbottom of the side scan sonar map. 100% soft bottom but now rubble, c cob, ecd, ane's, fishing line, sm bol 20cm, fish, hydroid
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1606				0		0	0					back in sediment, ON pipeline
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1610				0		0	0					on pipeline rte. ~200ft west of side scan sonar hard bottom zone. 100% soft sed, slight bioturb. Occasional clusters of pits burrows and mounds, cm common. 1-2cm filaments on surface.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1611				0		0	0					rock rubble, cobble, sm bol. 600ft west of hard bottom zone from side scan. Scattered hard bottom here
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1612				0		0	0					100% sediment
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1615				0		0	0					100% soft bottom, same bottom
CalypsoPipeline	5/13/2006	TONGS			South MP 26E		1619				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1620				0		0	0					close to pipeline rte. 100% soft sed, slight bioturb, pits, few burrows, 2cm filaments on surface of sed. Rock cobble 5cm, mostly sed
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1626				0		0	0					on pipeline. ~100ft west of side scan sonar hard bottom zone. 100% soft bottom, slight bioturb. Sm pits, mounds. No epifauna. Approaching ridge on sonar
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1627				0		0	0					Exactly west edge of side scan sonar hard bottom, reef, rock bol, 2ft relief, ro slabs, bol, bmb, gorgonian
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1628				0		0	0					back on mud, ro pav, thin veneer sed, tall prm 20-30cm w/ brittle stars, npr
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1630				0		0	0					soft sed, patch rock, ro bol, ro ledge 1-2 ft, ecd, lithidid spg
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1632				0		0	0					ro pav, thin veneer sed. On pipeline
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1633				0		0	0					ane's, ro pav, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 26E		1634				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1635				0		0	0					on south pipeline rte. 100% soft sed, sparse bioturb, pits, sm 5-10cm burrows, 2cm filaments on surface,
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1636				0		0	0					exposed ro pav, veneer sed, bmb.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	258	1637				0		0	0					back opn soft sed
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1638				0		0	0					ro pav, cobble, few bmb isadella, lrgr bmb karitosis, right on south pipeline rte. Lrgr prm 30cm tall, cm
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1639				0		0	0					end of tape 43
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1640				0		0	0					right on pipeline southern rt, ro pav, thin veneer sed. Start tape 44. Alternating btw 100% soft sed and ro pav, low relief outcrops
CalypsoPipeline	5/13/2006	TONGS			South MP 26E		1641				0		0	0					maybe 100ft north of south pipeline rte
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1642				0		0	0					hard bottom, low relief exposed ro, ane's, ecd, prm
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	259	1643				0		0	0					prm, ro pav
CalypsoPipeline	5/13/2006	TONGS			South MP 26E		1644				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E		1645				0		0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	260	1646				0		0	0					dense hard bottom, back on pipeline rte. ~100% bol, pav 1-2 ft relief, phk, ane's, ecd, aerosoma, starfish
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	260	1647				0		0	0					bmb, back on sediment
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	263	1650				0		0	0					on track south pipeline. 100% soft sed w/ bioturb and sm 2cm filaments, occasional patches of ro
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	263	1653				0		0	0					lob/pav, ane
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1655				0		0	0					long line or cable
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1657				0		0	0					100% sed. 100ft south of south corridor. Exposed ro, hor, bmt
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1659				0		0	0					scattered ro, scorpion fish, ane's, lae
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1700				0		0	0					ro bol 20, 30, 50 cm, ane's, hor, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1706				0		0	0					100ft south of south corridor, ro pav, prm. 1 ft relief
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1708				0		0	0					~150 ft south of south corridor, ro bol/pav. 50% cover, bmb, ferrea hex
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1707				0		0	0					hex spg, vase, sed over ro pav, ane's, lae, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1708				0		0	0					hor.
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1710				0		0	0					100ft south of south corridor, soft sed, bioturb
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1711				0		0	0					ro cobble, 10-20cm prm, hor, ecd
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1715				0		0	0					50ft south of south corridor, soft sed, alternating w/ patches of exposed ro pav/sm bol, cobble

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CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1718					0	0	0				long line	
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1719					0	0	0				long line?? Ro cobble, sed over ro pav	
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1720					0	0	0					
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	265	1722					0	0	0					MOSTLY soft sed, sparse patches of cobble and pav
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	264	1723					0	0	0					nph, spiral whip blk coral, ro bol.bmb, ane's, starfish
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	265	1725					0	0	0					long line. Right on south corridor. Sed, ro cob
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	266	1730					0	0	0					right on south corridor. Mostly sed, occasional patch of cobble. Increased sog to .7 to 1.0 knots
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	267	1731					0	0	0					chain dogfish, prm w/ brittle stars
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	267	1735					0	0	0					right on track, sed over rock pav, occasional ro cobble, ecd's, lae, thl, roc crab
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	268	1740					0	0	0					close to south corridor line. Mostly sed w/ come ro outcrops and bol, ane's, cideroid urchir
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	268	1741					0	0	0					end of tape 44
CalypsoPipeline	5/13/2006	TONGS			South MP 26E	268	1742					0	0	0					start tape 45; MP26E transect south corridor go to MP25
CalypsoPipeline	5/14/2006	TONGS			Ship wreck at MP 26							0	0	0					Target from Side-Scan Sonar chart at Calypso Port Site: 150 ft shipwreck?, 1200 ft SSE of MP 26
CalypsoPipeline	5/14/2006	TONGS			Ship wreck at MP 27							0	0	0					Launch ROV
CalypsoPipeline	5/14/2006	TONGS			Ship wreck at MP 28	255						0	0	0					on bottom: SOFT SEDIMENT; sparse bioturbation
CalypsoPipeline	5/14/2006	TONGS			Ship wreck at MP 29	254						0	0	0					wreck in sight; appears to be a barge, vertical line up in water column; very barren, little growth, few neph ane, rattail, 5 cm gorgo; tires for bumpers on sides, about 6 ft relief, sonar shows 36 yd long, flat top, no superstructure, smooth sides, sit
CalypsoPipeline	5/11/2006	TONGS			MP 27E	240	1038					0	0	0					
CalypsoPipeline	5/11/2006	TONGS			MP 27E	240	1040					0	0	0					skate, asteroid, same bottom, over flat sediment with small cones and mounds, depressions with floe in them, occ Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	240	1041					0	0	0					fish
CalypsoPipeline	5/11/2006	TONGS			MP 27E	240	1042					0	0	0					skate, Coronaster, Cancer, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1043					0	0	0					Coronaster, asteroid
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1044					0	0	0					skate, hydroid colony, Coronaster, small fish, ast
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1046					0	0	0					Cancer, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1049					0	0	0					scattered Coronaster's, ast
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1050					0	0	0					flat sediment with small cones and mounds, depressions with occ floe, scattered fish
CalypsoPipeline	5/11/2006	TONGS			MP 27E	242	1052					0	0	0					Cancer, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	243	1054					0	0	0					Cancer, a few Coronaster's
CalypsoPipeline	5/11/2006	TONGS			MP 27E	243	1055					0	0	0					Cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	243	1056					0	0	0					Cancer, ech, fish, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	243	1058					0	0	0					ben, scattered Coronaster, ast
CalypsoPipeline	5/11/2006	TONGS			MP 27E	244	1100					0	0	0					Coronaster, flat sediment bottom with bioturbation, small cones and mounds, depressions with floe, cancer, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	244	1103					0	0	0					Coronaster's
CalypsoPipeline	5/11/2006	TONGS			MP 27E	245	1105					0	0	0					3 Coronaster's, flat sediment with bioturbation, mounds, depressions, skate
CalypsoPipeline	5/11/2006	TONGS			MP 27E	245	1106					0	0	0					asteroid, Coronaster/asteroid, galatheid, asteroid, Coronaster, Cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	246	1108					0	0	0					asteroid, Cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	246	1109					0	0	0					Coronaster's, cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	246	1110					0	0	0					Coronaster, flat sediment with bioturbated mounds, cones, and depressions. Lack rippled sedimen
CalypsoPipeline	5/11/2006	TONGS			MP 27E	247	1112					0	0	0					asteroid, Coronaster x2
CalypsoPipeline	5/11/2006	TONGS			MP 27E	248	1113					0	0	0					galatheid, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	248	1115					0	0	0					benthobatis
CalypsoPipeline	5/11/2006	TONGS			MP 27E	248	1116					0	0	0					echinoid, Cancer, asteroid
CalypsoPipeline	5/11/2006	TONGS			MP 27E	248	1117					0	0	0					galatheid, fish, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	249	1118					0	0	0					asteroid
CalypsoPipeline	5/11/2006	TONGS			MP 27E	249	1120					0	0	0					flat sediment with bioturbated mounds and depressions, fish x2
CalypsoPipeline	5/11/2006	TONGS			MP 27E	249	1121					0	0	0					Coronaster, ast
CalypsoPipeline	5/11/2006	TONGS			MP 27E	249	1122					0	0	0					line/cable
CalypsoPipeline	5/11/2006	TONGS			MP 27E	249	1123					0	0	0					asteroid
CalypsoPipeline	5/11/2006	TONGS			MP 27E	250	1125					0	0	0					skate
CalypsoPipeline	5/11/2006	TONGS			MP 27E	250	1126					0	0	0					coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 27E	251	1127					0	0	0					cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	251	1129					0	0	0					end of tape 7, switching to tape 8
CalypsoPipeline	5/11/2006	TONGS			MP 27E	252	1130					0	0	0					flat sediment with bioturbation, mounds and depressions, holes, ecd, as
CalypsoPipeline	5/11/2006	TONGS			MP 27E	252	1132					0	0	0					fish
CalypsoPipeline	5/11/2006	TONGS			MP 27E	252	1135					0	0	0					asteroid
CalypsoPipeline	5/11/2006	TONGS			MP 27E	253	1137					0	0	0					Coronaster, fish
CalypsoPipeline	5/11/2006	TONGS			MP 27E	253	1138					0	0	0					Cancer
CalypsoPipeline	5/11/2006	TONGS			MP 27E	253	1139					0	0	0					roc
CalypsoPipeline	5/11/2006	TONGS			MP 27E	255	1140					0	0	0					same flat sediment, at the end of waypoint, going to bring up ROV, paused tape
CalypsoPipeline	5/11/2006	TONGS			MP 28E	232	846					0	0	0					
CalypsoPipeline	5/11/2006	TONGS			MP 28E	232	847					0	0	0					Coronaster, hermit crab
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	850					0	0	0					flat sed, ecd holes, occ Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	852					0	0	0					sand wave of ob RS,
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	853					0	0	0					small fish
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	855					0	0	0					unident litter, critters on the bottom, look like shrimp
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	857					0	0	0					ob sand ripples
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	858					0	0	0					large fish ~15 cm, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	859					0	0	0					
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	900					0	0	0					more consistent ob RS, Coronaster, slight bioturb, fish
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	901					0	0	0					pausing tape because we're not moving
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	904					0	0	0					restarting tape, ech,
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	905					0	0	0					fish,
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	906					0	0	0					hermit crab, coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	907					0	0	0					pausing tape again because we're still not moving
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	909					0	0	0					restarting tape, 10cm drop from ob RS sand wave, 3 Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	910					0	0	0					same flat sed, occ sand wave of ob RS, small shrimp and fish on bottom, occ Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	911					0	0	0					flat sed with small cones and mounds
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	912					0	0	0					pausing tape
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	913					0	0	0					restarting tape

Data Source	Date (m/d/y)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (oC)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu=? possible burrow)	Notes- habitat, invertebrate, fish
CalypsoPipeline	5/11/2006	TONGS			MP 28E		914					0	0	0	0	0	0	galatheid or Coronaster?	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	232	916					0	0	0	0	0	0	benthobatis.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	917					0	0	0	0	0	0	ech. coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	918					0	0	0	0	0	0		
CalypsoPipeline	5/11/2006	TONGS			MP 28E		919					0	0	0	0	0	0		
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	920					0	0	0	0	0	0	anemone in depression, same flat sed with ecd holes, Coronaster, bioturb, little shrimp	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		921					0	0	0	0	0	0		
CalypsoPipeline	5/11/2006	TONGS			MP 28E		922					0	0	0	0	0	0	fish (lime)	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	924					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	926					0	0	0	0	0	0	cancer, changing tapes	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	928					0	0	0	0	0	0	flat bioturbated sed. Coronaster, small cones and mounds.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	930					0	0	0	0	0	0	same habitat, Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	932					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	232	933					0	0	0	0	0	0	cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	935					0	0	0	0	0	0	eel.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		936					0	0	0	0	0	0	2 Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	937					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	938					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		939					0	0	0	0	0	0	skate, ob RS, sand wave ridge ~20cm, to flat sed	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	940					0	0	0	0	0	0	same flat sed, some sand ripple, small fish, Coronaster, anemone	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	941					0	0	0	0	0	0	trails in sed, ob RS	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	942					0	0	0	0	0	0	3 Coronaster, anemone, beer bottle with Coronaster, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	943					0	0	0	0	0	0	2 cor, ecd mounds, ob RS with small ledge to flat sed with ecd mounds	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	944					0	0	0	0	0	0	small shrimp scampers along bottom	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	946					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	947					0	0	0	0	0	0	2 cor, ob RS.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	233	948					0	0	0	0	0	0	unident critter hovering along bottom, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	229	949					0	0	0	0	0	0	coming up from bottom for a minute	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	950					0	0	0	0	0	0	ROV off bottom, back down again	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	951					0	0	0	0	0	0	ob RS, ecd mounds, cor.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	952					0	0	0	0	0	0	small sand wave ledge from ob RS to flat, now back to ob RS, shrimp, another sand wave ledge	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	953					0	0	0	0	0	0	cor, moving from ob RS to lower flat sediment with ecd mounds.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	954					0	0	0	0	0	0	tiny depressions with flock, 2 cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	955					0	0	0	0	0	0	fish.	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	235	957					0	0	0	0	0	0	flat sed, small cones and mounds, depressions, a cable	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	234	958					0	0	0	0	0	0	cancer, echinoid	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		959					0	0	0	0	0	0	Coronaster, anemone	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1000					0	0	0	0	0	0	obs RS, echinoid, small cones and mounds	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1003					0	0	0	0	0	0	Coronaster, small cones and mounds, few depressions	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1004					0	0	0	0	0	0	prob hermit crab, small ridge from rippled sediment to flat sediment, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1005					0	0	0	0	0	0	echinoid, coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		1006					0	0	0	0	0	0	galatheid, Coronaster, anemone	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1008					0	0	0	0	0	0	Coronaster, ca ncer	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1009					0	0	0	0	0	0	eel, flat sediment with small cones and mounds, depressions with debris and flock in them, odr urchin	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1010					0	0	0	0	0	0	more rippled sediment, shrimp, fish, coronaster, eel, flat sediment	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1011					0	0	0	0	0	0	asteroid	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1012					0	0	0	0	0	0	echinoid	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1013					0	0	0	0	0	0	anemone	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1014					0	0	0	0	0	0	Coronaster, fish	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		1015					0	0	0	0	0	0	fish	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	236	1016					0	0	0	0	0	0	3 Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1020					0	0	0	0	0	0	same bottom, flat sed with small cones, mounds, depressions with flock, anemone, alternates with sand waves	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		1021					0	0	0	0	0	0	Coronaster, fish	
CalypsoPipeline	5/11/2006	TONGS			MP 28E		1022					0	0	0	0	0	0	cancer, ben	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1023					0	0	0	0	0	0	bottom alternates flat with obs RS, echinoid x3, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	237	1024					0	0	0	0	0	0	cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	238	1026					0	0	0	0	0	0	fish, Coronaster, benthobatis	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	238	1028					0	0	0	0	0	0	2 Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	238	1029					0	0	0	0	0	0	end of tape 6, switching to tape 7	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	238	1030					0	0	0	0	0	0	bottom alternates between flat sediment with small cones and depressions, and rippled sediment, occ Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	239	1031					0	0	0	0	0	0	larger shrimp alongside an echinoid, x2	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	239	1033					0	0	0	0	0	0	echinoid, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	239	1034					0	0	0	0	0	0	echinoid	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	239	1035					0	0	0	0	0	0	cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 28E	240	1037					0	0	0	0	0	0	fish, successive rows of mounds	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	226	731					0	0	0	0	0	0	start waypt 29, gal crab, soft sed, slight bioturb	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	225	735					0	0	0	0	0	0	same bottom	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	226	739					0	0	0	0	0	0	3 Bathynectes, Coronaster, ceranthid?	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	226	741					0	0	0	0	0	0	several Bathynectes, very sparse bioturb, almost flat sed	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	227	742					0	0	0	0	0	0	Coronaster, 8cm scorpion fish??. white urchin 10cm w/short spines and white tes	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	227	745					0	0	0	0	0	0	flat sed, sparse bioturb, small 1cm tubes sticking out of bottom possibly polychaete, sabelidae??	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	227	750					0	0	0	0	0	0	same bottom, coronaster, bathynectes	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	756					0	0	0	0	0	0	coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	757					0	0	0	0	0	0	Coronaster, skate, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	758					0	0	0	0	0	0	Coronaster.	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	759					0	0	0	0	0	0	rock with anemone, Coronaster, fish	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	800					0	0	0	0	0	0	Benthobatis	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	802					0	0	0	0	0	0	Coronaster, 4 Coronaster,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	805					0	0	0	0	0	0	Coronaster.	

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CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	806					0	0	0	0				rock	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	807					0	0	0	0				2 cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	809					0	0	0	0				Benthobatis, Coronaster, rock	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	810					0	0	0	0					
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	811					0	0	0	0				Benthobatis, Coronaster, skate	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	812					0	0	0	0				2 lime, cancer	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	814					0	0	0	0				cancer, skate, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	815					0	0	0	0				unident in depression,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	816					0	0	0	0				skate	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	817					0	0	0	0				depression of obsolete RS, Coronaster,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	820					0	0	0	0				low relief flat sed, with light bioturb, switch tape	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	820					0	0	0	0					
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	823					0	0	0	0				cancer, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	824					0	0	0	0				echurian, urchin, Coronaster, echurian,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	232	826					0	0	0	0				Coronaster,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	232	829					0	0	0	0				urchin, hermit crab, Coronaster	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	232	830					0	0	0	0				same flat sed with echurian holes, urchin, scat Coronaster, occasional fish	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	232	831					0	0	0	0				Benthobatis	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	232	832					0	0	0	0				echurian, Coronaster,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	835					0	0	0	0				obsolete rippled sediment, Coronaster, back to flat sed, unident looked like shrimp ~8cr	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	836					0	0	0	0				went over slight depression	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	837					0	0	0	0				sand wave of obsolete rippled sediment, back to flat sed,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	229	838					0	0	0	0				10cm fish,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	230	840					0	0	0	0				flat sandy sed, occasional sand ripple, oc Coronaster, slight bioturb,	
CalypsoPipeline	5/11/2006	TONGS			MP 29E	231	841					0	0	0	0				anemone, Benthobatis, small fish at bottom	
CalypsoPipeline		TONGS			MP 29E	231	843					0	0	0	0				sand ripples, Coronaster	
CalypsoPipeline		TONGS			MP 30E	214	603					0	0	0	0				starting mile post 30 heading east	
CalypsoPipeline		TONGS			MP 30E	214	605					0	0	0	0				sandy mud bottom, bioturb, thalassia detritus	
CalypsoPipeline		TONGS			MP 30E	214	607					0	0	0	0				Coronaster	
CalypsoPipeline		TONGS			MP 30E	214	609					0	0	0	0				cancer crab	
CalypsoPipeline		TONGS			MP 30E	214	610					0	0	0	0				same bottom	
CalypsoPipeline		TONGS			MP 30E	214	615					0	0	0	0				same bottom, Coronaster	
CalypsoPipeline		TONGS			MP 30E	214	617					0	0	0	0				occasional anemone in a ball shape about 5cm in diameter, end of tape twc	
CalypsoPipeline		TONGS			MP 30E	214	618					0	0	0	0				beginning of tape 3, continuing dive #1, heading east past mile post 30, same bottom, soft sed,	
CalypsoPipeline		TONGS			MP 30E	215	620					0	0	0	0				bioturbation, sm pits and mounds 5-10cm	
CalypsoPipeline		TONGS			MP 30E	215	623					0	0	0	0				10cm flatfish, Coronaster dominant macrofauna	
CalypsoPipeline		TONGS			MP 30E	214	624					0	0	0	0				10cm fish, Benthobatis	
CalypsoPipeline		TONGS			MP 30E	215	625					0	0	0	0				speed dropped to .25 knot	
CalypsoPipeline		TONGS			MP 30E	215	630					0	0	0	0				same bottom, Coronaster, anemone	
CalypsoPipeline		TONGS			MP 30E	215	630					0	0	0	0				flat sand bottom, bioturbation	
CalypsoPipeline		TONGS			MP 30E	216	631					0	0	0	0				outboard camera- line on bottom, thalassia detritus	
CalypsoPipeline		TONGS			MP 30E	216	633					0	0	0	0				pile of rock cobble? (maybe bones?) no more than 1-2ft across	
CalypsoPipeline		TONGS			MP 30E	216	634					0	0	0	0				Benthobatis	
CalypsoPipeline		TONGS			MP 30E	216	635					0	0	0	0				same bottom	
CalypsoPipeline		TONGS			MP 30E	216	637					0	0	0	0				rat tail fish?	
CalypsoPipeline		TONGS			MP 30E	218	642					0	0	0	0				same bottom	
CalypsoPipeline		TONGS			MP 30E	219	644					0	0	0	0				artifact, ceratamid, fewer Coronaster	
CalypsoPipeline		TONGS			MP 30E	219	645					0	0	0	0				thalassia detritus, bioturb, echurian worm	
CalypsoPipeline		TONGS			MP 30E	219	646					0	0	0	0				something in outboard camera rock boulder 2 ft across, might be a little boulder field, some relief in sonar	
CalypsoPipeline		TONGS			MP 30E	219	648					0	0	0	0				only one in video	
CalypsoPipeline		TONGS			MP 30E	219	649					0	0	0	0				another boulder in outboard camera, appeared 3ft in diameter, surrounding bottom mud with sparser bioturbation	
CalypsoPipeline		TONGS			MP 30E	219	650					0	0	0	0				2 ft across boulder, anemone's, hydroid, striation almost coral-like like a head type of coral? Bathynectes	
CalypsoPipeline		TONGS			MP 30E	219	651					0	0	0	0				Boulders within 30m scale of sonar, not dense but a few scattered	
CalypsoPipeline		TONGS			MP 30E	220	652					0	0	0	0				rock boulder w/ sponge hexact tube sponge?? 10 cm tall. Surrounding bottom flat sand with slight bioturb, thal detr, Coronaster, anemone	
CalypsoPipeline		TONGS			MP 30E	220	652					0	0	0	0				close to track slightly south 50 ft	
CalypsoPipeline		TONGS			MP 30E	220	652					0	0	0	0				1-2 ft boulder 1ft relief, anemone's, hydroid, fishing line	
CalypsoPipeline		TONGS			MP 30E	220	655					0	0	0	0				out of boulder field, good sized burrow 30-40cm across, all flat sediment bottom with sparse bioturbation	
CalypsoPipeline		TONGS			MP 30E	220	657					0	0	0	0				Benthobatis	
CalypsoPipeline		TONGS			MP 30E	220	700					0	0	0	0				100% soft bottom, slight bio turb, 12 cm eel, Coronaster, Benthobatis	
CalypsoPipeline		TONGS			MP 30E	221	704					0	0	0	0				hermit crab?, skate	
CalypsoPipeline		TONGS			MP 30E	221	705					0	0	0	0				same bottom	
CalypsoPipeline		TONGS			MP 30E	222	710					0	0	0	0				same bottom, 100% soft sediment with sparse bio turb, thalassia detritus, occasional Coronaster	
CalypsoPipeline		TONGS			MP 30E	223	712					0	0	0	0				skate	
CalypsoPipeline		TONGS			MP 30E	222	715					0	0	0	0				same bottom, eel	
CalypsoPipeline		TONGS			MP 30E	223	716					0	0	0	0				cancer crab in sediment	
CalypsoPipeline		TONGS			MP 30E	223	717					0	0	0	0				Bathynectes	
CalypsoPipeline		TONGS			MP 30E	223	718					0	0	0	0				skate	
CalypsoPipeline		TONGS			MP 30E	223	719					0	0	0	0				end of tape 3	
CalypsoPipeline		TONGS			MP 30E	226	720					0	0	0	0				beginning of tape 4, Benthobatis, 100% soft sed bottom, bio turb, Coronaster, thalassia detritus,	
CalypsoPipeline		TONGS			MP 30E	224	722					0	0	0	0				Bathynectes	
CalypsoPipeline		TONGS			MP 30E	224	723					0	0	0	0				Benthobatis	
CalypsoPipeline		TONGS			MP 30E	225	724					0	0	0	0				same bottom, Coronaster, anemone	
CalypsoPipeline		TONGS			MP 30E	225	724					0	0	0	0				scorpion fish??	
CalypsoPipeline		TONGS			MP 30E	225	727					0	0	0	0				skate, Bathynectes, Coronaster	
CalypsoPipeline		TONGS			MP 30E	226	729					0	0	0	0				skate, Bathynectes	
CalypsoPipeline		TONGS			MP 30E	225	730					0	0	0	0				same bottom, soft sed, slight bio turb, thalassia detritus	
CalypsoPipeline		TONGS			MP 30E							0	0	0	0				passed waypt 29	
CalypsoPipeline	5/11/2006	TONGS			MP 31E							0	0	0	0				Start transect at Mile Post 31 heading East	

