Pacific Reef Assessment and Monitoring Program

Data Report

Ecological monitoring 2012–2013—reef fishes and benthic habitats of the main Hawaiian Islands, American Samoa, and Pacific Remote Island Areas

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This report outlines some of the coral reef monitoring surveys conducted by the National Oceanic and Atmospheric Administration (NOAA) Pacific Islands Fisheries Science Center's Coral Reef Ecosystem Division in 2012 and 2013. This includes the following regions: American Samoa, the main Hawaiian Islands and the Pacific Remote Island Areas.

Acknowledgements

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Acronyms

CRED	Coral Reef Ecosystem Division
CRCP	Coral Reef Conservation Program
NOAA	National Oceanic and Atmospheric Administration
Pacific RAMP	Pacific Reef Assessment Monitoring Program
SPC	Stationary Point Count
PMNM	Papahānaumokuākea Marine National Monument
PRIA	Pacific Remote Island Areas

Contents

Introduction

Background

The Coral Reef Ecosystem Division (CRED) established a long-term monitoring program, known as the Pacific Reef Assessment and Monitoring Program (Pacific RAMP) in 2000. Pacific RAMP, which is supported by NOAA's Coral Reef Conservation Program (CRCP), is tasked with documenting and understanding the status and trends of coral reef ecosystems in the U.S. Pacific. Pacific RAMP monitors reef areas in the following regions: the Hawaiian and Mariana Archipelagos, American Samoa, and the Pacific Remote Island Areas (PRIA), which include Johnston and Wake Atolls and the U.S. Line and Phoenix Islands (Figure 1).

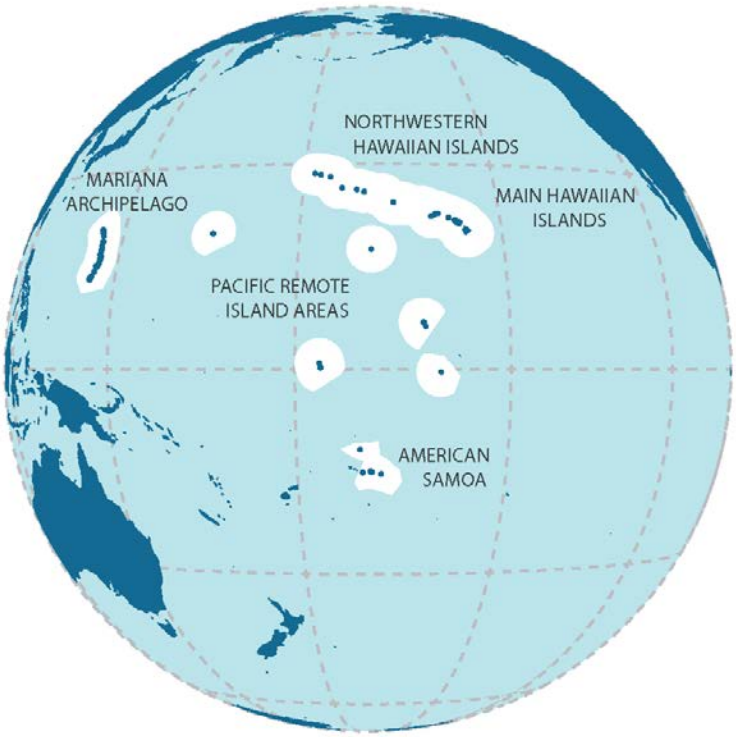

Figure 1: Coral reef areas surveyed by NOAA-CRED for Pacific RAMP. White areas represent the exclusive economic zones for each U.S. Pacific region surveyed.

Pacific RAMP involves interdisciplinary monitoring of oceanographic conditions and biological surveys of organisms associated with hard-bottomed habitats in the 0–30 m depth range. From 2000–2011, regions were surveyed on a biennial basis and in 2012 Pacific RAMP changed to a triennial cycle, as part of the implementation of NOAA's National Coral Reef Monitoring Plan (NCRMP) that is funded by NOAA CRCP.

The NCRMP aims to support integrated, consistent and comparable monitoring of coral reefs across all U.S.-affiliated regions. Partnership and cooperation with other federal and jurisdictional management groups is a core principle of the NCRMP. For example, the Papahānaumokuākea Marine National Monument (PMNM) conducts a subset of coral reef monitoring surveys in the Northwestern Hawaiian Islands using a similar survey design and methods, and with considerable overlap in observers. Data gathered by PMNM is therefore readily merged with data gathered specifically for NCRMP by CRED. Similarly, in 2012, NOAA National Marine Fisheries Service (NMFS) supported supplementary surveys around the main Hawaiian Islands using the same methods, design and observers for reef surveys as Pacific RAMP, in order to augment and improve the value of the Pacific RAMP fish survey data used in assessments of reef fish status. The supplemental data are included with data shown in this report.

The NCRMP has three themes: biological, climate and socioeconomic monitoring. Under the biological monitoring theme, the Pacific RAMP collects the following benthic and reef-associated fish data: fish and coral demographic information (species, size, abundance, biomass, disease (coral only), bleaching (coral only)); and information on benthic composition and key species (see Appendix 1: Pacific RAMP data types collected for the biological theme of NCRMP). The focus of this report is the data collected using the stationary point count method to survey the fish assemblage and paired rapid visual assessments of benthic composition (see Section: Methods). Additional, related fish and benthic data are collected via benthic transects and towed diver surveys (for more information see NCRMP 2013); these data will be reported in a forthcoming series of complimentary data reports.

Monitoring scope and historical programmatic changes

Pacific RAMP includes the following biological monitoring objectives:

- Gather information on and document the status and trends of coral reef fishes and benthic assemblages in the U.S. Pacific;
- Provide information on status and trends of coral reef taxa of ecological and economic importance;
- Generate data suitable for tracking and assessing changes in reef assemblages in response to human, oceanographic, or environmental stressors; and
- Generate data suitable for evaluating the effectiveness of specific management strategies, and to support appropriate adaptive management.

These objectives are based on the key monitoring questions for NCRMP and the CRCP support for baseline observations and monitoring (refer to NCRMP 2013 and NOAA CRCP 2009 for more details).

Pacific RAMP involves monitoring over very large spatial scales: ~40 islands and atolls spread over thousands of kilometers. The target of Pacific RAMP biological monitoring under NCRMP is to provide snapshot assessments of coral reef assemblages at U.S.-affiliated islands in the Pacific, with the core reporting unit being at the island level (or sub-island scale for large islands), and as such the survey design and effort are optimized to generate data at the spatial scale of islands and atolls. The NCRMP is therefore explicitly a "wide-but-thin" survey program, with the aim of generating large-scale, regional status and trend information of the Nation's shallow water (0–30 m) coral reef ecosystems, in order to provide a broad-scale context and perspective to local jurisdictions and other survey programs.

Additional surveys at smaller spatial scales which are intended to address more local information needs are also occasionally performed by CRED (for instance the American Samoa priority watershed surveys – see Appendix 2: American Samoa priority watershed surveys), but those are not a part of Pacific RAMP.

In 2012 Pacific RAMP changed from surveying regions once every two years, to once every three years. The sampling design and methods used to monitor coral reef fish species and habitats for Pacific RAMP have also evolved over time. More specifically, from 2000–2006 surveys were conducted at haphazardly located permanent sites using various belt transect methods. During 2007–2009, CRED and PMNM conducted comparative reef fish surveys using both the belt transect and the stationary point count (SPC) methods, and incorporated a stratified random sampling survey design. Survey replication (i.e., the number of sites sampled) greatly increased over this period and this higher level of replication has since been maintained (Appendix 3: Surveys per region per year and method used). Following this methods calibration period, from 2009 onwards the SPC method and depth-stratified random sampling were applied routinely in Pacific RAMP for surveying reef fish and associated benthic communities.

Report structure

This report summarizes a subset of the reef fish and benthic survey data collected by the Coral Reef Ecosystem Division for Pacific RAMP and for compatible PMNM, NMFS and CRCP survey missions in 2012 and 2013. Over that time period, surveys were conducted in the following regions: the Pacific Remote Island Areas, American Samoa and the main Hawaiian Islands. The status of reefs in each region is first described in the wider Pacific context (Section: U.S. Pacific reefs: the status of reef fish) and then at the island scale for each of the regions (Section: Island status and trends). Given the substantial changes in methods and design, this report specifically focuses on examining the observations collected since 2009, which only includes the subset of Pacific RAMP data that were collected using the SPC method under the depth-stratified random sampling design. In the final section, the publications that were produced in 2012 and 2013 as a result of those surveys are listed; these publications either use the Pacific RAMP fish data or were coauthored by members of the CRED fish team and relevant to Pacific RAMP fish ecological monitoring work. All data used in this report along with other biological and climate monitoring data collected by CRED for Pacific RAMP are available upon request.

Methods

Sampling domain and design

The target sampling domain is hardbottom habitat in water shallower than 30m. All islands / atolls within regions are stratified by reef zone (backreef, forereef, lagoon) and depth zone: shallow (0–6 m), mid (6–18 m), and deep (18–30 m). For the large majority of cases, entire islands or atolls are stratified by habitat and depth as described above, however, for populated large islands or where large portions of an island are under fundamentally different levels of management (e.g., inside or outside marine protected areas), there is an additional level of stratification based on "sector" (section of coastline and /or management status). Specifically, Guam is subdivided into three sectors: "Marine Preserve" (being all areas within Guam's Marine Preserve System); "Guam Open East" (areas outside of Mean Preserves on east side of Guam); and "Guam West" (Appendix 4: Sectors maps). Furthermore, the generally larger, main Hawaiian Islands are divided into between 2 and 7 sectors per island, with sector boundaries designed to reflect broad differences in oceanographic exposure, reef structure, and local human population density (Appendix 4: Sectors maps). Finally, some of the smaller, more closely spaced islands are always pooled into single reporting and sampling units (i.e., Alamagan, Guguan and Sarigan in the Mariana Archipelago; Tutuila and Aunu`u, Ofu and Olosega in American Samoa; and Ni`ihau and Lehua in the main Hawaiian Islands). Due to their small size, these island groups are only ever allocated a limited number of sea days per cruise, and therefore total sampling effort per island is inadequate to report out data at that level. Details of sectors and sampling effort per survey cruise are given in Appendix 5: Sectors by year.

Term	Definition
Sample site data	The average values of estimated observed quantities from the SPC surveys conducted at each site. Typically derived from a single pair of simultaneous surveys. Sites are tied to geographic coordinates.
Reporting unit	A collection of sample sites, typically an island or atoll, and in some cases small island groups or sectors of larger islands.
Sampling domain	Hardbottom habitat in water less than 30 m depth.
Strata	Reef zone (backreef, forereef, lagoon) Depth zone (shallow 0–6m[1], mid 6–18 m, deep 18–30 m) Sectors (e.g., management units[2] and stretches of coastline with broadly similar habitat attributes and local human population density[3]).

Table 1. Sampling terms and definitions. [1] For practical reasons, sites in which the centerpoint of the survey cylinder is shallower than 1.5 m are not surveyed. [2] For the island of Guam only. [3] Currently only in the main Hawaiian Islands and Guam.

Site selection

Prior to each survey mission, sample site locations are randomly drawn from geographic information system (GIS) habitat and strata maps (Figure 2). That is, the latitude and longitude of site locations are randomly drawn from a map of the entire sampling domain.

Maps used in the site selection procedure were created using information from the NOAA National Centers for Coastal Ocean Science, reef zones (e.g., forereef) digitized from IKONOS satellite imagery or nautical charts, bathymetric data from the CRED-affiliated Pacific Islands Benthic Habitat Mapping Center, University of Hawai`i at Mānoa, and prior knowledge gained from previous visits to survey locations.

During cruise planning, logistic and weather conditions factor into the allocation of monitoring effort around each island or atoll. Prior to the cruises, these constraints determine the area of target habitat from which sites are randomly selected; for instance, one side of an island may be deemed unsurveyable given seasonal wave conditions or CRED's allocation of sea days aboard the NOAA research vessel may curtail the time spent in a particular area. The density of sites that are sampled per stratum is therefore determined by proportionally allocating effort (e.g., the number of sites to be surveyed) based on a weighting factor calculated from the area per stratum per reporting unit and the variance of the target output metrics (e.g., consumer group biomass and total fish biomass; see Section: Fish groupings), combined with what is feasible given the time constraints of ship time allotted per island or atoll.

During field operations on a research cruise, if a site is not suitable (e.g., soft- as opposed to hard-bottomed habitat) or accessible (e.g., due to inclement sea conditions), the dive is aborted and an alternate (backup) site is picked from the randomized list. In some cases, the spatial coverage of sampling sites around the entire area of target sampling domain is incomplete. As such, any inferences about coral reef fish assemblages and habitat made at the island-scale are clearly only representative of the areas surveyed (Appendix 5: Sectors by year). For further details on the methods and maps used to select sites see Williams et al. (2011) or the Coral Reef Ecosystem Division Standard Operating Procedures: Data Collection for Rapid Ecological Assessment Fish Surveys (Ayotte et al. 2011).

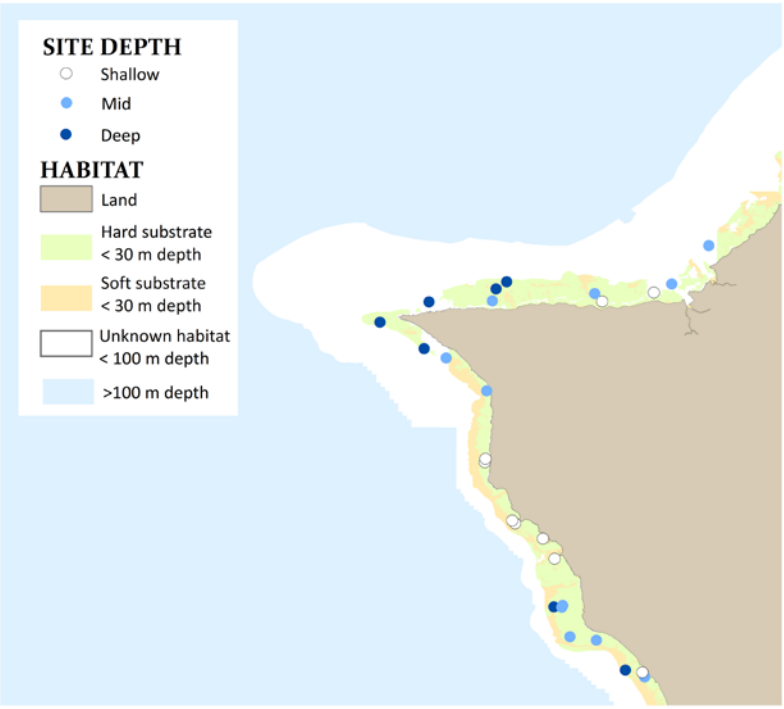

Figure 2. An example of the benthic habitat and depth strata information used in the site selection process. Reef fish survey sites are randomly selected within each depth stratum. Reef fish survey effort is allocated to optimize island-scale biomass estimates. Prior to surveying, a series of primary sites are selected, each circle identifies a site which falls on hard substrata (green) in the three depth strata (see map legend, shallow: 0–6 m, mid: 6–18 m and deep: 18–30 m). An alternate set of depth-stratified sites are also generated in the event that primary sites are not suitable or accessible.

Sampling methods

At each reef fish survey site two types of data are collected, visual counts of the fish assemblage and surveys of the benthic habitat.

Counting and sizing reef fishes

The SPC protocol closely follows that used by Ault and colleagues (Ault et al., 2006) and involves a pair of divers conducting simultaneous counts in adjacent, visually estimated 15-m-diameter cylindrical plots extending from the substrate to the limits of vertical visibility (Figure 3). Prior to beginning each SPC pair, a 30-m line is laid across the substratum. Markings at 7.5 m, 15 m and 22.5 m enable survey divers to locate the midpoint (7.5 m or 22.5 m) and two edges (0 m and 15 m; or 15 m and 30 m) of their survey plots. Each count consists of two components. The first of these is a 5-min species enumeration period in which the diver records the taxa of all species observed within their cylinder. At the end of the 5-min period, divers begin the tallying portion of the count, in which they systematically work through their species listing and record the number and estimated size (total length, TL, to the nearest cm) of each individual fish. The tallying portion is conducted as a series of rapid visual sweeps of the plot, with one species-grouping counted per sweep. To the extent possible, divers remain at the center of their cylinders throughout the count. However, small, generally site-attached and semi-cryptic species, which tend to be underrepresented in counts made by an observer remaining in the center of a 7.5-m radius cylinder, are left to the end of the tally period, at which time the observer

swims through their plot area carefully searching for those species. In cases where a species is observed during the enumeration period but is not present in the cylinder during the tallying period, divers record their best estimates of size and number observed in the first encounter during the enumeration period and mark the data record as "noninstantaneous." Surveys are not conducted if horizontal visibility is < 7.5 m, i.e., when observers cannot distinguish the edges of their cylinder (see Ayotte et al. 2011). Biomass per fish is then calculated using the standard length-weight equation. Data from the two adjacent SPC surveys are averaged to create a biomass estimate for each site (Section: Data handling), in cases where more than one SPC paired survey is conducted, data from matched members of each pair are first averaged before pair-specific results are averaged to create site estimates.

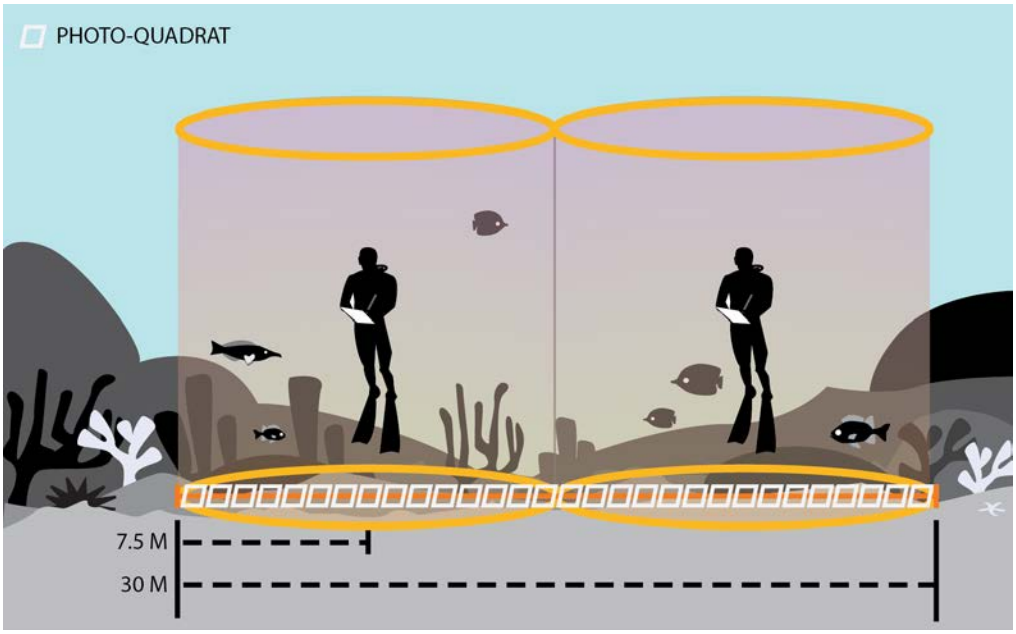

Figure 3 Side view of the stationary point count method. Dive partners count and size fishes within adjacent cylinders measuring 7.5 m in radius. Once the fish survey is complete, divers estimate benthic habitat composition and a photo-transect is collected, spanning the two cylinders.

Assessing benthic habitat characteristics

Two complementary methods are used to assess benthic composition within the same area where fish are surveyed. The first involves divers conducting a rapid visual assessment of the percentage cover of major functional categories of benthic cover and the second involves collecting photo-quadrat images of the benthos taken along the survey transect line that are later analyzed (Figure 3). The rapid visual assessment method provides a coarse but immediate estimate of benthic composition. In contrast, the photo-quadrat surveys provide estimates of benthic composition at a higher taxonomic or functional resolution, but only after substantial post-survey data processing. A comparison of these two methods indicates that the rapid visual assessment technique provides robust estimates of benthic cover, particularly for hard coral, which are consistent with cover estimates from the photo-quadrat survey method (McCoy et al. submitted). As with the fish data, benthic data from the two adjacent SPC surveys are averaged to create an estimate per site.

Benthic visual assessment

After completing the fish survey, both divers scan the benthos in their survey cylinder for 2–3 min and visually estimate the percentage cover of each of: encrusting algae, fleshy macro algae, hard coral, turf algae, sand and soft coral. Divers also estimate the slope, broad habitat type and structural complexity (Ayotte et al. 2011). Divers record reef habitat complexity by visually estimating the percentage of the cylinder that falls into the following levels of vertical relief: <0.25 m, 0.25–0.75 m, 0.75–1.5 m, 1.5–3 m, 3–5 m, and >5 m. The abundance of free (e.g., *Tripneustes, Heterocentrotus, Diadema* and *Echinothrix)* and boring (e.g., *Echinometra* and *Echnostephus*) urchins is also rapidly visually assessed and recorded on a DACOR scale (Dominant, Abundant, Common, Occasional, Rare). Finally divers identify the broad-scale habitat type for the general area of the survey. The habitat classification scheme follows the geomorphological structures as identified by the Biogeography Branch of the NOAA National Ocean Service National Centers for Coastal Ocean Science. The coral reef and hardbottom habitat types are: aggregate reef, individual patch reef, aggregated patch reefs, spur and groove, pavement, pavement with sand channels, pavement with patch reefs, reef rubble and rock / boulder (Kendall and Poti 2011).

Photo-quadrat survey

With the fish survey and rapid benthic visual assessment completed, one diver takes photographs of the benthos at 1 m intervals along the transect line (30 photographs per site) (Figure 3). A 1 meter PVC stick is used to position a digital camera (Canon PowerShot SD1200 IS, 10.0 megapixel) directly above the substrate to frame an area of ~0.7 m^2 per photograph. These images are archived for future analysis.

Our preferred benthic assessment method is the photo-quadrat survey as benthic composition can be identified to a higher resolution. However, due to a lag in analyzing the photo-images, only the visual assessment data are shown in this report.

Data entry and storage

Data were entered into a Microsoft Access database. Upon completion of a monitoring cruise, all data were migrated to an Oracle database that is stored on a server at the Pacific Islands Fisheries Science Center.

Data quality control

Data quality control is implemented at three main stages:

- Ongoing routine training of observers (Figure 4: Pre-field, Appendix 6: Quality control).
- Checking for errors at the data entry stage (Figure 4: In the field). This occurs on the cruise when observers check the data entered by their dive partner against their datasheet for typing and potential sizing errors. At the end of the cruise, a series of error checking scripts are run prior to migrating from the data entry database (Access) to the storage database (Oracle) (Figure 4: Post field).

- Examining diver estimation accuracy. This occurs during and after the monitoring cruise when diver estimates are compared between dive partner pairs (Figure 4: In the field). Observer comparisons from the regions surveyed in 2012 and 2013 are in Appendix 6.2 Observer cross-comparison.

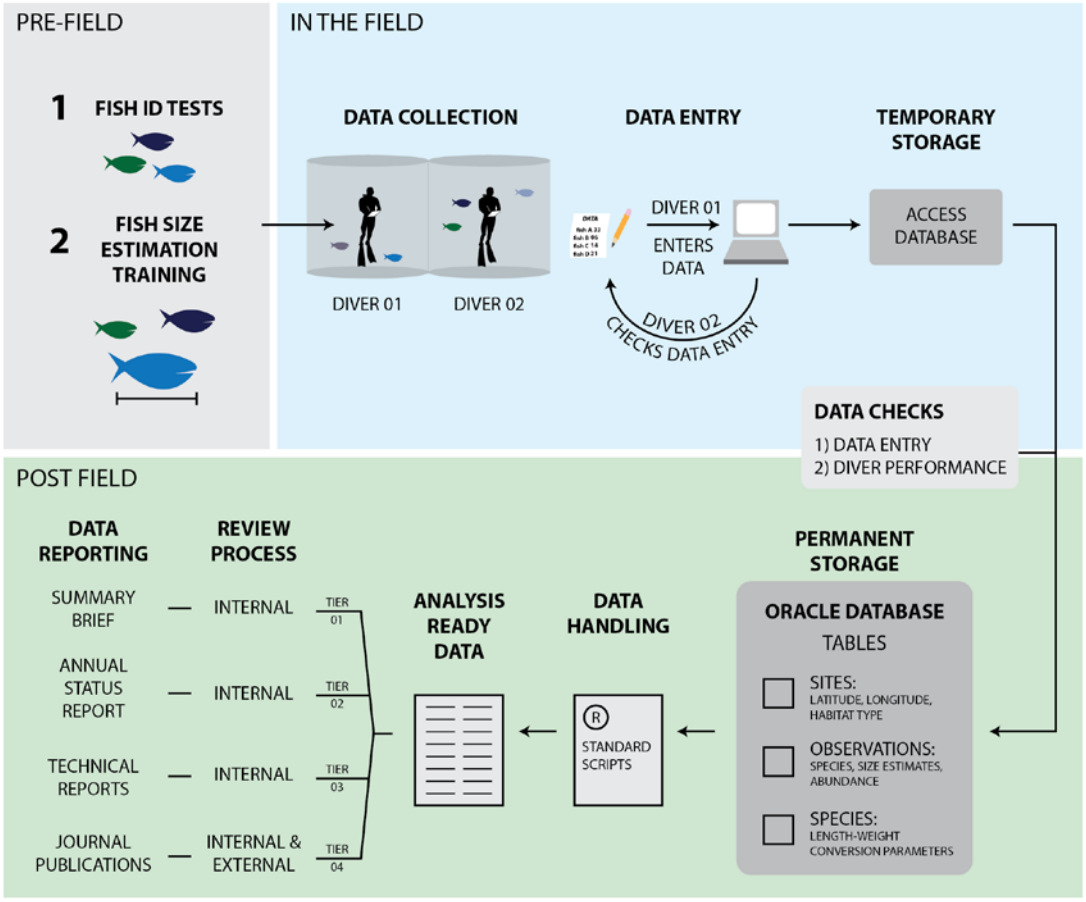

Figure 4. The training, data collection, data processing and reporting phases for Pacific RAMP fish and benthic surveys.

Data handling

Calculating fish biomass and benthic cover estimates per site

Using the count and size estimate data collected per observer in each replicate survey, the body weight of individual fish is calculated using length-to-weight (LW) conversion parameters, and, where necessary, length-length (LL) parameters (for example, to convert TL to fork length [FL] for species with LW parameters based on FL). LW and LL conversion parameters were taken from FishBase (Froese and Pauly 2010, Kulbicki et al. 2005; Appendix 7: Species list). Herein the term "biomass" refers to the aggregate body weight of a group of fishes per unit area (g m^{-2}). Site is the base sample unit and the estimated biomass of fishes per site is calculated by taking the mean values from the paired SPC surveys. Similarly the mean percentage cover estimates per benthic functional group and complexity measures are calculated as site level means.

Fish groupings

In this report, species data are summarized at three different levels: consumer group, size class, and total fish biomass ("all fishes"). Consumer groups are: "primary consumers" (herbivores and detritivores); "secondary consumers" (omnivores and benthic invertivores); "planktivores"; and "piscivores," with classifications based on diet information taken largely from FishBase (Froese and Pauly, 2010; Appendix 7: Species list). The size classes used are 0–20, 20–50 and >50 cm TL.

Generating island-scale estimates from the stratified design

Summary statistics (e.g., mean and variances) of survey quantities, e.g., biomass, are calculated by first averaging values within each stratum before calculating the reporting unit values. A weighted average method to calculate summary statistics is used because survey strata vary in size within each reporting unit.

Estimates of the mean and variance for each survey quantity considered are calculated based on the observed values at sampled sites within each stratum. Then aggregate estimates of the quantities across all strata are calculated using the formulas below. For example, with respect to biomass we have:

(1) pooled mean biomass (*X*) across S strata: $X = \sum_1^S (X_i * w_i)$ and;

(2) pooled variance of mean biomass (*VAR*) across S strata: $VAR = \sum_1^S (VAR_i * w_i^2)$

where X_i is the estimate of mean biomass within stratum *i*, VAR_i is the estimated variance of X_i and w_i is the stratum-weighting factor. Strata weighting factors were based on the size of strata, i.e., if a stratum is 50% of the total area in an island then is weighting factor will be 0.5, and total of all weighting factors in an island sums to 1 (Smith et al. 2011).