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																				Camera setting: Manual, ISO 100, Flash- Fluorescent F, AF mode- single, Large Resolution 2592 x 1944 pixels, Fine compression, Speed 1/200, F stop 4.0; lasers are 8 cm apart; overlay on video when it reads a five decimal digit lat and lon that is the RO
CalypsoPipeline	5/11/2006	TONGS			MP 31E							0	0	0						Surface current 1.6 kn; Launch
CalypsoPipeline	5/11/2006	TONGS			MP 31E							0	0	0						On bottom, mud, pills, mounds
CalypsoPipeline	5/11/2006	TONGS			MP 31E	189	414					0	0	0						Mud Bottom with Bioturb
CalypsoPipeline	5/11/2006	TONGS			MP 31E	189	414					0	0	0						Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	191	418					0	0	0						Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	191	419					0	0	0						Coronaster same bioturbation (bioturbation, small mounds and burrows)
CalypsoPipeline	5/11/2006	TONGS			MP 31E	191	420					0	0	0						bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 31E	191	421					0	0	0						detritus
CalypsoPipeline	5/11/2006	TONGS			MP 31E	191	421					0	0	0						cerianthid
CalypsoPipeline	5/11/2006	TONGS			MP 31E	192	422					0	0	0						Coronaster, anemone, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	192	423					0	0	0						sm cluster burrows, Coronaster, Bathynectes, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	192	424					0	0	0						Coronaster's, Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	192	425					0	0	0						Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	192	426					0	0	0						Coronaster's, small cerianthid, Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	193	427					0	0	0						anemone, sm cerianthid's, Coronaster, cluster burrows
CalypsoPipeline	5/11/2006	TONGS			MP 31E	193	428					0	0	0						anemone, Coronaster's, galatheid, anemone
CalypsoPipeline	5/11/2006	TONGS			MP 31E	193	428					0	0	0						anemone, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	193	430					0	0	0						same bioturbation, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	193	431					0	0	0						Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	194	434					0	0	0						same bioturbation, cerianthid, Coronaster's, sm volcano mounds, anemone, cluster burrows, anemone
CalypsoPipeline	5/11/2006	TONGS			MP 31E	194	435					0	0	0						same bioturbation cerianthid, Coronaster, anemone
CalypsoPipeline	5/11/2006	TONGS			MP 31E	197	438					0	0	0						same bioturbation, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	196	439					0	0	0						cerianthid, cable, Coronaster, snake eel
CalypsoPipeline	5/11/2006	TONGS			MP 31E	197	440					0	0	0						same bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 31E	197	443					0	0	0						250 ft north of pipeline since we started
CalypsoPipeline	5/11/2006	TONGS			MP 31E	197	444					0	0	0						re-position ship so it will be south of the pipeline, 2 Coronaster, cerianthid, same bioturbation, thalassia
CalypsoPipeline	5/11/2006	TONGS			MP 31E	197	446					0	0	0						detritus
CalypsoPipeline	5/11/2006	TONGS			MP 31E	198	447					0	0	0						cerianthid, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	199	448					0	0	0						anemone, cerianthid with galatheid crab, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	199	448					0	0	0						Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	198	449					0	0	0						Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	199	451					0	0	0						Coronaster, Bathynectes, same bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 31E	199	452					0	0	0						same bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 31E	199	453					0	0	0						re-position ship so it is 100ft s of line and ROV should be tracking closer
CalypsoPipeline	5/11/2006	TONGS			MP 31E	201	458					0	0	0						sargassum
CalypsoPipeline	5/11/2006	TONGS			MP 31E	201	500					0	0	0						same bioturbation, mud bioturbation, sparse thalassia detritus Coronaster, anemone, squid 10-12cm, few sm fish 3-4cm
CalypsoPipeline	5/11/2006	TONGS			MP 31E	201	505					0	0	0						cerianthid, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	201	507					0	0	0						tracking close to the line, within 100ft of line on north side
CalypsoPipeline	5/11/2006	TONGS			MP 31E	202	508					0	0	0						anemone or cerianthid?
CalypsoPipeline	5/11/2006	TONGS			MP 31E	202	510					0	0	0						same bioturbation, flat mud, bioturbation, primarily Coronaster and anemone, thalassia detritus, Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	202	515					0	0	0						lrger burrow 15-20cm across, may be white lobster burrow??, lrg pits 1-5cm, mounds are 5-10 cm in diameter
CalypsoPipeline	5/11/2006	TONGS			MP 31E	202	516					0	0	0						snake eel, end of tape one
CalypsoPipeline	5/11/2006	TONGS			MP 31E	203	517					0	0	0						start of tape two
CalypsoPipeline	5/11/2006	TONGS			MP 31E	203	520					0	0	0						same bioturbation, Coronaster, anemone, cerianthid dominate
CalypsoPipeline	5/11/2006	TONGS			MP 31E	203	521					0	0	0						skate or torpedo fish, Bathynectes, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E		523					0	0	0						trying to take photos of macrofauna
CalypsoPipeline	5/11/2006	TONGS			MP 31E		524					0	0	0						
CalypsoPipeline	5/11/2006	TONGS			MP 31E	204	525					0	0	0						same bioturbation, on sonar about 60ft there appears to be a circular depression with something in it (Navy practice mine in shipping crate about 3ft across)
CalypsoPipeline	5/11/2006	TONGS			MP 31E		527					0	0	0						bottle
CalypsoPipeline	5/11/2006	TONGS			MP 31E	205	529					0	0	0						same bioturbation, Coronaster
CalypsoPipeline	5/11/2006	TONGS			MP 31E	205	530					0	0	0						squid
CalypsoPipeline	5/11/2006	TONGS			MP 31E	207	533					0	0	0						anemone, sm crab
CalypsoPipeline	5/11/2006	TONGS			MP 31E	207	535					0	0	0						same bioturbation, sm anemone, thalassia detritus, Coronaster, bioturbation, a few sm 1-2 cm fish, Coronaster, bottle
CalypsoPipeline	5/11/2006	TONGS			MP 31E	207	536					0	0	0						Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	207	537					0	0	0						Bathynectes
CalypsoPipeline	5/11/2006	TONGS			MP 31E	208	538					0	0	0						squid, bottle with anemone growing on it?
CalypsoPipeline	5/11/2006	TONGS			MP 31E	208	540					0	0	0						skate, same bioturbation
CalypsoPipeline	5/11/2006	TONGS			MP 31E	208	541					0	0	0						course altered so we are pretty much on pipeline track, going to try to speed up to one kno
CalypsoPipeline	5/11/2006	TONGS			MP 31E	209	545					0	0	0						same bioturbation, cerianthid, Coronaster, sm squid, thalassia detritus, Bathynectes's, sonar showing rock rubble, mostly thalassia debris, fishing line, quite a few anemone's, slight rock possible sm rock
CalypsoPipeline	5/11/2006	TONGS			MP 31E	210	547					0	0	0						cobble under sediment difficult to see, maybe hy
CalypsoPipeline	5/11/2006	TONGS			MP 31E	211	548					0	0	0						same mud bottom
CalypsoPipeline	5/11/2006	TONGS			MP 31E	210	549					0	0	0						tracking well on the pipeline (within 50ft)
CalypsoPipeline	5/11/2006	TONGS			MP 31E	210	549					0	0	0						heinken bottle
CalypsoPipeline	5/11/2006	TONGS			MP 31E	210	550					0	0	0						Benthobatis, cerianthid, several Coronaster, same bioturbation, pile of cable or rope (1 in) anemone or gorg growing on it, thalassia detritus piling up around it
CalypsoPipeline	5/11/2006	TONGS			MP 31E	211	552					0	0	0						Benthobatis
CalypsoPipeline	5/11/2006	TONGS			MP 31E	212	554					0	0	0						hole w/ plastic, something coming on upward camera, target on sonar 60ft out appears to be linear object
CalypsoPipeline	5/11/2006	TONGS			MP 31E	213	555					0	0	0						about 20ft long a human artifact scoured on North side on sonar, rectangular object
CalypsoPipeline	5/11/2006	TONGS			MP 31E	213	600					0	0	0						Benthobatis, sea world placard, same bioturbation, mud, bioturbation, Coronaster, thalassia
CalypsoPipeline	5/11/2006	TONGS			MP 31E	213	601					0	0	0						100ft north of pipeline route, same bioturbation, bioturbation, Coronaster, cancer crat
CalypsoPipeline	5/11/2006	TONGS			MP 31E	213	603					0	0	0						10 cm mottled gm fish, chlorophthalmus????
CalypsoPipeline	5/11/2006	TONGS			MP 31E	213	603					0	0	0						cancer?
CalypsoPipeline	5/11/2006	TONGS			MP 31E							0	0	0						end mile post 31, were are at mile post 30 now

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish	
Calypso Port																					
ClaypsPort	4/1/06	TONGS																			
ClaypsPort	4/1/06	TONGS			EW6	257	1225	S	S		0			0	0	1 (69 cm)			Bu	Small flat white outcrop w 1 anemone beyond edge of sand wave, otherwise barren; 0.8-M LONG ?GREAT NORTHERN TILEFISH WITH EXCAVATION	
ClaypsPort	4/1/06	TONGS			Tie EW5	285	1805	S	S		0			0	0				1	Bu	Rippled sediment; possibly Caulolattus [blue line?] tilefish [SIDE CAMERA]; cluster of anemones
ClaypsPort	4/1/06	TONGS			Tie EW5	283	1841	S	S		0			0	0					Bu	Alternating rippled & flat sediment with tubes; possible tilefish burrow [SIDE CAMERA] [Tilefish Bu 6-10 feet in diam]
ClaypsPort	4/1/06	TONGS			EW 5		1920	S	S		0			0	0				1	Bu	Caulolattus tilefish burrow in depression slopes [tilefish Burrow? Blue line or golden
ClaypsPort	4/1/06	TONGS			EW 5		1924	S	S		0			0	0					Bu	Caulolattus? Burrow tilefish burrow in depression slopes [not in primary video, audio only
ClaypsPort	4/1/06	TONGS			New NE A (N)	258	2255	S	S		0			0	0					Bu	Tilefish burrow; more little rubble (burrow not visible in primary video)
ClaypsPort	4/1/06	TONGS			EW4	240	618	S	S		0			1	0						large red shrimp, Coronaster, Bathynectes, Benthobatis [JR Addition Lat and Long Estimated from habitat map]
ClaypsPort	4/1/06	TONGS			EW 2	288	511	S	S		0			1	0						Benthobatis, red shrimp [JR Addition Lat and Long Estimated from habitat map
ClaypsPort	4/1/06	TONGS			Tie EW 2	208	2207	S	S		0			0	0						boat, few anemones, tilefish [pHYCIDS] [NOTE- NOT TILEFISH!], not much growth, Hormathidae's, encrusting on railing
CFX Telecom Cable																					
CFX Cable	6/18/2008	NEREUS				193	02:50:00	S	S		0			0	0						Seagrass detritus, numerous Coronaster sp. observed. [Numerous Cancer.]
CFX Cable	6/18/2008	NEREUS				194	03:00:00	S	S		0			0	0						Sandy habitat with moderate bioturbation. Fewer biota (less frequency) when compared to shallower depths. Decapods, several Coronaster sp., and seagrass detritus observed.
CFX Cable	6/18/2008	NEREUS				196	03:06:00	S	S		0			0	0						Coronaster sp., debris (bottles), numerous Coronaster sp., and seagrass detritus observed
CFX Cable	6/18/2008	NEREUS				197	03:10:00	S	S		0			0	0						Sandy habitat with moderate bioturbation. Fewer organisms observed when compared to shallower depths. Coronaster sp., seagrass detritus, and squat lobster (Chirostyliidae) observed.
CFX Cable	6/18/2008	NEREUS				197	03:13:00	S	S		0			0	0						Coronaster sp., blind torpedo (Benthobatis marcidia), seagrass detritus, and shortnose greeneye? (Chlorophthalmus agassizi) observed.
CFX Cable	6/18/2008	NEREUS				198	03:22:00	S	S		0			0	0						Sandy substrate with some bioturbation and few organisms. Observed occasional Coronaster sp., seagrass detritus, and broken, crab carapace underneath cable Numerous Cancer, No Chaceon verified in video.
CFX Cable	6/18/2008	NEREUS				200	03:30:00	S	S		0			0	0						Sandy substrate with less bioturbation than before. Fewer organisms, occasional Coronaster sp., seagrass detritus, small squid, [Numerous Cancer, no Chaceon verified in video]
CFX Cable	6/18/2008	NEREUS				202	03:40:00	S	S		0			0	0						Cable turning quite often (S-shaped curves). ROV stopped on seafloor at 3:42, waiting for ship to catch up. [Observed Cancer (close up)]
CFX Cable	6/18/2008	NEREUS				205	03:43:00	S	S		0			0	0						Stirring up sediment due to ROV touchdown. Waiting for ship to catch up.
CFX Cable	6/18/2008	NEREUS				205	03:44:00	S	S		0			0	0						Sandy substrate with low to moderate bioturbation. Observed few organisms, one Coronaster sp., and some seagrass detritus.
CFX Cable	6/18/2008	NEREUS				203	03:49:00	S	S		0			0	0						Sandy substrate with low bioturbation. Observed fewer organisms and debris (tire - observed during disc change and not captured on video)
CFX Cable	6/18/2008	NEREUS				206	03:54:00	S	S		0			0	0						Sandy substrate with low bioturbation. Observed Coronaster sp., and seagrass detritus. [Cancer Observed on video]
CFX Cable	6/18/2008	NEREUS				205	03:56:00	S	S		0			0	0						Beginning to see some small sand waves or an increase in bioturbation. Coronaster sp. observed
CFX Cable	6/18/2008	NEREUS				206	03:59:00	S	S		0			0	0						Sandy substrate with low bioturbation. Fewer than 5 Coronaster sp. observed in the last 10 minutes. Seagrass detritus still present.
CFX Cable	6/18/2008	NEREUS				206	04:00:00	S	S		0			0	0						Sandy substrate with low bioturbation. Observed seagrass detritus and two crabs on side of cable.
CFX Cable	6/18/2008	NEREUS				207	04:12:00	S	S		0			0	0						Beginning to see a more regular pattern in sand, perhaps small sand waves or an increase in bioturbation. After a curve in the cable, several Coronaster
CFX Cable	6/18/2008	NEREUS				208	04:13:00	S	S		0			0	0						Sandy substrate with slight bioturbation or asymmetric ripples
CFX Cable	6/18/2008	NEREUS				208	04:16:00	S	S		0			0	0						Observed blind torpedo (Benthobatis marcidia). There was an ~ 90 degree turn in cable to the south.
CFX Cable	6/18/2008	NEREUS				210	04:19:00	S	S		0			0	0						Cable then turns back toward E-SE
CFX Cable	6/18/2008	NEREUS				210	04:20:00	S	S		0			0	0						Observed ~ 1 m diameter loop in the cable. Blind torpedo (Benthobatis marcidia)
CFX Cable	6/18/2008	NEREUS				211	04:26:00	S	S		0			0	0						Increase in water column particulates. Observed one Coronaster sp.
CFX Cable	6/18/2008	NEREUS				211	04:26:00	S	S		0			0	0						Observed another loop in the cable. 100% soft bottom with asymmetrical ripples about 3-5cm in height.
CFX Cable	6/18/2008	NEREUS				213	04:30:00	S	S		0			0	0						Seagrass (Thalassia testudinum) detritus observed. Sparse biota.
CFX Cable	6/18/2008	NEREUS				213	04:36:00	S	S		0			0	0						Debris (perhaps a bottle) located to the right of cable. Another bottle observed to the right of the cable at 4:27.
CFX Cable	6/18/2008	NEREUS				215	04:38:00	S	S		0			0	0						100% soft bottom with asymmetrical sand ripples and sparse bioturbation. Few organisms and occasional seagrass detritus observed. The ROV position is currently 80-90 m north of the projected cable location.
CFX Cable	6/18/2008	NEREUS				215	04:40:00	S	S		0			0	0						Observed crab, [black leg most likely Bathynectes]
CFX Cable	6/18/2008	NEREUS				216	04:45:00	S	S		0			0	0						Unidentifiable skate on the cable. [Chaceon unconfirmed, several small white crabs, Cancer?]
CFX Cable	6/18/2008	NEREUS				216	04:48:00	S	S		0			0	0						100% sediment with asymmetrical ripples and sparse biota. Observed multiple crabs one blind torpedo (Benthobatis marcidia). 100% soft bottom with asymmetrical ripples. Possible burrowing anemones observed. [Several small >10cm observed probably cancer, cannot confirm Chaceon]
CFX Cable	6/18/2008	NEREUS				217	04:50:00	S	S		0			0	0						Occasional depressions of ~ 10 cm diameter. Observed small burrows. Slight ridge (orientation SE-NW) present in the sediment at 4:49:38. [Observed several >10cm crabs possibly Cancer, not Chaceon observed]
CFX Cable	6/18/2008	NEREUS				218	04:52:00	S	S		0			0	0						ROV located ~ 80 m north of projected cable location. 100% soft sediment with asymmetrical ripples and very sparse biota. [No Chaceon observed, 2 small crabs >10cm possibly Cancer.]
CFX Cable	6/18/2008	NEREUS				218	04:54:00	S	S		0			0	0						End of Disc 3.
CFX Cable	6/18/2008	NEREUS				218	04:59:00	S	S		0			0	0						Start of Disc 4.
CFX Cable	6/18/2008	NEREUS				220	05:00:00	S	S		0			0	0						A jellyfish?
CFX Cable	6/18/2008	NEREUS				220	05:02:00	S	S		0			0	0						Sparse biota, asymmetrical sand ripples, 100% soft sediment [No Chaceon observed some small crabs >10cm possibly Cancer.]
CFX Cable	6/18/2008	NEREUS				220	05:05:00	S	S		0			0	0						Passed a cluster of something, perhaps crabs, on the right side of the cable.
CFX Cable	6/18/2008	NEREUS				222	05:11:00	S	S		0			0	0						We are approximately 140 meters north of as-laid cable line
CFX Cable	6/18/2008	NEREUS				222	05:13:00	S	S		0			0	0						Two starfish, asymmetrical ripples, slight bioturbation, and a flat, smooth bottom
CFX Cable	6/18/2008	NEREUS				225	05:18:00	S	S		0			0	0						N/A
CFX Cable	6/18/2008	NEREUS				225	05:20:00	S	S		0			0	0						Passed a shallow ridge, 3 crabs (one golden crab) and a skate (Benthobatis marcidia). Passed another skate (Benthobatis marcidia) about 15 cm and are seeing more biota. [No positive ID of Chaceon, Cancer present]
CFX Cable	6/18/2008	NEREUS				223	05:20:00	S	S		0			0	0						Sand ridges/waves and a spider crab (Rochinia sp.?) observed. ROV located 130 m off of as-laid cable coordinates.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	
																				Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				225	05:23:00	S	S			0	0	0	0					A fish (Chlorophthalmus agassizi - shortnose greeneye) on left of cable followed by a Coronaster sp. on the right side of the cable.
CFX Cable	6/18/2008	NEREUS				226	05:30:00	S	S			0	0	0	0					Occasionally asymmetrical sand ripples, sparse biota, occasional seagrass detritus, and a few depressions of 10-15 cm in diameter.
CFX Cable	6/18/2008	NEREUS				229	05:33:00	S	S			0	0	0	0					N/A
CFX Cable	6/18/2008	NEREUS				228	05:34:00	S	S			0	0	0	0					One white crab and a golden crab (Chaceon fenneri). (Cancer crab is >3cm)
CFX Cable	6/18/2008	NEREUS				228	05:35:00	S	S			0	0	0	0					A sand ridge oriented SE to NW with a sharp drop off to the north (maybe 15 cm). Sand wave was followed by [Cancer crab >10cm]
CFX Cable	6/18/2008	NEREUS				229	05:36:00	S	S			0	0	0	0					A crab and one fish observed.
CFX Cable	6/18/2008	NEREUS				230	05:38:00	S	S			0	0	0	0					Another sand ridge located approximately 100 m from the last sand ridge. Same orientation as previous ridge.
CFX Cable	6/18/2008	NEREUS				229	05:40:00	S	S			0	0	0	0					Asymmetrical sand ripples.
CFX Cable	6/18/2008	NEREUS				231	05:42:00	S	S			0	0	0	0					One rattail fish, possibly Nezumia sp.
CFX Cable	6/18/2008	NEREUS				230	05:43:00	S	S			0	0	0	0					Two Coronaster sp. observed. At approximately 20m out, there appears to be a sand ridge on the sonar, oriented E-SE to NW.
CFX Cable	6/18/2008	NEREUS				231	05:45:00	S	S			0	0	0	0					We've been asked to stop because we are not getting tracking data. Resumed work. Ship is going to switch positioning beacons.
CFX Cable	6/18/2008	NEREUS				233	05:49:00	S	S			0	0	0	0					A circular, burrowing anemone (Order Ceriantaria), [no] (Chaceon fenneri), and one white crab. [Cancer crabs >10cm]
CFX Cable	6/18/2008	NEREUS				233	05:50:00	S	S			0	0	0	0					Briefly lost navigation/tracking. 100% soft bottom with asymmetrical ripples. Observed occasional starfish.
CFX Cable	6/18/2008	NEREUS				232	05:53:00	S	S			0	0	0	0					End of Disc 4.
CFX Cable	6/18/2008	NEREUS				232	05:56:00	S	S			0	0	0	0					Begin Disc 5. ROV trying to hold position while ship solves positioning/tracking issues
CFX Cable	6/18/2008	NEREUS				232	05:58:00	S	S			0	0	0	0					Observed Coronaster sp., and ~10 cm long eel. [JR ID's crab as Chaceon on video but its Cancer >10cm]
CFX Cable	6/18/2008	NEREUS				233	06:00:00	S	S			0	0	0	0					Still trying to solve tracking problem. ROV trying to hold position. 100% soft bottom with asymmetrical ripples. Sparse biota. Most common organisms are golden crabs (Chaceon fenneri) and Coronaster sp. An occasional fish is observed. ROV location ~1
CFX Cable	6/18/2008	NEREUS				233	06:10:00	S	S			0	0	0	0					100% soft bottom with asymmetrical sand ripples. Sparse biota. Video not recording from 6:05 to 6:15 (accidentally recording still image instead of video feed).
CFX Cable	6/18/2008	NEREUS				235	06:15:00	S	S			0	0	0	0					Sand ridge observed at 6:14. Observed Nezumia sp.
CFX Cable	6/18/2008	NEREUS				235	06:18:00	S	S			0	0	0	0					Sand wave/ridge visible ~15 m out on side scan sonar. 100% soft bottom with asymmetrical sand ripples. Coronaster sp. observed. Anticipated sand wave/ridge visible in video at 16:18:41. It is ~15-20 cm in height and oriented E-SE to W-NW. Every few mi
CFX Cable	6/18/2008	NEREUS				235	06:20:00	S	S			0	0	0	0					Coming up on another sand wave/ridge. 100% soft sediment with asymmetrical ripples and sparse bioturbation. Coronaster sp. observed. Another sand wave/ridge at 6:22:24.
CFX Cable	6/18/2008	NEREUS				239	06:24:00	S	S			0	0	0	0					Numerous Coronaster sp. observed. Another sand ridge/wave about 10 meters out on side scan sonar. ~15 cm eel observed just prior to the sand wave/ridge. Encounter sand wave/ridge in video at 6:25:25. Cable briefly suspended ~0.3 m off seafloor. Observ
CFX Cable	6/18/2008	NEREUS				238	06:30:00	S	S			0	0	0	0					Sparse biota includes golden crab (Chaceon fenneri). 100% soft bottom with asymmetrical ripples.
CFX Cable	6/18/2008	NEREUS				242	06:35:00	S	S			0	0	0	0					Occasional (0.5-1 m height) sand wave oriented SE-NW. Shortnose greeneye (Chlorophthalmus agassizi) observed. [1 crab observed, most likely Cancer, >10cm]
CFX Cable	6/18/2008	NEREUS				241	06:37:00	S	S			0	0	0	0					Several Coronaster sp. and one small fish (~5 cm) observed.
CFX Cable	6/18/2008	NEREUS				241	06:37:00	S	S			0	0	0	0					Encountered sand wave (~1 m height) at 6:37:43. Observed small fish (~5-10 cm), Coronaster sp., and piece of Sargassum sp. caught on the cable. Occasional Coronaster sp. and golden crab (Chaceon fenneri) observed along the cable [3 Crabs observed, most
CFX Cable	6/18/2008	NEREUS				243	06:40:00	S	S			0	0	0	0					100% soft bottom. Small fish (possibly Nezumia sp.) observed. Seafloor suddenly dropped ~10 m (may be sinkhole). Sinkhole feature is ~30m long with a maximum depth of ~255 m and appears circular on the sonar. Coronaster sp. observed.
CFX Cable	6/18/2008	NEREUS				247	06:44:00	S	S			0	0	0	0					Small fish measuring ~5 cm observed (possibly Nezumia sp.). Occasional Coronaster sp. observed. Many of them are located on top of the cable. Fish observed resting near the cable (possibly Family Scorpaenidae). Also observed several small fish, Corona
CFX Cable	6/18/2008	NEREUS				245	06:50:00	S	S			0	0	0	0					100% soft mud bottom with fewer ripples and sparse bioturbation. Number of depressions observed, ~10 20 cm in diameter. Observed Thalassia debris, many Coronaster sp., several small fish, and burrowing anemone (Order Ceriantaria). Note that several of
CFX Cable	6/18/2008	NEREUS				247	06:54:00	S	S			0	0	0	0					End of Disc 5.
CFX Cable	6/18/2008	NEREUS				249	06:56:00	S	S			0	0	0	0					Begin Disc 6. 100% soft bottom. Coronaster sp., scorpionfish (Family Scorpaenidae), small fish (possibly Laemonema melanurum), and burrowing anemone (Order Ceriantaria) observed. No audio annotation.
CFX Cable	6/18/2008	NEREUS				247	07:00:00	S	S			0	0	0	0					100% soft bottom with some asymmetrical sand ripples and sparse bioturbation. Observed several small fish (possibly Laemonema melanurum), occasional burrowing anemones (Order Ceriantaria), white lobster burrows (Acanthacaris caeca), and numerous Coron
CFX Cable	6/18/2008	NEREUS				251	07:09:00	S	S			0	0	0	0					Observed some codling (Laemonema melanurum), burrowing anemones (seem to be more common > 240 m mark), golden crabs (Chaceon fenneri), Coronaster sp., and debris (bottle). [Golden Crab >10cm @ 7:09:13, 7:20:54 >10cm (black tips on legs)]
CFX Cable	6/18/2008	NEREUS				253	07:21:00	S	S			0	0	0	0					100% soft bottom with asymmetrical sand ripples and sparse bioturbation. Small fishes (including Laemonema melanurum), scorpion fish (Family Scorpaenidae), and Coronaster sp. Coronaster sp. range from occasional to frequent and are usually found on the
CFX Cable	6/18/2008	NEREUS				255	07:29:00	S	S			0	0	0	0					Encountered a sand wave oriented in SE-NW direction. 100% soft bottom. Observed burrowing anemones, several golden crabs (Chaceon fenneri), and Thalassia debris. Asymmetrical sand ripples, some occasional 10 cm fishes (possibly Laemonema melanurum), se
CFX Cable	6/18/2008	NEREUS				258	07:40:00	S	S			0	0	0	0					100% soft sediment with asymmetrical ripples and the occasional 0.5 m sand ridge/wave oriented SE NW. Observed golden crabs (Chaceon fenneri), burrowing anemones (Order Ceriantaria), numerous Coronaster sp., debris (bottle), small fishes (possibly Laem
CFX Cable	6/18/2008	NEREUS				261	07:50:00	S	S			0	0	0	0					100% soft sediment with irregular bioturbation and occasional sand ridge/wave (<0.5 m in height). Observed swimming crab (Bathynectes longispina), several codling (Laemonema melanurum), blind torpedo (Benthobatis marcidia), burrowing anemones, several Co
CFX Cable	6/18/2008	NEREUS				262	07:53:00	S	S			0	0	0	0					End of Disc 6.
CFX Cable	6/18/2008	NEREUS				262	07:55:00	S	S			0	0	0	0					100% soft bottom with moderate bioturbation, seagrass detritus, codling (Laemonema melanurum). [No Chaceon, observed Cancer]
CFX Cable	6/18/2008	NEREUS				262	08:00:00	S	S			0	0	0	0					1.68 surface current. 100% soft bottom. Codling (Laemonema melanurum). [Few Cancer observed, no Chaceon]