In this report, only data from sites surveyed under the stratified sampling design are used, i.e., data collected from 2009 onwards; Appendix 8: Random stratified sites surveyed at each island per year. In the few cases where less than 2 sites were surveyed in a stratum in a reporting period, these sites were removed from the island-scale parameter estimates for that period.

To assess Pacific-wide patterns in reef fish assemblages, statistics of total fish biomass (i.e., all fishes) and biomass within each consumer group and size class (mean and variance) are calculated per island per year and then averaging across years. In the section on U.S. Pacific reefs, summary graphs and metrics were generated from data collected since 2009 (see Section: U.S. Pacific reefs: the status of reef fish).

Island-scale values for total fish biomass (i.e., all fishes) and biomass per consumer group and size class (mean and variance) are calculated by year (see Section: Island status and trends). Thus far, the time series under the stratified sampling design is too short to infer temporal trends[1].

[1] Since the towed diver survey method has not changed since 2002, these data can be used to assess temporal trends in large fish (> 50 cm total length). These data are available upon request: nmfs.pic.credinfo@noaa.gov

For the main Hawaiian Islands, surveys were conducted as part of the Pacific RAMP survey cycle in 2010 and 2013. Supplementary surveys were commissioned by the Pacific Islands Fisheries Science Center in 2012, in order to increase the sample size and to fill in portions of the coastline not covered due to logistical constraints during the 2010 Pacific RAMP cruise. The 2012 cruise was designed to complement the 2010 cruise, so the 2010–2012 survey data from the main Hawaiian Islands have been pooled together in this report. In the Island status and trends section, summary graphs, maps and metrics were generated for regions surveyed in 2012–2013 (i.e., American Samoa, PRIA and the main Hawaiian Islands).

All data handling and analyses were performed using raw site data extracted from the NOAA CRED Oracle database, processed using a set of routine processing scripts written in R (R Development Core Team 2011) (Figure 4: post field), and visualized using the ggplot2 package. The site level data used to generate all figures and summary statistics are reported in Appendix 9: Site level data.

U.S. Pacific reefs: the status of reef fish

This section summarizes variation in reef fish community biomass across the U.S. Pacific island regions, which include the Northwestern Hawaiian Islands and Mariana Archipelago in addition to the main Hawaiian Islands, American Samoa, and the Pacific Remote Island Areas. The islands and atolls surveyed span broad biogeographic, geologic, oceanographic and human-impact gradients. Thus, patterns in the biological community will be influenced by a combination of these factors.

At the region scale, the highest mean total fish biomass was recorded in the Northwestern Hawaiian Islands (mean ± standard error: 212 ± 57 g m^{-2}), followed in decreasing order by the Pacific Remote Island Areas (90 ± 6 g m^{-2}), the northern Mariana Archipelago (63 ± 4 g m^{-2}), American Samoa (44 ± 2 g m^{-2}), the main Hawaiian Islands (26 ± 1 g m^{-2}), and the southern Mariana Archipelago (20 ± 1 g m^{-2})(Figure 5: All fishes). Fish biomass is summarized by consumer group and size class in Figures 5 and 6 and Table 2). The regional mean (+/- standard error) values for total fish biomass and biomass per size class that are reported in this section are plotted as reference points for visual comparison in the following Island status and trends section.

Consumer groups

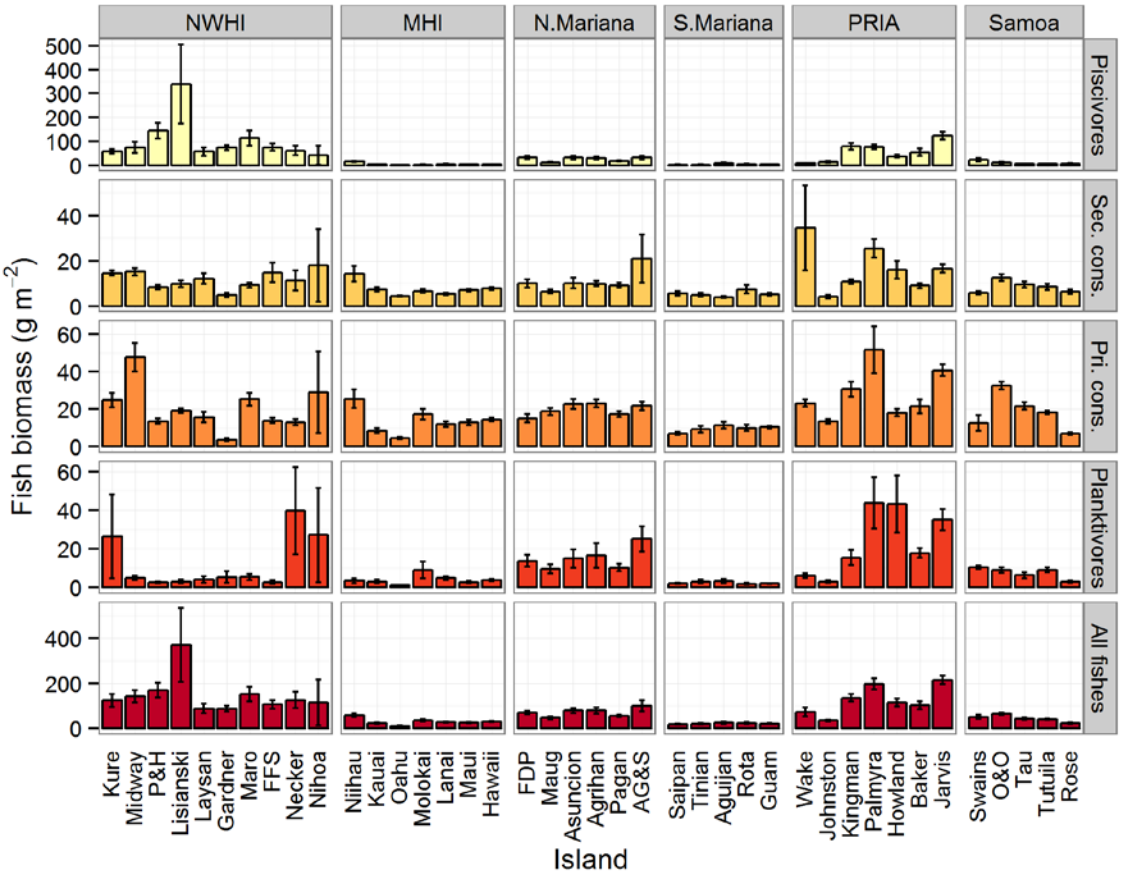

Figure 5 Mean fish biomass by consumer group per US Pacific reef area. Mean fish biomass (± standard error) per consumer group per reef area pooled across survey years (2009–2013). Islands are ordered within region by latitude. See Appendix 3 for the species per consumer group classification scheme. See Appendix 5 and Appendix 8 for the sampling density per strata at each island by year and Appendix 9 for the site level data used to produce the graph. NWHI = Northwestern Hawaiian Islands, MHI = main Hawaiian Islands, N.Mariana = northern Mariana Archipelago, S. Mariana = southern Mariana Archipelago, PRIA = Pacific Remote Island Areas, Samoa = American Samoa, Sec.consumers = secondary consumers, Pri. Consumers = primary consumers.

Size classes

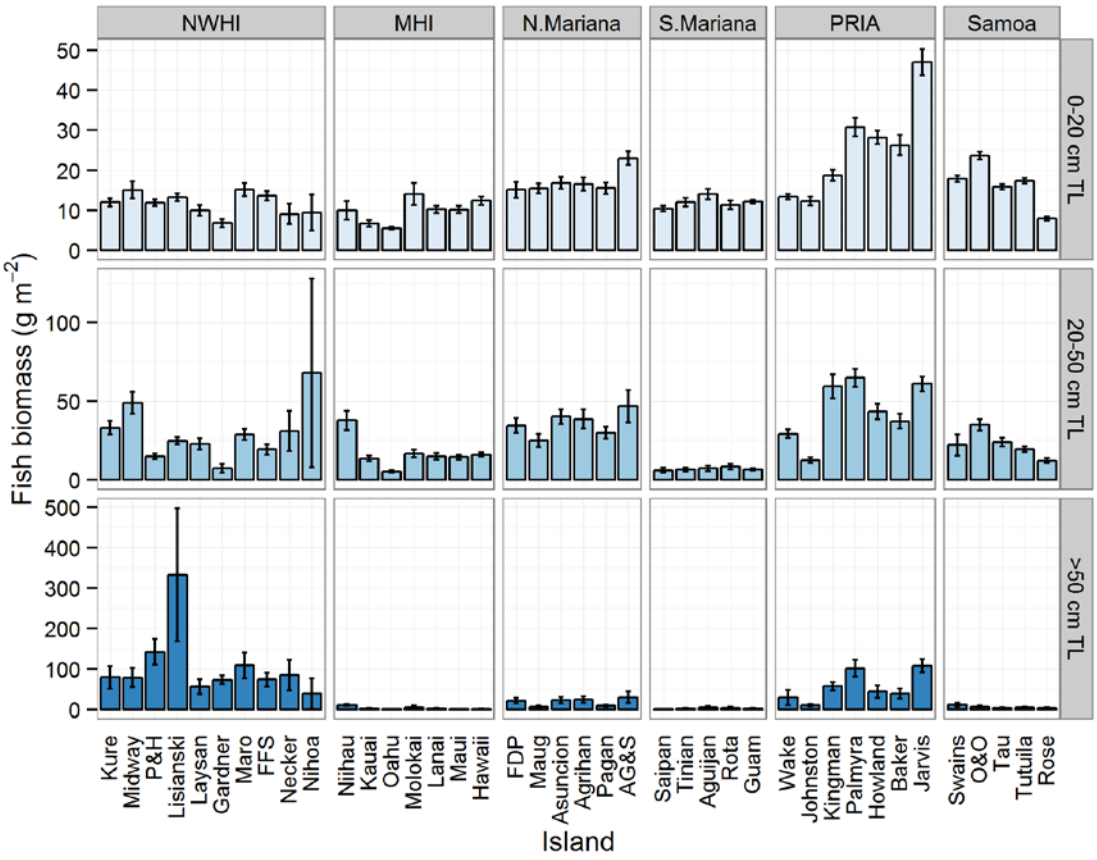

Figure 6 Mean fish biomass per size class per US Pacific reef areas. Mean fish biomass (± standard error) per size class (0–20 cm, 20–50 and > 50 cm in total length (TL)) per reef area pooled across survey years (2009–2013). Islands are ordered within region by latitude. See Appendix 5 and Appendix 8 for the sampling density per strata at each island by year and Appendix 9 for the site level data. NWHI = Northwestern Hawaiian Islands, MHI = main Hawaiian Islands, N.Mariana = northern Mariana Archipelago, S. Mariana = southern Mariana Archipelago, PRIA = Pacific Remote Island Areas, Samoa = American Samoa, TL = total length.

Table 2. Mean fish biomass with standard error in parentheses for all fish biomass, biomass per consumer group and per size class. NWHI = Northwestern Hawaiian Islands, MHI = main Hawaiian Islands, N.Mariana = northern Mariana Archipelago (Farallon de Pajaros down to Sarigan), S. Mariana = southern Mariana Archipelago (Saipan, Tinian, Aguijan, Rota, and Guam), PRIA = Pacific Remote Island Areas, Samoa = American Samoa, Sec.consumers = secondary consumers, Pri. Consumers = primary consumers, TL = total length.

Region	Sites[1]	All fishes	Piscivores	Sec. consumers	Pri. consumers	Planktivores	0–20 cm TL	20–50 cm TL	> 50 cm TL
NWHI	521	212 (56.9)	179 (57)	10 (0.9)	18 (0.8)	5 (0.9)	13 (0.5)	22 (1.2)	177 (57.1)
MHI	621	26 (1.3)	4 (0.3)	7 (0.4)	12 (0.7)	4 (0.6)	9 (0.5)	15 (0.8)	3 (0.6)
N.Mariana	186	63 (4.4)	22 (2.6)	9 (0.7)	19 (1.1)	12 (2.1)	16 (0.9)	33 (2.6)	15 (2.6)
S.Mariana	300	20 (1)	3 (0.5)	5 (0.4)	10 (0.5)	2 (0.2)	12 (0.3)	7 (0.6)	2 (0.6)
PRIA	468	90 (5.8)	42 (3.9)	10 (0.9)	25 (2.4)	14 (2.4)	18 (0.8)	33 (2.1)	39 (4.4)
Samoa	462	44 (1.9)	7 (0.6)	9 (0.9)	20 (0.7)	8 (0.8)	17 (0.5)	22 (1.3)	5 (1)

[1] The number of sites surveyed during 2009–2013.

Island status and trends

This section summarizes data collected at each island in 2010–2013. For each island within region, maps illustrate the site level data from the past and most recent surveys and a standard set of graphs show summary information on the fish and benthic community at the island scale. On each fish biomass graph, a reference line indicates the regionwide mean estimate, provided as a relevant regional comparison for island-level estimates.

American Samoa

Ofu and Olosega Islands

Ofu and Olosega Islands were surveyed in 2010 (n = 30) and 2012 (n =30).

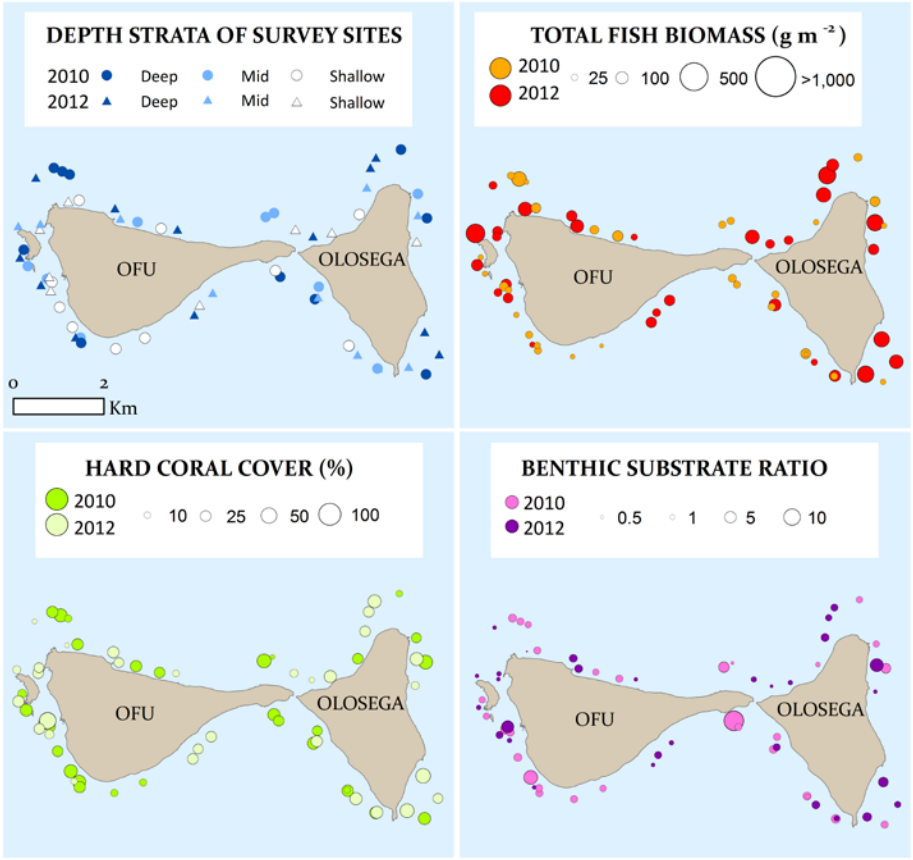

Figure 7 Ofu and Olosega Islands site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

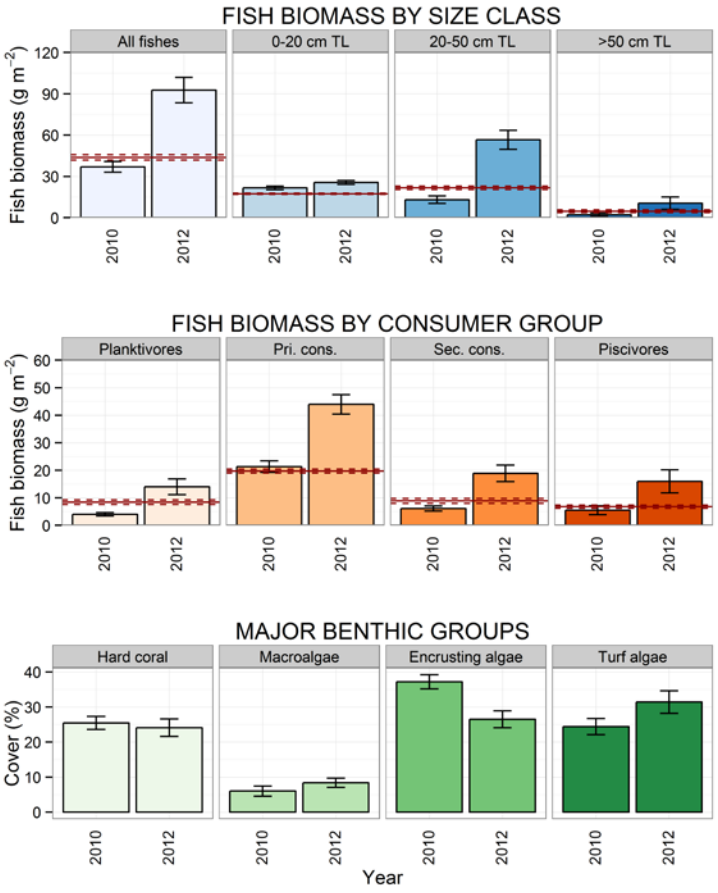

Figure 8 Ofu and Olosega Islands fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The American Samoa region mean estimates are plotted for reference (red dashed line).

Rose Atoll

Rose Atoll was surveyed in 2010 (n=34) and 2012 (n=48).

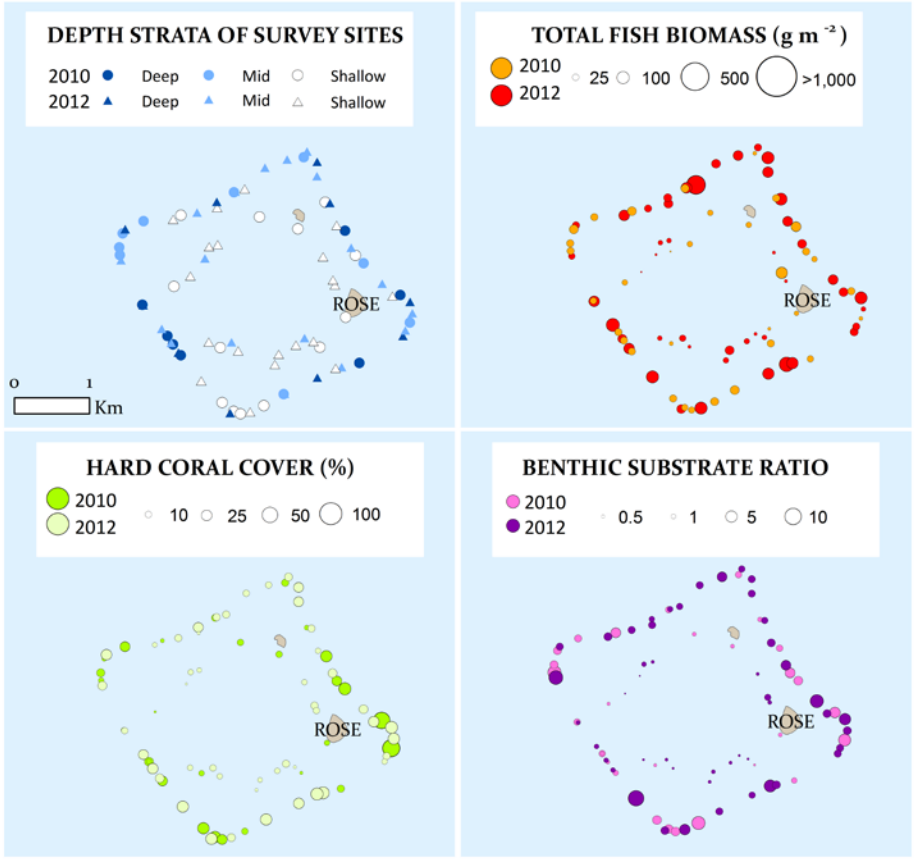

Figure 9 Rose Atoll site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

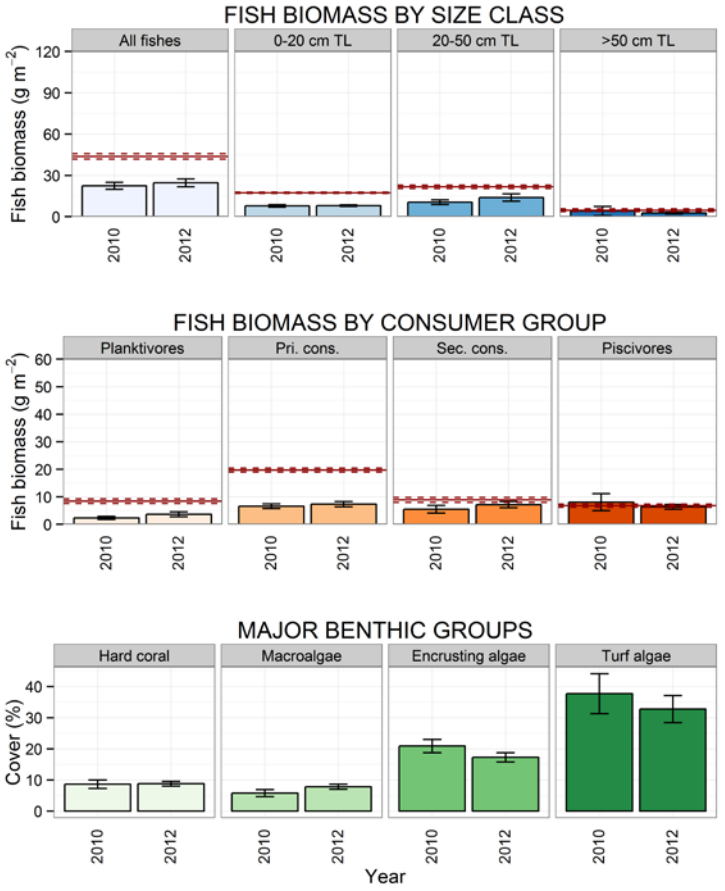

Figure 10 Rose Atoll fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The American Samoa region mean estimates are plotted for reference (red dashed line).

Swains Island

Swains Island was surveyed in 2010 (n=24) and 2012 (n=38).

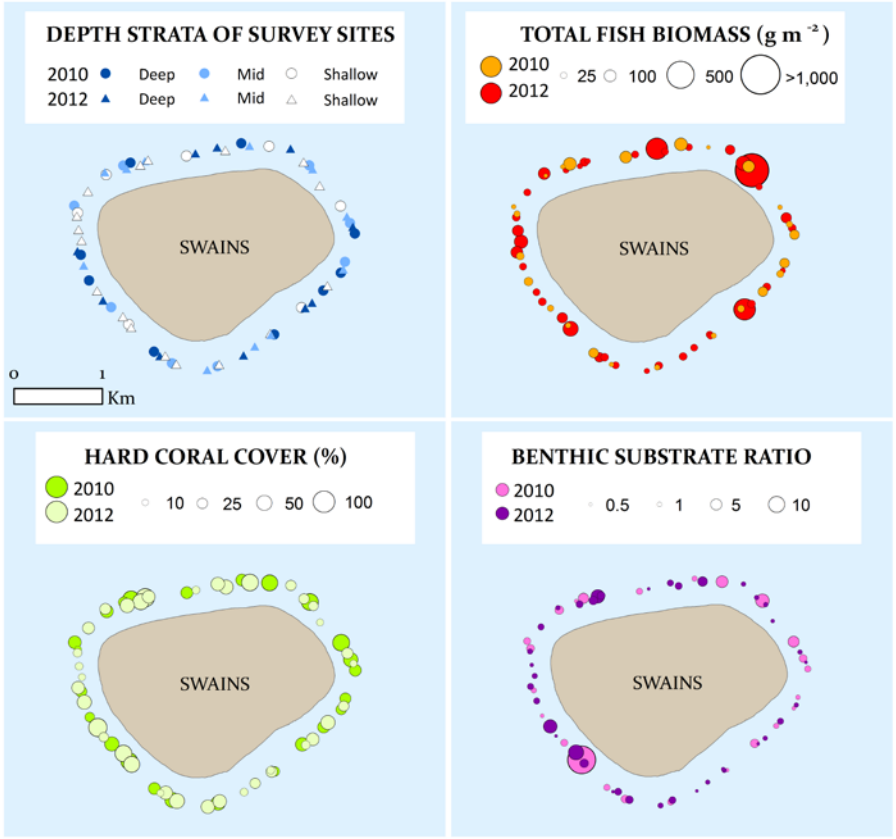

Figure 11 Swains Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

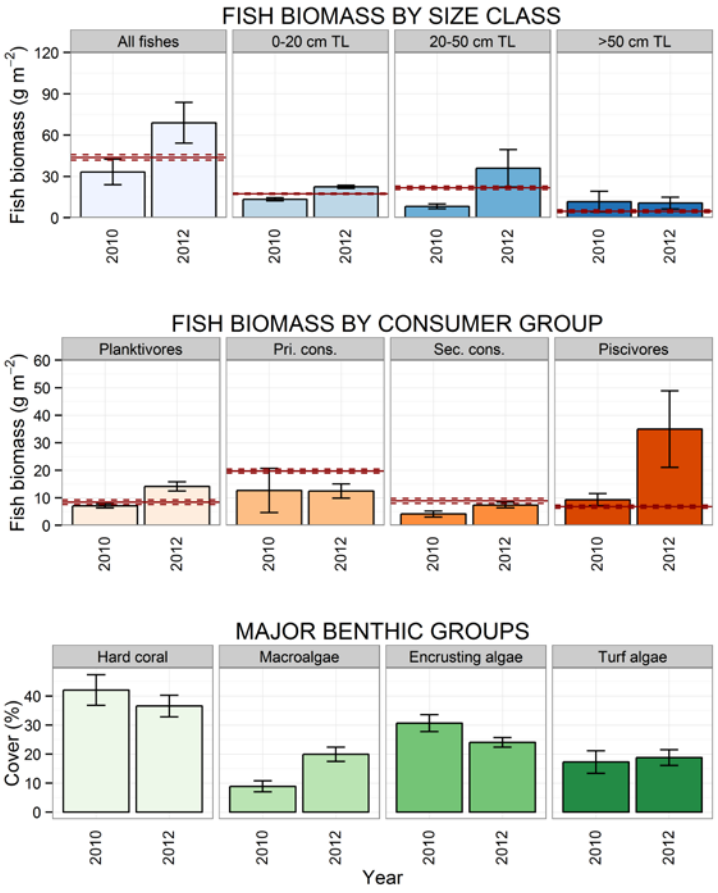

Figure 12 Swains Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The American Samoa region mean estimates are plotted for reference (red dashed line).

Ta`ū Island

Ta`ū Island was surveyed in 2010 (n=24) and 2012 (n=22).