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes-habitat, invertebrate, fish
																				Look a fix at this location and tiled it #11. Observed hardbottom measured 1 m diameter by 0.5 m height (two individual rocks). Hardbottom colonized by organisms (difficult to distinguish). FIRST hardbottom outcropping of the survey. Also observed c
CFX Cable	6/18/2008	NEREUS				262	08:02:00	S, Ro	H			0		0	0					100% soft bottom with moderate bioturbation. Observed codling (<i>Laemonema melanurum</i>)
CFX Cable	6/18/2008	NEREUS				262	08:03:00	S	S			0		0	0					Rock cobble outcrops with attached biota (10-20 cm in size). 1-2 m rock pavement (with attached biota) across the entire field of view (several scorpionfish).
CFX Cable	6/18/2008	NEREUS				262	08:04:00	S, Ru, Ro	H			0		0	0					Return to soft bottom habitat with moderate bioturbation. Coronaster sp., codling (<i>Laemonema melanurum</i>), and possible scorpionfish observed. Reappearance of sand ripples at 8:07. next to the cable. [Cancer not Chaceon next to cable]
CFX Cable	6/18/2008	NEREUS				262	08:05:00	S	S			0		0	0					100% soft sediment at 8:09. Observed crab [bath @08:09:21], codling (<i>Laemonema melanurum</i>), and unidentified skate.
CFX Cable	6/18/2008	NEREUS				261	08:09:00	S	S			0		0	0					Just after photograph taken, we encountered some small rock outcroppings (several meters across, 10 20 cm relief). Several fish associated with rock outcroppings including Serranidae?, catshark (<i>Galeus</i> sp.?), scorpionfish, and <i>Laemonema melanurum</i> (codling).
CFX Cable	6/18/2008	NEREUS				262	08:10:00	S, Ro	H			0		0	0					100% soft sediment with sand ripples. Codling (<i>Laemonema melanurum</i>) observed
CFX Cable	6/18/2008	NEREUS				261	08:11:00	S	S			0		0	0					Encountered sand ridge/wave at 8:12 (some rubble at the bottom). Observed rock pavement, codling (<i>Laemonema melanurum</i>), and scorpionfish.
CFX Cable	6/18/2008	NEREUS				262	08:12:00	S, Ru, Ro	H			0		0	0					At 8:12:26, observed a 2 m wide rock outcrop with sparse, attached biota (biota small and encrusting).
CFX Cable	6/18/2008	NEREUS				262	08:12:34	S	S			0		0	0					Another sand ridge with SE/NW orientation. Scorpionfish on the ridge. 20 cm rock boulders observed after ridge.
CFX Cable	6/18/2008	NEREUS				263	08:13:00	S, Ro	H			0		0	0					At 8:13:18, Coronaster sp. observed. Occasional sand ridge/wave in SE/NW orientation. Codling (<i>Laemonema melanurum</i>) observed to the left of the cable. Several Coronaster sp. and scorpionfish. Blind torpedo (<i>Benthobatis marcidia</i>) also observed. [Cancer
CFX Cable	6/18/2008	NEREUS				263	08:13:18	S	S			0		0	0					Rock outcrop (several meters across, 0.5-1 m relief) colonized by hydroids, anemones (possibly Family Sagartidae), zoanthids, maybe coral, and rosefish (<i>Helicolenus dactylopterus</i> ?). Coronaster sp. and another species of starfish (either <i>Tosia</i> or <i>Pteraster</i>)
CFX Cable	6/18/2008	NEREUS				263	08:17:30	S, Ro	H			0		0	0					100% soft bottom. Possible flatfish observed in depression. Coronaster sp., crab (possibly <i>Bathynectes longispina</i>), small starfish, codling (<i>Laemonema melanurum</i>), and scorpionfish observed.
CFX Cable	6/18/2008	NEREUS				264	08:18:00	S	S			0		0	0					Small rocks (5-10 m diameter) with encrusting organisms spaced minutes apart. [SFR Possible Chaceon, @18:19:59, black leg crab walking (mostly sand, very little rubble)]
CFX Cable	6/18/2008	NEREUS				266	08:20:00	S	S			0		0	0					Patchy, low relief pavement. Some of the hardbottom pavement covered with a thin veneer of sediment. Observed cancer crab (<i>Cancer borealis</i> ?), codling (<i>Laemonema melanurum</i>), Coronaster sp., and a few fishes (difficult to distinguish). Rock outcrop on th
CFX Cable	6/18/2008	NEREUS				267	08:22:00	S, Ro	H			0		0	0					Pavement/small slabs (low relief) measuring 1-2 m in diameter to the right of cable. Sparse epifauna (some hydroids, nephroids, etc)
CFX Cable	6/18/2008	NEREUS				267	08:25:00	S, Ro	H			0		0	0					Sporadic low relief pavement with intervening soft bottom and sand waves. Sparse epifauna growing on pavement. Coronaster sp. and codling (<i>Laemonema melanurum</i>) observed.
CFX Cable	6/18/2008	NEREUS				268	08:26:00	S, Ro	H			0		0	0					100% soft bottom with sand ripples. Coronaster sp. and scorpionfish observed.
CFX Cable	6/18/2008	NEREUS				269	08:27:00	S	S			0		0	0					Low relief pavement with associated fishes (<i>Helicolenus dactylopterus</i> ?, scorpionfish, and <i>Laemonema melanurum</i>) and small rock outcropping on left of cable. Sparse epifauna (including hydroids, etc) observed on hardbottom. Small rubble in between rock pa
CFX Cable	6/18/2008	NEREUS				270	08:30:00	S, Ro	H			0		0	0					According to sonar, ROV back in soft sediment. Observed codling (<i>Laemonema melanurum</i>) and crab. ROV crossed over slight sand ridge/wave oriented in SE-NW direction. Coronaster sp., rosefish? (<i>Helicolenus dactylopterus</i>), and squid observed. [Bath @ 8:34
CFX Cable	6/18/2008	NEREUS				270	08:31:00	S	S			0		0	0					Added by SFR, crab far away so size is aprox. Possible Chaceon
CFX Cable	6/18/2008	NEREUS				272	08:36:49	S	S			1		0	0					100% soft sediment with asymmetrical sand ripples and light bioturbation. Observed golden crab (<i>Chaceon fenneri</i>), Coronaster sp., squid, debris/plastic underneath cable, and blind torpedo (<i>Benthobatis marcidia</i>). Have not seen hardbottom since 8:30. Occ
CFX Cable	6/18/2008	NEREUS				271	08:40:00	S	S			0		0	0					Many test photos taken. Continuing to work on exposure settings because blur remains to be an issue. Observed blind torpedo (<i>Benthobatis marcidia</i>). [black legged crab (bath) @ 08:47:48]
CFX Cable	6/18/2008	NEREUS				274	08:47:00	S	S			0		0	0					100% soft bottom with asymmetrical ripples. Occasional sand ridge/wave (less than 0.5 m in height). Crab (difficult to distinguish genus), burrowing anemone, and codling (<i>Laemonema melanurum</i>) observed. Also observed pits and mounds less than 10cm wide
CFX Cable	6/18/2008	NEREUS				276	08:50:00	S	S			0		0	0					Started Disc 8
CFX Cable	6/18/2008	NEREUS				278	08:56:00	S	S			0		0	0					100% soft sediment with asymmetrical ripples and light bioturbation. Several blind torpedoes (<i>Benthobatis marcidia</i>), numerous Coronaster sp., 10 cm fish, scorpionfish, and crabs observed. Pits and mounds less than 10 cm width/length.
CFX Cable	6/18/2008	NEREUS				282	09:04:00	S	S			0		0	0					750 m from waypoint AC10. Speed test to confirm readout on monitor. We suspect that we are not going the reported 0.7 knots. Observed Coronaster sp., codling (<i>Laemonema melanurum</i>), blind torpedo (<i>Benthobatis marcidia</i>). Note high density of organisms in
CFX Cable	6/18/2008	NEREUS				285	09:10:00	S	S			0		0	0					100% soft bottom with asymmetrical ripples and light bioturbation. Observed golden crab (<i>Chaceon fenneri</i>), Coronaster sp., seagrass detritus, burrowing anemone, squid, debris (bottle), blind torpedo (<i>Benthobatis marcidia</i>), several small crabs, and fish.
CFX Cable	6/18/2008	NEREUS				291	09:20:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed golden crab (<i>Chaceon fenneri</i>), Coronaster sp., blind torpedo (<i>Benthobatis marcidia</i>), and squid. Occasional 10 cm pock mark depressions. Organisms were low or infrequent in abundance (~2 organisms)
CFX Cable	6/18/2008	NEREUS				294	09:30:00	S	S			0		0	0					100 m north of waypoint AC10. 100% flat soft bottom with sparse bioturbation (no rippling). Squid are becoming more frequent. Coronaster sp. (not many, only 2-3), and blind torpedoes (<i>Benthobatis marcidia</i>). Fewer mobile epifauna. [2 black legs @ 09:29
CFX Cable	6/18/2008	NEREUS				297	09:40:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (no ripples). Observed a school of squid (~30 individuals each ~10 cm long) at 9:41, crabs (<i>Bathynectes longispina</i> and <i>Chaceon fenneri</i>), Coronaster sp., blind torpedo (<i>Benthobatis marcidia</i>), scorpionfish?
CFX Cable	6/18/2008	NEREUS				297	09:50:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (no ripples). Some small pits less than 10 cm in diameter. Observed squid, crabs (<i>Bathynectes longispina</i>), burrowing anemone, and starfish (either <i>Tosia</i> sp. or <i>Pteraster</i> sp.).
CFX Cable	6/18/2008	NEREUS				298	09:56:00	S	S			0		0	0					Start Disc 9. 100% flat soft bottom with sparse bioturbation (no ripples). Observed blind torpedo (<i>Benthobatis marcidia</i>) and swimming crab (<i>Bathynectes longispina</i>)
CFX Cable	6/18/2008	NEREUS				300	10:00:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (few asymmetrical ripples). Observed starfish (possibly <i>Tosia</i> sp. or <i>Pteraster</i> sp.). Recently we have seen Coronaster sp., squid, blind torpedo (<i>Benthobatis marcidia</i>), golden crab (<i>Chaceon fenneri</i>), all in

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				301	10:03:00	S	S			0		0	0					100% soft bottom with asymmetrical ripples. No pits and still fewer epifauna. Crab (possibly Bathynectes longispina), several blind torpedoes (Benthobatis marcidia), seagrass detritus, and debris? observed.
CFX Cable	6/18/2008	NEREUS				300	10:10:00	S	S			0		0	0					100% soft bottom with asymmetrical ripples. Observed blind torpedo (Benthobatis marcidia) - more and more common in this ten minute stretch. Coronaster sp., squid, and are in low abundance. Seagrass detritus (entirely Thalassia) observed frequently. [
CFX Cable	6/18/2008	NEREUS				298	10:12:00	S	S			0		0	0					Lost asymmetrical rippling in sediment. Some bioturbation remains and epifauna abundance is low
CFX Cable	6/18/2008	NEREUS				300	10:17:00	S	S			0		0	0					100% flat soft bottom (no rippling). 2+ m from the bottom due to current drag on the ROV umbilical
CFX Cable	6/18/2008	NEREUS				303	10:20:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed crabs (Bathynectes longispina, blind torpedo (Benthobatis marcidia), Coronaster sp., and squid all in low abundance. (no chaceon sighted)
CFX Cable	6/18/2008	NEREUS				303	10:30:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (no ripples). Coronaster sp., squid, blind torpedo (Benthobatis marcidia), are rare to occasional during this 10 minute stretch. (no chaceon observed)
CFX Cable	6/18/2008	NEREUS				305	10:40:00	S	S			0		0	0					100% flat soft bottom (no ripples) and sparse bioturbation. Large amount of debris (rope) to the left of the cable. Ship took a fix, and eel? observed. Coronaster sp. now absent. Have not seen a sand wave since last reported. ROV having trouble kee
CFX Cable	6/18/2008	NEREUS				307	10:48:00	S	S			0		0	0					124 m north of waypoint AC11.
CFX Cable	6/18/2008	NEREUS				308	10:50:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed codling (Laemonema melanurum), burrowing anemones, crab (difficult to distinguish), blind torpedo (Benthobatis marcidia), and swimming crab (Bathynectes longispina), once prominent, are now rare. [
CFX Cable	6/18/2008	NEREUS				311	10:56:00	S	S			0		0	0					Start Disc 10. 100% flat soft bottom with sparse bioturbation.
CFX Cable	6/18/2008	NEREUS				310	11:00:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (no ripples). Debris (fishing line?) caught underneath the cable. Observed crabs, blind torpedo (Benthobatis marcidia), and seagrass detritus. ROV has returned to within a meter above bottom. Codling (Lae
CFX Cable	6/18/2008	NEREUS				311	11:02:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation (no ripples). Seagrass detritus, crab (difficult to distinguish partially hidden by cable), blind torpedoes (Benthobatis marcidia), and swimming crab (Bathynectes longispina) observed. At 11:08, briefly s
CFX Cable	6/18/2008	NEREUS				313	11:10:00	S	S			0		0	0					100% soft bottom with sparse bioturbation. Possible debris beneath cable. Observed swimming crabs (Bathynectes longispina), blind torpedoes (Benthobatis marcidia), rattail (Nezumia sp.), seagrass detritus, and debris (bottle).
CFX Cable	6/18/2008	NEREUS				314	11:12:00	S	S			0		0	0					Rajid? Observed starfish (possibly Tosia sp. or Pteraster sp.)
CFX Cable	6/18/2008	NEREUS				314	11:20:00	S	S			0		0	0					100% soft bottom with sparse bioturbation. Seagrass detritus, several blind torpedoes (Benthobatis marcidia), some small fishes, swimming crabs (Bathynectes longispina), larger fish, unidentifiable urchin (possibly Echinus affinis), codling (Laemonema me
CFX Cable	6/18/2008	NEREUS				317	11:30:00	S	S			0		0	0					100% flat soft sediment with sparse bioturbation (no ripples). Observed several blind torpedoes (Benthobatis marcidia), some seagrass detritus, golden crabs (Chaceon fenneri), small fishes, and possible urchin along right side of cable at 11:39:51. ROV
CFX Cable	6/18/2008	NEREUS				316	11:31:28	S	S			1		0	0					(ladd by SFR, Chaceon for sure!
CFX Cable	6/18/2008	NEREUS				314	11:39:00	S	S			0		0	0					ROV lifted off bottom (> 3 m), paid out more cable to correct problem. Quick fix.
CFX Cable	6/18/2008	NEREUS				315	11:40:00	S	S			0		0	0					100% soft bottom with sparse bioturbation. Cable crossing (ship took at fix). Several blind torpedoes (Benthobatis marcidia) and seagrass detritus observed. Surface current is ~2.7 knots out of the south.
CFX Cable	6/18/2008	NEREUS				318	11:46:00	S	S			0		0	0					Crab (Bathynectes longispina?) observed to the left of the cable. Another cable crossing at 11:46:54. Ship took a fix.
CFX Cable	6/18/2008	NEREUS				319	11:50:00	S	S			0		0	0					100% soft bottom with sparse bioturbation.
CFX Cable	6/18/2008	NEREUS				319	11:56:00	S	S			0		0	0					Start Disc 11. 100% soft bottom with sparse bioturbation. Seagrass detritus, and swimming crab (Bathynectes longispina). [No Chaceon observed]
CFX Cable	6/18/2008	NEREUS				321	12:00:00	S	S			0		0	0					100% soft bottom with sparse bioturbation. Observed blind torpedo (Benthobatis marcidia) [No Chaceon observed]
CFX Cable	6/18/2008	NEREUS				318	12:05:00	S	S			0		0	0					Swimming crab (Bathynectes longispina) and a small crab (difficult to distinguish) observed. Surface current at 3 knots.
CFX Cable	6/18/2008	NEREUS				322	12:10:00	S	S			0		0	0					100% flat soft bottom with sparse to moderate bioturbation. Observed seagrass detritus. Difficult to stay on the bottom. [Cancer, no chaceon observed]
CFX Cable	6/18/2008	NEREUS				322	12:12:00	S	S			0		0	0					[Cancer Observed, no Chaceon]
CFX Cable	6/18/2008	NEREUS				323	12:14:00	S	S			0		0	0					Unidentified skate (Benthobatis marcidia?) and [Cancer Observed, no Chaceon]
CFX Cable	6/18/2008	NEREUS				324	12:15:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Seagrass detritus and crab (possibly Chaceon fenneri) observed.
CFX Cable	6/18/2008	NEREUS				322	12:19:43	S	S			1		0	0					(ladd by SFR, Chaceon?)
CFX Cable	6/18/2008	NEREUS				322	12:20:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. ROV frequently lifted off the bottom due to high surface current.
CFX Cable	6/18/2008	NEREUS				325	12:27:00	S	S			0		0	0					[Cancer] observed on the cable.
CFX Cable	6/18/2008	NEREUS				323	12:30:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV having difficulty staying on bottom
CFX Cable	6/18/2008	NEREUS				323	12:34:00	S	S			0		0	0					ROV >3 m off the bottom. Cable has S curve.
CFX Cable	6/18/2008	NEREUS				321	12:36:00	S	S			0		0	0					ROV high off the bottom. May have observed blind torpedo (Benthobatis marcidia) and [Cancer, no Chaceon observed].
CFX Cable	6/18/2008	NEREUS				322	12:40:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV having difficulty staying on the bottom. Cable snaking.
CFX Cable	6/18/2008	NEREUS				328	12:44:00	S	S			0		0	0					Observed golden crabs (Chaceon fenneri), unidentified galatheid, and fish. [nice clear shot of Cancer, no chaceon observed]
CFX Cable	6/18/2008	NEREUS				325	12:46:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV having difficulty staying on bottom. Cable snaking.
CFX Cable	6/18/2008	NEREUS				325	12:50:00	S	S			0		0	0					100% flat soft bottom with sparse to moderate bioturbation. ROV having difficulty staying on bottom
CFX Cable	6/18/2008	NEREUS				326	12:53:00	S	S			0		0	0					End of Disc 11. Start of Disc 12.
CFX Cable	6/18/2008	NEREUS				326	12:54:00	S	S			0		0	0					ROV having difficulty staying on the bottom and moving forward. There is a lot of strain on the umbilical due to high surface current. Observed [Cancer, no Chaceon]
CFX Cable	6/18/2008	NEREUS				326	13:00:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV crabbing and having difficulty staying on the bottom. Brittle star observed.
CFX Cable	6/18/2008	NEREUS				330	13:05:00	S	S			0		0	0					ROV crew will keep skids on the bottom in order to maintain position. The camera is ~0.5 m off of the bottom.
CFX Cable	6/18/2008	NEREUS				326	13:10:00	S	S			0		0	0					Cable is out of view.
CFX Cable	6/18/2008	NEREUS				326	13:11:00	S	S			0		0	0					Cable back in view.
CFX Cable	6/18/2008	NEREUS				325	13:12:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV having difficulty staying on bottom
CFX Cable	6/18/2008	NEREUS				325	13:13:00	S	S			0		0	0					