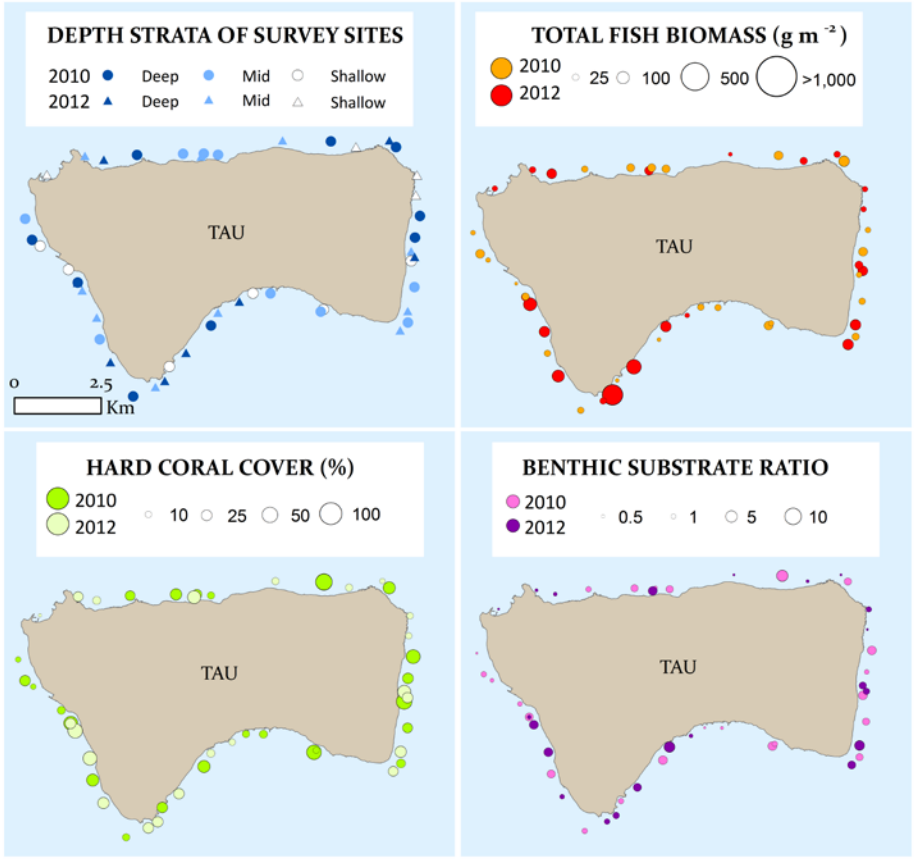

Figure 13 Ta`ū site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

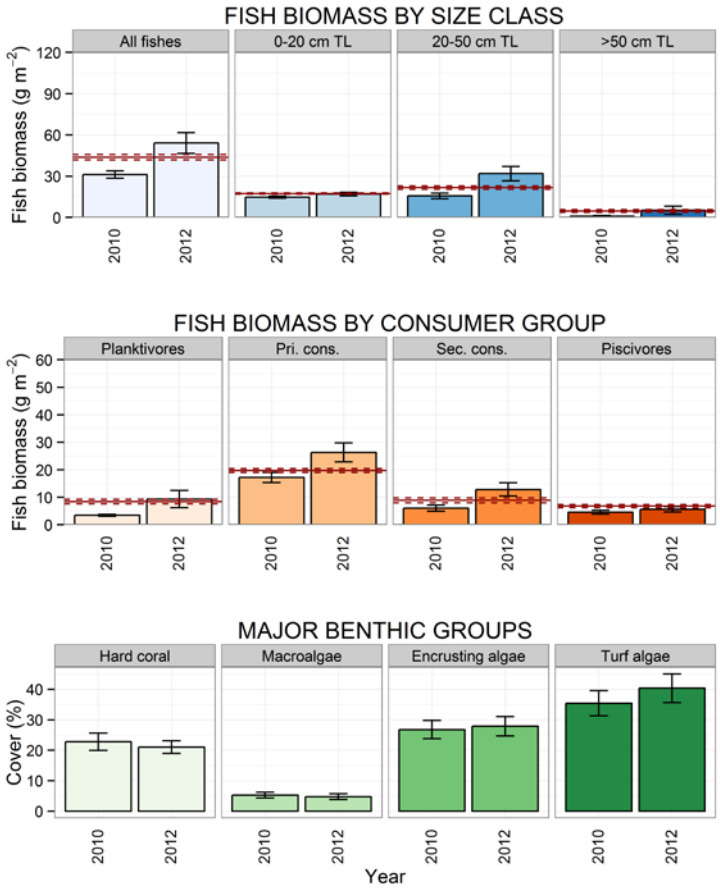

Figure 14 Ta`ū Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The American Samoa region mean estimates are plotted for reference (red dashed line).

Tutuila and Aunu`u Islands

Tutuila and Aunu`u Islands were surveyed in 2010 (n=127) and 2012 (n=85). Additional surveys were conducted in the priority watersheds of Vatia and Faga'alu, a copy of a summary overview is in Appendix 2.

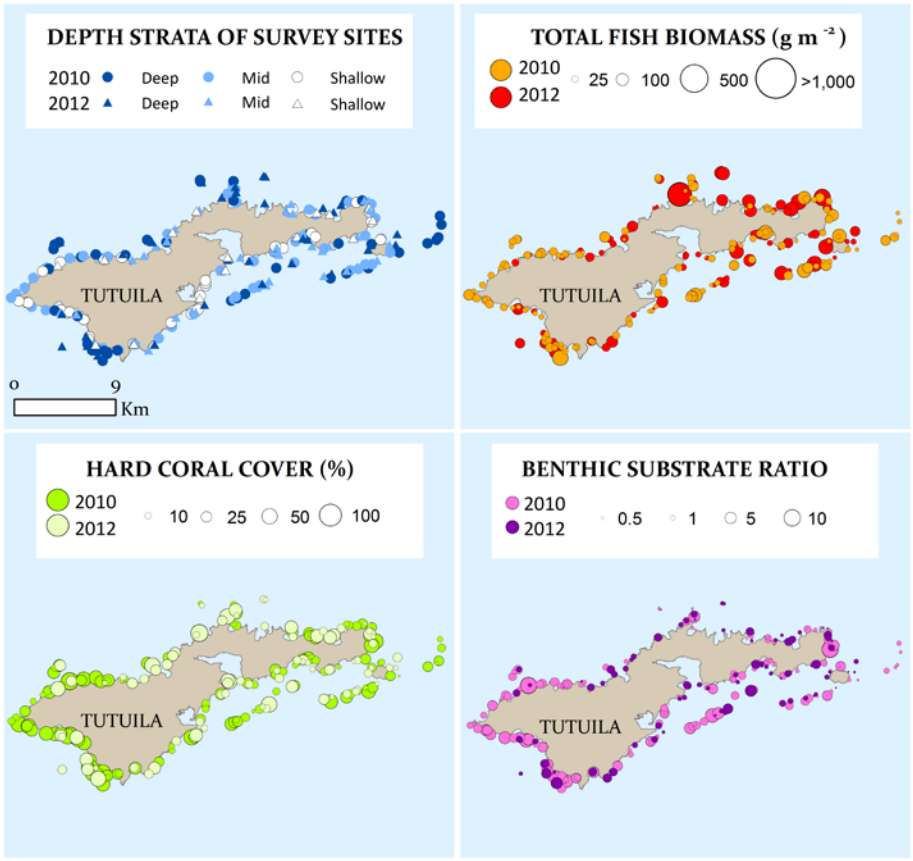

Figure 15 Tutuila and Aunu`u Islands site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

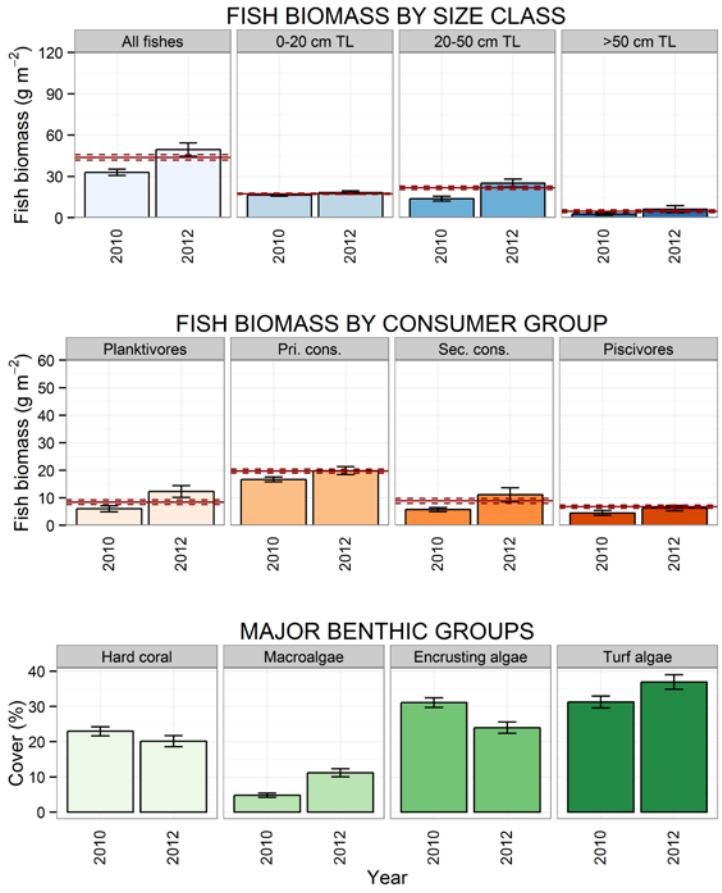

Figure 16 Tutuila and Aunu`u Islands fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The American Samoa region mean estimates are plotted for reference (red dashed line).

Main Hawaiian Islands

Hawai`i Island

Hawai`i Island was surveyed in 2010 (n = 43) and 2013 (n =58)

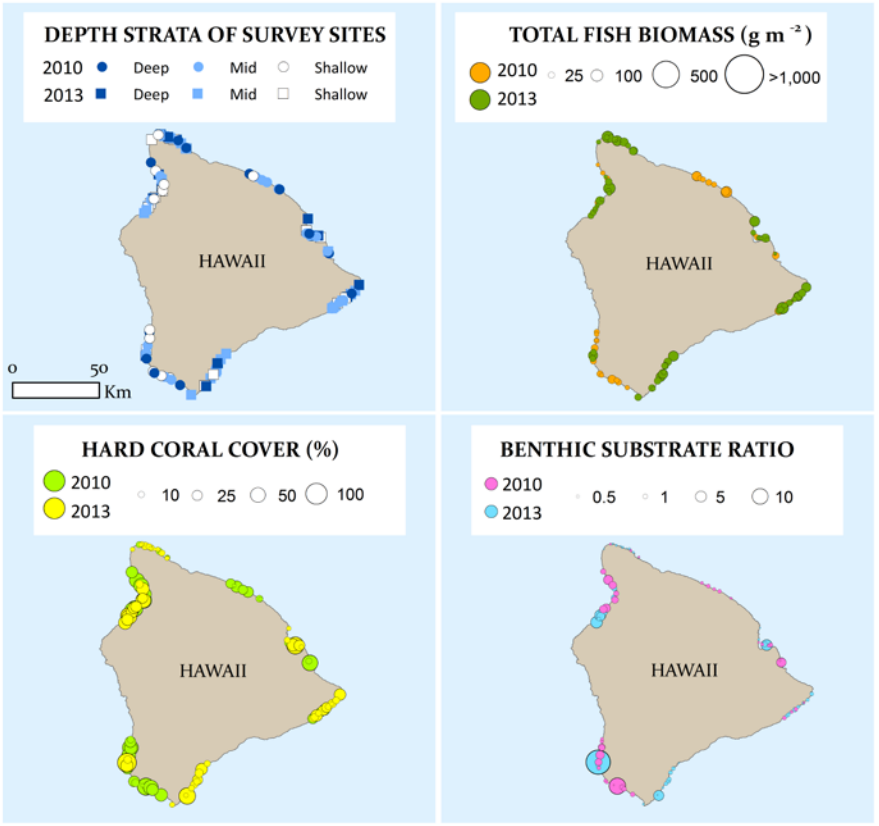

Figure 17 Hawai`i Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

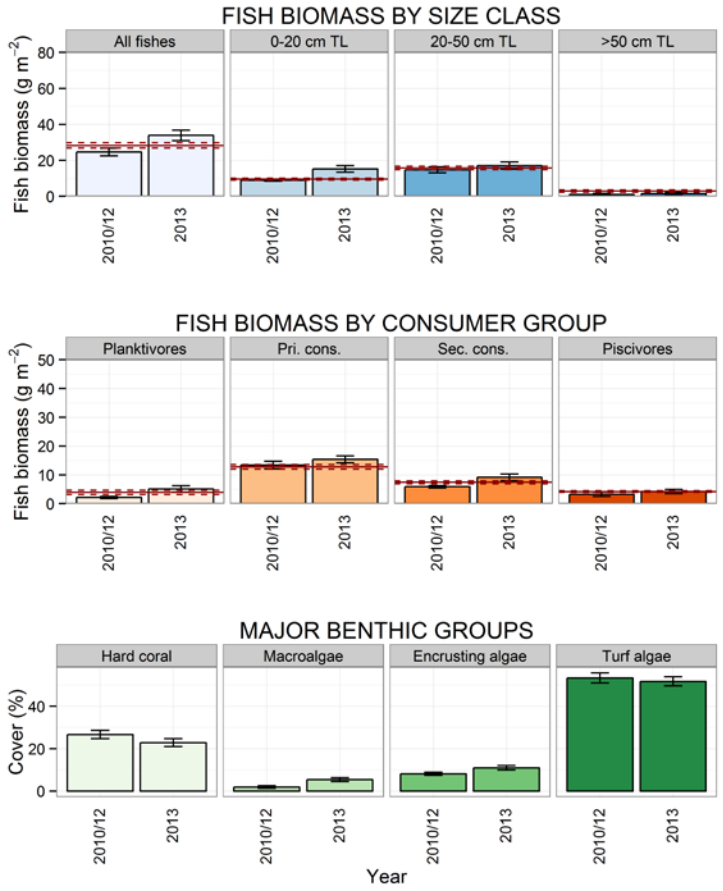

Figure 18 Hawai`i Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Kaua`i Island

Kaua`i Island was surveyed in 2010 (n = 26) and 2013 (n =37).

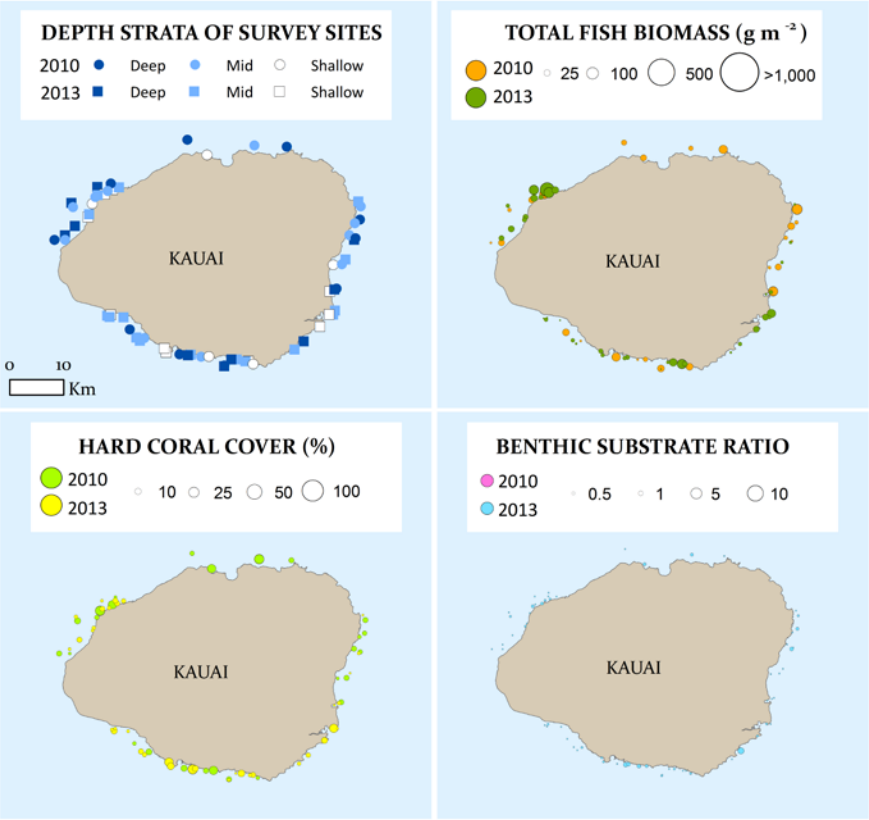

Figure 19 Kaua`i Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

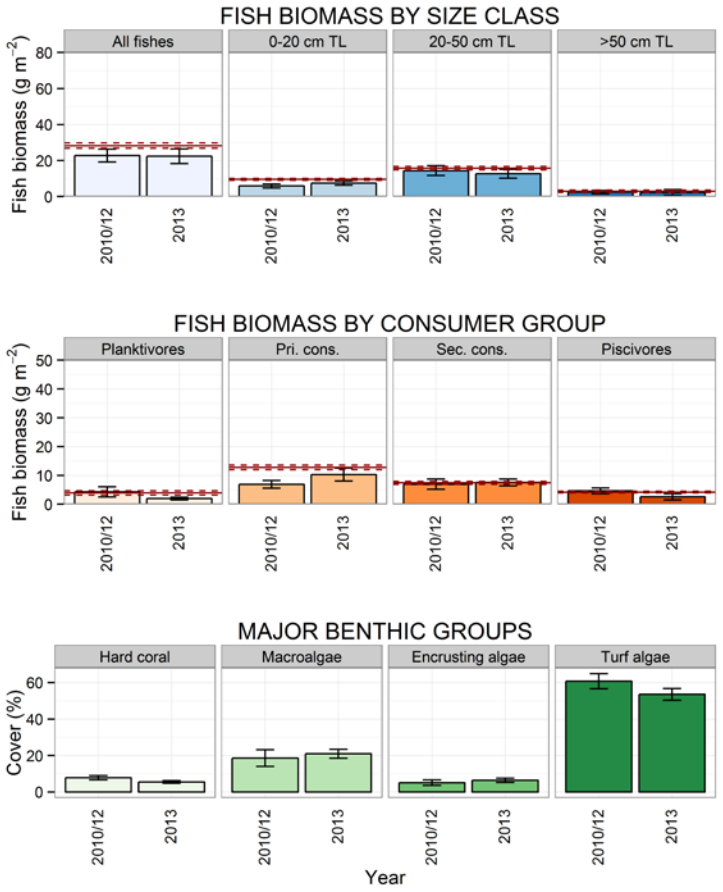

Figure 20 Kaua`i Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Lāna`i Island

Lāna`i was surveyed in 2010 (n =16), 2012 (n =29) and 2013 (n=29).

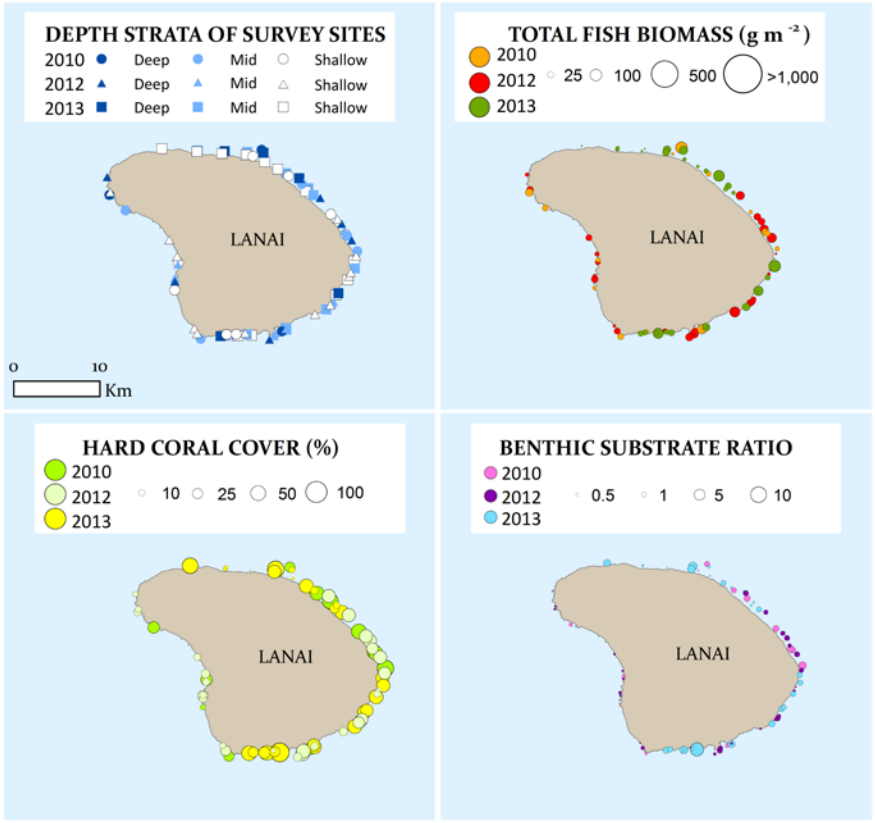

Figure 21 Lāna`i Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

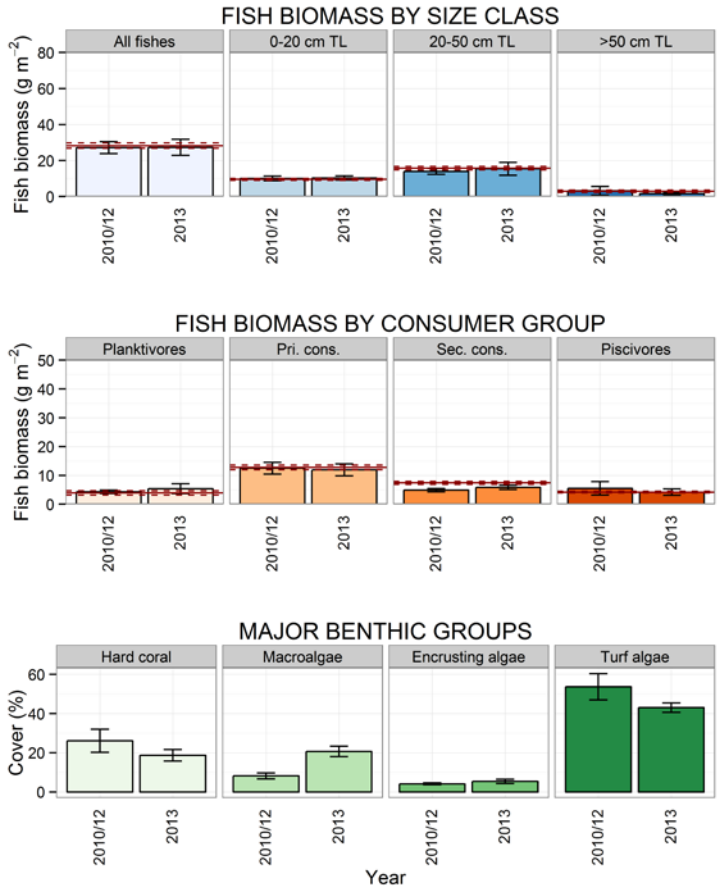

Figure 22 Lāna`i Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Maui Island

Maui Island was surveyed in 2010 (n =33), 2012 (n=49) and 2013 (n =34).

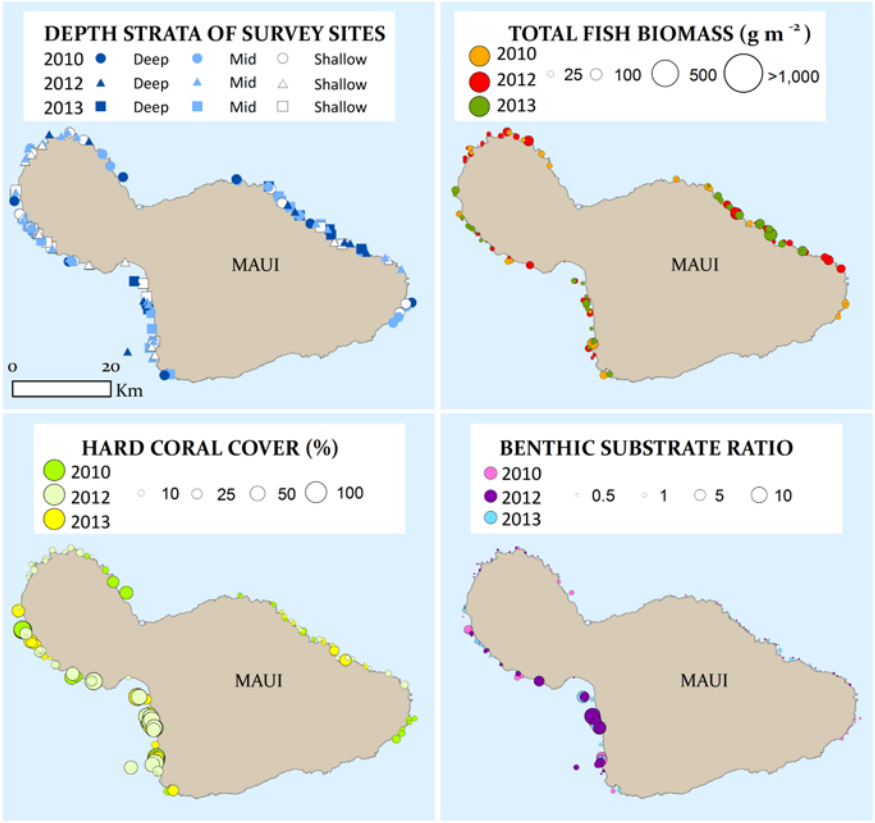

Figure 23 Maui Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

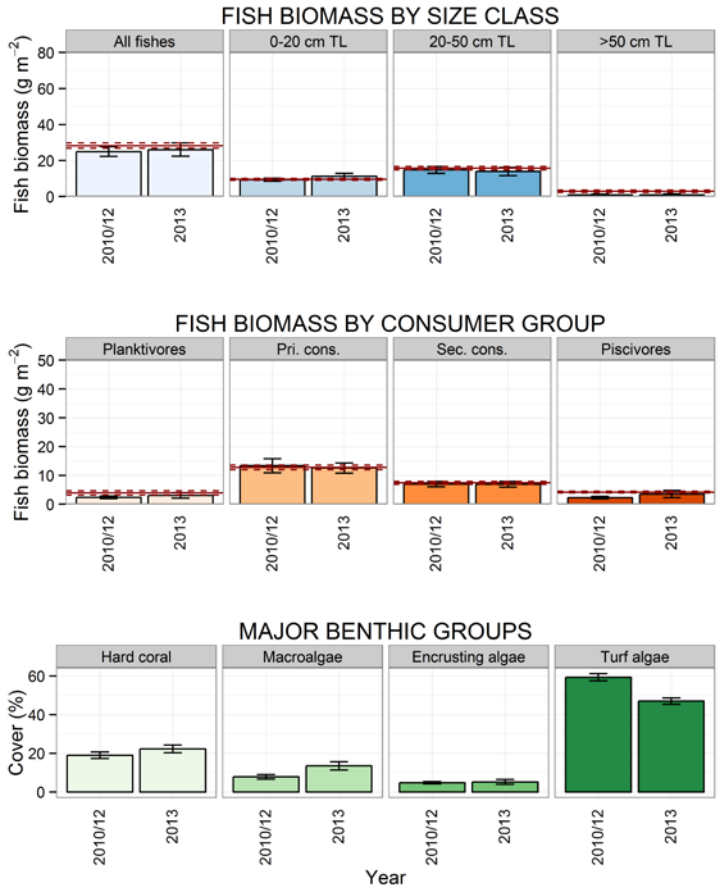

Figure 24 Maui Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Moloka`i Island

Moloka`i Island was surveyed in 2010 (n =10), 2012 (n=50) and 2013 (n =39).