Data Source	Date (mm/dd/yyyy)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; Ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blue-line Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				331	13:14:00	S				0		0	0					Observed blind torpedo (Benthobatis marcidia) and (cancer, no chaceon observed)
CFX Cable	6/18/2008	NEREUS				331	13:16:00	S	S			0		0	0					Observed galatheid in depression beneath cable.
CFX Cable	6/18/2008	NEREUS				332	13:17:00	S	S			0		0	0					Observed galatheid, large hermit crab, and codling (Laemonema melanurum)
CFX Cable	6/18/2008	NEREUS				330	13:19:00	S	S			0		0	0					Blackbelly rosefish? (Helicolenus dactylopterus).
CFX Cable	6/18/2008	NEREUS				331	13:19:38	S	S			1	103	0	0					(Added by SFR, Chaceon close up)
CFX Cable	6/18/2008	NEREUS				331	13:20:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. ROV located ~110 m north of as-laid cable coordinates. Observed galatheid and golden crabs (Chaceon fenneri) [Bathynectes @ 13:20:55]
CFX Cable	6/18/2008	NEREUS				331	13:20:59	S	S			1	114	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				331	13:21:31	S	S			1		0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				331	13:23:00	S	S			0		0	0					Observed blind torpedo (Benthobatis marcidia), and unidentifiable rajid (Breviraja sp.?). [no Chaceon observed recorded in next line]
CFX Cable	6/18/2008	NEREUS				331	13:23:09	S	S			1	131	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				330	13:25:00	S	S			0		0	0					100% flat soft bottom with some bioturbation. Surface current is ~3 knots. Swimming crab (Bathynectes longispina) observed. ROV is currently located ~120 m northeast of as-laid cable coordinates. [Cancer observed, no Chaceon]
CFX Cable	6/18/2008	NEREUS				332	13:30:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. and scorpionfish observed. [No Chaceon, moved to next entry]
CFX Cable	6/18/2008	NEREUS				333	13:30:06	S	S			1	121	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				333	13:32:00	S	S			0		0	0					Observed a galatheid and [Cancer observed, no Chaceon].
CFX Cable	6/18/2008	NEREUS				332	13:35:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation.
CFX Cable	6/18/2008	NEREUS				331	13:36:00	S	S			0		0	0					Observed ~20 cm galatheid, small crab (possibly Bathynectes longispina), and blind torpedo (Benthobatis marcidia). [Cancer crabs no chaceon observed].
CFX Cable	6/18/2008	NEREUS				333	13:40:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. and galatheid observed. [no Golden crabs (Chaceon fenneri), moved to next entry]
CFX Cable	6/18/2008	NEREUS				333	13:40:05	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				332	13:45:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. Galatheid, and seagrass detritus observed. Surface current is ~3 knots. [no Chaceon, only Cancer]
CFX Cable	6/18/2008	NEREUS				333	13:46:56	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				335	13:50:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. codling (Laemonema melanurum) observed. [No Chaceon, moved to next entry. Cancer present]
CFX Cable	6/18/2008	NEREUS				335	13:51:24	S	S			1		0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				333	13:52:00	S	S			0		0	0					End of Disc 12. Start of Disc 13.
CFX Cable	6/18/2008	NEREUS				333	13:53:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. Observed several, galatheid, and codling? (Laemonema melanurum). ROV having some difficulty staying on the bottom. [no chaceon, moved to next entry. Cancer]
CFX Cable	6/18/2008	NEREUS				335	13:58:04	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				335	13:58:04	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				336	14:00:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. [1] Golden crabs (Chaceon fenneri) and fish (Laemonema melanurum?) observed. [and Cancer]
CFX Cable	6/18/2008	NEREUS				337	14:05:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Numerous [Cancer and black legged crabs] and swimming crab (Bathynectes longispina) observed.
CFX Cable	6/18/2008	NEREUS				340	14:10:00	S	S			0		0	0					100% flat soft bottom with moderate bioturbation. and a galatheid. [Chaceon moved to next entries, mostly Cancer]
CFX Cable	6/18/2008	NEREUS				337	14:10:29	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				340	14:14:37	S	S			1	99	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				340	14:14:59	S	S			1		0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				340	14:15:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Galatheids and golden crabs (Chaceon fenneri) [one Chaceon off to the side] observed.
CFX Cable	6/18/2008	NEREUS				340	14:20:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Galatheids and golden crabs (Chaceon fenneri) observed
CFX Cable	6/18/2008	NEREUS				339	14:25:00	S	S			0		0	0					Video still recording. "Copy" may be bad. ROV having difficulty staying on bottom
CFX Cable	6/18/2008	NEREUS				340	14:25:01	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				336	14:30:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed galatheid. ROV having difficulty staying on bottom. Surface current ~3.2 knots
CFX Cable	6/18/2008	NEREUS				335	14:37:00	S	S			0		0	0					Possible urchin observed (too high off bottom for identification).
CFX Cable	6/18/2008	NEREUS				339	14:40:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fenneri) and galatheid observed. End of Disc 13. Start of Disc 14. 2 minutes of tape are missing. 14:40-14:42
CFX Cable	6/18/2008	NEREUS				340	14:42:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fenneri) [not] observed. [moved to next entry]. ROV having difficulty staying on bottom.
CFX Cable	6/18/2008	NEREUS				341	14:42:32	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				334	14:50:00	S	S			0		0	0					ROV pulled off bottom; briefly lost sight of the cable. 100% flat soft bottom with sparse bioturbation. ROV too high to take a photo.
CFX Cable	6/18/2008	NEREUS				342	14:53:00	S	S			0		0	0					Several photographs taken. Golden crab (Chaceon fenneri) [not] observed (moved to next entry)
CFX Cable	6/18/2008	NEREUS				340	14:53:59	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				342	14:55:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Possible cable crossing (but none on map). [no] Observed golden crab (Chaceon fenneri) (moved to next entry), galatheid, fish (Laemonema melanurum?), and unidentifiable decapod.
CFX Cable	6/18/2008	NEREUS				343	14:56:36	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				343	14:58:00	S	S			0		0	0					[no] Golden crabs (Chaceon fenneri) (moved to next few entries), swimming crab (Bathynectes longispina), and galatheid observed.
CFX Cable	6/18/2008	NEREUS				345	14:58:10	S	S			1	85	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				344	14:58:50	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				342	14:59:39	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				341	15:00:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. ROV having difficulty staying on bottom
CFX Cable	6/18/2008	NEREUS				341	15:05:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. ROV lifted off bottom.
CFX Cable	6/18/2008	NEREUS				342	15:10:00	S	S			2		0	0					100% flat soft bottom with sparse bioturbation. Observed golden crabs (Chaceon fenneri) (@ 15:13:20, 15:14:45) and an unidentifiable crab.
CFX Cable	6/18/2008	NEREUS				346	15:15:00	S	S			2		0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fenneri) (@ 15:16:06 & 15:17:51) galatheid, and debris (bucket?) beneath the cable.
CFX Cable	6/18/2008	NEREUS				346	15:18:00	S	S			0		0	0					Possible urchin observed.
CFX Cable	6/18/2008	NEREUS				344	15:20:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Observed golden crab (Chaceon fenneri) (@ 15:23:20) and galatheid.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				348	15:25:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fennen) and unidentified crab observed.
CFX Cable	6/18/2008	NEREUS				349	15:29:00	S	S			1	93	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				348	15:30:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fennen) [and Cancer] and blind topeño (Bentholia marcidia) observed.
CFX Cable	6/18/2008	NEREUS				349	15:35:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed galatheids, seagrass detritus, fish. [Cancer, Spider/teco crabs and black legged crab, No Chaceon]
CFX Cable	6/18/2008	NEREUS				349	15:38:00	S	S			0		0	0					End of Disc 14. Start of Disc 15.
CFX Cable	6/18/2008	NEREUS				348	15:40:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Observed blackbelly rosefish? (Helicolenus dactylopterus), golden crabs (Chaceon fennen) [@ 15:41:40], and unidentified decapod.
CFX Cable	6/18/2008	NEREUS				352	15:44:34	S	S			1	90	0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				352	15:45:00	S	S			1		0	0					[Added by SFR, close up of Chaceon]
CFX Cable	6/18/2008	NEREUS				350	15:46:00	S	S			0		0	0					ROV was pulled backwards by ship, lost navigation, and currently standing by
CFX Cable	6/18/2008	NEREUS				352	16:02:00	S, Ru	H			0		0	0					Rock rubble/cobble (~2.5 cm in diameter). Ship having a tracking problem. All operations stopped
CFX Cable	6/18/2008	NEREUS				353	16:11:00	S, Ru	H			1		0	0					Rock rubble/cobble (~2.5 cm in diameter). Observed golden crabs (Chaceon fennen) [@ 16:11:25]. Ship lost communication with beacon and currently do not have position.
CFX Cable	6/18/2008	NEREUS				350	16:13:00	S	S			0		0	0					Still do not have tracking. The turbidity is making visual identifications difficult
CFX Cable	6/18/2008	NEREUS				349	16:15:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed white lobster? (Acanthacaris caeca). ROV having difficulty staying on bottom. Currently, 3-4 m off the bottom. The surface current is ~ 2.5 knots.
CFX Cable	6/18/2008	NEREUS				354	16:19:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed chain dogfish? (Scyliorhinus sp.) and galatheid
CFX Cable	6/18/2008	NEREUS				353	16:20:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed some debris (possibly fishing line) to the right of the cable, hermit crab. Have not seen hardbottom since the small patch of rocky rubble (16:02). [Cancer?, no Chaceon]
CFX Cable	6/18/2008	NEREUS				352	16:23:00	S	S			0		0	0					Observed two small fish (~10 cm in length), possibly codling (Laemonema melanurum). Golden crabs (Chaceon fennen) (moved to next entry) and small unidentified crab also observed.
CFX Cable	6/18/2008	NEREUS				354	16:23:37	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				354	16:24:28	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				354	16:25:00	S	S			2		0	0					100% flat soft bottom with sparse bioturbation. Observed golden crabs (Chaceon fennen), Araeosoma sp., and eel-like fishes (~ 10 cm long, black spots along the sides and caudal fin).
CFX Cable	6/18/2008	NEREUS				354	16:28:30	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				356	16:30:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Occasional seagrass detritus (Thalassia sp.). Several species of galatheids (some small, some larger with arms > 10 cm) usually positioned next to the cable, 10 cm codling (Laemonema melanurum), shortnose
CFX Cable	6/18/2008	NEREUS				356	16:35:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Observed golden crabs (Chaceon fennen), Araeosoma sp., and eel-like fishes (~ 10 cm long, black spots along the sides and caudal fin).
CFX Cable	6/18/2008	NEREUS				355	16:37:00	S	S			0		0	0					End of Disc 15. Start of Disc 16.
CFX Cable	6/18/2008	NEREUS				357	16:40:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Galatheids, several shortnose greeneyes? (Chlorophthalmus agassizi), [no] golden crabs (Chaceon fennen) [moved to next entry], seagrass detritus and unidentified crab observed.
CFX Cable	6/18/2008	NEREUS				357	16:41:49	S	S			1		0	0					[Added by SFR, crab far away so size is approx. Chaceon]
CFX Cable	6/18/2008	NEREUS				356	16:47:00	S	S			0		0	0					Galatheids, Araeosoma sp., unidentified crabs, fish, and debris (to the right of the cable) observed. Surface current picked up to ~3.5 knots.
CFX Cable	6/18/2008	NEREUS				359	16:50:10	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. Observed galatheids, golden crab (Chaceon fennen), possible shrimp to the left of the cable, and chain dogfish? (Scyliorhinus sp.).
CFX Cable	6/18/2008	NEREUS				358	16:55:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. numerous galatheids, purple squid (Vampyroteuthis sp.?) unidentified crab, several shortnose greeneyes (Chlorophthalmus agassizi), and debris on the cable. [Cancer and galatheid]
CFX Cable	6/18/2008	NEREUS				357	17:00:00	S	S			0		0	0					ROV briefly stopped.
CFX Cable	6/18/2008	NEREUS				357	17:02:00	S	S			0		0	0					Surface current still ~3.5 knots. Galatheids observed regularly. Also observed [Cancer Crab]
CFX Cable	6/18/2008	NEREUS				358	17:06:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Galatheids observed.
CFX Cable	6/18/2008	NEREUS				359	17:09:00	S	S			0		0	0					Talking with ROV pilots regarding ROV max temperature, amperage, and full thrusters. ROV still only moving between 0.1 to 0.2 knots. The surface current remains ~3.5 knots. The ROV cannot go any faster.
CFX Cable	6/18/2008	NEREUS				359	17:10:00	S	S			1		0	0					100% flat soft bottom with sparse bioturbation. [cancer] observed in depression beneath cable. Galatheids also observed. Golden crab (Chaceon fennen) off to side at 17:15
CFX Cable	6/18/2008	NEREUS				357	17:15:00	S	S			0		0	0					ROV having trouble moving forward. All stop. Very steep angle on the ROV umbilical (~2.03 tons of tension on the umbilical). ROV power is maxed out. [no Chaceon] and galatheids observed.
CFX Cable	6/18/2008	NEREUS				359	17:20:00	S	S			1		0	0					100% flat soft bottom. Observed numerous galatheids, golden crabs (Chaceon fennen) [@ 17:23:22], blackbelly rosefish? (Helicolenus dactylopterus), and fish in a burrow (Laemonema melanurum?).
CFX Cable	6/18/2008	NEREUS				360	17:24:00	S	S			0		0	0					Cable crossing, southeast of AC 13.
CFX Cable	6/18/2008	NEREUS				357	17:25:00	S	S			0		0	0					Galatheids observed.
CFX Cable	6/18/2008	NEREUS				356	17:28:00	S	S			0		0	0					The ship is lagging behind and we are waiting for it to catch up. The bottom current is increasing. The surface current is ~ 2.5 knots.
CFX Cable	6/18/2008	NEREUS				359	17:30:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Mostly galatheids and [no] golden crabs (Chaceon fennen). Also observed a codling? (~15 cm dark, heavy body) in a depression beneath the cable.
CFX Cable	6/18/2008	NEREUS				361	17:35:00	S	S			0		0	0					100% flat soft bottom with sparse bioturbation. Galatheids, [no] golden crab (Chaceon fennen), and several small fish (Laemonema melanurum?) observed. [and 2 cancer crabs present]
CFX Cable	6/18/2008	NEREUS				359	17:37:00	S	S			0		0	0					End of Disc 16. Start of Disc 17.
CFX Cable	6/18/2008	NEREUS				358	17:39:00	S	S			0		0	0					100% flat soft bottom. Few depressions measuring 5-10 cm in diameter. [no] golden crab (Chaceon fennen), codling (Laemonema melanurum), and galatheids.
CFX Cable	6/18/2008	NEREUS				362	17:40:00	S	S			1		0	0					100% flat soft bottom. Golden crabs (Chaceon fennen), galatheids, unidentified crab, Araeosoma sp. (poisonous pancake urchin), scorpionfish?, eel-like fishes (~ 10 cm long, black spots along the sides and caudal fin - [2 sharks]), and two unidentified
CFX Cable	6/18/2008	NEREUS				362	17:46:00	S	S			1	86	0	0					100% flat soft bottom. Spotted catfish [small shark?], many galatheids (population boom!), shortnose greeneyes (Chlorophthalmus agassizi), and [one] golden crabs (Chaceon fennen) observed! [@ 17:49:21]. ROV slowed speed again due to currents. [Cancer]
CFX Cable	6/18/2008	NEREUS				362	17:50:00	S	S			1		0	0					100% flat soft bottom. Observed two starfish (Tosa sp. and Pteraster sp.), galatheids, sea urchin or gaper (Chaunax sp.), and golden crab (Chaceon fennen) [at 17:50:00. Consistently traveling ~150 m north of as-laid cable coordinates.
CFX Cable	6/18/2008	NEREUS				361	17:52:19	S	S			1		0	0					[added SFR Chaceon]

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; Ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				361	17:53:29	S	S		1		0	0	0					added SFR Chaceon
CFX Cable	6/18/2008	NEREUS				360	17:56:00	S	S		0		0	0	0					~150 m north of as-laid point labeled "cable crossing". This may be the crossing we passed at 17:24. Araeosoma sp. and codling (Laemonema melanurum) observed.
CFX Cable	6/18/2008	NEREUS				362	18:00:00	S	S		1		0	0	0					Observed golden crabs (Chaceon fenneri) @18:02:16, seagrass detritus, and galatheids [And Cancer] 100% flat soft bottom. Observed numerous golden crabs (Chaceon fenneri) @18:05:21; galatheid next to a golden crab, and a codling (Laemonema melanurum) in a depression (~15-20 cm in diameter) beneath the cable. [And Cancer]
CFX Cable	6/18/2008	NEREUS				365	18:05:00	S	S		1		0	0	0					100% flat soft bottom. Galatheids, hermit crab, [NO] golden crabs (Chaceon fenneri), unidentified crab, eel-like fish (~ 10 cm long, black spots along the sides and caudal fin), and Araeosoma sp. observed. [Cancer Crabs]
CFX Cable	6/18/2008	NEREUS				366	18:10:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Observed galatheids, golden crabs (Chaceon fenneri) (@18:16:35), rattail fish? (Nezumia sp.), and Araeosoma sp. [un identified crab and Cancer]
CFX Cable	6/18/2008	NEREUS				366	18:15:00	S	S		1	81	0	0	0					100% flat soft bottom with moderate bioturbation. Multiple shortnose greeneyes (Chlorophthalmus agassizi), golden crabs (Chaceon fenneri) (@18:24:01), galatheids, and seagrass detritus observed. Less particulate in water column. [also Cancer, hermits a
CFX Cable	6/18/2008	NEREUS				367	18:25:00	S	S		0		0	0	0					[NO] Golden crabs (Chaceon fenneri), Araeosoma sp., and galatheids observed. Organisms becoming more sparse in last 10 minutes. [Same shark as before, Cancer]
CFX Cable	6/18/2008	NEREUS				368	18:30:00	S	S		1	90	0	0	0					100% flat soft bottom with moderate bioturbation. Galatheids, golden crabs (Chaceon fenneri) @18:33:25, and eel-like fish (~ 10 cm long, black spots along the sides and caudal fin) observed.
CFX Cable	6/18/2008	NEREUS				369	18:35:00	S	S		0		0	0	0					Galatheid observed.
CFX Cable	6/18/2008	NEREUS				371	18:36:00	S	S		0		0	0	0					End of Disc 17. Start of Disc 18.
CFX Cable	6/18/2008	NEREUS				370	18:37:52	S	S		1		0	0	0					Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				371	18:38:00	S	S		0		0	0	0					100% flat soft bottom with sparse bioturbation. Galatheid and [Cancer] Crabs observed. ROV pulled off bottom and slightly backwards [no Chaceon]
CFX Cable	6/18/2008	NEREUS				372	18:40:00	S	S		0		0	0	0					Observed , eel-like fish (~ 10 cm long, black spots along the sides and caudal fin [not an eel - close up of shark good picture]), galatheid, seagrass detritus, small crab, rattail fish (Nezumia sp.), and codlings (Laemonema melanurum) in depressions ben
CFX Cable	6/18/2008	NEREUS				372	18:45:00	S	S		0		0	0	0					[Cancer] in depression under cable, galatheid , eel-like fish (~ 10 cm long, black spots along the sides and caudal fin [no eel - shark]), codling (Laemonema melanurum), and unidentified fish. [No Chaceon]
CFX Cable	6/18/2008	NEREUS				373	18:50:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Galatheids positioned underneath cable, small fish, seagrass detritus, and shortnose greeneyes (Chlorophthalmus agassizi) observed. ROV pulled backward a bit.
CFX Cable	6/18/2008	NEREUS				376	18:55:00	S	S		0		0	0	0					Observed galatheids, seagrass detritus , unidentified fishes, small unidentified crab, and shortnose greeneyes (Chlorophthalmus agassizi). The current is strong and forward motion is intermittent [Cancer crabs, no golden crabs (Chaceon fenneri)]
CFX Cable	6/18/2008	NEREUS				376	19:00:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Shortnose greeneye (Chlorophthalmus agassizi) observed. [no and golden crab (Chaceon fenneri)]
CFX Cable	6/18/2008	NEREUS				377	19:03:00	S	S		1	86	0	0	0					Galatheids, shortnose greeneyes (Chlorophthalmus agassizi), and golden crabs (Chaceon fenneri) @ 19:04:29 observed. Surface current ~3.5 knots.
CFX Cable	6/18/2008	NEREUS				377	19:05:00	S	S		0		0	0	0					Several shortnose greeneyes (Chlorophthalmus agassizi) and galatheids observed. The current is working against us. ROV having trouble maintaining forward motion. The surface current remains at ~3.5 knots.
CFX Cable	6/18/2008	NEREUS				379	19:10:00	S	S		0		0	0	0					ROV is a little high off of the bottom and fighting current to get back down. 100% flat soft bottom with moderate bioturbation. Several galatheids observed.
CFX Cable	6/18/2008	NEREUS				379	19:15:00	S	S		0		0	0	0					Continuous flat soft bottom with moderate bioturbation. Galatheids, debris (floating plastic bag), shortnose greeneyes (Chlorophthalmus agassizi) , unidentified crabs, and unidentified fish observed. [cancer, no golden crab (Chaceon fenneri)]
CFX Cable	6/18/2008	NEREUS				380	19:20:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Codling (Laemonema melanurum), multiple Araeosoma sp., galatheids, unidentified crab, several shortnose greeneyes (Chlorophthalmus agassizi), bones (pieces), and [no] golden crab (Chaceon fenneri) obser
CFX Cable	6/18/2008	NEREUS				380	19:25:00	S	S		1	80	0	0	0					100% flat soft bottom with moderate bioturbation. Observed seagrass detritus, several shortnose greeneyes (Chlorophthalmus agassizi), galatheids, golden crabs (Chaceon fenneri) @19:27:45, and unidentified fish.
CFX Cable	6/18/2008	NEREUS				377	19:30:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Several shortnose greeneyes (Chlorophthalmus agassizi), galatheids, unidentified crustacean, and unidentified fishes observed.
CFX Cable	6/18/2008	NEREUS				379	19:33:00	S	S		0		0	0	0					End of Disc 18. Start of Disc 19.
CFX Cable	6/18/2008	NEREUS				380	19:35:00	S	S		0		0	0	0					Shortnose greeneye (Chlorophthalmus agassizi), Araeosoma sp., galatheids, and codling? (Laemonema melanurum) observed. Organisms appear to be more sparse.
CFX Cable	6/18/2008	NEREUS				380	19:40:00	S	S		0		0	0	0					Sea robin? (Peristedion sp.) observed. Also observed shortnose greeneye (Chlorophthalmus agassizi) and seagrass detritus.
CFX Cable	6/18/2008	NEREUS				376	19:45:00	S	S		2		0	0	0					100% flat soft bottom with moderate bioturbation. Golden crabs (Chaceon fenneri) [possible at 19:45:46 & definite @19:47:36], unidentified fish, small crab, blind torpedo (Benthobatis marcida), and codling (Laemonema melanurum) observed.
CFX Cable	6/18/2008	NEREUS				378	19:51:00	S	S		0		0	0	0					100% flat soft bottom with moderate bioturbation. Observed multiple shortnose greeneye (Chlorophthalmus agassizi), several codling (Laemonema melanurum), unidentified fish, galatheid, small fish (codling?), and seagrass detritus. Some codling were obse
CFX Cable	6/18/2008	NEREUS				379	19:55:00	S	S		1	85	0	0	0					100% flat soft bottom with sparse bioturbation. Observed golden crabs (Chaceon fenneri) (@19:58:45), galatheids, seagrass detritus, and small unidentified crab (looks like a spider, Rochinia sp.).
CFX Cable	6/18/2008	NEREUS				379	20:00:00	S	S		1		0	0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fenneri) (@20:10:38 & 20:14:02), unidentified crab (spider crab? - Rochinia sp.) and shortnose greeneyes (Chlorophthalmus agassizi).
CFX Cable	6/18/2008	NEREUS				378	20:02:00	S	S		0		0	0	0					Unidentified crab (spider crab? - Rochinia sp.) and shortnose greeneyes (Chlorophthalmus agassizi) observed. ROV is currently located ~120 m north east of waypoint AC 14.
CFX Cable	6/18/2008	NEREUS				378	20:05:00	S	S		3		0	0	0					Unidentified fishes, galatheids, golden crabs (Chaceon fenneri) @20:05:15 & 20:07:06 & 20:09:54; crab (spider crab? - Rochinia sp.), and seagrass detritus observed.
CFX Cable	6/18/2008	NEREUS				381	20:10:00	S	S		2		0	0	0					100% flat soft bottom with sparse bioturbation. Golden crabs (Chaceon fenneri) (@20:10:38 & 20:14:02), buried blind torpedo (Benthobatis marcida), shortnose greeneyes (Chlorophthalmus agassizi), seagrass detritus, and unidentified crab (spider crab? - R
CFX Cable	6/18/2008	NEREUS				381	20:15:00	S	S		1		0	0	0					100% flat soft bottom with moderate bioturbation. Observed galatheids, shortnose greeneye (Chlorophthalmus agassizi), and golden crabs (Chaceon fenneri) (@20:15:49). [and Cancer]