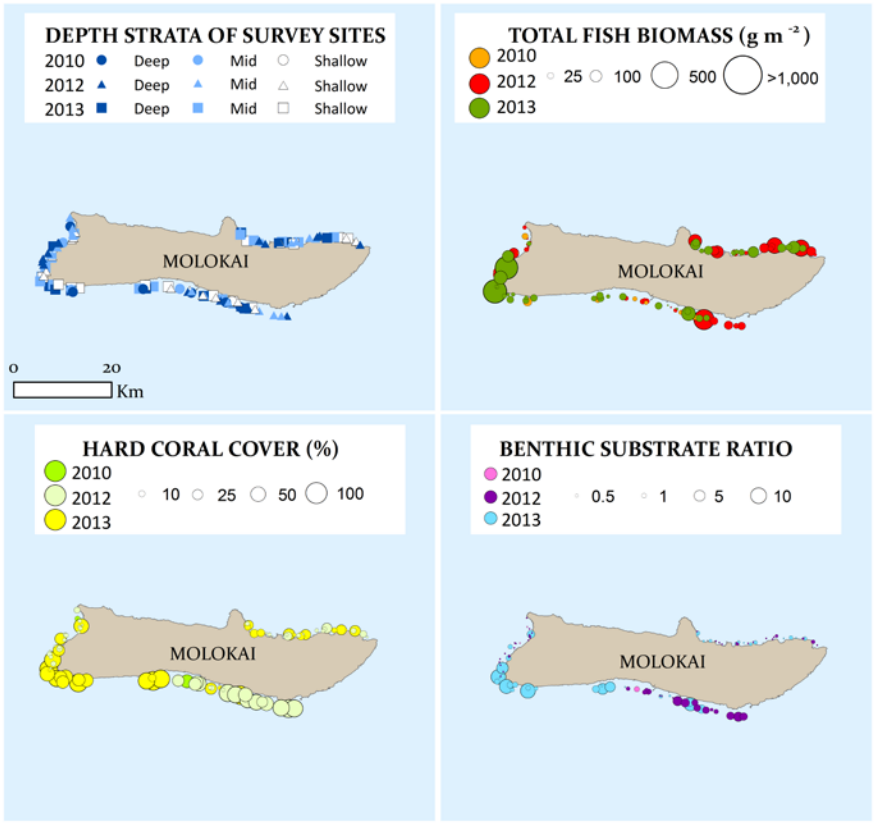

Figure 25 Moloka`i Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

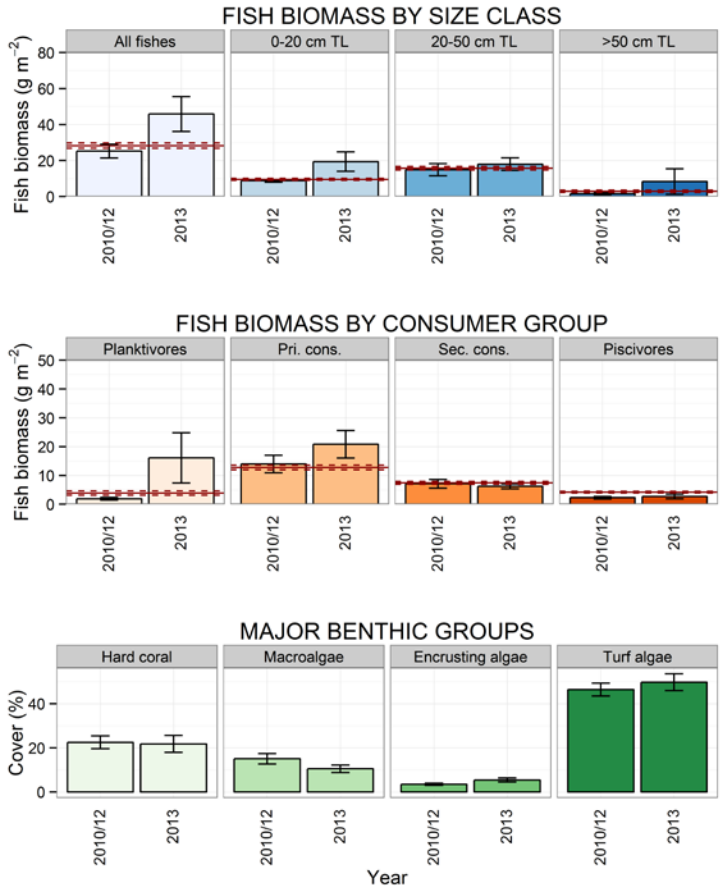

Figure 26 Moloka`i Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Ni`ihau Island

Ni`ihau Island was surveyed in 2010 (n =16) and 2012 (n =26).

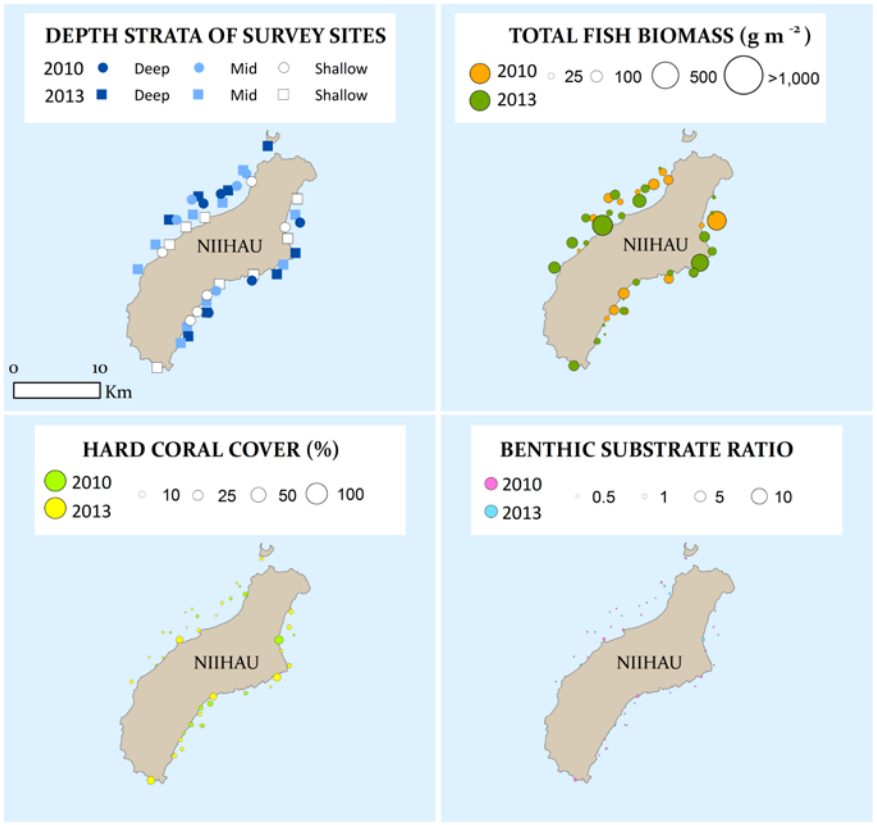

Figure 27 Ni`ihau Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

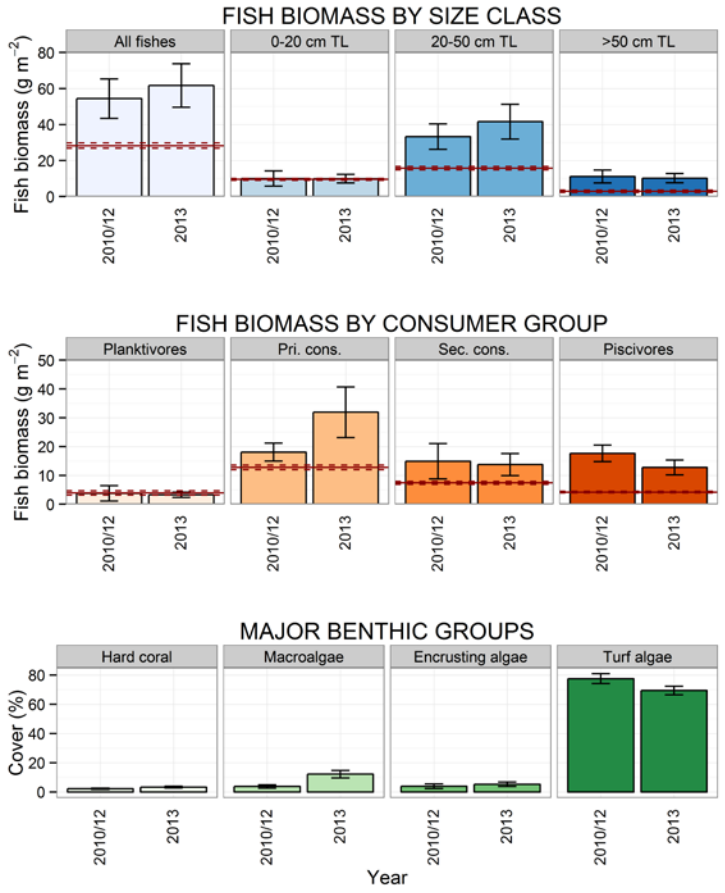

Figure 28 Ni`ihau Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

O`ahu Island

O`ahu Island was surveyed in 2010 (n =40), 2012 (n=35) and 2013 (n =64).

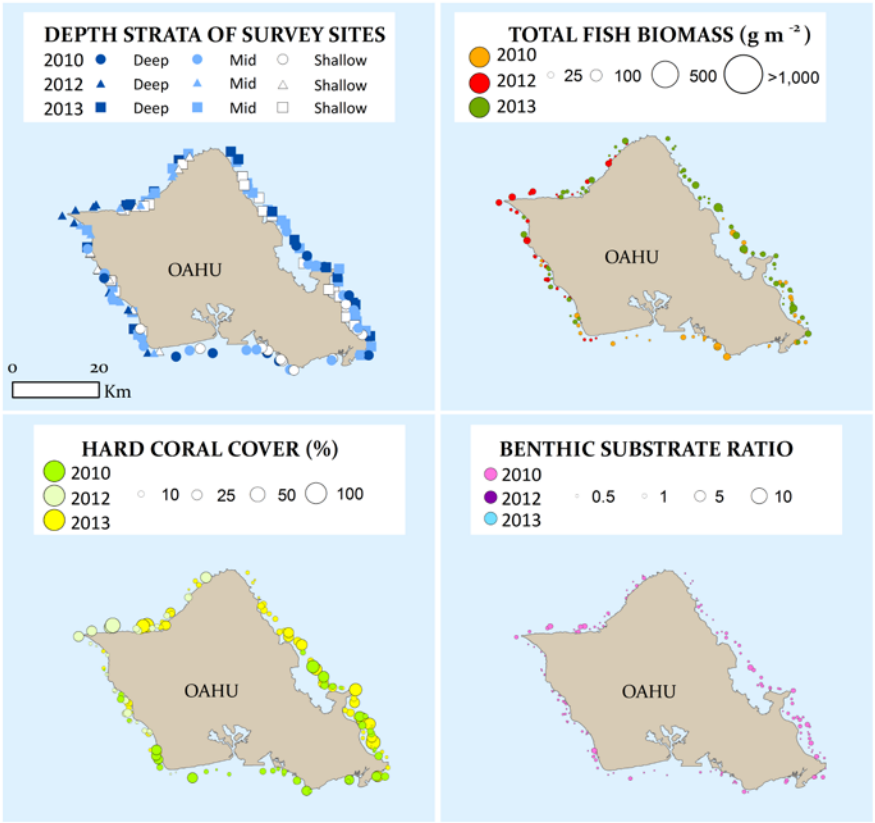

Figure 29 O`ahu Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

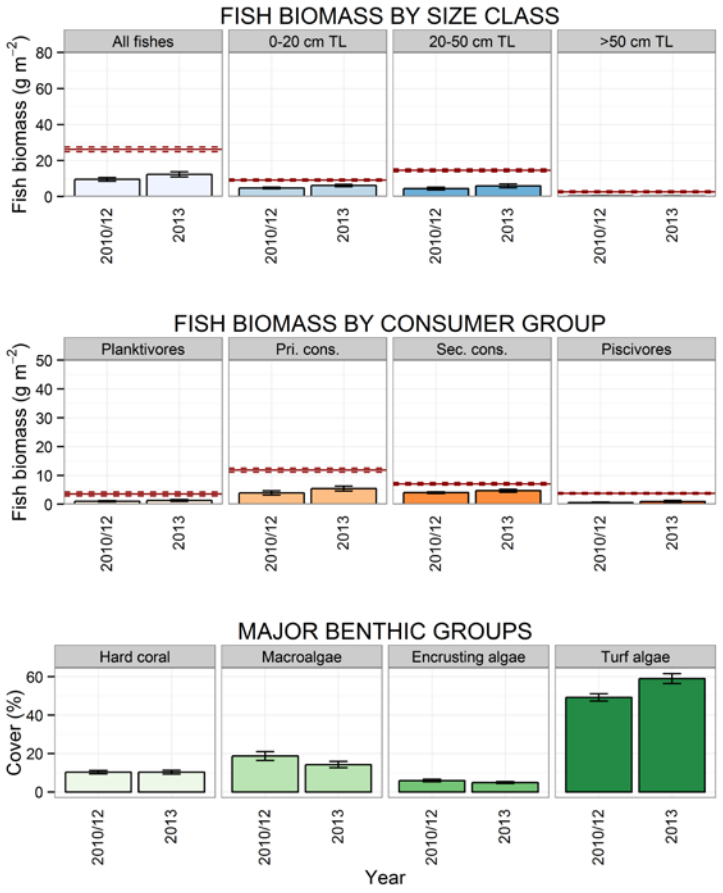

Figure 30 O`ahu Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The main Hawaiian Island region mean estimates are plotted for reference (red dashed line).

Pacific Remote Island Areas

Baker Island

Baker Island was surveyed in 2010 (n=21) and 2012 (n=24).

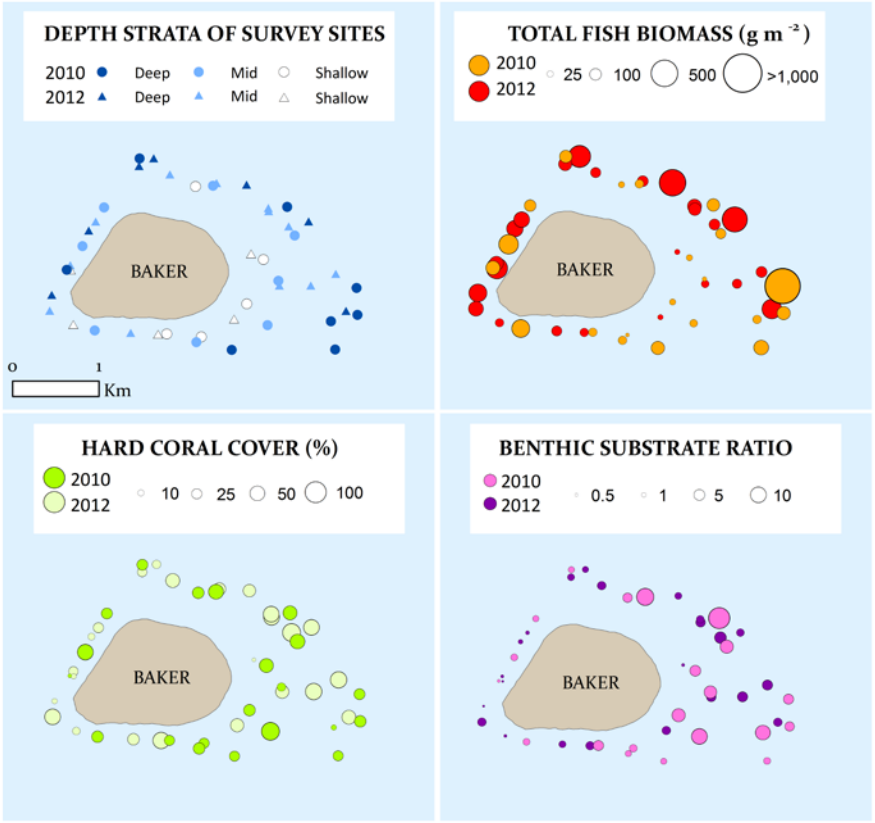

Figure 31 Baker Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

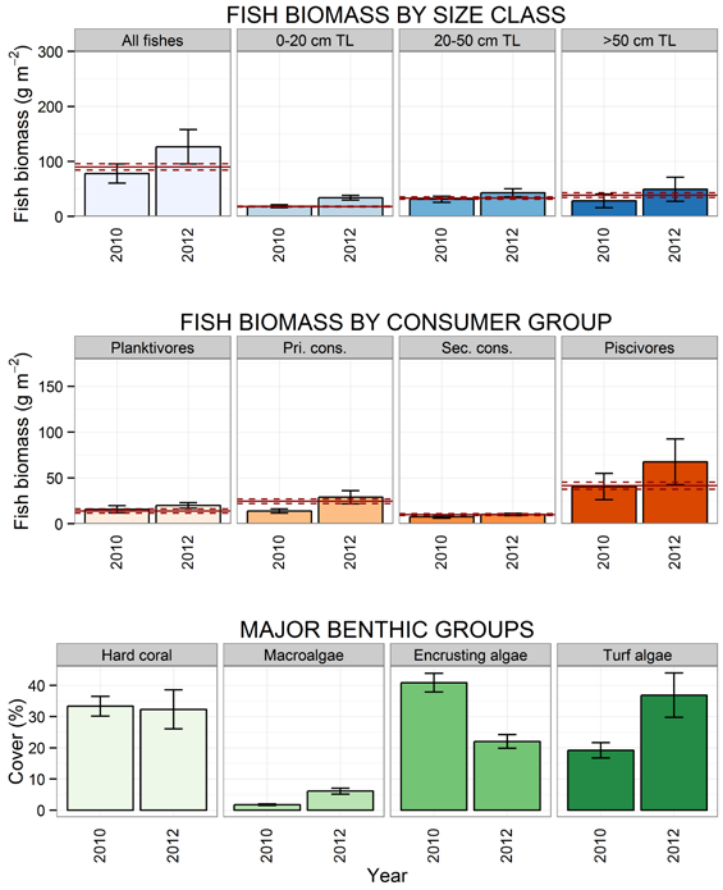

Figure 32 Baker Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Howland Island

Howland Island was surveyed in 2010 (n=16) and 2012 (n=39).

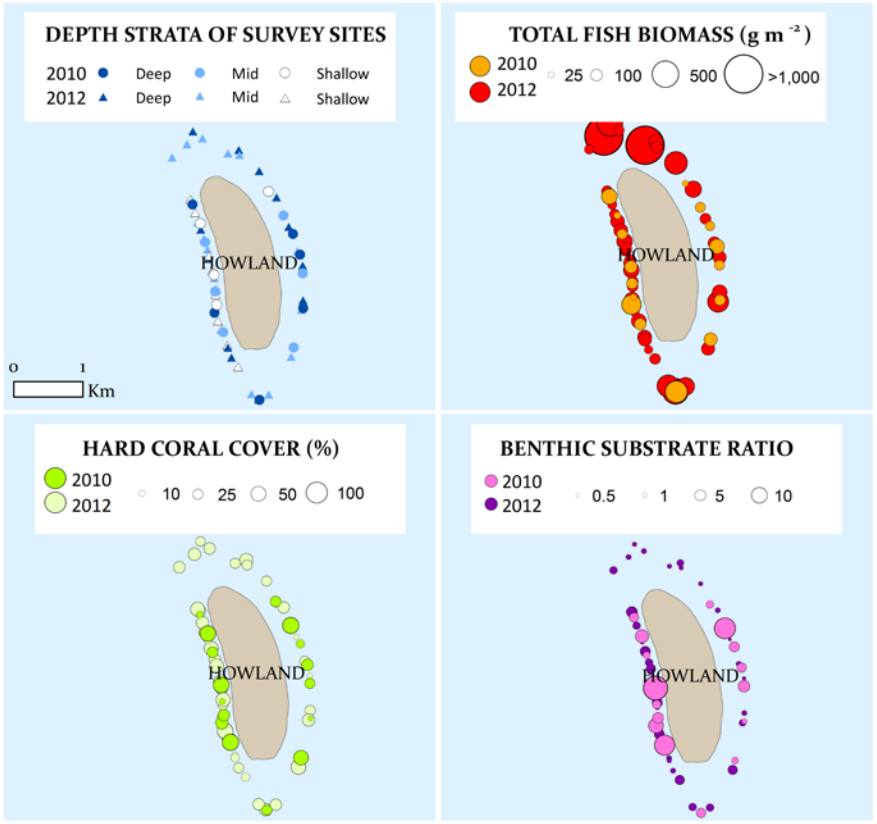

Figure 33 Howland Island site survey data 2010 and 2012 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

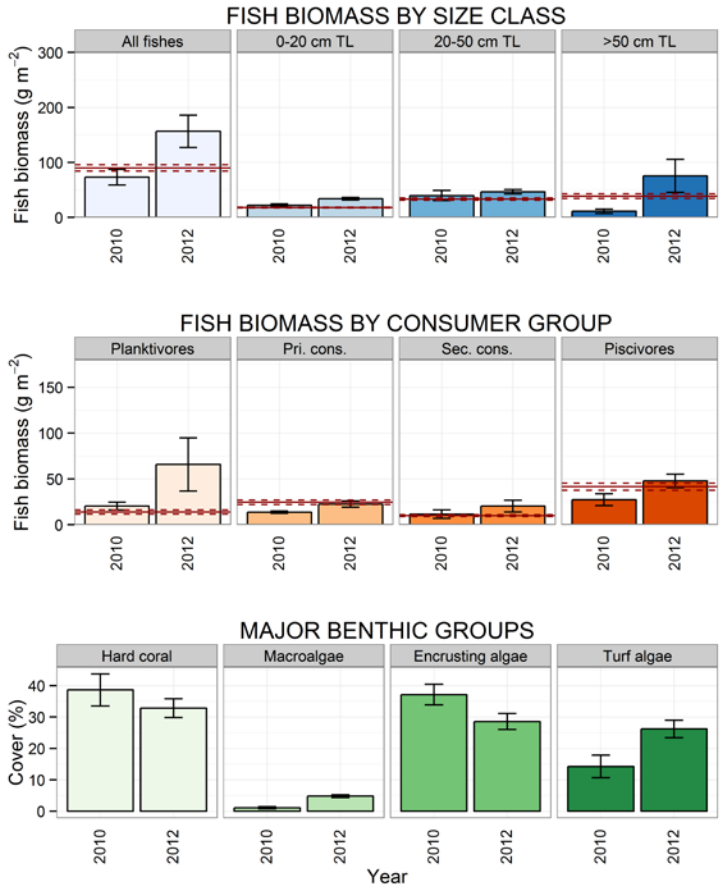

Figure 34 Howland Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Jarvis Island

Jarvis Island was surveyed in 2010 (n=30) and 2012 (n=42).

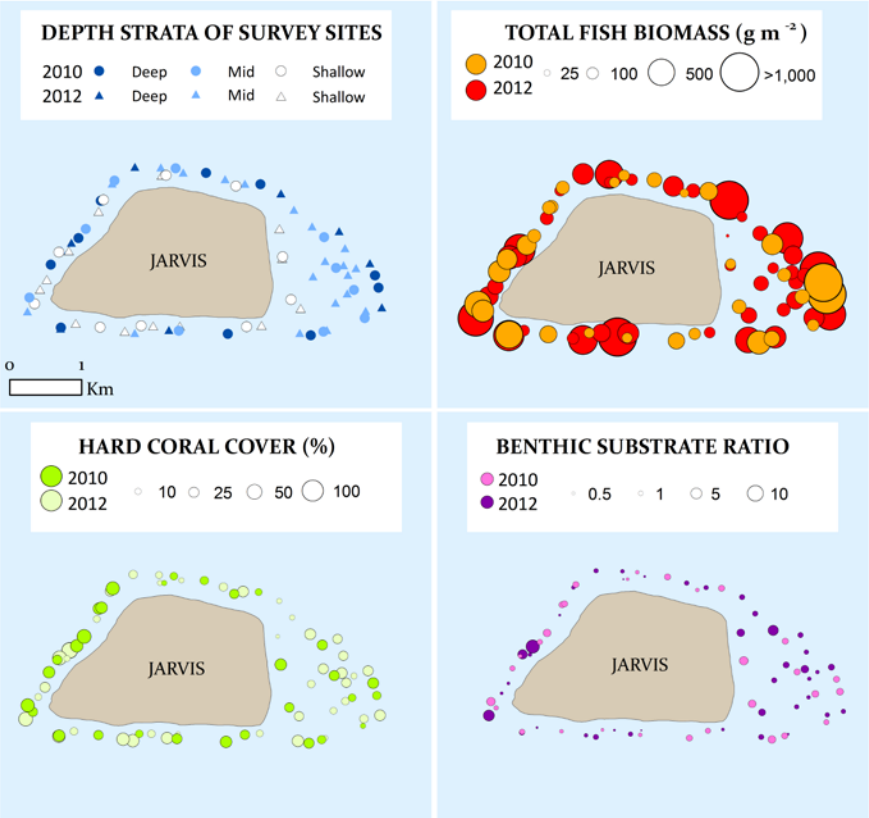

Figure 35 Jarvis Island site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

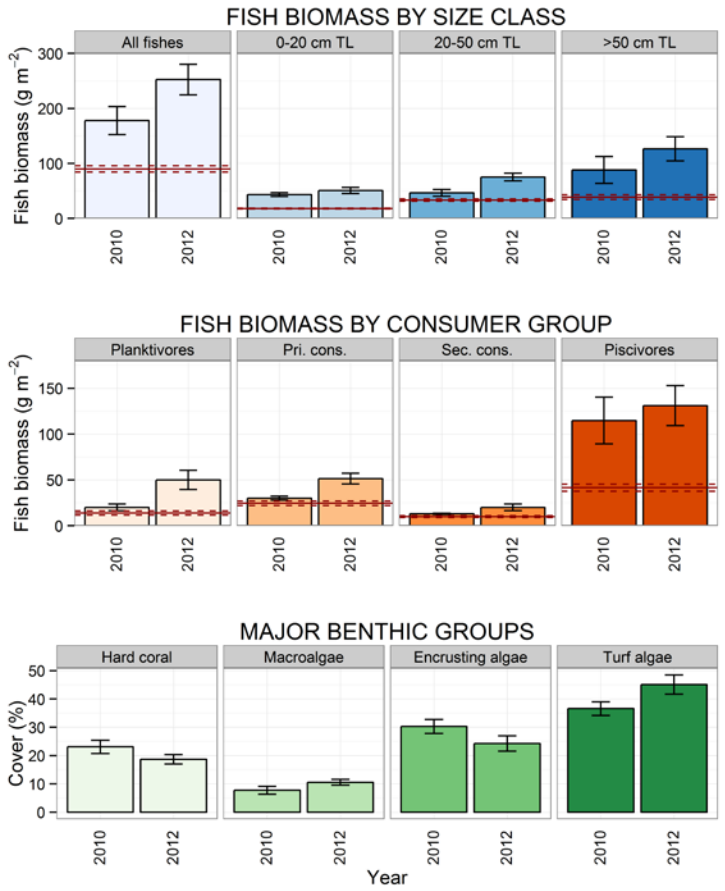

Figure 36 Jarvis Island fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Johnston Atoll

Johnston Atoll was surveyed in 2010 (n=39) and 2012 (n=35).

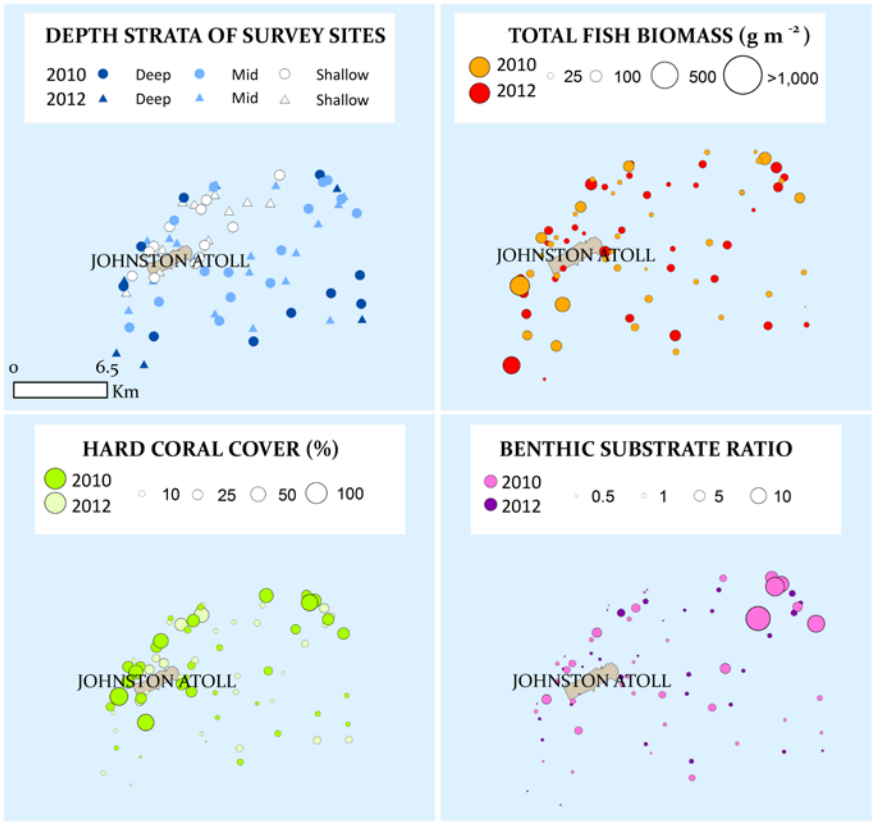

Figure 37 Johnston Atoll site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

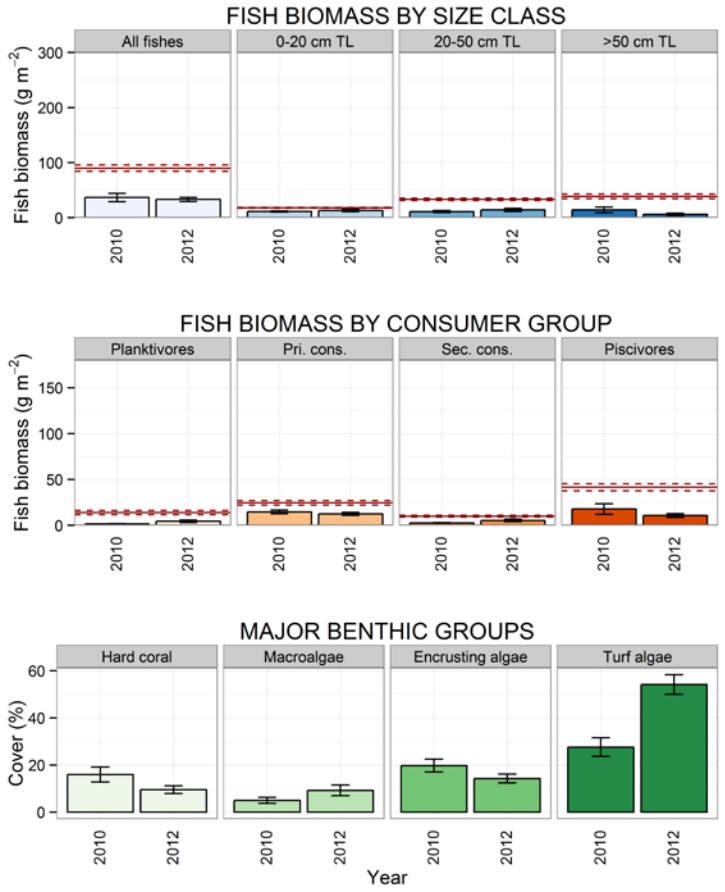

Figure 38 Johnston Atoll fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Kingman Reef

Kingman Reef was surveyed in 2010 (n=33) and 2012 (49).

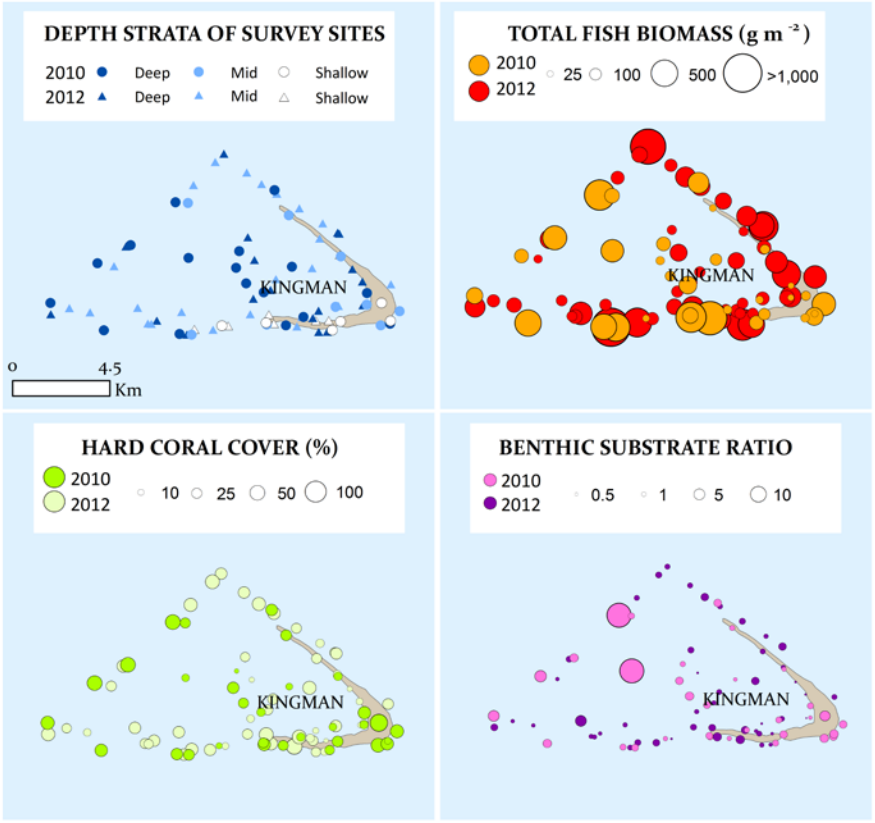

Figure 39 Kingman Reef site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef

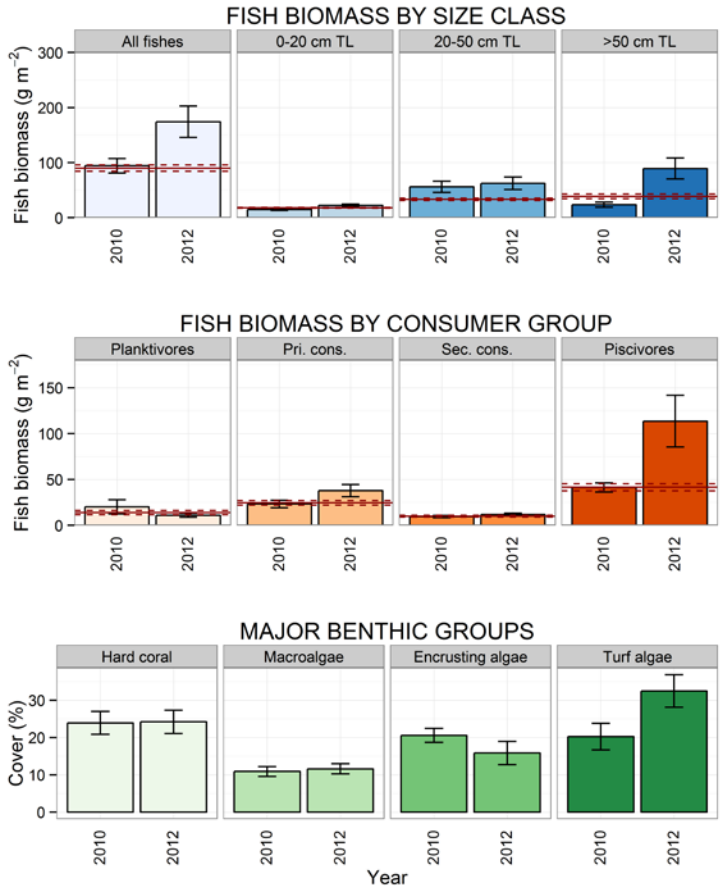

Figure 40 Kingman Reef fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Palmyra Atoll

Palmyra Atoll was surveyed in 2010 (n=40) and 2012 (n=42).

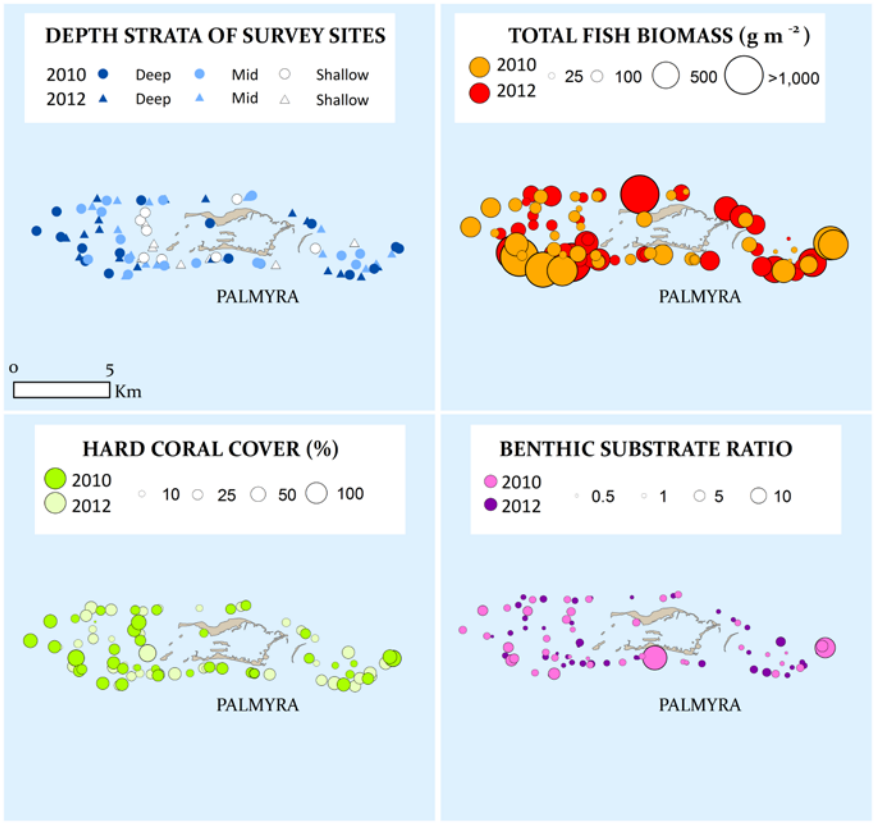

Figure 41 Palmyra Atoll site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

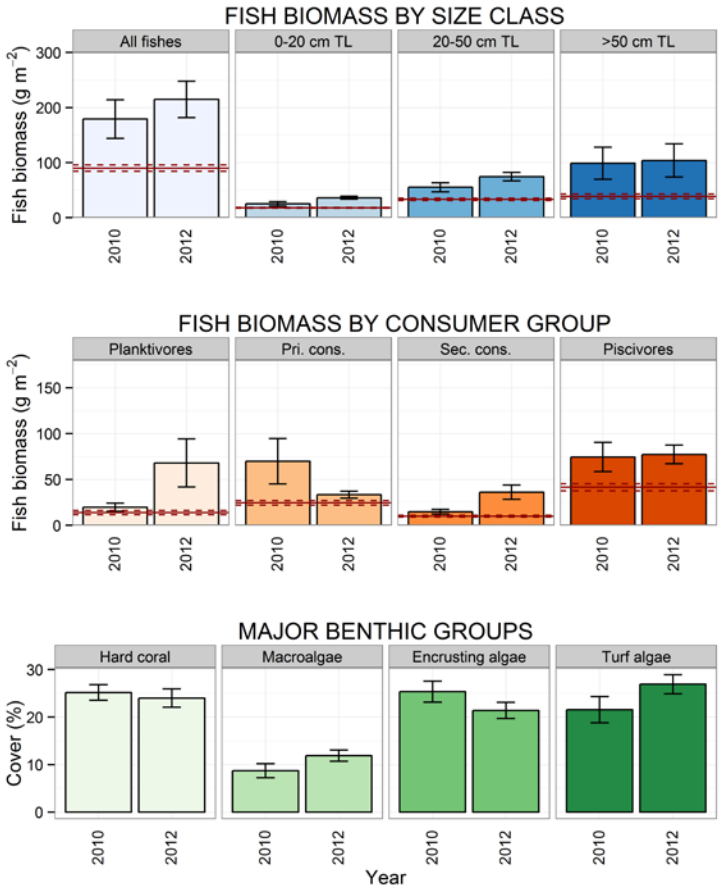

Figure 42 Palmyra Atoll fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

Wake Atoll

Wake Atoll was surveyed in 2009 (n=29) and 2011 (n =30). Wake Atoll is part of the Pacific Remote Island Areas, however, due to its location it is surveyed en route from the Marianas cruise, therefore the survey years match the Marianas, rather than the PRIAs cruise cycle.

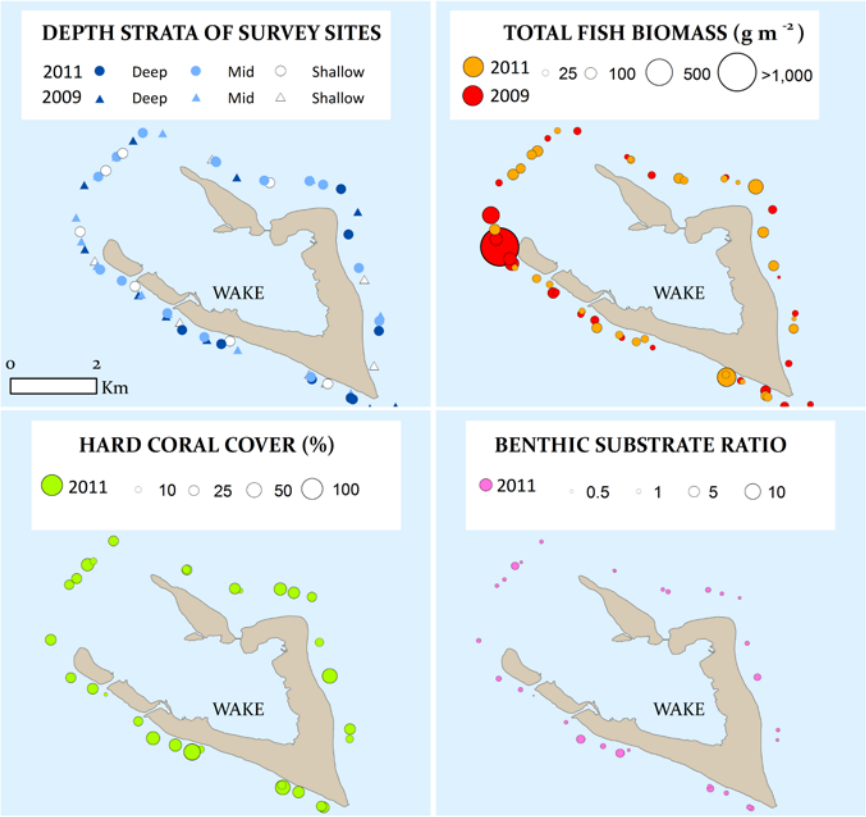

Figure 43 Wake Atoll site survey data 2010 and 2013 identified by depth strata (top left). Total fish biomass recorded at each site per year (top right). Hard coral cover (%) assessed by rapid visual assessment (bottom left). Benthic substrate ratio (hard coral plus encrusting algae / turf and macroalgae) (bottom right). This ratio indicates the balance between the benthic components that contribute to reef accretion (coral and crustose coralline algae) compared to fleshy macroalgae and turf algae that compete for space on the reef.

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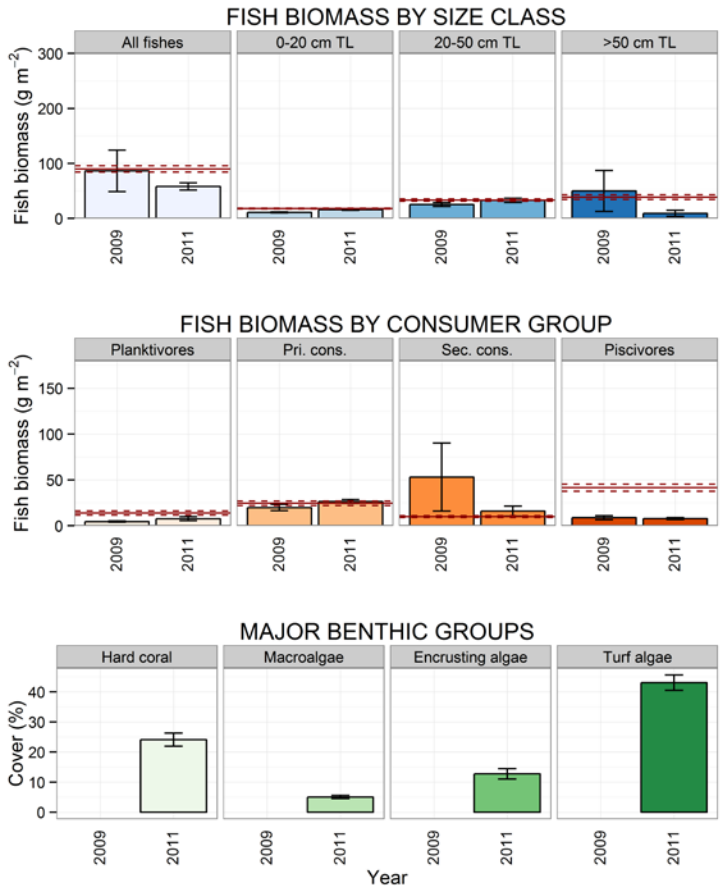

Figure 44 Wake Atoll fish and benthic plots showing the biomass (g m^{-2} ± SE) of fish observed in total and per size class (top) and per consumer group (middle) and the percentage cover (± SE) of the benthos. The Pacific Remote Island Areas region mean estimates are plotted for reference (red dashed line).

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Publications, information products, and data requests 2012–2013

The following products published in 2012–2013 either were produced through the use of data collected during fish and benthic Pacific RAMP monitoring surveys conducted using the depth-stratified random stationary point count method, in full or in part, or were coauthored by members of the CRED fish team.

Blogs

Reef fish monitoring cruise in the main Hawaiian Islands completed: preliminary results from fish surveys. http://pifscblog.wordpress.com/2013/08/28/mhi-ramp-monitoring-brief/

The final count: summary of mission to assess reef fish assemblages, build capacity in Timor Leste. http://pifscblog.wordpress.com/2013/08/13/final-count-timor-leste-2/

Update from Timor Leste: scientists complete live aboard mission to survey reef fishes and benthos, assess ocean acidification. http://pifscblog.wordpress.com/2013/07/08/timor-leste-live-aboard/

Update from Timor Leste: team completes 50 surveys of reef fish and benthic communities in first week. http://pifscblog.wordpress.com/2013/06/19/update-timor-leste-first-week/

Scientists assess reef fish and benthic communities, monitor effects of ocean acidification off Timor Leste. http://pifscblog.wordpress.com/2013/06/03/fish-acidification-timor-leste/

Scientists continue surveys of a marine protected area in Maui. http://pifscblog.wordpress.com/2013/05/09/surveys-khfma-maui/

Monitoring briefs

Coral Reef Ecosystem Division, Pacific Islands Fisheries Science Center. 2013. Pacific Reef Assessment and Monitoring Program. Fish monitoring brief: Pacific Remote Island Areas 2012. Pacific Islands Fisheries Science Center, PIFSC Data Report, DR-13-007, 2 p.

Coral Reef Ecosystem Division, Pacific Islands Fisheries Science Center.2013. Pacific Reef Assessment and Monitoring Program. Fish monitoring brief: American Samoa 2012. Pacific Islands Fisheries Science Center, PIFSC Data Report, DR-13-008, 2 p.

Coral Reef Ecosystem Division, Pacific Islands Fisheries Science Center. 2013. Pacific Reef Assessment and Monitoring Program. Fish monitoring brief: main Hawaiian Islands 2012. Pacific Islands Fisheries Science Center, PIFSC Data Report, DR-13-006, 2 p.

Reports

Brainard RE, Asher J, Blyth-Skyrme V, Coccagna EF, Dennis K, Donovan MK, Gove JM, Kenyon J, Looney EE, Miller JE, Timmers MA, Vargas-Angel B, Vroom PS, Vetter O, Zgliczynski B, Acoba T, DesRochers A, Dunlap MJ, Franklin EC,

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Scientific publications

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Edwards CB, Friedlander AM, Green AG, Hardt MJ, Sala E, Sweatman HP, Williams ID, Zgliczynski B, Sandin SA, Smith JE. 2013. Global assessment of the status of coral reef herbivorous fishes: evidence for fishing effects. Proceedings of the Royal Society B 280: 20131835. DOI: 10.1098/rspb.2013.1835.

Heenan A, Williams ID. 2013. Monitoring herbivorous fishes as indicators of coral reef resilience in American Samoa. PLoS ONE 8(11): e79604. DOI: 10.1371/journal.pone.0079604

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Fish and benthic data requests

In 2012: 17 requests.

In 2013: 25 requests.

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Williams ID, Richards BL, Sandin SA, Baum JK, Schroeder RE, Nadon MO, Zgliczynski B, Craig P, McIlwain JL, Brainard RE. 2011. Differences in reef fish assemblages between populated and remote reefs spanning multiple archipelagos across the central and western Pacific. Journal of Marine Biology 2011, Article ID 826234, 14 p. DOI: 10.1155/2011/826234.

Appendices

Appendix 1: Pacific RAMP data types collected for the biological theme of NCRMP

Theme	Indicator	Method	Spatial sampling	Temporal scale
Benthos	Coral demographics and condition: species, abundance, size, bleaching, disease, mortality Benthic percent cover Benthic key species (presence/absence) Rugosity	Paired 18m coral demographic transects Paired 15m photoquadrat transects 200x10m towed-diver survey	Stratified random sampling optimized for commercially and ecologically important fish and coral species in shallow (0–30 m) hard bottom areas. Strata include depth, habitat type, and management zone.	Surveys conducted every 3 years, all surveys generally conducted within the same 3-month season.
Fish	Fish abundance, size, and species Fish key species (presence/absence)	Paired 15-m-diameter stationary point count (SPC) surveys ~2000 x10m^2 towed-diver survey		

Appendix 2: American Samoa priority watershed surveys

Below is a copy of a report summarizing additional surveys that were conducted in the priority watersheds of Faga'alu and Vatia in American Samoa in 2012.

Reef fish and benthic marine surveys in Faga'alu and Vatia watersheds, Tutuila, American Samoa

Depth-stratified random biological monitoring surveys conducted by NOAA 4–6 April 2012

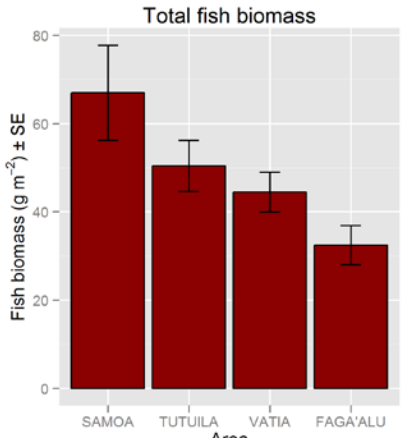
NOAA FISHERIES

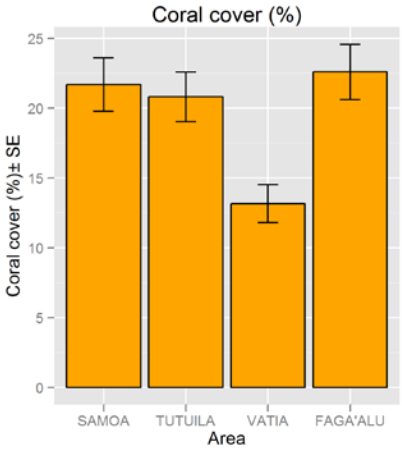
Overview

Vatia and Faga'alu Bays were selected as high-priority sites in American Samoa on the basis of their potential for successful, locally based coral reef management and conservation (NOAA CRCP 2010). In 2012, staff of the Coral Reef Ecosystem Division (CRED) of the NOAA Pacific Islands Fisheries Science Center surveyed the bays fed by these priority watersheds with the same methods used in the long-term Pacific Reef Assessment and Monitoring Program (Pacific RAMP).

Methods

Monitoring surveys took place in April 2012 (Vatia Bay: 4–6 April and Faga'alu Bay: 8–10 April). In each bay, survey sites were randomly selected using a depth-stratified design. Sampled sites were selected pseudo-randomly from all available sampling locations using a map of the total area of target habitat, with an equal density of sites selected in each depth stratum: shallow (0–6 m), mid (6–18 m), and deep (18–30 m). At each site, the fish assemblage was surveyed using the stationary-point-count method, and the benthic community composition and structure were assessed. A pair of divers identified, counted, and estimated the size of all fishes within a visually estimated 15-m-diameter cylinder centered at the site. These data were used to calculate fish biomass per unit area (g m^{-2}) for each species. After completing each fish survey, both divers visually estimated the percentage of cover of encrusting algae, fleshy macroalgae, hard corals, turf algae, sand, and soft corals from the center of their cylinders. Divers also estimated the slope, broad habitat type, and complexity at each site.



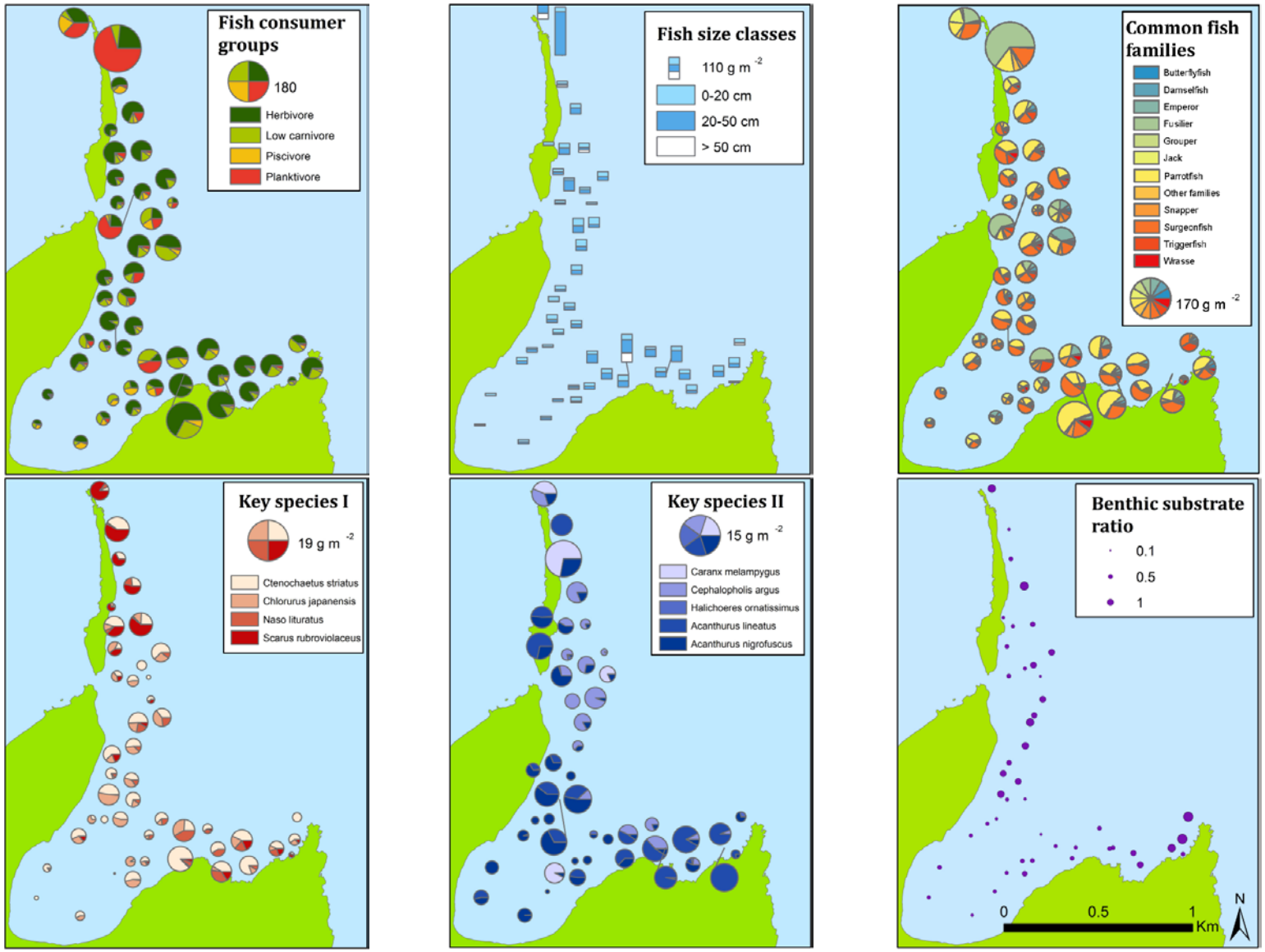


Data summary

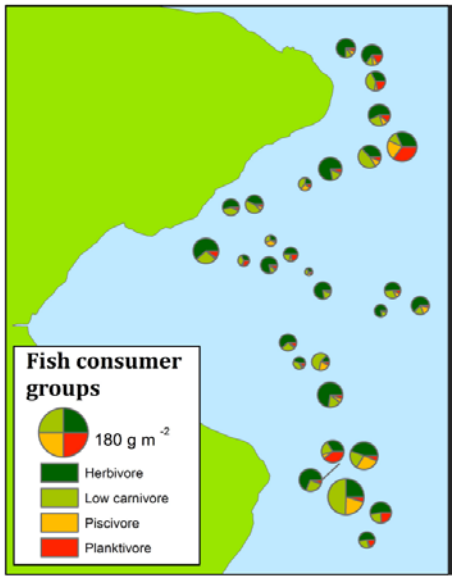
First, the total fish biomass and coral cover observed at each of the bays are presented alongside mean values of these attributes for the island of Tutuila and the archipelago of American Samoa from surveys conducted during the Pacific RAMP cruise in 2012. Second, for each of the bays, the following data are presented as a series of maps: the biomass of fishes per consumer group, the biomass of fishes per size class, the biomass per common fish family, the biomass of key reef fish species, and the benthic substrate ratio. Consumer groups are herbivores, which mainly eat plant material; low carnivores, which eat invertebrates; piscivores, which eat fishes; and planktivores, which eat plankton. The size classes for fishes are 0–20 cm, 20–50 cm and > 50 cm in total length. The common fish families are butterflyfishes, damselfishes, emperors, fusiliers, groupers, jacks, parrotfishes, snappers, triggerfishes, surgeonfishes, and wrasses. These families include species observed in the Department of Marine and Wildlife Resources (DMWR) Key Reef Species Program, the Commercial Fisheries Biosampling Program, and the Samoan Archipelago Coral Reef Ecosystem Genetics and Connectivity Program. Biomass is displayed only for key species, namely those observed in more than 15% of the survey sites. Finally, the benthic substrate ratio indicates the balance between the cover of benthic components that contribute to reef accretion (corals and crustose coralline algae) compared to those components that do not (turf algae and macroalgae).