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				380	20:21:00	S	S			0		0	0				100% flat soft bottom with moderate bioturbation. Observed codling (<i>Laemonema melanurum</i>), seagrass detritus, and galatheids. [cancer crabs possible golden crabs (<i>Chaceon fenneri</i>)? Too far away to tell]
CFX Cable	6/18/2008	NEREUS				382	20:25:00	S	S			0		0	0				[no] Golden crabs (<i>Chaceon fenneri</i>), galatheids, unidentified fishes, shortnose greeneyes (<i>Chlorophthalmus agassizi</i>), codling? (<i>Laemonema melanurum</i>), seagrass detritus, and unidentified crustacean observed. [cancer present]
CFX Cable	6/18/2008	NEREUS				383	20:30:00	S	S			0		0	0				100% flat soft bottom with moderate bioturbation. Unidentified fish and some kind of crustacean observed. End of Disc 19.
CFX Cable	6/18/2008	NEREUS				382	20:35:00	S	S			1		0	0				Start of Disc 20. 100% flat soft bottom with moderate bioturbation. Several fish observed but difficult to identify because the ROV is too high off the bottom. Golden crabs (<i>Chaceon fenneri</i>) [@ 20:36:39], seagrass detritus, unidentified crab (spider c
CFX Cable	6/18/2008	NEREUS				381	20:40:00	S	S			2		0	0				100% flat soft bottom with moderate bioturbation. Golden crabs (<i>Chaceon fenneri</i>) [@ 20:40:02 & 20:43:47], unidentified fishes, seagrass detritus, and some kind of crustacean observed. [cancer present]
CFX Cable	6/18/2008	NEREUS				381	20:45:00	S	S			1		0	0				100% flat soft bottom with moderate bioturbation. Observed golden crabs (<i>Chaceon fenneri</i>) @ 20:48:30 shortnose greeneyes (<i>Chlorophthalmus agassizi</i>), several galatheids, and small unidentified crab.
CFX Cable	6/18/2008	NEREUS				385	20:50:00	S	S			2		0	0				100% flat soft bottom with moderate bioturbation. Many galatheids, unidentified fishes, golden crabs (<i>Chaceon fenneri</i>) [@ 20:50:56 & 20:52:54], galatheid carcass, seagrass detritus, codling? (<i>Laemonema melanurum</i>) swimming in depression underneath cable.
CFX Cable	6/18/2008	NEREUS				385	20:55:00	S	S			1	75	0	0				100% flat soft bottom with moderate bioturbation. Observed some kind of crustacean, several unidentified fishes, golden crab (<i>Chaceon fenneri</i>) @ 20:55:59 in depression underneath cable, eel-like fish (~ 10 cm long, black spots along the sides and caudal
CFX Cable	6/18/2008	NEREUS				386	20:57:38	S	S			1		0	0				Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				385	20:59:16	S	S			1		0	0				Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				386	21:00:00	S	S			3		0	0				100% flat soft bottom with moderate bioturbation. Unidentified crab, codling? (<i>Laemonema melanurum</i>) in depression underneath cable, crab (spider crab? - <i>Rochinia</i> sp.), golden crabs (<i>Chaceon fenneri</i>) [2 @ 21:00:58, & 1 @ 21:04:00], <i>Araeosoma</i> sp., codling
CFX Cable	6/18/2008	NEREUS				388	21:05:00	S	S			0		0	0				100% flat soft bottom with moderate bioturbation. Observed fish in depression underneath cable, hermit crab, seagrass detritus, shortnose greeneyes (<i>Chlorophthalmus agassizi</i>), unidentified crab (spider crab?), fish in depression underneath cable, crab
CFX Cable	6/18/2008	NEREUS				387	21:08:58	S	S			1		0	0				Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				388	21:10:00	S	S			1		0	0				Observed crab (spider crab? - <i>Rochinia</i> sp.), shortnose greeneye (<i>Chlorophthalmus agassizi</i>), unidentified crab (moving too quickly), blackbelly rosefish? (<i>Helicolenus dactylopterus</i>), blind torpedo (<i>Benthobatis marcidia</i>), 2 crustaceans (possibly a hermit c
CFX Cable	6/18/2008	NEREUS				387	21:15:00	S	S			2		0	0				100% flat soft bottom with moderate bioturbation. Golden crabs (<i>Chaceon fenneri</i>) [@ 21:15:16 & 21:19:39], galatheids, seagrass detritus, small crabs, and shortnose greeneye (<i>Chlorophthalmus agassizi</i>) observed.
CFX Cable	6/18/2008	NEREUS				387	21:20:00	S	S			1		0	0				100% flat soft bottom with moderate bioturbation. Observed shortnose greeneye (<i>Chlorophthalmus agassizi</i>), blind torpedoes (<i>Benthobatis marcidia</i>), eel-like fish (~ 10 cm long, black spots along the sides and caudal fin), small fish swimming along cable. a
CFX Cable	6/18/2008	NEREUS				388	21:25:00	S	S			1		0	0				100% flat soft bottom with moderate bioturbation. Codling? (<i>Laemonema melanurum</i>), crab (spider crab? - <i>Rochinia</i> sp.), unidentified fishes (large and small), golden crab (<i>Chaceon fenneri</i>) [@ 21:25:56], seagrass detritus, unidentified crab, and some kind o
CFX Cable	6/18/2008	NEREUS				388	21:30:00	S	S			1		0	0				Eel-like fish (~ 10 cm long, black spots along the sides and caudal fin) and golden crab (<i>Chaceon fenneri</i>) [@ 21:31:51] observed. End of Disc 20. Start of Disc 21.
CFX Cable	6/18/2008	NEREUS					21:32:00	S	S			0		0	0				Same fishing line observed at 21:25 is now running alongside the cable. Also observed blackbelly rosefish? (<i>Helicolenus dactylopterus</i>) and rapid (possibly <i>Brevitars</i> sp.).
CFX Cable	6/18/2008	NEREUS				389	21:34:00	S	S			6		0	0				100% flat soft bottom with moderate bioturbation. Observed golden crabs (<i>Chaceon fenneri</i>) [2 @ 21:34:16, 1 @ 21:35:41, 21:36:03, 21:36:24, 21:39:40], codling (<i>Laemonema melanurum</i>), crab (possibly <i>Chaceon fenneri</i>), unidentified fishes, and some crustacea
CFX Cable	6/18/2008	NEREUS				391	21:40:12	S	S			1	136	0	0				100% flat soft bottom with sparse bioturbation. Golden crabs (<i>Chaceon fenneri</i>) [21:40:12], several codling (<i>Laemonema melanurum</i>), galatheids, seagrass detritus, small fish, codling (<i>Laemonema melanurum</i>) in depression beneath cable, spider crabs? (<i>Rochin</i>
CFX Cable	6/18/2008	NEREUS				391	21:40:40	S	S			2		0	0				Added By SFR Chaceon. 2nd one at 21:40:57
CFX Cable	6/18/2008	NEREUS				391	21:45:00	S	S			2		0	0				Spider crab? (<i>Rochinia</i> sp.), several codling (<i>Laemonema melanurum</i>), golden crab (<i>Chaceon fenneri</i>), seagrass detritus, galatheid, eel-like fish (~ 10 cm long, black spots along the sides and caudal fin), golden crab (<i>Chaceon fenneri</i>) [@ 21:45:48 & 21:47:2
CFX Cable	6/18/2008	NEREUS				391	21:50:00	S	S			4		0	0				100% flat soft bottom with sparse bioturbation. Observed golden crabs (<i>Chaceon fenneri</i>) [@ 21:50:31 & 21:50:50 & 21:52:21 & 21:53:29], squid?, several codling (<i>Laemonema melanurum</i>), galatheids, seagrass detritus, and several small fish (unidentifiable).
CFX Cable	6/18/2008	NEREUS				391	21:55:00	S	S			2		0	0				Galatheid, golden crabs (<i>Chaceon fenneri</i>) [21:55:24 & 21:57:19], spider crab? (<i>Rochinia</i> sp.), small fishes, shortnose greeneye (<i>Chlorophthalmus agassizi</i>), and small unidentifiable crab observed.
CFX Cable	6/18/2008	NEREUS				392	22:00:00	S	S			1		0	0				First appearance of sand waves, orientation is northeast/southwest. 100% soft bottom. Golden crabs (<i>Chaceon fenneri</i>) [@ 22:00:36], codling (<i>Laemonema melanurum</i>), galatheid, squat lobster? (<i>Chirostylidae</i>), rattail? (<i>Nezumia</i> sp.), seagrass detritus, and d
CFX Cable	6/18/2008	NEREUS				393	22:04:50	S	S			1	79	0	0				Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				392	22:05:00	S	S			2		0	0				Intermittent sand waves oriented northwest to southeast. Observed cephalopod? (settled on bottom) and golden crabs (<i>Chaceon fenneri</i>) [2 @ 22:06:14]. Cable is occasionally buried. Another cephalopod? (uses propulsion to move and then settles on seafloor
CFX Cable	6/18/2008	NEREUS				392	22:06:00	S	S			1		0	0				Sand waves disappear. Return to flat sand with virtually no bioturbation. Seagrass detritus, codling (<i>Laemonema melanurum</i>), golden crabs (<i>Chaceon fenneri</i>) [@ 22:07:28], sea toad (<i>Chaunax</i> sp.), and shortnose greeneye (<i>Chlorophthalmus agassizi</i>) observed.
CFX Cable	6/18/2008	NEREUS				393	22:08:28	S	S			1	77	0	0				Added By SFR Chaceon
CFX Cable	6/18/2008	NEREUS				392	22:10:00	S	S			1		0	0				Sand waves reappear, same orientation. <i>Araeosoma</i> sp., squat lobster? (<i>Chirostylidae</i>), spider crab? (<i>Rochinia</i> sp.), golden crab (<i>Chaceon fenneri</i>) [22:11:38], starfish (possibly <i>Tosia</i> sp.), several shortnose greeneyes (<i>Chlorophthalmus agassizi</i>), galatheid
CFX Cable	6/18/2008	NEREUS				395	22:15:00	S	S			0		0	0				100% soft bottom. Possible cable crossing. Shortnose greeneye (<i>Chlorophthalmus agassizi</i>) observed. Sand waves are intermittent. Observed blind torpedo (<i>Benthobatis marcidia</i>), several shortnose greeneyes (<i>Chlorophthalmus agassizi</i>), spotted rajid, invertebrate tracks, golden crab (<i>Chaceon fenneri</i>) [@ 22:18:38], lobster? (possibly squat lobster or white l
CFX Cable	6/18/2008	NEREUS				393	22:16:00	S	S			1		0	0				

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/18/2008	NEREUS				394	22:20:00	S	S			0		0	0					Intermittent sand waves (same orientation). Shortnose greeneyes (Chlorophthalmus agassizi), sea toad (Chaunax sp.) hiding underneath cable, another sea toad? (Chaunax sp.), and small fish observed.
CFX Cable	6/18/2008	NEREUS				394	22:25:00	S	S			1	90	0	0					Intermittent sand waves (same orientation). Observed golden crab (Chaceon fenneri) @ 22:26:44. Araeosoma sp., unidentified crab, and shortnose greeneye (Chlorophthalmus agassizi).
CFX Cable	6/18/2008	NEREUS				393	22:30:00	S	S			0		0	0					Observed intermittent sand waves (same orientation). Kaitati? (Muzumia sp.), Araeosoma sp., shortnose greeneye (Chlorophthalmus agassizi), several crabs (spider crabs? - Rochinia sp.) clinging to cable, large fish on left side of cable, seagrass detritus.
CFX Cable	6/18/2008	NEREUS				394	22:34:00	S	S			0		0	0					Intermittent sand waves (same orientation). Araeosoma sp. observed.
CFX Cable	6/18/2008	NEREUS				394	22:35:00	S	S			1		0	0					Sand waves in same orientation. Observed shortnose greeneye (Chlorophthalmus agassizi), crab (spider crab? - Rochinia sp.), codling (Laemonema melanurum), Araeosoma sp., several crabs (spider crabs? - Rochinia sp.), codling (Laemonema melanurum), and g
CFX Cable	6/18/2008	NEREUS				397	22:38:00	S	S			0		0	0					Large depressions/pits observed on right side of cable (possibly created by tilefish) [22:38:16]. These depressions are located in an area where the cable is suspended off of the sediment (possible trench?). Several fish observed but difficult to dist
CFX Cable	6/18/2008	NEREUS				395	22:40:00	S	S			0		0	0					Sand waves (same orientation) with virtually no bioturbation. Cable no longer suspended and lying on sediment at 22:39. Observed codling (Laemonema melanurum) swimming alongside the cable. At 22:40, the cable is completely buried and reappears at 22:
CFX Cable	6/18/2008	NEREUS				395	22:45:00	S	S			1		0	0					Sand waves briefly disappear. Minimal bioturbation. Cable touches back down at 22:45 and becomes partially buried. Observed golden crab (Chaceon fenneri) @ 22:45:55 and small fish measuring ~10 cm in length. Cable occasionally becomes re-suspended.
CFX Cable	6/18/2008	NEREUS				396	22:50:00	S	S			0		0	0					Intermittent sand waves with sparse bioturbation. Observed some small fishes (<10 cm) possibly shortnose greeneye (Chlorophthalmus agassizi), seagrass detritus, and codling (Laemonema melanurum). The current is pushing ROV off of the bottom for brief p
CFX Cable	6/18/2008	NEREUS				400	22:55:00	S	S			0		0	0					Intermittent sand waves (same orientation) with sparse bioturbation. Observed a couple Araeosoma sp. and several small crabs on the cable. Cable occasionally suspended and then partially buried. Several small fish (possibly shortnose greeneye - Chloro
CFX Cable	6/18/2008	NEREUS				401	23:00:00	S	S			0		0	0					Intermittent sand waves with sparse bioturbation. Several small fishes (including Laemonema melanurum), seagrass detritus, blind torpedo (Benthobatis marcida), [NO] golden crab (Chaceon fenneri) [23:02:32], codling (Laemonema melanurum), unidentified ra
CFX Cable	6/18/2008	NEREUS				401	23:05:00	S	S			0		0	0					Observed shortnose greeneye (Chlorophthalmus agassizi), invertebrate tracks, and spider crab? (Rochinia sp.) on the cable.
CFX Cable	6/18/2008	NEREUS				398	23:07:07	S	S			1		0	0					added by SFR Chaceon
CFX Cable	6/18/2008	NEREUS				402	23:10:00	S	S			1		0	0					Intermittent sand ripple zones with low to no bioturbation. Some small fishes, codling (Laemonema melanurum), golden crab (Chaceon fenneri) [23:10:14], shortnose greeneye (Chlorophthalmus agassizi), and blind torpedo (Benthobatis marcida) were observed.
CFX Cable	6/18/2008	NEREUS				402	23:11:00	S	S			0		0	0					Araeosoma sp. (pancake urchin) observed.
CFX Cable	6/18/2008	NEREUS				398	23:12:00	S	S			0		0	0					Cable partially buried.
CFX Cable	6/18/2008	NEREUS				403	23:19:00	S	S			0		0	0					Cable suspended ~0.25 to 1 m off of the bottom.
CFX Cable	6/18/2008	NEREUS				405	23:20:00	S	S			0		0	0					Sand ripple zones with sparse bioturbation. Cable suspended off bottom at 23:13 and 23:18. Observed shortnose greeneyes (Chlorophthalmus agassizi), codlings (Laemonema melanurum), spider crabs? (Rochinia sp.), multiple Araeosoma sp., and blind torpedo
CFX Cable	6/18/2008	NEREUS				405	23:25:00	S	S			0		0	0					End of Disc 22. Start of Disc 23.
CFX Cable	6/18/2008	NEREUS				403	23:27:00	S	S			0		0	0					Sand ripple zones with sparse bioturbation. Spider crabs? (Rochinia sp.), small unidentified fish, several codling (Laemonema melanurum), galatheid?, and crustacean (possibly Eumunida picta).
CFX Cable	6/18/2008	NEREUS				403	23:30:00	S	S			1	90	0	0					Intermittent sand ripple zones continue with low to sparse bioturbation. Observed golden crabs (Chaceon fenneri) @ 23:30:16, several codlings (Laemonema melanurum), shortnose greeneyes (Chlorophthalmus agassizi - very common), sea toads (Chaunax sp.),
CFX Cable	6/18/2008	NEREUS				402	23:31:05	S	S			1	77	0	0					added by SFR
CFX Cable	6/18/2008	NEREUS				405	23:37:58	S	S			3		0	0					added by SFR and 2nd one at 23:38:37, 23:39:10
CFX Cable	6/18/2008	NEREUS				405	23:40:00	S	S			2		0	0					Spider crabs? (Rochinia sp.), codling (Laemonema melanurum - frequent, all less than 10 cm), golden crab (Chaceon fenneri) @ 23:40:34, 23:42:10, and shortnose greeneyes (Chlorophthalmus agassizi - 5+ all less than 10 cm) observed. Sand ripples continue
CFX Cable	6/18/2008	NEREUS				403	23:43:00	S	S			1		0	0					Fix taken. Shortnose greeneyes (Chlorophthalmus agassizi) observed. [added Chaceon at 23:43:58
CFX Cable	6/18/2008	NEREUS				408	23:47:00	S	S			1		0	0					New topography observed, possibly epifaunal/infaunal pits/depressions (ends at 23:48). Codling (Laemonema melanurum), Araeosoma sp., and shortnose greeneyes (Chlorophthalmus agassizi) observed. [Chaceon 23:49:08]
CFX Cable	6/18/2008	NEREUS				406	23:50:00	S	S			0		0	0					Cable suspended. Observed codling (Laemonema melanurum) and golden crab (Chaceon fenneri). Sand ripples continue.
CFX Cable	6/18/2008	NEREUS				407	23:51:00	S	S			0		0	0					Encountered odd topography again (many depressions/pits). Ends less than a minute later. Spider crabs? (Rochinia sp.), [no] golden crab (Chaceon fenneri), several codlings (Laemonema melanurum), blackbelly rosefish? (Helicolenus dactylopterus), numerou
CFX Cable	6/18/2008	NEREUS				405	23:57:00	S	S			1	120	0	0					Squid, golden crabs (Chaceon fenneri) @ 23:57:18, seagrass detritus, and several shortnose greeneyes (Chlorophthalmus agassizi) observed.
CFX Cable	6/18/2008	NEREUS				408	23:57:22	S	S			2		0	0					Added by SFR chaceon, second at 23:58:28
CFX Cable	6/18/2008	NEREUS				406	00:00:00	S	S			1		0	0					Intermittent sand waves. Observed golden crab (Chaceon fenneri) @ 00:00:00, codling (Laemonema melanurum), shortnose greeneye (Chlorophthalmus agassizi), and starfish (possibly Tosia sp.)
CFX Cable	6/18/2008	NEREUS				411	00:02:00	S	S			0		0	0					Encountered odd topography again (many depressions/pits). [there are small 'ghost shrimp' looking animals around the pits 03:00:00
CFX Cable	6/19/2008	NEREUS				412	00:03:00	S	S			3		0	0					'Single rock?' in area of depressions/pits previously described as odd topography. ~1-1.5 m in length and less than 1 m width. "Odd topography" ends at 0:05. Intermittent sand waves. Observed numerous shortnose greeneyes (Chlorophthalmus agassizi), ad
CFX Cable	6/19/2008	NEREUS				406	00:11:00	S	S			1		0	0					Codling (Laemonema melanurum) and shortnose greeneye (Chlorophthalmus agassizi) remain the most common fishes. Golden crab (Chaceon fenneri) @ 00:11:20, Araeosoma sp., and spider crabs? (Rochinia sp.) were observed. Zones of sand ripples followed by
CFX Cable	6/19/2008	NEREUS				409	00:13:00	S	S			0		0	0					Many spider crabs? (Rochinia sp.) clinging to suspended cable. Shortnose greeneyes (Chlorophthalmus agassizi), codling (Laemonema melanurum), and squat lobster also observed. Sand ripple zones (same orientation as previously noted) continue to alternat
CFX Cable	6/19/2008	NEREUS				408	00:21:00	S	S			0		0	0					End of Disc 23. Start of Disc 24.
CFX Cable	6/19/2008	NEREUS				411	00:23:00	S	S			0		0	0					Intermittent sand ripples (same orientation). Observed crabs, codling (Laemonema melanurum) and Araeosoma sp. observed. ROV lifted off bottom.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu? = possible burrow)	Notes-habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				414	00:25:00	S	S			0		0	0					Encountered odd topography/depressions/spits. Potential hard bottom, brief outcropping (1 x 1 m). Appears to be a sudden decrease in elevation. No fix taken. Return to previous depth (414) with intermittent sand ripples. Shortnose greeneyes (Chloroph)
CFX Cable	6/19/2008	NEREUS				414	00:31:00	S	S			0		0	0					Cable suspended < 1m in places, usually between sand ripple zones. Shortnose greeneye (Chlorophthalmus agassizi) and codling (Laemonema melanurum) remain occasional to common. Spider crabs (Rochinia sp.?) often on the cable.
CFX Cable	6/19/2008	NEREUS				413	00:33:00	S	S			0		0	0					~ 2 m suspension over flat, sparsely bioturbated soft bottom
CFX Cable	6/19/2008	NEREUS				411	00:34:00	S	S			0		0	0					Cable touchdown and burial into sand ripple zone
CFX Cable	6/19/2008	NEREUS				413	00:35:00	S	S			0		0	0					Cable emerges from sediment. Pattern consists of troughs (without ripples) and peaks (with continuous sand ripples). Cable is suspended over troughs and briefly buried when it reaches the peak.
CFX Cable	6/19/2008	NEREUS				414	00:38:00	S	S			0		0	0					Cable travels along a trough to the left and ripples to the right. Codling (Laemonema melanurum) observed.
CFX Cable	6/19/2008	NEREUS				413	00:39:00	S	S			1		0	0					Sand ripples with virtually no bioturbation. Observed golden crab (Chaceon fennen) [00:49:00], spider crabs (Rochinia sp.?), codling (Laemonema melanurum), and shortnose greeneye (Chlorophthalmus agassizi). Very low bioturbation in troughs between s
CFX Cable	6/19/2008	NEREUS				415	00:50:00	S	S			0		0	0					Sand ripples with virtually no bioturbation. Observed blind torpedo (Benthobatis marcida), codling (Laemonema melanurum), and shortnose greeneye (Chlorophthalmus agassizi). Troughs between sand ripple zones are less bioturbated than last ten minute str
CFX Cable	6/19/2008	NEREUS				416	00:52:00	S	S			1		0	0					Sand ripple peaks continue to alternate with sparsely bioturbated soft bottom troughs. Observed starfish (Tosia sp.?), scorpionfish?, multiple Araeosoma sp., codling (Laemonema melanurum), blind torpedo (Benthobatis marcida), and golden crab (Chaceon f
CFX Cable	6/19/2008	NEREUS				418	01:00:00	S	S			0		0	0					Codling (Laemonema melanurum), Araeosoma sp., small dark bodied fish, were observed. Flat soft bottom (troughs) between sand ripple zones (peaks) appeared to have virtually no bioturbation. Codling (Laemonema melanurum) and shortnose greeneye (Chloroph
CFX Cable	6/19/2008	NEREUS				421	01:08:00	S	S			0		0	0					Ink in the water?
CFX Cable	6/19/2008	NEREUS				422	01:10:00	S	S			0		0	0					Sand ripples, when present, remain in the same orientation relative to the cable. Organisms are less abundant (fewer fishes and crabs when compared to last 10 minute section).
CFX Cable	6/19/2008	NEREUS				424	01:12:00	S	S			0		0	0					Several turns in the cable. Cable travels down edge of trough. Large, heavy bodied fish (dark in color) observed.
CFX Cable	6/19/2008	NEREUS				419	01:16:00	S	S			0		0	0					End of Disc 24. Start of Disc 25.
CFX Cable	6/19/2008	NEREUS				422	01:19:00	S	S			0		0	0					Sand ripples. Observed blind torpedo (Benthobatis marcida).
CFX Cable	6/19/2008	NEREUS				422	01:20:00	S	S			0		0	0					Pattern of peaks (rippled sand) and troughs (flat bottom, sparse bioturbation) still evident. Codling (Laemonema melanurum), Araeosoma sp., shortnose greeneye (Chlorophthalmus agassizi), and maybe one scorpionfish? observed. Low invertebrate abundance.
CFX Cable	6/19/2008	NEREUS				422	01:25:00	S	S			0		0	0					Something in depression off to the left of cable. Few to no biota observed
CFX Cable	6/19/2008	NEREUS				426	01:28:00	S	S			0		0	0					Observed blind torpedo (Benthobatis marcida) and sand ridge.
CFX Cable	6/19/2008	NEREUS				428	01:30:00	S	S			0		0	0					Steady sand ripples. Sand ripples are more perpendicular to the cable. Observed blind torpedo (Benthobatis marcida). Not seeing as many fish or invertebrates.
CFX Cable	6/19/2008	NEREUS				433	01:32:00	S	S			0		0	0					100% soft bottom. Observed multiple squid. Sand ripples are less pronounced and are smoothing out (must be in a trough). Encountered a sand ridge and ripples return. Cable has not been suspended in a while. Observed a shortnose greeneye (Chlorophthalmus agassizi).
CFX Cable	6/19/2008	NEREUS				428	01:35:00	S	S			1		0	0					Observed several squid, two blind torpedoes (Benthobatis marcida), and golden crab (Chaceon fennen) [01:36:31]. Sand ripples are no longer oriented perpendicular to the cable. Return to asymmetrical ripples. Ripples are becoming less pronounced and g
CFX Cable	6/19/2008	NEREUS				434	01:40:00	S	S			0		0	0					Cable meandering between peaks (with sand ripples) and troughs (flat sediment with sparse bioturbation) observed codling (Laemonema melanurum), urchin?, and two small crustaceans. Cable becomes briefly suspended over sand ripples. Observed squat lob
CFX Cable	6/19/2008	NEREUS				435	01:47:00	S	S			1		0	0					Cable meandering between peaks (with sand ripples) and troughs (flat sediment with sparse bioturbation) Shortnose greeneye (Chlorophthalmus agassizi), golden crab (Chaceon fennen) [01:47:12], several small unidentified fish, and jellyfish? observed.
CFX Cable	6/19/2008	NEREUS				438	01:50:00	S, Ru	H			1		0	0					Hardbottom consisting of low relief cobbles and stones (no attached epifauna). Observed several blackbelly rosefish? (Helicolenus dactylopterus), golden crab (Chaceon fennen) [01:50:12], and codling (Laemonema melanurum) under cable. Rocks a little bi
CFX Cable	6/19/2008	NEREUS				438	01:52:00	S	S			0		0	0					Hardbottom cobble on left side of cable and sand on right. At 1:52:13, all sand in field of view. Multiple codling (Laemonema melanurum) observed.
CFX Cable	6/19/2008	NEREUS				440	01:57:00	S	S			0		0	0					Debris, shortnose greeneye (Chlorophthalmus agassizi), and codling (Laemonema melanurum) observed Still traveling between rippled peaks and flat, soft bottom troughs.
CFX Cable	6/19/2008	NEREUS				441	01:58:00	S, Ru	H			0		0	0					Hardbottom consisting of low relief cobble with no attached epifauna. Observed codling (Laemonema melanurum). Cable suspended over hardbottom. Seems that hardbottom cobble/rubble are within depressions/troughs.
CFX Cable	6/19/2008	NEREUS				443	02:00:00	S	S			0		0	0					Out of hardbottom and back in rippled sand. Multiple codling (Laemonema melanurum), small dark bodied fish, sea toad or gaper (Chaunax sp.), and invertebrate tracks observed.
CFX Cable	6/19/2008	NEREUS				444	02:05:00	S	S			0		0	0					Cable fluctuates between being suspended or buried. Sand ripples separated by flat, sparsely bioturbated soft bottom. Araeosoma sp. and unidentified fishes observed.
CFX Cable	6/19/2008	NEREUS				447	02:10:00	S	S			1		0	0					Unidentifiable crab on the cable, codling (Laemonema melanurum), sea toad or gaper (Chaunax sp.), blackbelly rosefish? (Helicolenus dactylopterus), starfish (Tosia or Pteraster sp.), two Araeosoma sp. in close proximity to one another, and golden crab (C
CFX Cable	6/19/2008	NEREUS				448	02:15:00	S	S			1		0	0					Observed squid and [chaceon @ 02:15:00]. End of Disc 25 and Start of Disc 26.
CFX Cable	6/19/2008	NEREUS				452	02:18:00	S	S			1		0	0					Small fish and golden crab (Chaceon fennen) [02:18:49] observed. Cable traveling between rippled peaks and flat, sparsely bioturbated troughs. Also observed couple of codling (Laemonema melanurum) and squid.
CFX Cable	6/19/2008	NEREUS				451	02:19:00	S	S			0		0	0					10 minute picture taken.
CFX Cable	6/19/2008	NEREUS				451	02:19:49	S, Ru	H			0		0	0					Hardbottom consisting of low relief, eroded cobble (~10 cm diameter) with no attached epifauna. Very small patch of hardbottom.
CFX Cable	6/19/2008	NEREUS				453	02:20:17	S	S			0		0	0					Observed spider crab (Rochinia sp.?) on the cable. Encountered splice box (ship took a fix) and several codling (Laemonema melanurum).
CFX Cable	6/19/2008	NEREUS				456	02:23:00	S	S			0		0	0					Spider crabs on the cable (Rochinia sp.?), blind torpedo (Benthobatis marcida), squid, and small fish observed.
CFX Cable	6/19/2008	NEREUS				456	02:25:00	S	S			0		0	0					Ink in the water? Seagrass detritus, multiple squid, orange starfish (Tosia sp.?), shrimp?, codling (Laemonema melanurum), invertebrate tracks, spider crab? on the cable, two blind torpedoes (Benthobatis marcida), debris (cans), another shrimp?, and Ara

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				460	02:30:00	S	S			1		0	0					Cable traveling between sand ripples and flat, sparsely botubated soft bottom. Observed reddish colored shrimps, unidentified orange fish, large dark-bodied fish resting on the bottom, golden crab (Chaceon fenneri) [02:31:08], sea load? (Chaunax sp.)
CFX Cable	6/19/2008	NEREUS				462	02:33:00	S, Ru	H			0		0	0					Cable crossing and codling (Laemonema melanurum). Hardbottom with small rock pebbles
CFX Cable	6/19/2008	NEREUS				463	02:35:00	S, Ru	H			0		0	0					Hardbottom (< 5% cover) consisting of scattered, small pebbles (~2 cm in diameter). No attached epifauna. Some rocks are within the 4-5 cm range. Hardbottom overlaid with thin veneer of sediment. Codling (Laemonema melanurum), scorpionfish, urchin?
CFX Cable	6/19/2008	NEREUS				462	02:38:00	S, Ru	H			0		0	0					Seem to be heading out of hardbottom, but occasional gravel in sand. Low relief hardbottom consisting of gravel covered by soft sediment. Observed multiple (>5) blind torpedoes (Benthobatis marcida).
CFX Cable	6/19/2008	NEREUS				461	02:40:00	S, Ru	H			1		0	0					Minimum hardbottom (< 5% cover) consisting of rock pebbles/cobble sticking out of sand. Golden crab (Chaceon fenneri) [02:40:52], shrimp (Glyphocrangon sp.), squid, and spotted rajid observed. Encountered a larger rock (~10 cm), coffee mug, and Cuban
CFX Cable	6/19/2008	NEREUS				460	02:45:00	S, Ru	H			0		0	0					Continuing over scattered hardbottom with less than 5% cover. Codling (Laemonema melanurum) and two blind torpedoes? (Benthobatis marcida) observed.
CFX Cable	6/19/2008	NEREUS				461	02:46:00	S, Ru	H			0		0	0					Squid observed.
CFX Cable	6/19/2008	NEREUS				460	02:47:00	S, Ru	H			0		0	0					Low relief, eroded rock outcroppings (phosphonic limestone?) with small cobble size stones. Hardbottom is < 25% cover.
CFX Cable	6/19/2008	NEREUS				459	02:48:00	S, Ru	H			0		0	0					Small cobble size stones (~10 cm). Back to small pebbles. Observed unidentified rajid, two Araeosoma sp., and small rocks along cable (no attached epifauna).
CFX Cable	6/19/2008	NEREUS				459	02:49:00	S, Ru	H			0		0	0					Hardbottom (10-20% cover) consisting of low relief rocks (~10 to 15 cm in diameter). Back into mostly sand with small pebbles. ROV encountered low relief rocks again (10-20% cover).
CFX Cable	6/19/2008	NEREUS				458	02:50:00	S, Ru	H			0		0	0					Hardbottom consisting of low relief cobble (~10-20% cover) with epifauna (Ceramiantha or Actinaria? and numerous white sponges (Phakellia sp.)). Also observed codling (Laemonema melanurum). Cobble measures ~10-15 cm in diameter.
CFX Cable	6/19/2008	NEREUS				458	02:51:00	S, Ru	H			0		0	0					White finger shaped sponge attached to rock. Scorpionfish? and codling (Laemonema melanurum) observed. Hardbottom consisting of rocks/cobble with 15% cover.
CFX Cable	6/19/2008	NEREUS				457	02:52:00	S, Ru	H			0		0	0					Attached epifauna is ~ 5 cm in height and difficult to determine (white branching sponges?). Still low relief rock/cobble (15% cover).
CFX Cable	6/19/2008	NEREUS				458	02:53:00	S, Ru	H			0		0	0					Observed codling (Laemonema melanurum). No longer seeing larger, darker rocks. Now only pebbles with less than 10% cover. Thin veneer of sediment covering the rock pebbles.
CFX Cable	6/19/2008	NEREUS				459	02:54:00	S, Ru	H			0		0	0					Rajid observed.
CFX Cable	6/19/2008	NEREUS				456	02:55:00	S, Ru	H			1		0	0					Hardbottom pebbles (~2 cm diameter) with ~5% cover and covered by thin veneer of sand. Golden crab (Chaceon fenneri) [05:55:12], unidentified fish, and rajid? observed.
CFX Cable	6/19/2008	NEREUS				458	02:56:00	S, Ru	H			0		0	0					Codling (Laemonema melanurum) observed. Still rock cobble (2-3 cm in diameter, < 5% cover) with thin veneer of sediment. Have not seen any attached epifauna since 2:52. Scorpionfish?
CFX Cable	6/19/2008	NEREUS				456	02:58:00	S, Ru	H			0		0	0					Still low relief, rock cobble (< 5% cover). Intermittent small patches (maybe a meter long) with larger rock/cobble.
CFX Cable	6/19/2008	NEREUS				456	02:59:00	S, Ru	H			0		0	0					Mostly seeing rock cobble around the cable. The cable seems to remove sand and expose rock
CFX Cable	6/19/2008	NEREUS				457	03:00:00	S, Ru	H			0		0	0					ROV crew shift change. Low relief, phosphonic, slightly exposed pebbles and rocks. Rocks along cable are more exposed.
CFX Cable	6/19/2008	NEREUS				456	03:02:00	S, Ru	H			0		0	0					Possible blackbelly rosefish (Helicolenus dactylopterus) observed. Between areas of slightly exposed pebbles and rocks, there are stretches of a meter or two with larger rocks. Also observed two rajids. Another blackbelly rosefish? (Helicolenus dactyl)
CFX Cable	6/19/2008	NEREUS				457	03:03:00	S, Ru	H			0		0	0					Blind torpedo (Benthobatis marcida), two squid, and invertebrate tracks observed. No epifauna attached to the exposed pebbles and rocks.
CFX Cable	6/19/2008	NEREUS				455	03:05:00	S, Ru	H			0		0	0					Continue to see small, exposed rocks (< 5 cm in diameter) and codling (Laemonema melanurum)
CFX Cable	6/19/2008	NEREUS				456	03:06:00	S, Ru	H			0		0	0					Codling (Laemonema melanurum) sea load? (Chaunax sp.) and squid observed
CFX Cable	6/19/2008	NEREUS				454	03:07:00	S, Ru, Ro	H			0		0	0					Rocks getting larger. Substrate looks more like outcroppings than loose rocks/pebbles
CFX Cable	6/19/2008	NEREUS				455	03:08:00	S, Ru, Ro	H			0		0	0					100% hardbottom (~2 meters in length) consisting of rock pavement and a single tall rock boulder measuring > 20 cm in height. Also observed blackbelly rosefish (Helicolenus dactylopterus). 100% hardbottom leads into area of rock cobble/pebbles with ~25
CFX Cable	6/19/2008	NEREUS				456	03:09:00	S, Ru	H			0		0	0					Hardbottom percent cover increasing. Rock are larger (~20 cm in diameter). Also observed debris along side of cable and codling (Laemonema melanurum).
CFX Cable	6/19/2008	NEREUS				455	03:11:00	S, Ru, Ro	H			0		0	0					Multiple rock slabs located for ~1 m along the cable. Rock slabs lead to rock cobble (~10 cm diameter). Observed rough, rock pavement with low relief (~100% cover) and covered by fine sand. Also observed a rock ledge/slabs. Sponge observed (possibly Phakellia sp. or Raspallidae). Few white finger sponges attached to rock pavement. Codling (Laemonema m
CFX Cable	6/19/2008	NEREUS				454	03:12:00	S, Ru, Ro	H			0		0	0					Several white sponges attached to rock pavement. Low relief rock slabs and pavement. Rubble adjacent to rock slabs/pavement. Small crab observed crawling on slab. Codling (Laemonema melanurum) and debris observed.
CFX Cable	6/19/2008	NEREUS				454	03:13:00	S, Ru, Ro	H			0		0	0					End of Disc 26
CFX Cable	6/19/2008	NEREUS				453	03:14:00					0		0	0					
CFX Cable	6/19/2008	NEREUS				454	03:16:00	S, Ru, Ro	H			0		0	0					Start of Disc 27. Observed rock pavement, slabs, rock cobble, bamboo coral (Family Isididae), and scorpionfish?. Small white sponges attached to rock pavement (difficult to characterize or identify).
CFX Cable	6/19/2008	NEREUS				453	03:17:00	S, Ru, Ro	H			0		0	0					Observed rock pavement and rock slabs (low relief). Scorpionfish? Rubble fields continue. Stones with sand patches in between. Rough pavement covered with fine layer of sand.
CFX Cable	6/19/2008	NEREUS				453	03:18:00	S, Ru, Ro	H			0		0	0					Rough rock pavement covered with layer of sand and field of rubble. Habitat type 2 according to description.
CFX Cable	6/19/2008	NEREUS				453	03:19:00	S, Ru, Ro	H			0		0	0					Overall low cover hardbottom (however there are some high cover pavement areas). Also clusters of cobble/rubble (~10 cm) and small rocks, with occasional rock slabs. Small fish, crabs clinging to
CFX Cable	6/19/2008	NEREUS				451	03:20:00	S, Ru, Ro	H			0		0	0					suspended cable, anemone?, and Phakellia sp. also observed
CFX Cable	6/19/2008	NEREUS				452	03:21:00	S, Ru, Ro	H			0		0	0					Low relief rock pavement/cobble with ~40% cover. Some boulders measure one meter in diameter
CFX Cable	6/19/2008	NEREUS				452	03:21:00	S, Ru, Ro	H			0		0	0					Rough rock pavement covered by sand in places. Scorpionfish?, small white sponges attached to rock pavement, Phakellia sp., and debris observed.
CFX Cable	6/19/2008	NEREUS				453	03:22:00	S, Ru, Ro	H			0		0	0					Rough rock pavement covered with fine layer of sand. Also observed small crab (spider crab?) clinging to the cable.
CFX Cable	6/19/2008	NEREUS				452	03:23:00	S, Ru, Ro	H			0		0	0					A couple of white sessile invertebrates. Rough rock pavement, rock cobble, and rock slab observed
CFX Cable	6/19/2008	NEREUS				453	03:24:00	S, Ru, Ro	H			0		0	0					Flat, low relief hardbottom. Observed a large rock (~30 x 15 cm with no attached epifauna). Observed codling (Laemonema melanurum) and Phakellia sp.
CFX Cable	6/19/2008	NEREUS				453	03:25:00	S, Ru, Ro	H			0		0	0					Rough rock pavement with small attached organisms (possibly white sponges)