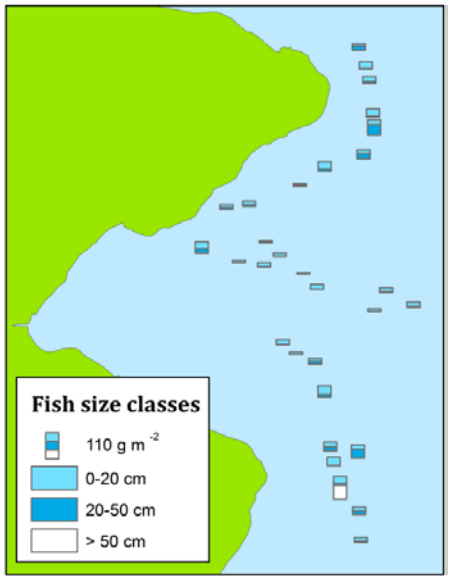
Uses of survey data

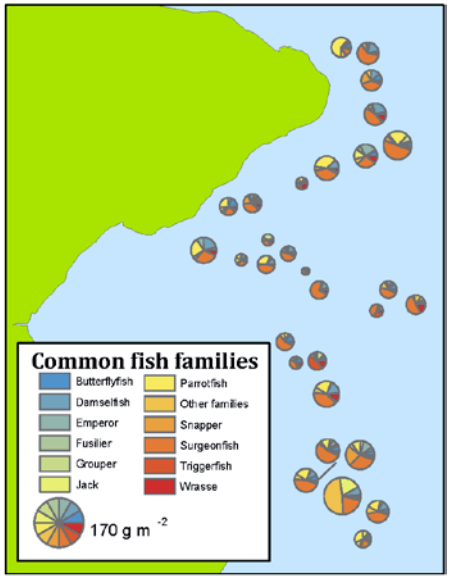
The purpose of these monitoring surveys was to provide baseline data on the fish assemblage and associated coral reef habitats for each of the bays. Augmented by data from future surveys, this information can be used as a reference point to monitor how these coral reef areas change over time and to help assess the effects of coral reef conservation and management decisions. All survey data and more detailed results are available upon request (email: nmfs.pic.credinfo@noaa.gov; web: www.pifsc.noaa.gov/cred).

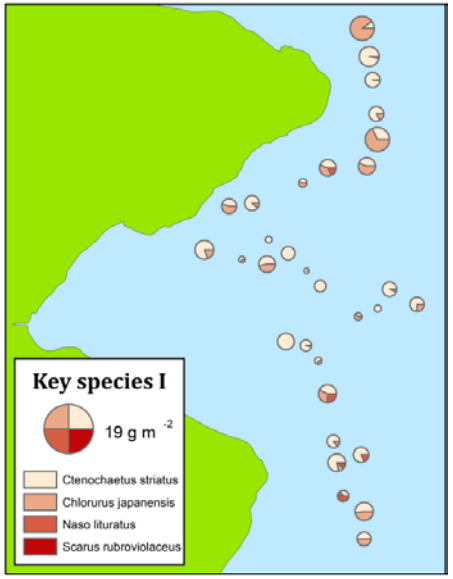

Fish consumer groups
180
Herbivore
Low carnivore
Piscivore
Planktivore
Fish size classes
110 g m -2
0-20 cm
20-50 cm
> 50 cm
Common fish families
Butterflyfish
Damselfish
Emperor
Fusilier
Grouper
Jack
Parrotfish
Other families
Snapper
Surgeonfish
Triggerfish
Wrasse
170 g m -2
Key species I
19 g m -2
Ctenochaetus striatus
Chlorurus japanensis
Naso lituratus
Scarus rubroviolaceus
Key species II
15 g m -2
Caranx melampygus
Cephalopholis argus
Halichoeres ornatissimus
Acanthurus lineatus
Acanthurus nigrofuscus
Benthic substrate ratio
0.1
0.5
1
0
0.5
1
Km
N

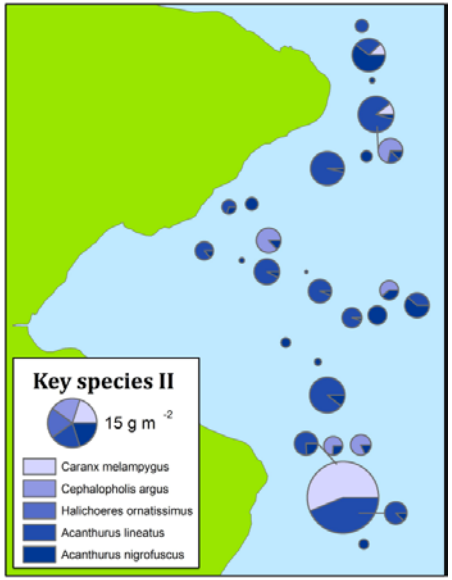
Vatia Bay

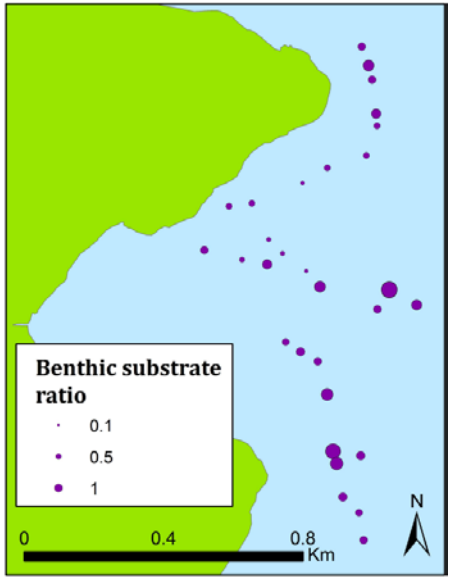

Fish consumer groups
180 g m -2
Herbivore
Low carnivore
Piscivore
Planktivore


Fish size classes
110 g m -2
0-20 cm
20-50 cm
> 50 cm


Common fish families
Butterflyfish
Damselfish
Emperor
Fusilier
Grouper
Jack
Parrotfish
Other families
Snapper
Surgeonfish
Triggerfish
Wrasse
170 g m -2


Key species I
19 g m -2
Ctenochaetus striatus
Chlorurus japanensis
Naso lituratus
Scarus rubroviolaceus


Key species II
15 g m -2
Caranx melampygus
Cephalopholis argus
Halichoeres ornatissimus
Acanthurus lineatus
Acanthurus nigrofuscus


Benthic substrate ratio
0.1
0.5
1
0
0.4
0.8
Km
N

Faga'alu

Appendix 3: Surveys per region per year and method used

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Region							**Belt &**	**Belt &**	**Belt &**					
Method	**Belt**	**Belt**	**Belt**	**Belt**	**Belt**	**Belt**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**	**SPC**
Mariana Arch.				67		72		66		251		354		
Main HI						73	57		186		184		163	287
NWHI*	58	18	63	62	57	40	64	155	147	203	118	141	91	
PRIAs*		30	34		48	13	67	12	193	42	179	30	231	
Am.Samoa			42		58		61		222		241		223	

Table A3.1. The number of sites surveyed per region per year. From 2000–2006 the belt transect method was used to survey coral reef fishes. During the calibration period that took place from 2006–2008, surveys were conducted using both the belt and the stationary point count (SPC) method. The SPC data collected prior to 2009 is not used in this report because sites were not selected based on the randomized depth stratified design (see Section: Methods). Furthermore, during the methods transition period, sites surveyed at the mid-depth strata in 2009 were the haphazardly selected, fixed sites selected in the previous years. Shallow and deep sites were randomly selected. Here we report all data from 2009 onwards, including the non-randomized mid-depth 2009 sites. In the future, these mid-depth sites should be excluded from any time series analysis.

*In partnership with the Papahānaumokuākea Marine National Monument (PMNM) surveys have been conducted in the Northwestern Hawaiian Islands and the Pacific Remote Island Areas on a more frequent, almost annual basis.

Appendix 4: Sectors maps

For the majority of islands, the entire island or atoll is stratified by habitat or depth. Guam and the main Hawaiian Islands, however, have an additional level of stratification.

Guam

Guam is subdivided into three sectors: "Marine Preserve" (being all areas within Guam's Marine Preserve System; "Guam Open East" (areas outside of Mean Preserves on east side of Guam); and "Guam West" (Figure A4.1).

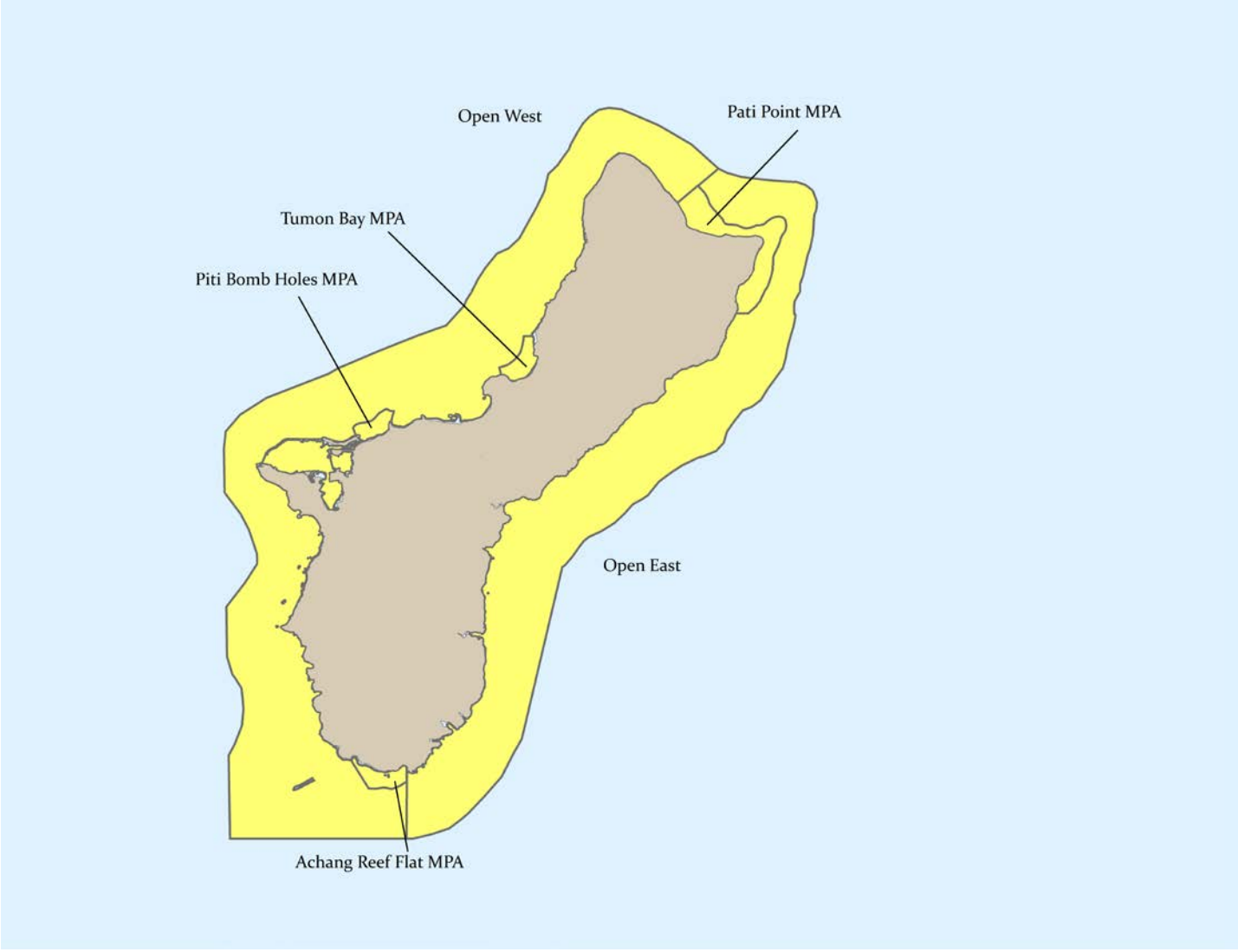


Figure A4.1. Guam sectors. Sampling is stratified by habitat, depth and the additional sectors based on whether areas are inside or outside the Marine Preserve system and by the East and West side of the island.

The main Hawaiian Islands

The main Hawaiian Islands are divided into between 2 and 7 sectors per island, with sector boundaries based on broad differences in oceanographic exposure, reef structure, and local human population density (Figure A4.2).

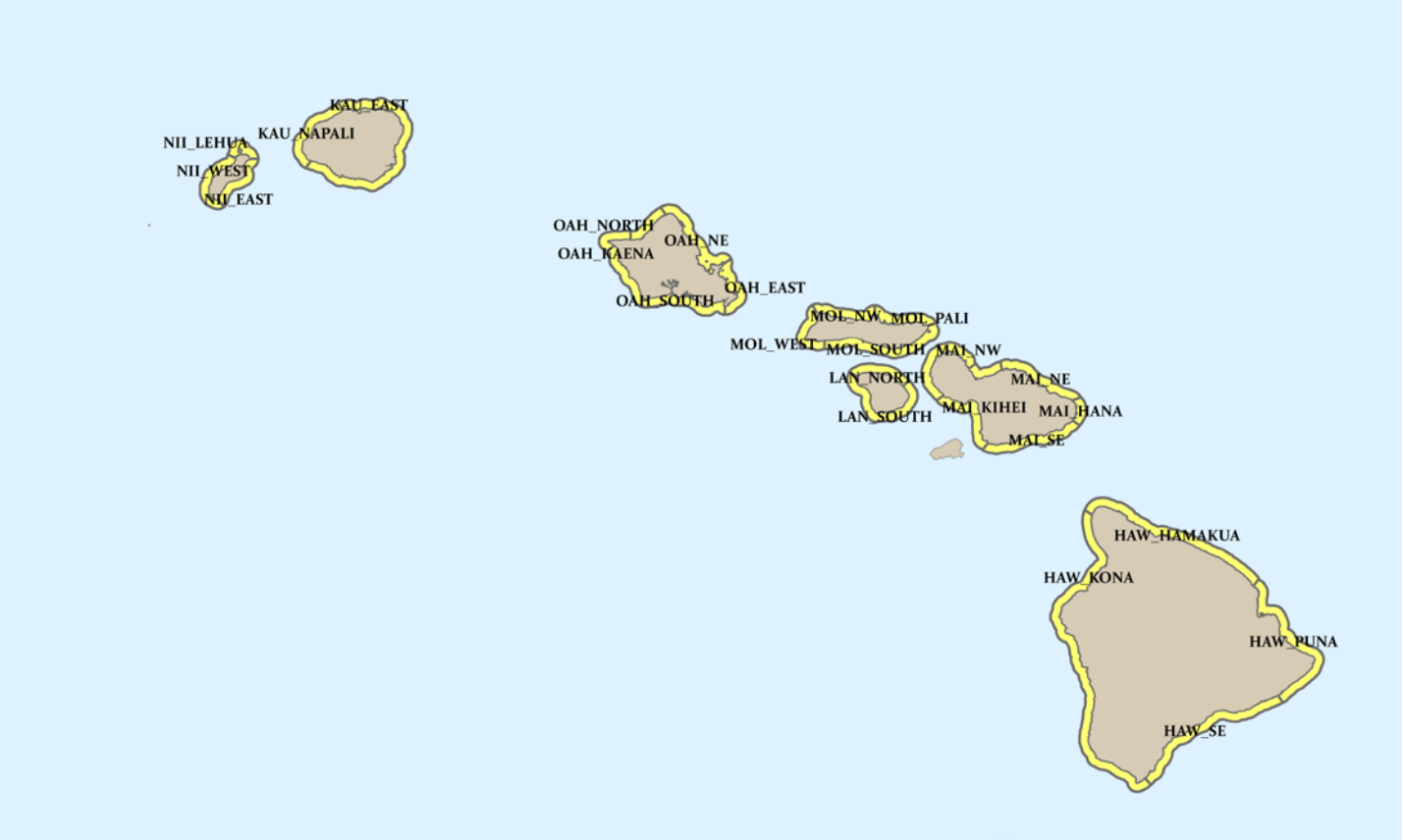


Figure A4.2. The sectors of the main Hawaiian Islands. Sectors are broadly based on wave exposure, habitat complexity and local human population density.

Appendix 5: Sectors by year

Table A5.1. The number of sites surveyed per depth strata and the sector used to pool up the data in island level parameter estimates. For most islands, during the site selection process, the sector area from which site locations are randomly drawn are the islands. In some case, particularly the larger islands in the main Hawaiian Island chain, islands are broken down into smaller sectors. D = deep (18–30 m), M = mid (6–18 m), S = shallow (0-6 m).

Year	Region	Island	Sector	Backreef-D	Backreef-M	Backreef-S	Forereef-D	Forereef-M	Forereef-S	Lagoon-D	Lagoon-M	Lagoon-S
2009	MARIAN	Agrihan	Agrihan				4	6	4			
2009	MARIAN	Aguijan	Aguijan				2	2	2			
2009	MARIAN	Ala-Gug-Sar	Alamagan				2	2	2			
2009	MARIAN	Ala-Gug-Sar	Guguan				2	3	1			
2009	MARIAN	Ala-Gug-Sar	Sarigan				2	3	2			
2009	MARIAN	Asuncion	Asuncion				3	6	4			
2009	MARIAN	Farallon de Pajaros	Farallon de Pajaros				1	3	3			
2009	MARIAN	Guam	Guam MPA				2	4				
2009	MARIAN	Guam	Guam Open				6	7	6			
2009	MARIAN	Maug	Maug				5	11	5			
2009	MARIAN	Pagan	Pagan				6	9	6			
2009	MARIAN	Rota	Rota				4	6	4			
2009	MARIAN	Saipan	Saipan			1	6	10	6			
2009	MARIAN	Tinian	Tinian				3	6	5			
2009	NWHI	Kure	Kure			5	10	15	4			9
2009	NWHI	Laysan	Laysan				6	5	3			
2009	NWHI	Lisianski	Lisianski				7	12				
2009	NWHI	Maro	Maro				9	17	5		1	7
2009	NWHI	Midway	Midway	1	1	5	6	18	7	1	3	11
2009	NWHI	Necker	Necker				5	6	2			
2009	PRIAs	Wake	Wake				10	12	7			
2010	MHI	Hawai`i	HAW_HAMAKUA				4	5	2			
2010	MHI	Hawai`i	HAW_PUNA				4	7				
2010	MHI	Hawai`i	HAW_KONA				5	7	9			
2010	MHI	Kaua`i	KAU_NAPALI				2	4	1			
2010	MHI	Kaua`i	KAU_EAST				8	7	4			
2010	MHI	Lāna`i	LAN_NORTH				1	1	2			
2010	MHI	Lāna`i	LAN_SOUTH				2	4	6			
2010	MHI	Maui	MAI_KAHULUI				1					
2010	MHI	Maui	MAI_KIHEI				3	3	2			
2010	MHI	Maui	MAI_LAHAINA				1	3	3			
2010	MHI	Maui	MAI_NE				2	3	2			
2010	MHI	Maui	MAI_NW					2	2			
2010	MHI	Maui	MAI_SE					1				
2010	MHI	Maui	MAI_HANA				1	2	2			

Year	Region	Island	Sector	Backreef-D	Backreef-M	Backreef-S	Forereef-D	Forereef-M	Forereef-S	Lagoon-D	Lagoon-M	Lagoon-S
2010	MHI	Moloka`i	MOL_WEST				2	2				
2010	MHI	Moloka`i	MOL_SOUTH				4	1	1			
2010	MHI	Ni`ihau	NII_EAST				3	1	4			
2010	MHI	Ni`ihau	NII_WEST				2	4	2			
2010	MHI	O`ahu	OAH_SOUTH				5	11	8			
2010	MHI	O`ahu	OAH_EAST				2	5	3			
2010	MHI	O`ahu	OAH_NE				3	3				
2010	NWHI	French Frigate	French Frigate				2	6	3	4	8	4
2010	NWHI	Kure	Kure			3	4	9	3		3	3
2010	NWHI	Lisianski	Lisianski				7	14	4			
2010	NWHI	Pearl & Hermes	Pearl & Hermes			7	6	14	4		4	6
2010	PRIAs	Baker	Baker				8	8	5			
2010	PRIAs	Howland	Howland				6	6	4			
2010	PRIAs	Jarvis	Jarvis				10	10	10			
2010	PRIAs	Johnston	Johnston		3	8	4	4		7	8	5
2010	PRIAs	Kingman	Kingman	2	4	3	11	5	3	4	1	
2010	PRIAs	Palmyra	Palmyra				16	16	6			2
2010	SAMOA	Ofu & Olosega	Ofu & Olosega				10	10	10			
2010	SAMOA	Rose	Rose			6	8	9	7		2	2
2010	SAMOA	Swains	Swains				9	8	7			
2010	SAMOA	Ta`ū	Ta`ū				9	9	6			
2010	SAMOA	Tutuila	Tutuila				42	52	33			
2011	MARIAN	Agrihan	Agrihan				8	4	8			
2011	MARIAN	Aguijan	Aguijan				5	4	4			
2011	MARIAN	Ala-Gug-Sar	Alamagan				3	2				
2011	MARIAN	Ala-Gug-Sar	Guguan				3	4	3			
2011	MARIAN	Ala-Gug-Sar	Sarigan				3	3	3			
2011	MARIAN	Asuncion	Asuncion				7	8	5			
2011	MARIAN	Farallon de Pajaros	Farallon de Pajaros				3	4	5			
2011	MARIAN	Guam	ACHANG_MPA					2	3			
2011	MARIAN	Guam	GUAM_EAST_OPEN				4	8	6			
2011	MARIAN	Guam	GUAM_WEST_OPEN				21	19	28			
2011	MARIAN	Guam	PATI_PT_MPA				7	7	6			
2011	MARIAN	Guam	PITI_BOMB_MPA				3	3	3			
2011	MARIAN	Guam	TUMON_BAY_MPA				5	2	6			
2011	MARIAN	Maug	Maug				9	15	6			
2011	MARIAN	Pagan	Pagan				10	11	8			
2011	MARIAN	Rota	Rota				8	8	8			
2011	MARIAN	Saipan	Saipan				13	9	8			
2011	MARIAN	Tinian	Tinian				7	8	4			
2011	NWHI	French Frigate	French Frigate				1		1	3		3

Year	Region	Island	Sector	Backreef-D	Backreef-M	Backreef-S	Forereef-D	Forereef-M	Forereef-S	Lagoon-D	Lagoon-M	Lagoon-S
2011	NWHI	Gardner	Gardner				3	6	3			
2011	NWHI	Laysan	Laysan				12	9	2			
2011	NWHI	Lisianski	Lisianski				4	4	1			
2011	NWHI	Maro	Maro				5	9	7			4
2011	NWHI	Midway	Midway			5	7	6	4		2	6
2011	NWHI	Necker	Necker				3	3	2			
2011	NWHI	Nihoa	Nihoa				2	4	2			
2011	NWHI	Pearl & Hermes	Pearl & Hermes				5		4		2	7
2011	PRIAs	Wake	Wake				8	15	7			
2012	MHI	Lāna`i	LAN_LCR_NORTH				2					
2012	MHI	Lāna`i	LAN_MCM_SOUTH				6	9	12			
2012	MHI	Maui	MAI_HCM_KIHEI				3	9	6			
2012	MHI	Maui	MAI_HS_LAHAINA					7	6			
2012	MHI	Maui	MAI_LCM_NE				5	4	2			
2012	MHI	Maui	MAI_LCM_NW				2	3				
2012	MHI	Maui	MAI_MCM_HANA					1				
2012	MHI	Maui	MAU_LCM_MOLOKINI				1					
2012	MHI	Moloka`i	MOL_LCM_PALI				6	6	3			
2012	MHI	Moloka`i	MOL_LS_WEST				6	6	6			
2012	MHI	Moloka`i	MOL_MCR_SOUTH				5	6	6			
2012	MHI	O`ahu	OAH_HS_SOUTH				3	8	8			
2012	MHI	O`ahu	OAH_MCM_KAENA				5	1				
2012	MHI	O`ahu	OAH_MS_NORTH				1	5	4			
2012	NWHI	French Frigate	French Frigate				2	3		3	7	
2012	NWHI	Kure	Kure			3	5	8	1		1	2
2012	NWHI	Lisianski	Lisianski				6	15	4			
2012	NWHI	Pearl & Hermes	Pearl & Hermes			1	7	8			7	8
2012	PRIAs	Baker	Baker				7	12	5			
2012	PRIAs	Howland	Howland				12	16	11			
2012	PRIAs	Jarvis	Jarvis				8	21	13			
2012	PRIAs	Johnston	Johnston		3	4	4	3	2	2	12	5
2012	PRIAs	Kingman	Kingman	4	4	4	8	15	3	6	5	
2012	PRIAs	Palmyra	Palmyra				17	16	9			
2012	SAMOA	Ofu & Olosega	Ofu & Olosega				12	10	8			
2012	SAMOA	Rose	Rose			15	10	15	8			
2012	SAMOA	Swains	Swains				10	11	17			
2012	SAMOA	Ta`ū	Ta`ū				8	10	4			
2012	SAMOA	Tutuila	Tutuila				31	37	17			
2013	MHI	Hawai`i	HAW_LCM_HAMAKUA				4	5	3			
2013	MHI	Hawai`i	HAW_LCM_SE				3	6	2			
2013	MHI	Hawai`i	HAW_MCM_PUNA				6	9	4			

Year	Region	Island	Sector	Backreef-D	Backreef-M	Backreef-S	Forereef-D	Forereef-M	Forereef-S	Lagoon-D	Lagoon-M	Lagoon-S
2013	MHI	Hawai`i	HAW_MCR_KONA				4	7	5			
2013	MHI	Kaua`i	KAU_LS_NAPALI				4	4	3			
2013	MHI	Kaua`i	KAU_MS_EAST				6	13	7			
2013	MHI	Lāna`i	LAN_LCR_NORTH				3	5	7			
2013	MHI	Lāna`i	LAN_MCM_SOUTH				2	6	6			
2013	MHI	Maui	MAI_HCM_KIHEI				2	5	3			
2013	MHI	Maui	MAI_HS_LAHAINA					6	6			
2013	MHI	Maui	MAI_LCM_NE				5	5	2			
2013	MHI	Moloka`i	MOL_LCM_PALI				4	5	4			
2013	MHI	Moloka`i	MOL_LS_WEST				4	6	4			
2013	MHI	Moloka`i	MOL_MCR_SOUTH				3	4	5			
2013	MHI	Ni`ihau	NII_LCM_LEHUA				1					
2013	MHI	Ni`ihau	NII_LS_EAST				4	5	4			
2013	MHI	Ni`ihau	NII_LS_WEST				3	5	4			
2013	MHI	O`ahu	OAH_HS_SOUTH				2	5	4			
2013	MHI	O`ahu	OAH_MCM_EAST				4	8	6			
2013	MHI	O`ahu	OAH_MCM_KAENA					1	1			
2013	MHI	O`ahu	OAH_MS_NE				5	10	6			
2013	MHI	O`ahu	OAH_MS_NORTH				4	4	4			

Appendix 6: Quality control

Appendix 6.1 Observer training

Typically there are between 4–10 fish divers, or observers, in the field. These observers include a majority of CRED fish team divers, but occasionally partners from local agencies, for example, from the Hawaiian Division of Aquatic Resources, the U.S. Fish and Wildlife Service, and students from the University of Hawai`i. New observers are trained in both fish identification and the survey technique; this includes a classroom component and in-water training. Prior to each survey cruise, all observers (new and experienced) must meet the minimum pass rate (90%) in a region-specific fish identification test. All observers also take part in in-water training exercises, typically on a monthly basis outside of the cruise season. Generally, the in-water training includes two dives, one to conduct a practice stationary point count (SPC) survey and another size estimation dive. The latter includes divers estimating the sizes of fish models in a mock SPC survey. Diver estimates are then calibrated against the known fish model sizes (for example see Figure A6.1).