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Ro= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				453	03:26:00	S, Ru, Ro	H			0		0	0					Fish (~10 cm in length, spotted) observed. Substrate consists of rough rock pavement with small white epifauna. Codling? (<i>Laemonema melanurum</i>) also observed.
CFX Cable	6/19/2008	NEREUS				450	03:27:00	S, Ru, Ro	H			0		0	0					Squid and scorpionfish? observed. Rough rock pavement covered with fine layer of sand
CFX Cable	6/19/2008	NEREUS				453	03:28:00	S, Ru, Ro	H			0		0	0					Rough rock pavement with small attached organisms (possibly white sponges). Epifaunal percent cover is less than 1%. <i>Phakellia</i> sp. observed.
CFX Cable	6/19/2008	NEREUS				452	03:29:00	S, Ru, Ro	H			0		0	0					Rough rock pavement and rock outcropping observed. Small white epifauna attached (difficult to characterize or identify).
CFX Cable	6/19/2008	NEREUS				452	03:30:00	S, Ru, Ro	H			0		0	0					Rough rock pavement. Golden crab (<i>Chaceon fenneri</i>) and small vase-shaped sponge observed. Overall, low-relief hardbottom.
CFX Cable	6/19/2008	NEREUS				453	03:31:00	S, Ru, Ro	H			0		0	0					Overall the hardbottom is low relief.
CFX Cable	6/19/2008	NEREUS				455	03:32:00	S, Ru, Ro	H			1		0	0					Phakellia sp.?
CFX Cable	6/19/2008	NEREUS				453	03:33:00	S, Ru	H			0		0	0					Rough rock pavement. <i>Phakellia</i> sp. observed.
CFX Cable	6/19/2008	NEREUS				453	03:34:00	S, Ru	H			1		0	0					Consistent hardbottom type (rough rock pavement) and coverage (~80%) for the last few minutes. Rock pavement covered by thin layer of sediment in places. Observed golden crab (<i>Chaceon fenneri</i>) (@ 03:34:20), rajid, and codling (<i>Laemonema melanurum</i>). Sm
CFX Cable	6/19/2008	NEREUS				455	03:35:00	S, Ru, Ro	H			0		0	0					Rough rock pavement covered by sediment in places. Scorpionfish? observed. Rock becomes more exposed and not covered with as much sand. All low relief.
CFX Cable	6/19/2008	NEREUS				453	03:36:00	S, Ru, Ro	H			0		0	0					Phakellia sp., large dark-bodied fish (~20 cm in length), and codling (<i>Laemonema melanurum</i>) observed
CFX Cable	6/19/2008	NEREUS				454	03:37:00	S, Ru, Ro	H			1		0	0					Phakellia sp., codling (<i>Laemonema melanurum</i>), and cat shark (<i>Scyliorhinus retifer</i>)? observed. [Chaceon 03:37:54]
CFX Cable	6/19/2008	NEREUS				454	03:38:00	S, Ru, Ro, Co	H			0		0	0					Dead and LIVE standing coral (<i>Lophelia pertusa</i>) and <i>Phakellia</i> sp. observed. Travel over little ledge which is end of slab. Scorpionfish? observed.
CFX Cable	6/19/2008	NEREUS				454	03:39:00	S, Ru	H			0		0	0					Rubble field with some rough rock pavement.
CFX Cable	6/19/2008	NEREUS				454	03:40:00	S, Ru, Ro	H			0		0	0					Sandy bottom with patchy rubble. Thin veneer of sand is covering hardbottom areas. 1 m rock boulder to the right of cable. Hardbottom percent cover decreasing.
CFX Cable	6/19/2008	NEREUS				455	03:41:00	S, Ru, Ro	H			0		0	0					Sandy bottom with patchy rubble. Eel-like fish (all white), <i>Phakellia</i> sp., and squid observed. Low relief (10-15 cm in height) eroded rock outcroppings (20-30 cm in diameter), debris (spam can), scorpionfish?, and blackbelly rosefish? (<i>Helicolenus dactylopterus</i>) observed.
CFX Cable	6/19/2008	NEREUS				457	03:43:00	S, Ru, Ro	H			0		0	0					Phakellia sp., small, white branching organisms attached to rocks (<i>Cnidaria</i> or <i>Otocorallia</i> ?), and long eel-like fish (snake-like body with black tip-possibly <i>Synbranchidae</i> ?) observed.
CFX Cable	6/19/2008	NEREUS				456	03:45:00	S, Ru	H			0		0	0					Rock cobble field.
CFX Cable	6/19/2008	NEREUS				455	03:46:00	S, Ru	H			0		0	0					Rock cobble field and rough rock pavement. <i>Phakellia</i> sp. observed.
CFX Cable	6/19/2008	NEREUS				455	03:47:00	S, Ru	H			0		0	0					Low relief hardbottom. ~30% cover. Rock rubble field.
CFX Cable	6/19/2008	NEREUS				456	03:48:00	S, Ru	H			0		0	0					Low relief hardbottom. Probably rock pavement mostly covered by sand with some loose rubble lying on top. Rope debris?
CFX Cable	6/19/2008	NEREUS				455	03:49:00	S, Ru, Ro	H			0		0	0					Raised rock amongst the rock cobble/rubble. Cable briefly suspended for a few cm
CFX Cable	6/19/2008	NEREUS				456	03:50:00	S, Ru	H			0		0	0					Urchin observed next to cable. Organismal abundance <1%.
CFX Cable	6/19/2008	NEREUS				455	03:51:00	S, Ru	H			0		0	0					Two blackbelly rosefish? (<i>Helicolenus dactylopterus</i>) observed. Exposed rock boulders (~20 cm in height) to left of cable. Crab and hydroids attached to solitary rock boulder.
CFX Cable	6/19/2008	NEREUS				454	03:52:00	S, Ru, Ro	H			0		0	0					Observed debris and unidentifiable orange colored organism.
CFX Cable	6/19/2008	NEREUS				455	03:54:00	S, Ru	H			0		0	0					Several large fish observed (large, spotted fish resting on seafloor next to cable; large, dark bodied fish swimming to the left of the cable).
CFX Cable	6/19/2008	NEREUS				453	03:56:00	S, Ru	H			1		0	0					Golden crab (<i>Chaceon fenneri</i>) [03:56:39] and codling? (<i>Laemonema melanurum</i>) observed. Sandy bottom with sparse rock rubble and intermittent rock boulders.
CFX Cable	6/19/2008	NEREUS				455	03:58:00	S, Ru, Ro	H			0		0	0					Urchin observed to the left of cable.
CFX Cable	6/19/2008	NEREUS				454	03:59:00	R, Ru, Ro	H			0		0	0					Fairly flat mud bottom with patchy rubble and rock cobble (~10-20 cm). Less than 30% hardbottom cover with no large sessile organisms.
CFX Cable	6/19/2008	NEREUS				453	04:00:00	S, Ru	H			0		0	0					Urchin observed to left of cable. Rock rubble/cobble (~5-10 cm in diameter) intermixed with sediment. Codling? (<i>Laemonema melanurum</i>) also observed.
CFX Cable	6/19/2008	NEREUS				455	04:05:00	S, Ru	H			0		0	0					2-5 cm rubble/rock cobble with no emergent, sessile or macro organisms. Appears to be black, phosphoric rock rubble. Observed golden crab (<i>Chaceon fenneri</i>) [04:09:43], codling (<i>Laemonema melanurum</i>), and possible shrimp.
CFX Cable	6/19/2008	NEREUS				458	04:07:00	S, Ru, Ro	H			1		0	0					Getting into more dense hardbottom. Flat, rock rubble/cobble (~3-5 cm in diameter). Mostly 10-30% hardbottom cover (patches at 50%). Rajid observed.
CFX Cable	6/19/2008	NEREUS				457	04:10:00	S, Ru, Ro	H			0		0	0					Cable off bottom a bit. Rock pavement (10-20 cm relief) or exposed rock.
CFX Cable	6/19/2008	NEREUS				456	04:13:00	S, Ru	H			1		0	0					Chaceon [04:13:43] End Disc 27
CFX Cable	6/19/2008	NEREUS				455	04:16:00	S, Ru, Ro	H			0		0	0					Start Disc 28. Flat bottom with rock rubble/cobble (2-5 cm in diameter) and occasional patches of rock pavement. No large macrofauna.
CFX Cable	6/19/2008	NEREUS				456	04:18:00	S, Ru, Ro	H			2		0	0					Patch of small rock (~10-20 cm relief). 50 to 75% hardbottom cover in some places. Observed golden crabs (<i>Chaceon fenneri</i>) [04:18:27 & 04:19:23], small (~5 cm height) white organisms (possibly sponges; difficult to distinguish), and scorpionfish?
CFX Cable	6/19/2008	NEREUS				455	04:20:00	S, Ru, Ro	H			0		0	0					Flat rock rubble/cobble with occasional low relief, rock pavement.
CFX Cable	6/19/2008	NEREUS				456	04:25:00	S, Ru, Ro	H			0		0	0					Low relief (~10-20 cm relief) rock pavement, cobble, and rubble with fine veneer of sediment. 100% cover.
CFX Cable	6/19/2008	NEREUS				459	04:29:00	S, Ru, Ro	H			0		0	0					Low relief (~10-20 cm relief) rock pavement, cobble, and rubble with fine veneer of sediment. Several fish species observed including <i>Nezumia</i> sp.?, codling (<i>Laemonema melanurum</i>), and scorpionfish?
CFX Cable	6/19/2008	NEREUS				459	04:30:00	S, Ru, Ro	H			0		0	0					Relatively flat. Patches of rock rubble/cobble (5-10 cm). Occasional low relief, exposed rock pavement. A few small sponges (5-10 cm) observed (possibly <i>Phakellia</i> sp.).
CFX Cable	6/19/2008	NEREUS				461	04:35:00	S, Ru, Ro	H			0		0	0					10-30% rock cobble with occasional patches of rock pavement. Observed numerous small (~5 cm) sponges (possibly <i>Phakellia</i> sp.) and one large (10-15 cm) <i>Phakellia</i> sp. to the left of the cable.
CFX Cable	6/19/2008	NEREUS				461	04:38:00	S, Ru	H			0		0	0					5 cm white sponges common (possibly <i>Phakellia</i> sp.).
CFX Cable	6/19/2008	NEREUS				462	04:40:00	S, Ru, Ro	H			1		0	0					Flat rubble/cobble with occasional white fan shaped sponge (possibly <i>Phakellia</i> sp.). Golden crab (<i>Chaceon fenneri</i>) (@ 04:40:38) observed. Cobble field and exposed phosphoric rock (close to 100% cover in small patch). Observed scorpionfish (possibly 1).
CFX Cable	6/19/2008	NEREUS				462	04:45:00	S, Ru, Ro	H			2		0	0					Observed a chain dogfish? Flat rubble/cobble with occasional white fan shaped sponges (possibly <i>Phakellia</i> sp.). Golden crabs (<i>Chaceon fenneri</i>) [04:46:40 & 04:47:45] also observed. Two (10 cm) <i>Phakellia</i> sp., and rajid observed. <5% cover of biota.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				462	04:50:00	S, Ru, Ro	H			0		0	0					Predominantly flat bottom with rubble/cobble (3-5 cm). Patches of rock pavement up to 75% cover. 200 m northeast of waypoint.
CFX Cable	6/19/2008	NEREUS				461	04:55:00	S, Ru	H			0		0	0					Predominantly flat bottom with rubble/cobble (3-5 cm)
CFX Cable	6/19/2008	NEREUS				462	05:00:00	S, Ru, Ro	H			0		0	0					Flat bottom consisting mostly of rock rubble and cobble (2-5 cm). Also patches of rock pavement. Mostly 10-30% hardbottom cover with occasional patch of 50-75% cover. All low relief, less than 10-20 cm in height.
CFX Cable	6/19/2008	NEREUS				463	05:02:00	S, Ru	H			0		0	0					Slight northerly bottom current. Observed demospongiae
CFX Cable	6/19/2008	NEREUS				463	05:05:00	S, Ru	H			0		0	0					10-30% rock rubble/rubble and very sparse sessile macrofauna (primarily Demospongiae and Phakellia sp.)
CFX Cable	6/19/2008	NEREUS				463	05:07:00	S, Ru	H			0		0	0					A couple of demospongiae (~5 cm in diameter and spherical in shape)
CFX Cable	6/19/2008	NEREUS				464	05:08:00	S, Ru	H			0		0	0					Good visibility (~30-60 ft). White demospongiae
CFX Cable	6/19/2008	NEREUS				463	05:10:00	S, Ru	H			0		0	0					Habitat remains the same. Flat, predominantly rock rubble/cobble (~5-10 cm in diameter) and 10-30% hardbottom cover on average. Sparse sessile organisms with the occasional fan and spherical sponges. The ROV is tracking cable very well, typically 1-1.
CFX Cable	6/19/2008	NEREUS				465	05:15:00					0		0	0					End of Disc 28
CFX Cable	6/19/2008	NEREUS				463	05:16:00	S, Ru	H			0		0	0					Start of Disc 29. Flat, predominantly rock rubble/cobble (~2-5 cm in diameter) and 10-30% hardbottom cover on average. Sparse sessile organisms with the occasional demospongiae (including Phakellia sp.)
CFX Cable	6/19/2008	NEREUS				464	05:18:00	S, Ru	H			0		0	0					Observed isopod (Bathynomus sp. - 15 cm in length) and debris (grease tube?)
CFX Cable	6/19/2008	NEREUS				464	05:20:00	S, Ru	H			0		0	0					Flat, sparse rubble with 1-10% cover. Less hardbottom than observed before
CFX Cable	6/19/2008	NEREUS				465	05:22:00	S, Ru, Ro	H			0		0	0					No sponges or gorgonians. Two Araeosoma sp. (poisonous urchins) and squid observed. Exposed rock and rock boulders observed to the left of the cable. Also observed a scorpionfish.
CFX Cable	6/19/2008	NEREUS				465	05:25:00	S, Ru, Ro	H			1		0	0					Rubble/cobble (1-5% cover). Also observed golden crab (Chaceon fenneri) [05:25:19] and school of squid swimming in water column.
CFX Cable	6/19/2008	NEREUS				467	05:29:00	S, Ru	H			0		0	0					30% cover of rubble/cobble, some pavement, and a number of white fan sponges (Phakellia sp.?)
CFX Cable	6/19/2008	NEREUS				467	05:30:00	S, Ru	H			1		0	0					Golden crab (Chaceon fenneri) observed. [05:30:20]
CFX Cable	6/19/2008	NEREUS				465	05:31:00	S	S			0		0	0					Soft sediment with sand ripples oriented in E-W direction. 10 cm wavelength and few cm in height. Prevailing northerly current. Sparse rubble/cobble still present with small white sponges attached.
CFX Cable	6/19/2008	NEREUS				467	05:35:00	S, Ru	H			0		0	0					Flat with fairly sparse rock rubble and cobble (10-20% cover). Observed several 5 cm sponges (either Phakellia sp. or Raspailiidae) and sand ripples in between the rubble. Less rubble and increased density in sponges.
CFX Cable	6/19/2008	NEREUS				466	05:38:00	S	S			0		0	0					Several squid observed. Predominantly sand bottom with ripples and sparse rubble/cobble. Rubble/cobble covered with thin veneer of sand. Sand looks a little coarser than previously seen.
CFX Cable	6/19/2008	NEREUS				467	05:40:00	S	S			0		0	0					Flat sediment with sand ripples (10 cm wavelength and ~2-3 cm wave height). Less than 1% rock rubble/cobble. Salp floated by in the water column.
CFX Cable	6/19/2008	NEREUS				470	05:42:00	S, Ru	H			0		0	0					Sand and sparse rubble/cobble. Rock size increasing slightly. Also observed scorpionfish
CFX Cable	6/19/2008	NEREUS				468	05:46:00	S, Ru	H			0		0	0					10-30% rock rubble/cobble. 10 cm white, spherical object. White fan sponges (possibly Phakellia sp.) observed.
CFX Cable	6/19/2008	NEREUS				470	05:50:00	S, Ru	H			0		0	0					Same type of habitat. Flat bottom with rock rubble/cobble (3-10 cm in diameter). Occasional fan sponges (<1% cover). Multiple Phakellia sp., half a dozen spherical sponges, codling (Laemonema melanurum), and squid ink observed.
CFX Cable	6/19/2008	NEREUS				470	05:53:00	S, Ru	H			0		0	0					Scorpionfish? observed next to the cable. Phakellia sp. with crinoid on top
CFX Cable	6/19/2008	NEREUS				471	05:55:00	S, Ru	H			0		0	0					Same habitat type. Mostly sediment with 10-30% rubble/cobble. Sparse biota, mainly fan sponges. Squid observed.
CFX Cable	6/19/2008	NEREUS				472	05:57:00	S, Ru	H			0		0	0					Observed a small 5 cm fish (codling or Nezumia sp.?). Fewer golden crabs on slope compared to top of terrace. Chain dogfish? observed. Substrate briefly changed to flat, smooth sediment. [No Chaceon observed]
CFX Cable	6/19/2008	NEREUS				471	06:00:00	S, Ru	H			1	113	0	0					Large golden crab (Chaceon fenneri) observed [06:00:39]. Same bottom type consisting of 2-5 cm rock rubble with 10-30% cover.
CFX Cable	6/19/2008	NEREUS				471	06:02:00	S, Ru	H			0		0	0					Chain dogfish (Scyliorhinidae) and large squid observed.
CFX Cable	6/19/2008	NEREUS				471	06:05:00	S, Ru	H			0		0	0					Flat bottom, rock rubble/cobble (1-5 cm in diameter)
CFX Cable	6/19/2008	NEREUS				471	06:10:00	S, Ru	H			0		0	0					10 cm skate observed. Flat, rubble/cobble (2-5 cm in diameter). Sparse sessile macrofauna. The dominant fauna are fan sponges.
CFX Cable	6/19/2008	NEREUS				471	06:12:00	S, Ru	H			0		0	0					
CFX Cable	6/19/2008	NEREUS				472	06:13:00	S, Ru	H			0		0	0					End of Disc 29. Second disc stopped running at time of change (may not be complete)
CFX Cable	6/19/2008	NEREUS				473	06:17:00	S, Ru	H			0		0	0					Start of Disc 30.
CFX Cable	6/19/2008	NEREUS				475	06:20:00	S, Ru, Ro	H			0		0	0					Rock pavement and rubble/cobble (5-10 cm in diameter). Several pieces of debris. At 6:22, rubble/cobble absent and there is 100% sediment. ROV still tracking 150 m north of reported cable line. A few, low relief rock outcroppings (5 cm in height) with
CFX Cable	6/19/2008	NEREUS				474	06:26:00	S, Ru	H			1		0	0					Rock rubble/rock (2-5 cm in diameter) and golden crab (Chaceon fenneri) [06:26:41] observed
CFX Cable	6/19/2008	NEREUS				475	06:29:00	S, Ru	H			0		0	0					School of squid (and ink)
CFX Cable	6/19/2008	NEREUS				474	06:30:00	S, Ru	H			0		0	0					Flat bottom, rock rubble/cobble (2-5 cm in diameter)
CFX Cable	6/19/2008	NEREUS				477	06:35:00	S, Ru	H			0		0	0					Same habitat as previous. Eel (10 cm) observed.
CFX Cable	6/19/2008	NEREUS				475	06:40:00	S, Ru	H			0		0	0					Flat bottom with rock rubble (<10% cover).
CFX Cable	6/19/2008	NEREUS				477	06:43:00	S, Ru	H			0		0	0					Possible catshark? (Scyliorhinidae). Debris observed, possibly cloth.
CFX Cable	6/19/2008	NEREUS				477	06:48:00	S, Ru	H			1		0	0					Golden crab (Chaceon fenneri) observed [06:48:05]
CFX Cable	6/19/2008	NEREUS				476	06:50:00	S, Ru	H			0		0	0					Flat bottom with rock rubble/cobble (2-5 cm in diameter). Sparse biota, primarily sponges, less than 1% cover. No corals. [video cuts out at 06:52 to 6:59]
CFX Cable	6/19/2008	NEREUS				477	06:55:00	S, Ru	H			0		0	0					Same habitat type. Observed scorpionfish. [Video returns at 06:59]
CFX Cable	6/19/2008	NEREUS				476	07:00:00	S, Ru	H			0		0	0					Flat bottom, rock rubble/cobble (2-5 cm in diameter). Very sparse biota. The ROV is tracking the cable well.
CFX Cable	6/19/2008	NEREUS				477	07:03:00	S, Ru	H			0		0	0					Flat bottom, rock rubble/cobble (2-5 cm in diameter). Crinoid observed to the right of the cable
CFX Cable	6/19/2008	NEREUS				476	07:06:00	S, Ru	H			0		0	0					Multiple squid.
CFX Cable	6/19/2008	NEREUS				477	07:10:00	S, Ru	H			0		0	0					3 knot surface current pulling the ROV 2+ m from the bottom. The ROV is having to slow periodically to maintain position in the water column.
CFX Cable	6/19/2008	NEREUS				476	07:11:00	S, Ru	H			0		0	0					Rock rubble/cobble less than 30%. Sparse to no biota.
CFX Cable	6/19/2008	NEREUS				478	07:14:00	S, Ru	H			0		0	0					End of Disc 30.
CFX Cable	6/19/2008	NEREUS				478	07:17:00	S, Ru	H			0		0	0					Start of Disc 31. Flat bottom with rock rubble (2-5 cm in diameter). 5 cm fan sponges are fairly common (Phakellia sp.?).
CFX Cable	6/19/2008	NEREUS				478	07:21:00	S, Ru	H			0		0	0					5 cm Phakellia sp. and Laemonema melanurum or Nezumia sp.?. 2-3 species of sponge present. No black corals or octocorals.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	Golden Crab	Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu? = possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				478	07:25:00	S, Ru	H					0	0					Flat bottom with rock rubble (2-5 cm in diameter). Numerous squid. Fan sponges (~5 cm) increasing in abundance.
CFX Cable	6/19/2008	NEREUS				479	07:26:00	S, Ru	H					0	0					Good video of a squid.
CFX Cable	6/19/2008	NEREUS				478	07:30:00	S, Ru	H			1		0	0					Flat bottom with rock rubble/cobble (2-5 cm in diameter). A few rocks are up to 10 cm in diameter. Sparse biota, less than 1% cover. Several 3-5 cm <i>Phakellia</i> sp. Golden crab (<i>Chaceon fenneri</i>) (07:33:49), codling (<i>Laemonema melanurum</i>) observed.
CFX Cable	6/19/2008	NEREUS				482	07:40:00	S, Ru	H					0	0					Flat bottom with rock rubble and small cobble (<5 cm in diameter). Benthic cover less than 1% and dominated by 2 species of sponges. Occasional codling (<i>Laemonema melanurum</i>).
CFX Cable	6/19/2008	NEREUS				481	07:49:00	S, Ru	H					0	0					Small cobble, largely uncolonized except for an occasional sponge. Occasional to infrequent codling (<i>Laemonema melanurum</i>) and a cylindrical invertebrate? Possibly a glass sponge.
CFX Cable	6/19/2008	NEREUS				481	07:56:00	S, Ru	H					0	0					Small pebble/rock (5 cm and less in diameter). Holothurian observed (<i>Holothuria lentiginosa enodis</i>). Codling (<i>Laemonema melanurum</i>), small skates, and blind torpedo (<i>Benthobatis marcida</i>) observed.
CFX Cable	6/19/2008	NEREUS				482	08:01:00	S, Ru	H					0	0					ROV starting to crab because of the current. Flat bottom, rock rubble/cobble (<10 cm in diameter), sparse biota. <i>Araeosoma</i> sp. observed to the right of the cable.
CFX Cable	6/19/2008	NEREUS				480	08:06:00	S, Ru	H					0	0					Current pushing ROV off the bottom. Distance off of seafloor is greater than 2 m for short stretches of 1-2 minutes while more umbilical is being deployed.
CFX Cable	6/19/2008	NEREUS				482	08:07:00	S, Ru	H					0	0					Flat bottom with small cobble/rubble. Unidentified fishes, small rajid, and codling (<i>Laemonema melanurum</i>) observed.
CFX Cable	6/19/2008	NEREUS				485	08:10:00	S, Ru	H					0	0					Flat bottom with rock rubble/cobble (2-10 cm in diameter). 5 cm fan sponges (<i>Phakellia</i> sp.?), squid, and rajid skates observed.
CFX Cable	6/19/2008	NEREUS				484	08:14:00	S, Ru	H					0	0					End of Disc 31.
CFX Cable	6/19/2008	NEREUS				482	08:17:00	S, Ru	H					0	0					Start of Disc 32. 10 cm <i>Phakellia</i> sp.
CFX Cable	6/19/2008	NEREUS				482	08:18:00	S, Ru	H					0	0					Several more <i>Demospongiae</i> .
CFX Cable	6/19/2008	NEREUS				483	08:20:00	S, Ru	H					0	0					Flat bottom with rubble/cobble (2-5 cm in diameter). Dominant species is the fan sponge, possibly <i>Phakellia</i> sp. A dozen 5-10 cm <i>Demospongiae</i> in view. The ROV is crabbing with the current. The cable is ~45 degrees to our field of view; therefore the
CFX Cable	6/19/2008	NEREUS				485	08:26:00	S, Ru	H					0	0					3-4 species of <i>Demospongiae</i> observed in past couple of hours. Sponges (<1% cover) dominated by <i>Demospongiae</i> .
CFX Cable	6/19/2008	NEREUS				486	08:27:00	S, Ru	H					0	0					Several sponges in field of view. Difficult to distinguish. ROV having difficulty moving forward and staying on the bottom.
CFX Cable	6/19/2008	NEREUS				485	08:30:00	S, Ru	H					0	0					ROV still crabbing to keep on course. Averaging ~2 m off bottom due to strong surface current. Flat bottom with rock rubble/cobble (2-10 cm in diameter). Fan sponges dominant fauna and fairly common.
CFX Cable	6/19/2008	NEREUS				486	08:32:00	S, Ru	H					0	0					Squid ink.
CFX Cable	6/19/2008	NEREUS				485	08:34:00	S, Ru	H					0	0					No scleractinian corals or odocorals. <i>Demospongiae</i> (5-10 cm) are frequent.
CFX Cable	6/19/2008	NEREUS				486	8:41:45	S, Ru	H					0	0					Flat bottom with rock rubble/cobble. 5 cm <i>Demospongiae</i> are common and frequent. They are planar and facing into the current.
CFX Cable	6/19/2008	NEREUS				486	08:45:00	S, Ru	H					0	0					Surface current at 3.6 knots.
CFX Cable	6/19/2008	NEREUS				488	08:50:00	S, Ru	H					0	0					Still crabbing 45 degrees. ROV located 2-3 m off the bottom due to strong surface current. Flat bottom, rock rubble/cobble. No evidence of pavement or ledges. A few <i>Phakellia</i> sp. identified in the past few minutes.
CFX Cable	6/19/2008	NEREUS				488	08:54:00	S, Ru	H					0	0					Rock rubble and several <i>Phakellia</i> sp. in field of view.
CFX Cable	6/19/2008	NEREUS				488	08:58:00	S, Ru	H					0	0					Rock rubble. Sparse biota in last several minutes.
CFX Cable	6/19/2008	NEREUS				488	09:02:00	S, Ru, Ro	H					0	0					ROV not moving. Current has stopped forward progress.
CFX Cable	6/19/2008	NEREUS				490	09:06:00	S, Ru	H					0	0					School of squid. ~5% cover of small cobble. Frequent <i>Demospongiae</i> . Observed one codling (<i>Laemonema melanurum</i>).
CFX Cable	6/19/2008	NEREUS				490	09:10:00	S, Ru	H					0	0					Flat bottom, rock rubble (2-5 cm in diameter). Variable hardbottom cover from 5-30%. Dominant fauna are 5 cm fan sponges. No evidence of the cable moving on the bottom.
CFX Cable	6/19/2008	NEREUS				490	09:15:00	S, Ru	H					0	0					Not moving at all as the ROV tries to fight the current. End of Disc 32.
CFX Cable	6/19/2008	NEREUS				490	09:20:00	S	S					0	0					Start of Disc 33. Mostly sediment. Slowly moving forward. Observed a blind torpedo (<i>Benthobatis marcida</i>) and squid.
CFX Cable	6/19/2008	NEREUS				489	09:22:00	S, Ru	H					0	0					Added by SFR - change of bottom
CFX Cable	6/19/2008	NEREUS				492	09:30:00	S, Ru	H					0	0					Observed blind torpedoes (<i>Benthobatis marcida</i>). Barely moving forward. Flat bottom, 2-5 cm rubble/cobble with 5% cover. Occasional <i>Demospongiae</i> .
CFX Cable	6/19/2008	NEREUS				491	09:40:00	S	S					0	0					Flat bottom. 100% sediment with occasional patches of rubble and small cobble
CFX Cable	6/19/2008	NEREUS				491	09:44:00	S	S					0	0					Mostly flat, soft sediment with a slight scattering of rubble (no attached epifauna). Barely moving forward. Flat bottom, 2-5 cm low relief rubble/cobble. Few <i>Demospongiae</i> (<i>Phakellia</i> sp.). ROV is tracking better. Located 1-1.5 m off bottom.
CFX Cable	6/19/2008	NEREUS				492	09:49:00	S, Ru	H					0	0					3-5 cm rock rubble and half a dozen <i>Phakellia</i> sp. Observed codling (<i>Laemonema melanurum</i>)
CFX Cable	6/19/2008	NEREUS				493	09:52:00	S, Ru	H					0	0					Flat bottom, rock rubble (2-5 cm in diameter). 5 cm fan sponges are fairly common.
CFX Cable	6/19/2008	NEREUS				493	09:55:00	S, Ru	H					0	0					Flat bottom with variable density (30-50% cover) of rock rubble (5-10 cm in diameter). 5 cm fan sponges remain common to abundant.
CFX Cable	6/19/2008	NEREUS				492	10:00:00	S, Ru	H					0	0					Flat bottom with variable density (5-10% cover) of rock rubble (5-10 cm in diameter). 5 cm fan sponges remain common to abundant. Lost sight of bottom briefly.
CFX Cable	6/19/2008	NEREUS				491	10:10:00	S, Ru	H					0	0					Lost sight of cable at 10:09. Cable recovered at 10:10. ~5% cover of scattered rock rubble. <i>Araeosoma</i> sp. observed next to the cable. ROV drifting off bottom at 10:12 and cable slightly within view. Lost sight of bottom/cable at 10:13. At 10:14 we r
CFX Cable	6/19/2008	NEREUS				495	10:17:00	S, Ru	H					0	0					Start of Disc 34. Strong surface current. ROV having difficulty maintaining height above bottom. Still trying to recover cable at 10:21.
CFX Cable	6/19/2008	NEREUS				495	10:24:00	S, Ru	H					0	0					Found the cable. Observed blind torpedo (<i>Benthobatis marcida</i>). ROV sitting on bottom, waiting for repositioning of ship to minimize drag on the umbilical.
CFX Cable	6/19/2008	NEREUS				495	10:39:00	S, Ru	H					0	0					Positioning ROV to navigate toward cable to continue survey.
CFX Cable	6/19/2008	NEREUS				494	10:46:00	S, Ru	H					0	0					On cable and continuing survey. Small cobble at < 5% cover. Low organismal components. Rajid, small sponge, small school of squid at 10:50, and more fan sponges.
CFX Cable	6/19/2008	NEREUS				494	10:50:00	S, Ru	H					0	0					Hardbottom (15% cover) consisting of rock rubble/cobble (<10 cm in diameter). Low relief. Codling (<i>Laemonema melanurum</i>), fan sponges (<i>Phakellia</i> sp.?), piece of debris (net), and more fan sponges (most dominant epifauna).
CFX Cable	6/19/2008	NEREUS				493	10:55:00	S, Ru	H					0	0					Hardbottom cover decreasing (5% cover) and consisting of rock rubble/cobble. Small rock outcropping with relief of ~1 meter. Several fan sponges attached to the rock outcropping.
CFX Cable	6/19/2008	NEREUS				493	10:56:00	S, Ru	H					0	0					Mostly soft bottom. Sponges now absent. At 10:57, hardbottom cover has decreased to ~1% and consists of rubble on top of soft sediment.