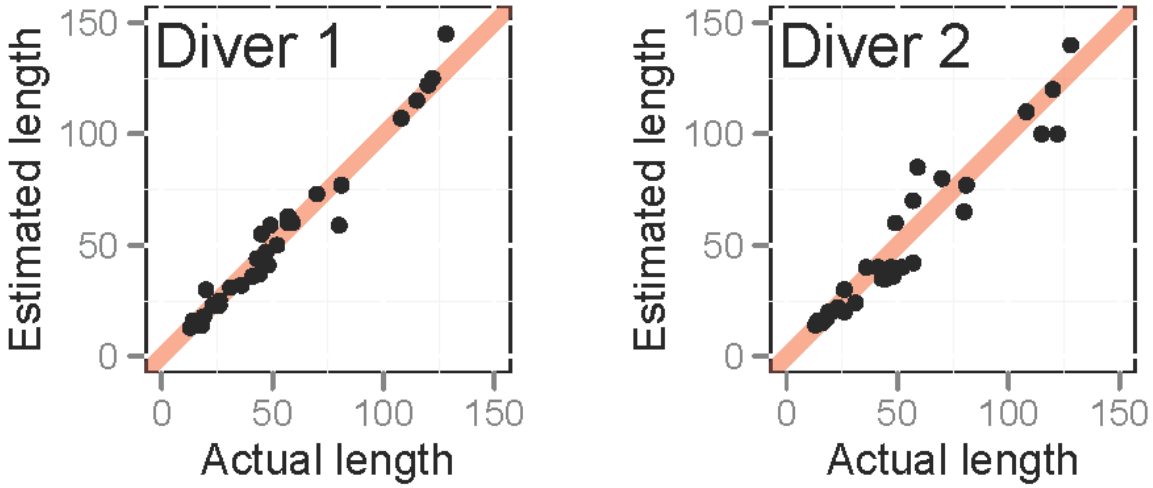


Figure A6.1. Example of size estimation dive training data for two divers. During the size estimation dives, diver accuracy is assessed by divers estimating the size of fish models of known lengths, which are haphazardly distributed throughout a mock SPC cylinder. The closer divers are to the red 1:1 line, the more accurate their estimated sizes.

Appendix 6.2 Observer cross-comparison

Estimates are compared between dive partner pairs to check for consistency between observers. This can be done for any parameter estimated, but here total fish biomass, species richness (number of unique species counted) and hard coral cover estimates are highlighted, three of the most frequently reported summary metrics from the stationary point count survey data. The difference between the estimates of each diver and those of their dive partner at each site is calculated and referred to here as diver performance. Real differences between dive partners are expected, as divers survey adjacent, not the same cylinder area. However, if there is no consistent bias in the estimates made by a diver, one would expect the median value of their performance to be close to zero i.e. with estimates in half of the counts being higher than their partner's estimates and half of the counts lower than their partner's estimates. Boxplots of diver performance, therefore, give 1) a strong but general indication of relative bias; if there is not consistent bias, then the median differences between a single diver and their dive partners will be close to zero and 2) an indication of how variable each divers' counts are compared to their dive partners – if a particular diver's performance varies extremely widely compared to their dive partners (i.e. several very high and/or several very low counts) that may be an indication of variability in their performance. As dive teams are regularly rotated throughout the course of a survey mission, measures of individual diver's counts reflect their performance relative to the entire pool of other divers participating in those surveys. These boxplots are routinely generated during and after field operations to give divers feedback on their performance relative to their colleagues and are summarized here by region (Figure A6.2 American Samoa 2012, Figure A6.3 main Hawaiian Islands 2012, Figure A6.4 main Hawaiian Islands 2013, Figure A6.5 Pacific Remote Island Areas 2012).

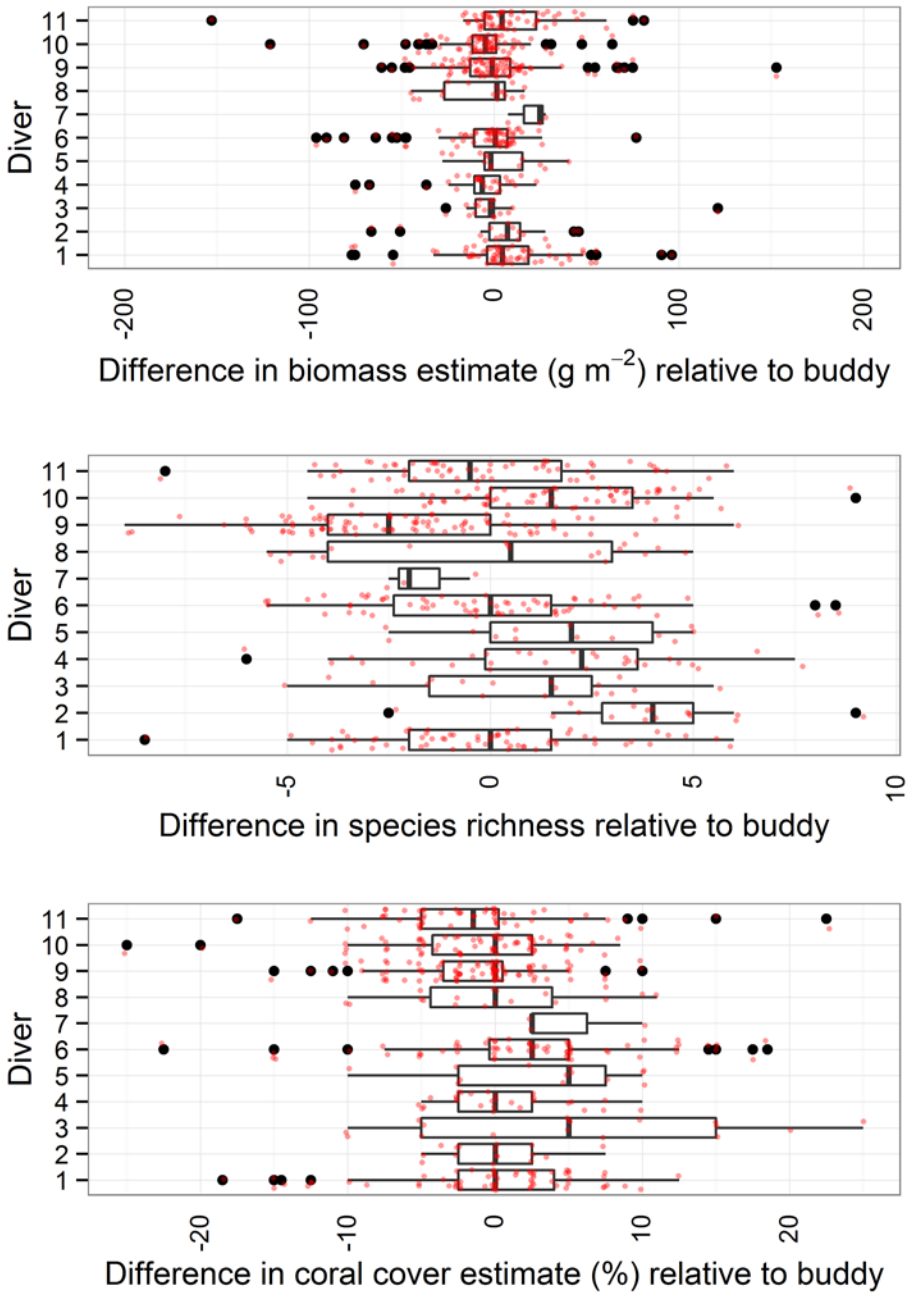


Figure A6.2 American Samoa comparison of observer diver vs dive partner estimates for total fish biomass, species richness and hard coral cover during 2012 surveys. The boxplot shows the median difference (thick vertical line) in estimates for each diver, the box represents the location of 50% of the data. Lines extending from each box are 1.5 times the interquartile range which represents approximately 2 standard deviations; points greater than this (outliers) are plotted individually (black dots).

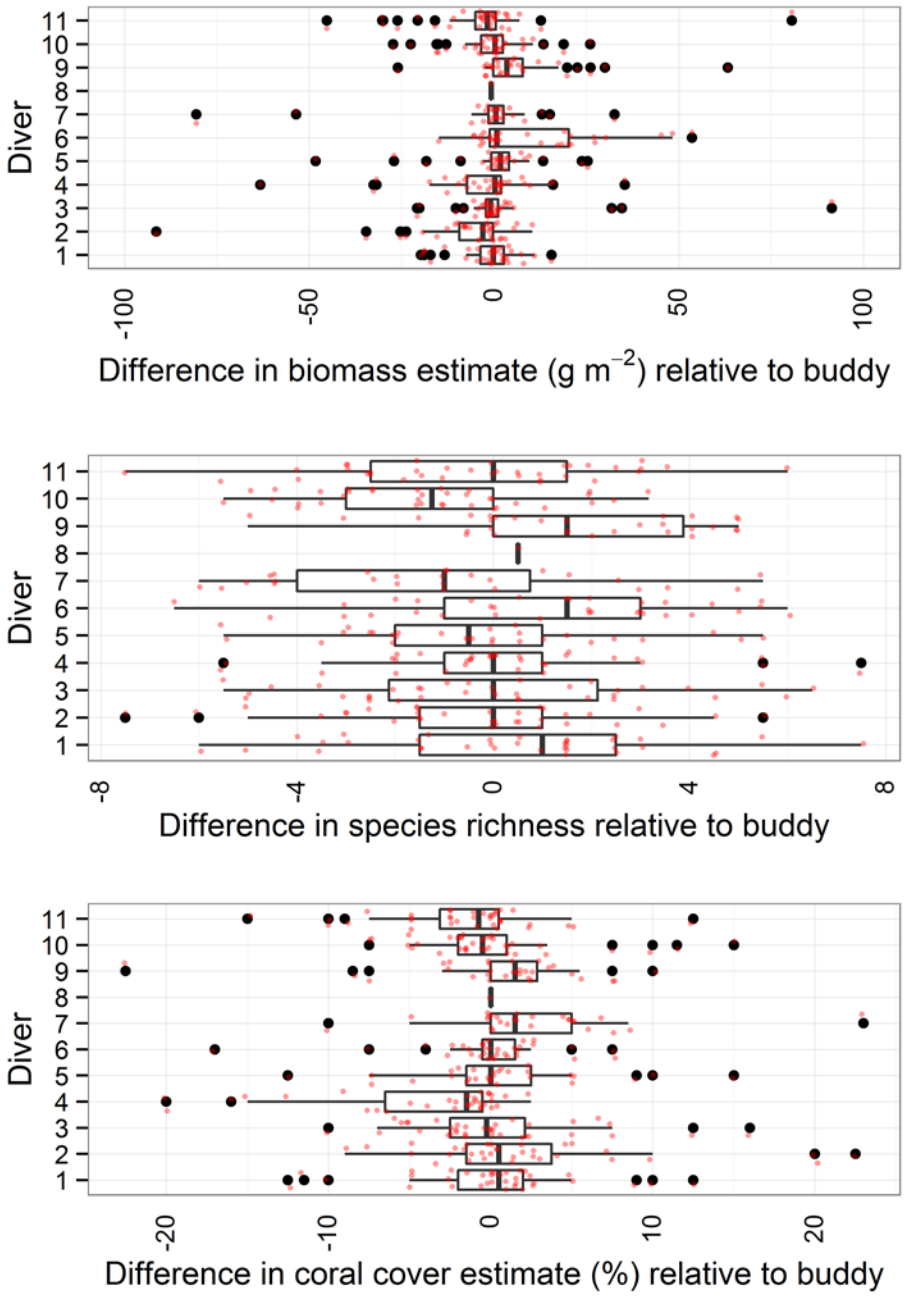


Figure A6.3 Main Hawaiian Islands 2012 comparison of observer diver vs diver partner estimates for total fish biomass, species richness and hard coral cover during 2012 surveys. See Figure A6.2 legend for details.

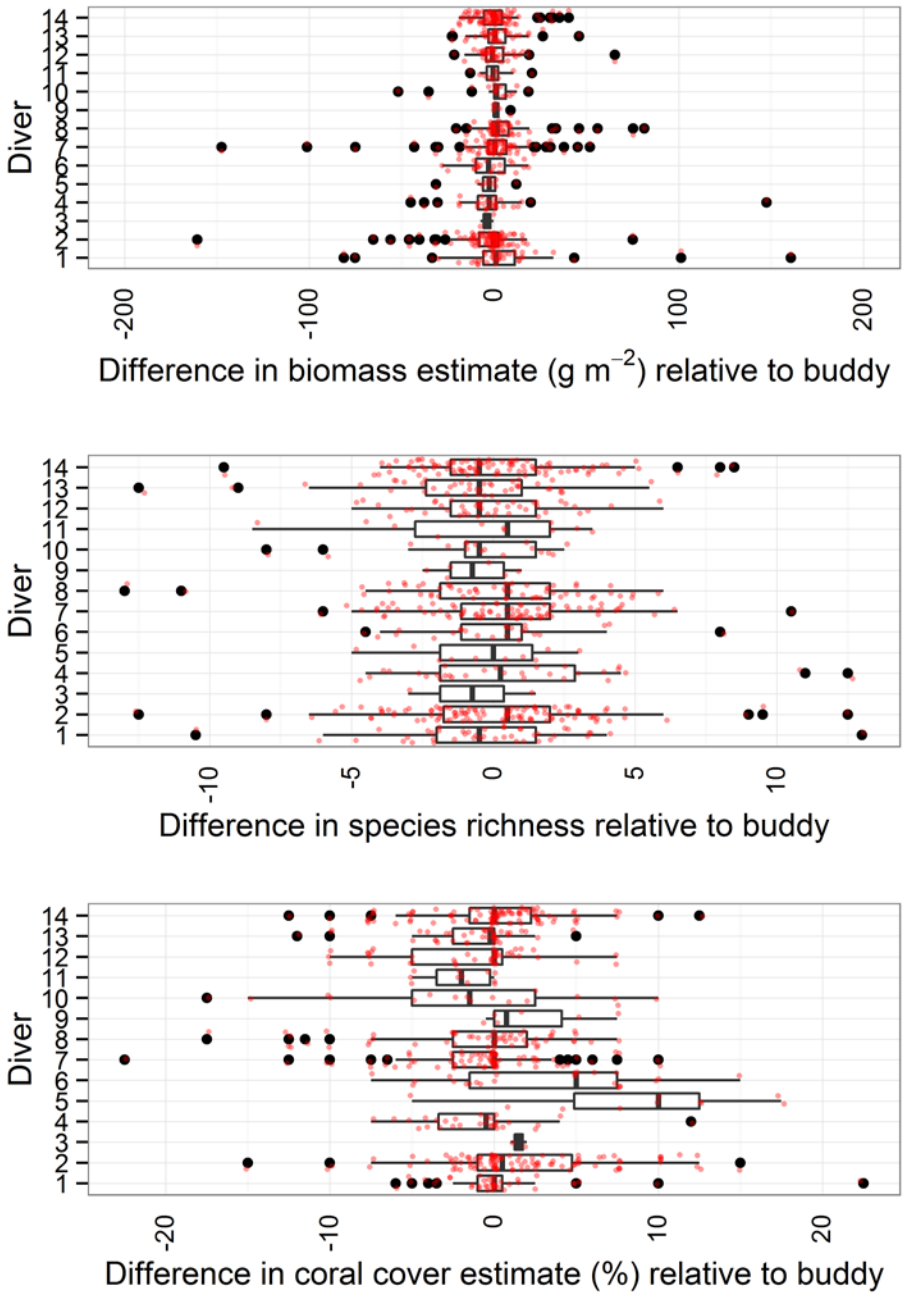


Figure A6.4 Main Hawaiian Islands comparison of observer diver vs dive partner estimates for total fish biomass, species richness and hard coral cover during 2013 surveys. See Figure A6.2 legend for details.

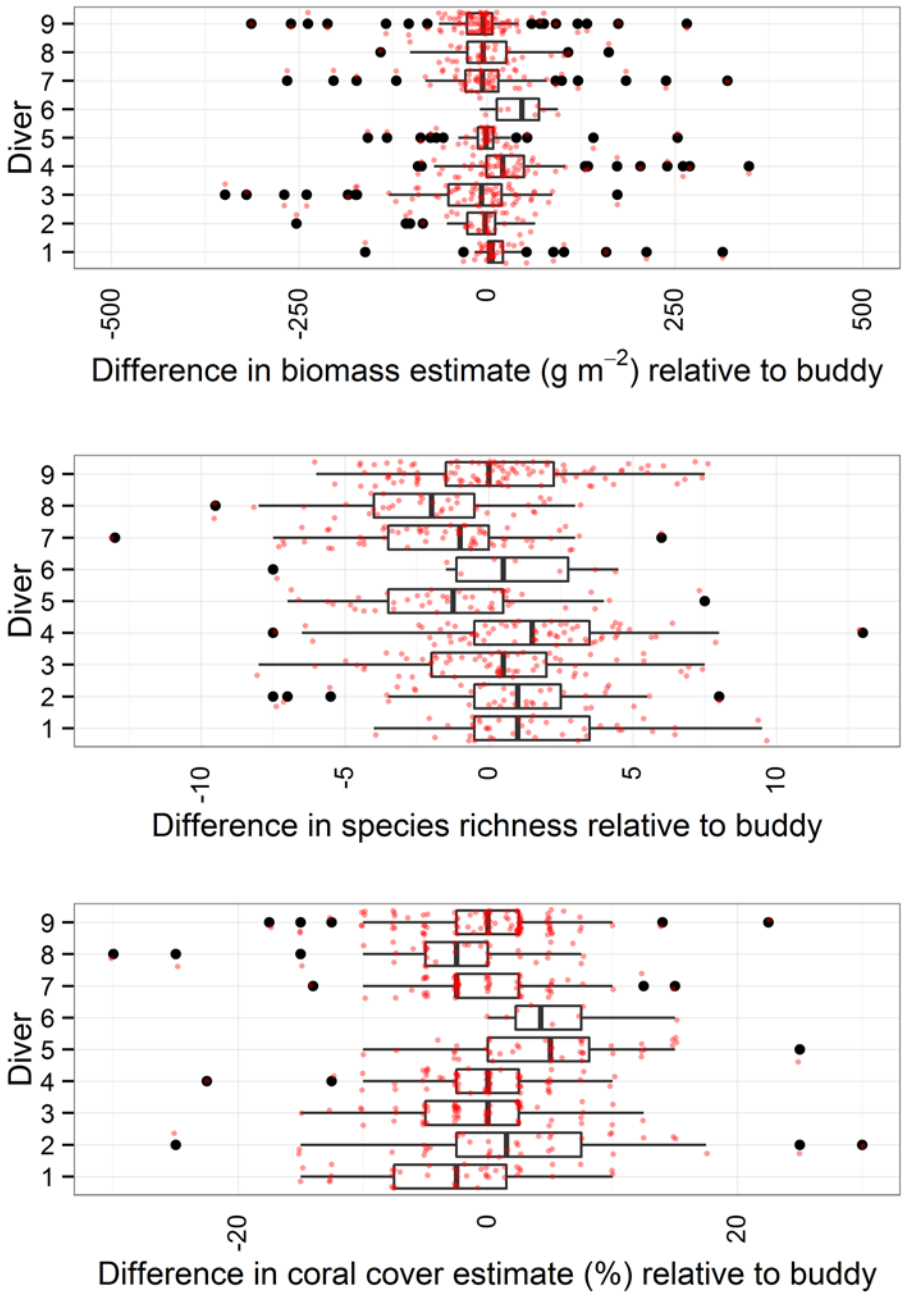


Figure A6.5 Pacific Remote Island Areas comparison of observer diver vs dive partner estimates for total fish biomass, species richness and hard coral cover during 2012 surveys. See Figure A6.2 legend for details.

Appendix 7: Species list

Table A.7. Species list ordered by abundance within consumer groups, showing length to weight parameters (LWA and LWB) used to calculate biomass per fish based on the estimated individual fish total length (Froese and Pauly 2010 and Kulbicki et al. 2005). The conversion factor is used for length weight parameters specified in fork as opposed to total fish length. Freq.= number of observations in all regions since 2009 using the stationary point count method. Y indicates whether species have been recorded per region; only regions surveyed in 2012–2013 are displayed.

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Planktivores	Chromis vanderbilti	Vanderbilt's chromis	Pomacentridae	0.03	3.00	1.00	3274	Y	Y	Y
Planktivores	Pomacentrus vaiuli	Ocellate damselfish	Pomacentridae	0.05	2.78	0.95	3035		Y	
Planktivores	Chromis margaritifer	Bicolor chromis	Pomacentridae	0.03	3.00	1.00	2536		Y	Y
Planktivores	Chromis acares	Midget chromis	Pomacentridae	0.03	3.00	1.00	2050	Y	Y	Y
Planktivores	Chromis agilis	Agile chromis	Pomacentridae	0.00	3.00	1.00	1563	Y	Y	Y
Planktivores	Melichthys niger	Black triggerfish	Balistidae	0.01	3.55	1.00	1523	Y	Y	Y
Planktivores	Chromis xanthura	Paletail chromis	Pomacentridae	0.01	2.77	1.00	1367		Y	Y
Planktivores	Chromis hanui	Hawaiian bicolor chromis	Pomacentridae	0.02	3.18	0.89	1359	Y		Y
Planktivores	Plectroglyphidodon lacrymatus	Whitespotted devil	Pomacentridae	0.06	2.64	1.00	1243		Y	Y
Planktivores	Thalassoma amblycephalum	Bluntheaded wrasse	Labridae	0.01	3.00	1.00	1224		Y	Y
Planktivores	Myripristis berndti	Blotcheye soldierfish	Holocentridae	0.03	3.00	0.92	1045	Y	Y	Y
Planktivores	Dascyllus albisella	Hawaiian dascyllus	Pomacentridae	0.05	2.91	1.00	985	Y		Y
Planktivores	Pseudanthias pascalus	Amethyst anthias	Serranidae	0.01	3.00	1.00	849		Y	Y
Planktivores	Pomachromis guamensis	Guam damsel	Pomacentridae	0.02	3.19	0.92	777			
Planktivores	Chromis ovalis	Hawaiian chromis	Pomacentridae	0.02	3.18	0.88	769	Y		
Planktivores	Chaetodon miliaris	Millet butterflyfish	Chaetodontidae	0.03	2.99	1.00	757	Y		
Planktivores	Dascyllus reticulatus	Reticulate dascyllus	Pomacentridae	0.03	3.13	0.95	737		Y	Y
Planktivores	Acanthurus thompsoni	Thompson's surgeonfish	Acanthuridae	0.02	3.00	1.00	688	Y	Y	Y
Planktivores	Blenniidae	Blenny species	Blenniidae	0.00	3.90	1.00	674	Y	Y	Y
Planktivores	Pseudanthias olivaceus	Olive anthias	Serranidae	0.02	3.00	1.00	660		Y	Y
Planktivores	Naso hexacanthus	Sleek unicornfish	Acanthuridae	0.04	2.85	0.88	650	Y	Y	Y
Planktivores	Nemateleotris magnifica	Fire goby	Microdesmidae	0.01	3.00	1.00	646		Y	Y
Planktivores	Pseudanthias bartlettorum	Bartlett's anthias	Serranidae	0.01	3.00	1.00	563			Y
Planktivores	Naso brevirostris	Spotted unicornfish	Acanthuridae	0.01	3.24	1.00	512	Y	Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Planktivores	Pomacentrus brachialis	Charcoal damsel	Pomacentridae	0.01	3.31	1.00	498		Y	Y
Planktivores	Stethojulis bandanensis	Red shoulder wrasse	Labridae	0.03	2.58	1.00	471		Y	Y
Planktivores	Pomacentrus coelestis	Neon damselfish	Pomacentridae	0.04	2.63	1.00	467		Y	Y
Planktivores	Chaetodon kleinii	Sunburst butterflyfish	Chaetodontidae	0.03	2.99	1.00	414	Y	Y	Y
Planktivores	Ptereleotris evides	Blackfin dartfish	Ptereleotridae	0.01	3.00	1.00	398		Y	Y
Planktivores	Pempheris oualensis	Silver sweeper	Pempheridae	0.01	3.00	1.00	383		Y	Y
Planktivores	Pomachromis richardsoni	Richardson's reef-damsel	Pomacentridae	0.03	3.02	0.91	379		Y	
Planktivores	Caesio teres	Yellow and blueback fusilier	Caesionidae	0.02	3.01	1.00	378		Y	Y
Planktivores	Cirrhilabrus katherinae	Katherine's wrasse	Labridae	0.01	3.01	1.00	369			
Planktivores	Abudefduf abdominalis	Green damselfish	Pomacentridae	0.02	3.13	0.89	358	Y		Y
Planktivores	Macolor niger	Black and white snapper	Lutjanidae	0.01	3.00	1.00	352		Y	Y
Planktivores	Dascyllus auripinnis	Gold-fin dascyllus	Pomacentridae	0.03	2.86	1.00	341		Y	Y
Planktivores	Myripristis amaena	Brick soldierfish	Holocentridae	0.02	3.26	0.89	318	Y	Y	Y
Planktivores	Myripristis kuntee	Shoulderbar soldierfish	Holocentridae	0.01	3.47	0.88	314	Y	Y	Y
Planktivores	Abudefduf vaigiensis	Indo-Pacific sergeant	Pomacentridae	0.03	2.80	1.00	314	Y	Y	Y
Planktivores	Naso vlamingii	Bignose unicornfish	Acanthuridae	0.01	3.25	1.00	294		Y	Y
Planktivores	Lepidozygus tapeinosoma	Fusilier damselfish	Pomacentridae	0.01	3.00	1.00	268		Y	Y
Planktivores	Pterocaesio tile	Dark-banded fusilier	Caesionidae	0.01	3.00	1.00	250		Y	Y
Planktivores	Chromis verater	Threespot chromis	Pomacentridae	0.02	3.18	0.95	247	Y		Y
Planktivores	Odonus niger	Redtoothed triggerfish	Balistidae	0.01	3.00	1.00	243		Y	Y
Planktivores	Macolor macularis	Midnight snapper	Lutjanidae	0.01	3.00	1.00	229		Y	
Planktivores	Luzonichthys whitleyi	Whitley's splitfin	Serranidae	0.01	3.00	1.00	213		Y	Y
Planktivores	Ptereleotris heteroptera	Blacktail goby	Ptereleotridae	0.01	3.00	1.00	202	Y	Y	Y
Planktivores	Dascyllus trimaculatus	Threespot dascyllus	Pomacentridae	0.03	3.04	0.98	191		Y	Y
Planktivores	Ecsenius bicolor	Bicolor blenny	Blenniidae	0.02	2.58	0.93	185		Y	Y
Planktivores	Dascyllus aruanus	Whitetail dascyllus	Pomacentridae	0.04	2.99	0.96	185		Y	Y
Planktivores	Meiacanthus atrodorsalis	Forktail blenny	Blenniidae	0.01	3.00	1.00	173		Y	Y
Planktivores	HemiTa`ūrichthys thompsoni	Thompson's butterflyfish	Chaetodontidae	0.03	3.00	1.00	173	Y	Y	Y
Planktivores	Amphiprion chrysopterus	Orangefin anemonefish	Pomacentridae	0.01	3.00	1.00	167		Y	Y
Planktivores	Ptereleotris zebra	Chinese zebra goby	Ptereleotridae	0.01	3.00	1.00	166		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Planktivores	Cirrhilabrus exquisitus	Exquisite wrasse	Labridae	0.01	3.01	1.00	159		Y	Y
Planktivores	Pomacentrus philippinus	Philippine damsel	Pomacentridae	0.02	3.06	0.95	155		Y	Y
Planktivores	Thalassoma hardwicke	Sixbar wrasse	Labridae	0.02	2.98	0.93	147		Y	Y
Planktivores	Thalassoma lunare	Moon wrasse	Labridae	0.02	2.83	0.90	136			Y
Planktivores	Apogon kallopterus	Iridescent cardinalfish	Apogonidae	0.01	3.31	0.93	111	Y		
Planktivores	Xanthichthys auromarginatus	Gilded triggerfish	Balistidae	0.03	2.93	1.00	99	Y	Y	Y
Planktivores	Decapterus macarellus	Mackerel scad	Carangidae	0.01	3.14	1.00	96	Y	Y	Y
Planktivores	HemiTa`ūrichthys polylepis	Pyramid butterflyfish	Chaetodontidae	0.03	3.00	1.00	85	Y	Y	
Planktivores	Chromis viridis	Blue green damselfish	Pomacentridae	0.04	2.90	0.91	83		Y	Y
Planktivores	Paracanthurus hepatus	Palette surgeonfish	Acanthuridae	0.02	3.06	0.98	75			Y
Planktivores	Neopomacentrus metallicus	Metallic demoiselle	Pomacentridae	0.03	2.93	0.84	75		Y	
Planktivores	Acanthurus mata	Elongate surgeonfish	Acanthuridae	0.02	3.01	0.94	73		Y	Y
Planktivores	Genicanthus personatus	Masked angelfish	Pomacanthidae	0.07	2.72	0.97	72			
Planktivores	Heniochus diphreutes	False moorish idol	Chaetodontidae	0.03	3.08	1.00	69	Y		
Planktivores	Naso sp		Acanthuridae	0.01	3.25	0.95	64	Y	Y	
Planktivores	Gunnellichthys curiosus	Curious wormfish	Microdesmidae	0.01	3.23	1.00	58	Y		
Planktivores	Spratelloides delicatulus	Delicate round herring	Clupeidae	0.01	3.31	0.94	45		Y	
Planktivores	Caesio caerulaurea	Blue and gold fusilier	Caesionidae	0.02	2.99	0.86	45		Y	
Planktivores	Xanthichthys mento	Redtail triggerfish	Balistidae	0.03	2.93	1.00	42			Y
Planktivores	Pseudanthias bicolor	Bicolor anthias	Serranidae	0.02	3.12	0.84	42	Y		
Planktivores	Pseudanthias bicolor	Bicolor anthias	Serranidae	0.02	3.12	0.84	42	Y		
Planktivores	Myripristis vittata	Whitetip soldierfish	Holocentridae	0.03	3.03	0.88	38	Y	Y	Y
Planktivores	Pseudanthias dispar	Peach fairy basslet	Serranidae	0.02	3.00	1.00	35			Y
Planktivores	Pterocaesio marri	Marr's fusilier	Caesionidae	0.01	3.15	1.00	33		Y	Y
Planktivores	Abudefduf sexfasciatus	Scissortail sergeant	Pomacentridae	0.02	3.15	0.88	33		Y	
Planktivores	Apogonidae	Apogonidae species	Apogonidae	0.02	3.12	0.95	32	Y	Y	Y
Planktivores	Amphiprion melanopus	Fire clownfish	Pomacentridae	0.02	3.30	0.99	32		Y	
Planktivores	Cirrhilabrus jordani	Flame wrasse	Labridae	0.01	3.18	1.00	31	Y		
Planktivores	Apogon angustatus	Broadstriped cardinalfish	Apogonidae	0.00	3.78	0.94	31		Y	Y
Planktivores	Amphiprion clarkii	Yellowtail clownfish	Pomacentridae	0.02	3.19	0.96	31			