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mm)	Bottom Type (S= sediment; Ru= coral/rock rubble; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blueline Tilefish	Tilefish Burrow (Bu= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				495	11:00:00	S, Ru	H			0		0	0					Low relief hardbottom ranges from 5-10% cover. Unidentifiable fish and fan sponges observed. Fan sponges remain the dominant epifauna. At 11:02, hardbottom is ~10% cover consisting of rock rubble/cobble. More fan sponges observed.
CFX Cable	6/19/2008	NEREUS				494	11:03:00	S, Ru	H			0		0	0					Hardbottom <30% cover.
CFX Cable	6/19/2008	NEREUS				495	11:05:00	S, Ru	H			0		0	0					Hardbottom <30% cover. Scattered fan sponges (all <5 cm in size). Very low relief hardbottom. Debris (fishing line) underneath cable at 11:06.
CFX Cable	6/19/2008	NEREUS				495	11:10:00	S, Ru	H			0		0	0					Hardbottom cover has decreased and ranges from 5-10%. Rock cobble/rubble and scattered fan sponges present.
CFX Cable	6/19/2008	NEREUS				496	11:15:00	S, Ru	H			0		0	0					Hardbottom <30% cover. Low relief. Scattered fan sponges (Phakellia sp.?) observed. End of Disc 34.
CFX Cable	6/19/2008	NEREUS				500	11:20:00	S, Ru	H			0		0	0					Start of Disc 35. Hardbottom <30% cover. 2 species of sponges: fan sponge (most dominant) and branching (v-shaped) sponge. Have not seen fish for quite some time. Variable hardbottom cover with scattered fan sponges.
CFX Cable	6/19/2008	NEREUS				497	11:22:00	S, Ru	H			0		0	0					Reduction in hardbottom percent cover (5-10%). Scattered fan sponges (<5 cm in size) present. At 11:26, hardbottom percent cover increases (<30%). Fan sponges remain to be dominant epifauna.
CFX Cable	6/19/2008	NEREUS				498	11:30:00	S, Ru	H			0		0	0					Hardbottom cover is variable, but overall it's <10%. Very small cobble and rubble. Occasional fan sponge, several shortnose greeneyes (Chlorophthalmus agassizi), a couple of codling (Laemonema melanurum), and unidentifiable rajid.
CFX Cable	6/19/2008	NEREUS				498	11:35:00	S, Ru	H			0		0	0					Hardbottom cover <5%. Very low epifaunal density. Fan sponges have become less frequent. Debris (bottle), 2 blind torpedoes (Benthobatis marcida), shortnose greeneyes (Chlorophthalmus agassizi), cylindrical invertebrate?, and slight turn in the cable.
CFX Cable	6/19/2008	NEREUS				500	11:40:00	S, Ru	H			0		0	0					Shortnose greeneye (Chlorophthalmus agassizi) observed. Hardbottom cover <5%. Low relief. Mostly soft sediment (might be consolidated hardbottom underneath), rock rubble (<5 cm in diameter), and occasional demospongiae observed.
CFX Cable	6/19/2008	NEREUS				495	11:43:00	S, Ru	H			0		0	0					ROV being pulled away from bottom, still have sight of cable.
CFX Cable	6/19/2008	NEREUS				499	11:44:00	S, Ru	H			0		0	0					ROV back on cable, continuing survey. Hardbottom cover <5%, consisting of rubble/cobble. Fan sponges, crinoid, and another turn in the cable observed.
CFX Cable	6/19/2008	NEREUS				499	11:47:00	S, Ru	H			0		0	0					Hardbottom cover 5-10%, but variable. Low relief rock rubble. Fan sponges continue to be dominant epifauna.
CFX Cable	6/19/2008	NEREUS				500	11:52:00	S, Ru	H			0		0	0					Hardbottom cover ~25%. Fan sponges are larger (5-10 cm). Unidentified fish and shortnose greeneye (Chlorophthalmus agassizi) observed. At 11:53, hardbottom cover has decreased to 10-15% and rubble appears smaller. Overall, hardbottom cover is very variable.
CFX Cable	6/19/2008	NEREUS				500	11:55:00	S, Ru	H			0		0	0					Rocks are getting a little higher (~10 cm). Unidentified fish (Scorpaenidae?) observed. Fishing line debris underneath cable. Hardbottom <5% cover, consisting of small cobble. Overall, hardbottom cover is variable. Codling (Laemonema melanurum) and p.
CFX Cable	6/19/2008	NEREUS				500	11:57:00	S, Ru	H			0		0	0					Hardbottom cover increased to ~30%. Scattered fan sponges observed.
CFX Cable	6/19/2008	NEREUS				501	12:00:00	S, Ru	H			0		0	0					Hardbottom cover ~30% consisting of rubble/cobble and scattered fan sponges (Phakellia sp.). Codling (Laemonema melanurum) observed. Overall, hardbottom cover is variable. Slight turn in the cable. Blind torpedo (Benthobatis marcida) and shortnose gr.
CFX Cable	6/19/2008	NEREUS				503	12:05:00	S, Ru	H			1	135	0	0					Hardbottom cover 5-10%, consisting of rubble/cobble. Overall, hardbottom cover is variable. Scattered fan sponges (Phakellia sp.), codling (Laemonema melanurum), larger pieces of cobble (higher relief), golden crab (Chaceon fennen) @ 12:07:04, and a
CFX Cable	6/19/2008	NEREUS				501	12:10:00	S, Ru	H			0		0	0					Hardbottom cover ranges from 10-20%, consisting of rubble/cobble. Scattered fan sponges (Phakellia sp.?) attached to rubble/cobble. Overall, hardbottom cover is variable. Large isopod? observed.
CFX Cable	6/19/2008	NEREUS				501	12:15:00	S, Ru	H			0		0	0					End of Disc 35.
CFX Cable	6/19/2008	NEREUS				501	12:17:00	S, Ru	H			0		0	0					Start of Disc 36. Variable hardbottom cover ranging from 5-20% and consisting of small cobble/rubble. Scattered fan sponges (Phakellia sp.?) attached to hardbottom. Sharp turn in the cable. Observed multiple shortnose greeneyes (Chlorophthalmus agas).
CFX Cable	6/19/2008	NEREUS				503	12:22:00	S, Ru	H			0		0	0					Hardbottom cover <5% and consists of small cobble (appears to be fine sediment underneath). Scattered fan sponges attached to hardbottom.
CFX Cable	6/19/2008	NEREUS				503	12:25:00	S, Ru	H			0		0	0					Hardbottom cover ranges from 5-10%. Scattered fan sponges (<5 cm in size). Observed several codlings (Laemonema melanurum). Hardbottom cover is variable. At 12:27, increase in hardbottom cover to at least 30%.
CFX Cable	6/19/2008	NEREUS				506	12:30:00	S, Ru	H			0		0	0					Impressions in sediment show that cable has been moved. Hardbottom cover is ~20% and variable, consisting of rock rubble/cobble. The substrate is mostly fine sediment. At 12:31, hardbottom cover decreases to 5-10%. Scattered fan sponges.
CFX Cable	6/19/2008	NEREUS				505	12:35:00	S, Ru	H			0		0	0					Hardbottom cover ranges from 5-10%, consisting of rubble/cobble. Impressions in sediment show that cable has been moved. Scattered fan sponges, small unidentifiable fish, and Araeosoma sp. observed. Variable hardbottom cover. Also observed scoripionis.
CFX Cable	6/19/2008	NEREUS				506	12:40:00	S, Ru	H			0		0	0					Observed vase-shaped, white sponge (~5 cm) and scattered fan sponges (Phakellia sp.). Hardbottom cover ~10% and consisting of rubble/cobble, with intermittent small rock boulders. Overall, hardbottom cover is variable.
CFX Cable	6/19/2008	NEREUS				505	12:43:00	S	S			0		0	0					ROV tracking very well. HB cover <1%.
CFX Cable	6/19/2008	NEREUS				506	12:45:00	S, Ru	H			0		0	0					Flat bottom with sparse rock rubble/cobble (2-5 cm in diameter). Hardbottom cover is less than 5%. Observed salp chains in water column. Looks like cable moved <1 meter to the north for ~3 meters. Virtually all sediment.
CFX Cable	6/19/2008	NEREUS				506	12:47:00	S	S			0		0	0					Soft bottom, less than 1% rubble/cobble. Circular depression beneath cable. [Tilefish Burrows?] Possible tilefish burrow? Observed rajid and fish ~15 cm in length (maybe catshark?). Flat bottom, rock rubble/cobble with <5% cover. Very little biota and no sessile macrofauna. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				506	12:50:00	S, Ru	H			0		0	0					Increase in rock/cobble. Hardbottom cover ranges from 5-10%. Increased frequency of fan sponges. Codling (Laemonema melanurum) observed.
CFX Cable	6/19/2008	NEREUS				507	12:54:00	S, Ru	H			0		0	0					Flat bottom with sparse rubble and 5-10 cm fan sponges.
CFX Cable	6/19/2008	NEREUS				507	12:55:00	S, Ru	H			0		0	0					Observed shortnose greeneye (Chlorophthalmus agassizi). Rock boulder ~30-40 cm in diameter with larger Phakellia sp. attached. Observed codling (Laemonema melanurum) and possible rock pavement. Hardbottom cover ~10% and at 12:58 a decrease in hardbottom.
CFX Cable	6/19/2008	NEREUS				506	13:00:00	S, Ru	H			0		0	0					Flat bottom with rubble/cobble (10 cm in diameter). Hardbottom cover ranges from 10-30%. A few patches of hardbottom cover at least 40% of the seafloor. Some rock pavement present in some areas. Larger cobble have 5-10 cm fan sponges attached. Also
CFX Cable	6/19/2008	NEREUS				506	13:03:00	S	S			0		0	0					Mostly fine sediment with <1% hardbottom cover. 3.6 knot surface current but ROV is still tracking very well. Blind torpedo (Benthobatis marcida) observed. [Tilefish Burrows?]

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	# Golden Crab	Golden Crab Carapace Width (mm)	# Royal Red Shrimp	Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# Blue-line Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				507	13:06:00	S, Ru	H			0		0	0					Hardbottom cover <5%, consisting of rubble/cobble. Scattered fan sponges. At 13:07, increase in hardbottom cover to ~30%.
CFX Cable	6/19/2008	NEREUS				506	13:10:00	S, Ru	H			0		0	0					ROV currently located ~150 m north of as-laid cable line. ROV tracking very well. Flat bottom, with rock rubble (2-10 cm in diameter), 10-30% hardbottom cover. The dominant biota is 5-10 cm fan sponges (Phakellia sp.?).
CFX Cable	6/19/2008	NEREUS				509	13:12:00	S	S			0		0	0				Bu? (100-c)	A biologically created 0.5 m diameter depression (no surrounding rubble or burrow in bottom). Hardbottom cover is <1%. Substrate composed mostly of fine sediment. Observed codling (Laemonema melanurum). [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				506	13:16:00	S	S			1		0	0					Mostly sediment. Flat bottom with ~1% rock rubble. Observed golden crab (Chaceon fennellii) @13:16:43, shortnose greeneye (Chlorophthalmus agassizii), and codling (Laemonema melanurum). End of Disc 36.
CFX Cable	6/19/2008	NEREUS				509	13:20:00	S	S			0		0	0					Start of Disc 37. Araeosoma sp. observed. Flat bottom, mostly sediment with ~1% rock rubble. ROV currently located ~150 meters north of as-laid cable track line.
CFX Cable	6/19/2008	NEREUS				510	13:25:00	S, Ru	H			0		0	0				Bu? (50-75c)	Rubble/cobble (5-10 cm in size). Another 0.5 m depression (~10 cm deep) with no hole in the bottom, possibly a tilefish burrow. Observed codling (Laemonema melanurum), Phakellia sp. in middle of rubble patch, and another Phakellia sp. (15 cm) within ru.
CFX Cable	6/19/2008	NEREUS				508	13:30:00	S	S			0		0	0					Flat sediment with ~1% rubble. Occasional patches of rubble with 10-30% cover. Very sparse biota.
CFX Cable	6/19/2008	NEREUS				510	13:35:00	S	S			0		0	0					Few fan sponges, galatheid?, and shortnose greeneye (Chlorophthalmus agassizii) observed.
CFX Cable	6/19/2008	NEREUS				509	13:36:52	S, Ru	S			0		0	0					Flat bottom with rock rubble (1-10% cover). Three, 10 cm fan sponges observed in the center of rubble patches.
CFX Cable	6/19/2008	NEREUS				510	13:40:00	S	S			0		0	0					Added by SFR - change of bottom
CFX Cable	6/19/2008	NEREUS				508	13:41:00	S	S			0		0	0					Flat sediment with ~1% rubble. Observed codling (Laemonema melanurum) and debris
CFX Cable	6/19/2008	NEREUS				510	13:45:00	S	S			0		0	0					Long line crosses over the top of our cable. Observed a small crab and codling (Laemonema melanurum)
CFX Cable	6/19/2008	NEREUS				511	13:46:00	S, Ru	H			0		0	0					Same habitat type. Flat sediment with ~1% rubble. Small depression with few, small fish associated with it (fish too small to make the burrow). Random patches of rubble/cobble and scattered fan sponges located in centers of rubble/cobble patches.
CFX Cable	6/19/2008	NEREUS				508	13:49:00	S	S			0		0	0					Added by SFR - change of bottom
CFX Cable	6/19/2008	NEREUS				509	13:50:00	S	S			0		0	0					Added by SFR - change of bottom
CFX Cable	6/19/2008	NEREUS				512	13:55:00	S, Ru	H			0		0	0				Bu? (50-75c)	Flat bottom, mostly sediment and sparse rock/rubble (<3%). Sparse biota. White fan sponges are uncommon in this area. Observed another burrow (0.5 m diameter and 10 cm deep) with no fish associated with it. Few scattered rock outcrops with Phakellia
CFX Cable	6/19/2008	NEREUS				512	14:00:00	S, Ru	H			0		0	0				Bu? (Not Ac)	Flat sediment with sparse rubble (<5% cover). Some bioturbation. Observed unidentifiable fish and another large depression/burrow. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				515	14:05:00	S, Ru	H			0		0	0					Flat sediment with some rock pavement, rubble, and rubble. Cobble and rubble measure <10 cm in diameter. Small rubble/cobble patch with 5 cm Phakellia sp. (patch is no more than 5 to 10 meters in diameter). After small rubble/cobble patch, the ROV is
CFX Cable	6/19/2008	NEREUS				513	14:10:00	S, Ru	H			0		0	0					5-10 cm rock rubble/cobble at 10% cover. Fan sponges are common. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				515	14:17:00	S	S			0		0	0					Flat sediment. Rock rubble/cobble varies from 1-20% (mostly 1% but there are small patches up to 10-20%). Few Phakellia sp. present in rubble/cobble areas. End of Disc 37.
CFX Cable	6/19/2008	NEREUS				515	14:20:00	S	S			0		0	0					Start of Disc 38. Flat soft sediment with rock rubble/cobble at ~1%. Large depression observed and Araeosoma sp.
CFX Cable	6/19/2008	NEREUS				515	14:20:00	S	S			0		0	0					Flat soft sediment with sparse rubble/cobble and occasional patches of bioturbation. Observed a few small burrows and an occasional 0.5 m diameter burrow (possible tilefish burrows). Observed some sort of track (10 cm wide and heading north/south) going
CFX Cable	6/19/2008	NEREUS				516	14:25:00	S	S			0		0	0					Flat soft sediment with sparse rubble/cobble and clusters of bioturbation (5-10 cm in diameter, possibly white lobster). Observed codling (Laemonema melanurum), another 0.5 m depression/burrow, small galatheid, and two sponges (Phakellia sp.) in center
CFX Cable	6/19/2008	NEREUS				514	14:30:00	S	S			0		0	0					Flat soft sediment with sparse rubble/cobble. Observed Araeosoma sp. Also, salp houses and ctenophores within the organic detritus floating by. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				512	14:35:00	S	S			0		0	0					Flat soft sediment with clusters of bioturbation and very sparse rubble/cobble. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				517	14:40:00	S	S			0		0	0					Flat soft sediment with sparse rubble (~1-2%). Observed no sessile biota. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				519	14:45:00	S	S			0		0	0					Flat soft sediment with sparse rubble (<1%). Observed large depression/burrow left of cable, some bioturbation, and possible codling (Laemonema melanurum)? [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				520	14:50:00	S	S			0		0	0					Cable shifted ~0.5 meter, slid along bottom to the north over a 5 m stretch. Flat soft bottom habitat with very sparse rock rubble (3 cm pieces with <1% cover). Observed large depression, urchin (Araeosoma sp.?), and unusual burrow (possible white lobster)
CFX Cable	6/19/2008	NEREUS				521	14:55:00	S	S			0		0	0					Flat soft sediment with sparse rubble/cobble. Observed large fish (undulating tail, black bars), codling (Laemonema melanurum), small crab, and benthic biota tracks. Cable is slightly suspended over a depression. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				520	15:00:00	S	S			0		0	0					Flat soft sediment with very sparse rubble/cobble and some bioturbation. Observed large fish swimming to the left of (and swims under) the cable. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				520	15:05:00	S	S			0		0	0					Flat soft sediment with very sparse rubble/cobble and sparse bioturbation. Observed urchin and small fish. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				519	15:10:00	S	S			0		0	0					Flat soft sediment with very sparse rubble/cobble and bioturbation. Attempted to take photograph, but having difficulty getting close to bottom. End of Disc 38.
CFX Cable	6/19/2008	NEREUS				522	15:14:00	S	S			0		0	0					Start of Disc 39. 100% flat soft sediment with no evidence of rubble. Some irregular bioturbation with burrows. Observed Araeosoma sp. and scorpionfish? [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				521	15:20:00	S	S			0		0	0					100% soft bottom with sparse bioturbation. ROV is at a stand still, trying to get down and take a photograph.
CFX Cable	6/19/2008	NEREUS				521	15:27:00	S	S			0		0	0					100% soft bottom habitat with minimal bioturbation. ROV is having difficulty getting down to 1 m. ROV at an absolute stand still.
CFX Cable	6/19/2008	NEREUS				524	15:30:00	S	S			0		0	0					Flat soft bottom with very sparse rubble and some bioturbation
CFX Cable	6/19/2008	NEREUS				523	15:35:00	S	S			0		0	0					Flat soft bottom with very sparse rubble and some bioturbation. Observed 2 urchins (Araeosoma sp.?). [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				521	15:40:00	S	S			0		0	0					Flat soft bottom with very sparse rubble and some bioturbation. ROV having difficulty staying close to bottom. Cable still within sight. At 15:42 and 15:44, briefly lost sight of cable. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				525	15:45:00	S	S			0		0	0					Flat soft bottom with very sparse rubble and some bioturbation
CFX Cable	6/19/2008	NEREUS				521	15:50:00	S	S			0		0	0					Flat soft bottom with very sparse rubble and some bioturbation
CFX Cable	6/19/2008	NEREUS				523	15:57:00	S	S			0		0	0					Flat soft sediment with sparse rubble and some bioturbation. Observed 0.5 m depression, likely a fish burrow. [Tilefish Burrows?]

Data Source	Date (mm/dd/yr)	Submersible, ROV Dive #	BMR Site #	Site Name (Reef #)	Location	Depth (m)	Time (Local) (Hr:mn)	Bottom Type (S= sediment; Ru= coral/rock rubble; R= rock pavement; ledges; Co= standing coral)	Hard Bottom (H)	Soft Bottom (S)	Bottom Temp (°C)	Golden Crab	Carapace Width (mm)	# Royal Red Shrimp (other)	# Golden Tilefish	# Sand Tilefish	# BlueLine Tilefish	Tilefish Burrow (Bu= probable, Bu?= possible burrow)	Notes- habitat, invertebrate, fish
CFX Cable	6/19/2008	NEREUS				525	16:00:00	S	S			0	0	0					Flat soft sediment with sparse rubble (<5% cover) and sparse bioturbation. Observed fish (Chaunax sp.?).
CFX Cable	6/19/2008	NEREUS				525	16:05:00					0	0	0					Bu? (N/A, N) ROV not on cable. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				527	16:07:00	S	S			0	0	0					ROV back on cable. Flat soft sediment with 1% small rubble and some bioturbation. ROV drifts off cable at 16:08 for 1.5 minutes. Observed squat lobster. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				527	16:10:00					0	0	0					Flat soft sediment with sparse bioturbation. End of Disc 39.
CFX Cable	6/19/2008	NEREUS				527	16:12:00	S	S			0	0	0					Start of Disc 40. ROV not on cable. Flat soft sediment with sparse rubble and sparse bioturbation. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				523	16:14:00	S	S			0	0	0					ROV back on cable for short time, but barely making headway
CFX Cable	6/19/2008	NEREUS				523	16:15:00	S	S			0	0	0					ROV off cable. Flat soft sediment with 2-3% rubble and sparse bioturbation. [Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				527	16:17:00	S	S			1	0	0					ROV off cable. [Chaceon and Tilefish Burrows?]
CFX Cable	6/19/2008	NEREUS				527	16:21:00	S	S			0	0	0					Bu? (N/A, N) ROV north of the cable. Flat soft sediment with <5% rubble and sparse bioturbation. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				526	16:23:00	S	S			0	0	0					Bu? (N/A, N) ROV off cable. Flat soft sediment with 1% small rubble and sparse bioturbation. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				527	16:24:00					0	0	0					ROV off cable. Observed a 0.5 m depression. ROV off bottom after 16:24:30.
CFX Cable	6/19/2008	NEREUS				505	16:30:00					0	0	0					ROV off cable, off bottom, and drifting away from ship.
CFX Cable	6/19/2008	NEREUS				492	16:36:00					0	0	0					ROV off cable, off bottom, and drifting away from ship.
CFX Cable	6/19/2008	NEREUS				513	16:43:00	S	S			0	0	0					Bu? (N/A, N) ROV having difficulty navigating to the bottom. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				525	16:56:00	S	S			0	0	0					ROV back on the bottom and trying to navigate back to the cable. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				527	17:00:00	S	S			0	0	0					Bu? (N/A, N) Cable? [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				527	17:05:00					0	0	0					Object found at 17:00 was a rope, maybe a crab trap line? Not the cable. End of Disc 40
CFX Cable	6/19/2008	NEREUS				527	17:09:00					0	0	0					Start of Disc 41.
CFX Cable	6/19/2008	NEREUS				531	17:13:00	S	S			0	0	0					Sediment bottom with sparse rubble (< 5% cover). No macrofauna. ROV still searching for the cable. Re-booted the camera software as well and took a test photo. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				527	17:21:00	S	S			0	0	0					Bu? (N/A, N) Bridge has asked to make some surface corrections. ROV standing by. ROV lifted off the bottom and making progress getting back down. Still searching for the cable. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				527	17:24:00					0	0	0					ROV back on bottom and searching for cable.
CFX Cable	6/19/2008	NEREUS				527	17:25:00					0	0	0					ROV pulled off the bottom again.
CFX Cable	6/19/2008	NEREUS				530	17:28:00	S	S			0	0	0					Bu? (N/A, N) ROV back on bottom and searching for cable. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				523	17:35:00					0	0	0					ROV off the bottom again and working its way back down to bottom
CFX Cable	6/19/2008	NEREUS				530	17:37:00					1	0	0					ROV back on bottom. [Chaceon @ 17:40:05, Tilefish Burrow]
CFX Cable	6/19/2008	NEREUS				529	17:42:00	S	S			0	0	0					ROV has sighted cable and navigating towards it. Surface current is 3.7 knots (down from 4.2 knots). Off cable 286 m to the SE and beginning survey again. The gap is likely soft bottom habitat.
CFX Cable	6/19/2008	NEREUS				530	17:48:00	S	S			0	0	0					Bu? (100+cf) 100% soft bottom habitat. Galatheid in large burrow to left of cable. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				528	17:51:00	S	S			0	0	0					100% soft bottom habitat with some bioturbation and several unidentifiable fish. ROV shifting from being on bottom and ~3 m off bottom.
CFX Cable	6/19/2008	NEREUS				526	17:56:00					0	0	0					ROV having difficulty staying on bottom.
CFX Cable	6/19/2008	NEREUS				523	18:00:00	S	S			0	0	0					ROV trying to navigate to the seafloor. Cable is in and out of sight (due to distance off bottom and lateral sway).
CFX Cable	6/19/2008	NEREUS				529	18:04:00					0	0	0					End of Disc 41.
CFX Cable	6/19/2008	NEREUS				527	18:05:00	S	S			0	0	0					2 Bu? (N/A, N) Start of Disc 42. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				528	18:10:00					0	0	0					ROV closer to the seafloor and searching for the cable. Coordinating with bridge to gain lateral motion while attempting to stay on bottom. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				531	18:16:00					0	0	0					ROV found cable and now maneuvering to regain our position over cable to resume the survey
CFX Cable	6/19/2008	NEREUS				525	18:20:00					0	0	0					ROV has drifted off the seafloor. Cable still in sight and working back down to bottom. Surface current has increased to 4 knots.
CFX Cable	6/19/2008	NEREUS				524	18:23:00					0	0	0					ROV off cable again but only 2.1 m above the bottom. Meeting being help with captain and crew staff to discuss next steps
CFX Cable	6/19/2008	NEREUS				530	18:25:00	S	S			0	0	0					ROV on bottom and attempting to move forward towards cable (which is not currently in sight). 100% sediment bottom with very sparse rubble. [Tilefish burrow]
CFX Cable	6/19/2008	NEREUS				534	18:31:00	S	S			0	0	0					ROV on bottom but off of cable. Observed two plastic bags on the bottom, squat lobster, and perhaps an eel swimming around bag.
CFX Cable	6/19/2008	NEREUS				534	18:35:00					0	0	0					Mission terminated. Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				447	18:40:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				399	18:41:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				297	18:43:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				189	18:45:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				70	18:47:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS				10	18:48:00					0	0	0					Recovering the ROV.
CFX Cable	6/19/2008	NEREUS					18:49:00					0	0	0					ROV at surface. End of Disc 42.