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Planktivores	Apogon apogonoides	Short-tooth cardinal	Apogonidae	0.02	3.12	0.96	30		Y	Y
Planktivores	Xanthichthys caeruleolineatus	Bluelined triggerfish	Balistidae	0.02	3.08	0.92	27			Y
Planktivores	Chromis alpha	Yellow-speckled chromis	Pomacentridae	0.02	2.96	1.00	27		Y	Y
Planktivores	Apogon sp	Apogon species	Apogonidae	0.02	3.12	0.95	27	Y	Y	Y
Planktivores	Acanthurus nubilus	Bluelinedsurgeon	Acanthuridae	0.02	2.94	1.00	27			Y
Planktivores	Myripristis adusta	Shadowfin soldierfish	Holocentridae	0.02	3.04	1.00	26		Y	Y
Planktivores	Chromis ternatensis	Ternate chromis	Pomacentridae	0.02	3.41	0.88	25		Y	Y
Planktivores	Naso annulatus	Whitemargin unicornfish	Acanthuridae	0.05	2.72	0.95	20	Y	Y	Y
Planktivores	Myripristis woodsi	Whitespot soldierfish	Holocentridae	0.01	3.00	1.00	20			Y
Planktivores	Heteropriacanthus cruentatus	Glasseye	Priacanthidae	0.03	2.82	1.00	20	Y	Y	Y
Planktivores	Pseudanthias cooperi	Red-bar anthias	Serranidae	0.02	3.12	0.89	16		Y	Y
Planktivores	Priacanthus meeki	Hawaiian bigeye	Priacanthidae	0.03	2.81	0.98	15	Y		Y
Planktivores	Bodianus anthioides	Lyretail hogfish	Labridae	0.02	3.00	1.00	15			Y
Planktivores	Amphiprion perideraion	Pink anemonefish	Pomacentridae	0.02	3.19	1.00	14		Y	Y
Planktivores	Manta birostris	Giant manta	Myliobatidae	0.02	3.00	1.00	11	Y		Y
Planktivores	Myripristis murdjan	Pinecone soldierfish	Holocentridae	0.03	3.03	0.90	10		Y	Y
Planktivores	Encrasicholina purpurea	Hawaiian anchovy	Engraulidae	0.01	3.31	0.94	10			
Planktivores	Chromis lepidolepis	Scaly chromis	Pomacentridae	0.19	1.94	0.92	10			Y
Planktivores	Pseudocoris yamashiroi	Redspot wrasse	Labridae	0.01	3.18	0.99	9			Y
Planktivores	Ptereleotris microlepis	Blue gudgeon	Ptereleotridae	0.01	3.23	0.98	8			
Planktivores	Pseudanthias thompsoni	Hawaiian anthias	Serranidae	0.02	3.12	0.85	8			
Planktivores	Naso caesius	Gray unicornfish	Acanthuridae	0.03	2.90	1.00	8		Y	Y
Planktivores	Genicanthus watanabei	Blackedged angelfish	Pomacanthidae	0.07	2.72	0.78	7			
Planktivores	Chromis weberi	Weber's chromis	Pomacentridae	0.02	3.18	0.85	7		Y	
Planktivores	Chromis leucura	Whitetail chromis	Pomacentridae	0.02	3.18	0.91	7	Y		
Planktivores	Chromis fumea	Smokey chromis	Pomacentridae	0.01	3.35	0.87	7		Y	
Planktivores	Apogon novemfasciatus	Sevenstriped cardinalfish	Apogonidae	0.01	3.41	0.95	7		Y	
Planktivores	Kuhlia sandvicensis	Hawaiian flagtail	Kuhliidae	0.02	3.03	0.93	5	Y		
Planktivores	Ecsenius opsifrontalis	Comical blenny	Blenniidae	0.03	2.45	1.00	5		Y	
Planktivores	Blenniella chrysospilos	Red-spotted blenny	Blenniidae	0.01	3.00	1.00	5		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Planktivores	Apogon maculiferus	Spotted cardinalfish	Apogonidae	0.02	3.12	0.95	5	Y		
Planktivores	Selar crumenophthalmus	Bigeye scad	Carangidae	0.01	3.19	0.90	3	Y		Y
Planktivores	Pseudanthias ventralis Hawai`iensis	Longifn anthias	Serranidae	0.02	3.19	0.92	3	Y		
Planktivores	Myripristis chryseres	Yellowfin soldierfish	Holocentridae	0.03	3.03	0.90	3			
Planktivores	Corythoichthys flavofasciatus	Network pipefish	Syngnathidae	0.00	3.00	1.00	3		Y	
Planktivores	Chromis caudalis	Blue-axil chromis	Pomacentridae	0.02	3.18	0.87	3			Y
Planktivores	Amblyeleotris fasciata	Red-banded/Barred shrimpgoby	Gobiidae	0.03	2.62	1.00	3		Y	
Planktivores	Oxycirrhites typus	Longnose hawkfish	Cirrhitidae	0.01	3.27	0.97	2	Y		
Planktivores	Naso maculatus	Spotted unicornfish	Acanthuridae	0.02	2.96	0.94	2			
Planktivores	Ecsenius midas	Persian blenny	Blenniidae	0.02	2.58	0.87	2			Y
Planktivores	Chrysiptera cyanea	Sapphire devil	Pomacentridae	0.03	2.95	1.00	2		Y	
Planktivores	Archamia biguttata	Twinspot cardinalfish	Apogonidae	0.02	3.12	0.95	2			
Planktivores	Pseudanthias pleurotaenia	Square-spot fairy basslet	Serranidae	0.02	3.12	0.86	1			
Planktivores	Pristilepis oligolepis	Spinyface soldier	Holocentridae	0.03	3.03	0.94	1			
Planktivores	Pomacentrus pavo	Sapphire damsel	Pomacentridae	0.03	2.97	0.86	1		Y	
Planktivores	Syngnathidae	Pipefish sp	Syngnathidae	0.00	4.12	1.00	1			
Planktivores	Nemateleotris helfrichi	Helfrich's dartfish	Microdesmidae	0.01	3.00	1.00	1			
Planktivores	Hyporhamphus acutus acutus	Pacific halfbeak	Hemiramphidae	0.00	3.58	0.94	1		Y	
Planktivores	Doryrhamphus excisus excisus	Bluestripe pipefish	Syngnathidae	0.00	4.12	1.00	1			
Planktivores	Chromis atripectoralis	Black Axil Chromis	Pomacentridae	0.02	3.29	0.84	1			
Planktivores	Caesio lunaris	Lunar fusilier	Caesionidae	0.02	3.01	1.00	1			
Planktivores	Apogon fraenatus	Bridled cardinalfish	Apogonidae	0.01	3.17	0.97	1			
Planktivores	Apogon exostigma	Narrowstripe cardinalfish	Apogonidae	0.02	3.07	0.95	1			
Piscivores	Cephalopholis urodeta	Darkfin hind	Serranidae	0.03	2.82	1.00	3335		Y	Y
Piscivores	Cephalopholis argus	Peacock hind	Serranidae	0.01	3.18	1.00	2888	Y	Y	Y
Piscivores	Oxycheilinus unifasciatus	Ringtail maori wrasse	Labridae	0.02	3.00	1.00	2390	Y	Y	Y
Piscivores	Lutjanus bohar	Two-spot red snapper	Lutjanidae	0.02	3.06	0.96	1947		Y	Y
Piscivores	Paracirrhites forsteri	Blackside hawkfish	Cirrhitidae	0.02	3.13	1.00	1881	Y	Y	Y
Piscivores	Aphareus furca	Small toothed jobfish	Lutjanidae	0.01	3.00	1.00	1376	Y	Y	Y
Piscivores	Caranx melampygus	Bluefin trevally	Carangidae	0.03	2.97	0.89	1265	Y	Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Piscivores	Aprion virescens	Green jobfish	Lutjanidae	0.02	2.89	0.90	975	Y	Y	Y
Piscivores	Parupeneus cyclostomus	Goldsaddle goatfish	Mullidae	0.01	3.00	1.00	798	Y	Y	Y
Piscivores	Paracirrhites hemistictus	Whitespot hawkfish	Cirrhitidae	0.02	3.13	1.00	620		Y	Y
Piscivores	Cephalopholis miniata	Coral hind	Serranidae	0.01	3.11	1.00	566			Y
Piscivores	Caranx ignobilis	Giant trevally	Carangidae	0.02	2.98	0.89	522		Y	Y
Piscivores	Carcharhinus amblyrhynchos	Grey reef shark	Carcharhinidae	0.00	3.37	0.85	413		Y	Y
Piscivores	Caranx lugubris	Black jack	Carangidae	0.02	3.00	0.90	389		Y	Y
Piscivores	Epinephelus fasciatus	Blacktip grouper	Serranidae	0.01	3.04	1.00	368		Y	Y
Piscivores	Variola louti	Yellow-edged lyretail	Serranidae	0.01	3.08	0.88	242		Y	Y
Piscivores	Gracila albomarginata	Masked grouper	Serranidae	0.02	3.01	1.00	235		Y	Y
Piscivores	Lutjanus monostigma	Onespot snapper	Lutjanidae	0.02	2.91	0.98	227		Y	Y
Piscivores	Aulostomus chinensis	Chinese trumpetfish	Aulostomidae	0.00	3.51	1.00	205	Y	Y	Y
Piscivores	Triaenodon obesus	Whitetip reef shark	Carcharhinidae	0.00	3.34	0.80	171	Y	Y	Y
Piscivores	Carangoides orthogrammus	Island trevally	Carangidae	0.02	3.03	0.89	164	Y	Y	Y
Piscivores	Oxycheilinus digramma	Cheeklined wrasse	Labridae	0.01	3.00	1.00	159		Y	Y
Piscivores	Synodontidae	Lizardfish species	Synodontidae	0.01	3.08	0.94	150	Y	Y	Y
Piscivores	Elagatis bipinnulata	Rainbow runner	Carangidae	0.01	2.92	0.77	128		Y	Y
Piscivores	Epinephelus hexagonatus	Starspotted grouper	Serranidae	0.01	3.04	1.00	121		Y	Y
Piscivores	Fistularia commersonii	Bluespotted cornetfish	Fistulariidae	0.00	3.05	1.00	91	Y	Y	Y
Piscivores	Cephalopholis spiloparaea	Strawberry hind	Serranidae	0.02	3.03	1.00	85		Y	Y
Piscivores	Carcharhinus galapagensis	Galapagos shark	Carcharhinidae	0.00	3.37	0.85	84			
Piscivores	Gymnothorax meleagris	Turkey moray	Muraenidae	0.00	3.00	1.00	72	Y	Y	Y
Piscivores	Epinephelus retouti	Red-tipped grouper	Serranidae	0.01	3.05	1.00	63			Y
Piscivores	Scomberoides lysan	Doublespotted queenfish	Carangidae	0.01	2.92	0.88	59	Y		Y
Piscivores	Gymnothorax flavimarginatus	Yellow-edged moray	Muraenidae	0.00	3.35	1.00	58	Y	Y	Y
Piscivores	Epinephelus melanostigma	One-blotch grouper	Serranidae	0.02	3.00	1.00	56		Y	Y
Piscivores	Epinephelus merra	Honeycomb grouper	Serranidae	0.02	2.97	1.00	56		Y	Y
Piscivores	Epinephelus polyphekadion	Camouflage grouper	Serranidae	0.01	3.17	1.00	50		Y	Y
Piscivores	Carcharhinus melanopterus	Blacktip reef shark	Carcharhinidae	0.00	3.34	1.00	49		Y	Y
Piscivores	Cephalopholis leopardus	Leopard hind	Serranidae	0.01	3.00	1.00	41		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Piscivores	Aethaloperca rogaa	Redmouth grouper	Serranidae	0.01	3.03	1.00	40			Y
Piscivores	Gymnothorax breedeni	Blackcheek moray	Muraenidae	0.00	3.30	1.00	37			Y
Piscivores	Epinephelus macrospilos	Snubnose grouper	Serranidae	0.01	3.03	1.00	37		Y	Y
Piscivores	Sphyraena barracuda	Great barracuda	Sphyraenidae	0.01	3.01	0.89	36	Y	Y	Y
Piscivores	Epinephelus Ta`ūvina	Greasy grouper	Serranidae	0.02	2.96	1.00	36		Y	Y
Piscivores	Epinephelus spilotoceps	Foursaddle grouper	Serranidae	0.00	3.35	1.00	35		Y	Y
Piscivores	Lethrinus xanthochilus	Yellowlip emperor	Lethrinidae	0.02	2.96	0.94	33		Y	Y
Piscivores	Gymnosarda unicolor	Dogtooth tuna	Scombridae	0.01	3.07	0.89	30		Y	Y
Piscivores	Cephalopholis sonnerati	Tomato hind	Serranidae	0.01	3.28	1.00	30			Y
Piscivores	Carangoides ferdau	Blue trevally	Carangidae	0.04	2.85	0.86	30	Y	Y	Y
Piscivores	Cephalopholis sexmaculata	Sixblotch hind	Serranidae	0.02	3.03	1.00	29			Y
Piscivores	Caranx sexfasciatus	Bigeye trevally	Carangidae	0.02	2.99	0.91	28		Y	Y
Piscivores	Lethrinus olivaceus	Longface emperor	Lethrinidae	0.03	2.85	0.97	25		Y	Y
Piscivores	Seriola dumerili	Greater amberjack	Carangidae	0.02	2.94	1.00	22	Y		Y
Piscivores	Plectropomus laevis	Blacksaddled coralgrouper	Serranidae	0.01	3.24	0.97	22		Y	
Piscivores	Pterois sphex	Hawaiian turkeyfish	Scorpaenidae	0.02	2.91	1.00	19	Y		
Piscivores	Gymnothorax javanicus	Giant moray	Muraenidae	0.00	3.30	1.00	19	Y	Y	Y
Piscivores	Epinephelus maculatus	Highfin grouper	Serranidae	0.01	3.06	1.00	19		Y	
Piscivores	Synodus ulae	Red lizard fish	Synodontidae	0.01	3.08	0.94	18	Y		
Piscivores	Epinephelus howlandi	Blacksaddle grouper	Serranidae	0.02	3.00	1.00	18		Y	Y
Piscivores	Sphyraena qenie	Blackfin barracuda	Sphyraenidae	0.01	3.00	0.92	17		Y	Y
Piscivores	Platybelone argalus	Keeltail needlefish	Belonidae	0.00	3.10	0.98	15			
Piscivores	Lutjanus semicinctus	Black-banded snapper	Lutjanidae	0.00	3.43	0.98	10			Y
Piscivores	Tylosurus crocodilus	Houndneedlefish	Belonidae	0.00	3.28	0.97	9	Y		
Piscivores	Synodus binotatus	Two-spot lizard fish	Synodontidae	0.01	3.00	1.00	9	Y		Y
Piscivores	Gymnothorax undulatus	Undulated moray	Muraenidae	0.00	3.00	1.00	9	Y	Y	Y
Piscivores	Synodus dermatogenys	Sand lizardfish	Synodontidae	0.01	3.20	0.95	7			
Piscivores	Cheilodipterus macrodon	Large toothed cardinalfish	Apogonidae	0.01	3.43	0.94	7		Y	
Piscivores	Synodus variegatus	Variegated lizardfish	Synodontidae	0.00	3.48	0.96	6	Y	Y	
Piscivores	Scorpaenopsis diabolus	False stonefish	Scorpaenidae	0.02	2.91	1.00	6	Y		

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Piscivores	Anyperodon leucogrammicus	Slender grouper	Serranidae	0.00	3.55	1.00	6		Y	
Piscivores	Variola albimarginata	White-edged lyretail	Serranidae	0.02	3.07	0.87	5		Y	
Piscivores	Plectropomus areolatus	Squaretail coralgrouper	Serranidae	0.01	3.09	1.00	5		Y	
Piscivores	Nebrius ferrugineus	Tawny nurse shark	Ginglymostomatidae	0.00	3.57	0.86	5			
Piscivores	Epinephelus socialis	Surge grouper	Serranidae	0.01	3.05	1.00	5			
Piscivores	Epinephelus quernus	Hawaiian grouper	Serranidae	0.02	3.00	1.00	5			
Piscivores	Sphyraena helleri	Heller's barracuda	Sphyraenidae	0.01	3.02	0.93	4	Y	Y	Y
Piscivores	Pogonoperca punctata	Spotted soapfish	Serranidae	0.02	3.01	1.00	4		Y	Y
Piscivores	Gymnothorax steindachneri	Steindachner's moray eel	Muraenidae	0.00	3.30	1.00	4	Y		
Piscivores	Euthynnus affinis	Kawakawa	Scombridae	0.03	3.11	1.00	4			
Piscivores	Thunnus albacares	Yellowfin tuna	Scombridae	0.02	2.97	0.94	3			Y
Piscivores	Scorpaenopsis cacopsis	Titan scorpionfish	Scorpaenidae	0.02	2.91	1.00	3	Y		
Piscivores	Enchelycore pardalis	Leopard moray eel	Muraenidae	0.02	2.91	1.00	3			Y
Piscivores	Caranx papuensis	Brassy trevally	Carangidae	0.02	2.92	0.88	3			
Piscivores	Trachinotus baillonii	Smallspotted dart	Carangidae	0.03	2.73	1.00	2			Y
Piscivores	Sphyrna lewini	Scalloped hammerhead	Sphyrnidae	0.00	3.24	0.77	2			Y
Piscivores	Saurida gracilis	Gracile lizardfish	Synodontidae	0.01	3.16	0.94	2			
Piscivores	Pterois volitans	Red lionfish	Scorpaenidae	0.02	3.01	1.00	2		Y	Y
Piscivores	Synodontidae sp	Lizardfish species	Synodontidae	0.01	3.08	0.94	2	Y	Y	Y
Piscivores	Sarda orientalis	Striped bonito	Scombridae	0.02	2.97	0.91	1	Y		
Piscivores	Saurida flamma	Orangemouth lizardfish	Synodontidae	0.01	3.06	0.94	1	Y		
Piscivores	Pseudocaranx dentex	White trevally	Carangidae	0.03	2.89	0.90	1			
Piscivores	Sphyrnidae	Hammerhead species	Sphyrnidae	0.00	3.24	0.77	1			Y
Piscivores	Grammatorcynus bilineatus	Double-lined mackerel	Scombridae	0.01	3.00	1.00	1			
Piscivores	Congridae	Conger eel species	Congridae	0.00	2.98	1.00	1	Y		Y
Piscivores	Antennarius commerson	Commerson's frogfish	Antennariidae	0.02	3.29	1.00	1			
Secondary consumer	Thalassoma duperrey	Saddle wrasse	Labridae	0.01	3.10	0.90	9520	Y		Y
Secondary consumer	Thalassoma quinquevittatum	Fivestripe wrasse	Labridae	0.01	3.00	1.00	5883	Y	Y	Y
Secondary consumer	Paracirrhites arcatus	Arc-eye hawkfish	Cirrhitidae	0.02	3.13	1.00	5876	Y	Y	Y

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Secondary consumer	Parupeneus multifasciatus	Manybar goatfish	Mullidae	0.01	3.21	0.90	4986	Y	Y	Y
Secondary consumer	Plectroglyphidodon johnstonianus	Johnston Island damsel	Pomacentridae	0.06	2.64	1.00	4192	Y	Y	Y
Secondary consumer	Halichoeres ornatissimus	Ornamented wrasse	Labridae	0.01	3.00	1.00	3619	Y	Y	Y
Secondary consumer	Gomphosus varius	Bird wrasse	Labridae	0.02	2.70	1.00	3549	Y	Y	Y
Secondary consumer	Stethojulis balteata	Belted wrasse	Labridae	0.02	3.00	1.00	2986	Y		Y
Secondary consumer	Plectroglyphidodon dickii	Blackbar devil	Pomacentridae	0.06	2.75	1.00	2969		Y	Y
Secondary consumer	Sufflamen bursa	Boomerang triggerfish	Balistidae	0.02	3.00	1.00	2682	Y	Y	Y
Secondary consumer	Balistapus undulatus	Orange-lined triggerfish	Balistidae	0.01	3.55	1.00	2477		Y	Y
Secondary consumer	Coris venusta	Elegant coris	Labridae	0.01	3.25	1.00	2441	Y		
Secondary consumer	Bodianus bilunulatus	Tarry hogfish	Labridae	0.01	3.00	1.00	2437	Y		Y
Secondary consumer	Thalassoma lutescens	Yellow-brown wrasse	Labridae	0.01	3.04	0.89	1991	Y	Y	Y
Secondary consumer	Halichoeres hortulanus	Checkerboard wrasse	Labridae	0.01	3.06	1.00	1956		Y	Y
Secondary consumer	Pseudocheilinus octotaenia	Eight-lined wrasse	Labridae	0.01	3.16	1.00	1909	Y	Y	Y
Secondary consumer	Labroides dimidiatus	Bluestreak cleaner wrasse	Labridae	0.01	3.23	1.00	1903		Y	Y
Secondary consumer	Thalassoma ballieui	Blacktail wrasse	Labridae	0.01	3.10	0.98	1829	Y		Y
Secondary consumer	Macropharyngodon geoffroy	Geoffroy's wrasse	Labridae	0.01	3.18	1.00	1456	Y		Y
Secondary consumer	Zanclus cornutus	Moorish idol	Zanclidae	0.01	3.37	0.96	1414	Y	Y	Y
Secondary consumer	Monotaxis grandoculis	Humpnose big-eye bream	Lethrinidae	0.02	3.02	0.89	1245	Y	Y	Y
Secondary consumer	Oxycheilinus bimaculatus	Two-spot wrasse	Labridae	0.09	2.17	1.00	1200	Y		Y
Secondary consumer	Chaetodon ornatissimus	Ornate butterflyfish	Chaetodontidae	0.03	2.99	1.00	1190	Y	Y	Y
Secondary consumer	Parupeneus insularis	Twosaddle goatfish	Mullidae	0.01	3.07	1.00	1176	Y	Y	Y
Secondary consumer	Chaetodon multicinctus	Pebbled butterflyfish	Chaetodontidae	0.05	2.81	1.00	1174	Y		Y
Secondary consumer	Macropharyngodon meleagris	Blackspotted wrasse	Labridae	0.02	3.00	1.00	1173		Y	Y
Secondary consumer	Plectroglyphidodon imparipennis	Brighteye damselfish	Pomacentridae	0.06	2.69	1.00	1116	Y	Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Chaetodon reticulatus	Mailed butterflyfish	Chaetodontidae	0.03	2.99	1.00	1061	Y	Y	Y
Secondary consumer	Coris gaimard	Yellowtail coris	Labridae	0.01	3.00	1.00	1035	Y	Y	Y
Secondary consumer	Pseudocheilinus evanidus	Striated wrasse	Labridae	0.00	3.51	1.00	996	Y	Y	Y
Secondary consumer	Rhinecanthus rectangulus	Wedge-tail triggerfish	Balistidae	0.05	2.64	1.00	948	Y	Y	Y
Secondary consumer	Sargocentron tiere	Blue lined squirrelfish	Holocentridae	0.02	3.00	1.00	935	Y	Y	Y
Secondary consumer	Labroides phthirophagus	Hawaiian cleaner wrasse	Labridae	0.01	3.23	1.00	931	Y		Y
Secondary consumer	Forcipiger flavissimus	Longnose butterfly fish	Chaetodontidae	0.01	3.00	1.00	925	Y	Y	Y
Secondary consumer	Chaetodon quadrimaculatus	Fourspot butterflyfish	Chaetodontidae	0.03	2.99	1.00	881	Y	Y	Y
Secondary consumer	Lutjanus kasmira	Common bluestripe snapper	Lutjanidae	0.01	3.25	0.95	846	Y	Y	Y
Secondary consumer	Labroides rubrolabiatus	Redlip cleaner wrasse	Labridae	0.01	3.17	1.00	845		Y	Y
Secondary consumer	Pseudocheilinus tetrataenia	Four-lined wrasse	Labridae	0.01	3.16	1.00	812	Y	Y	Y
Secondary consumer	Epibulus insidiator	Slingjaw wrasse	Labridae	0.02	3.08	0.93	763		Y	Y
Secondary consumer	Chaetodon auriga	Threadfin butterflyfish	Chaetodontidae	0.04	2.83	1.00	721	Y	Y	Y
Secondary consumer	Parupeneus pleurostigma	Sidespot goatfish	Mullidae	0.01	3.00	1.00	710	Y	Y	Y
Secondary consumer	Cirrhitops fasciatus	Redbarred hawkfish	Cirrhitidae	0.02	3.00	1.00	695	Y		
Secondary consumer	Chaetodon fremblii	Bluestriped butterflyfish	Chaetodontidae	0.03	2.99	1.00	689	Y		
Secondary consumer	Chaetodon lunula	Raccoon butterflyfish	Chaetodontidae	0.03	2.99	1.00	663	Y	Y	Y
Secondary consumer	Pseudocheilinus hexataenia	Sixline wrasse	Labridae	0.02	3.00	1.00	662		Y	Y
Secondary consumer	Sufflamen fraenatum	Masked triggerfish	Balistidae	0.03	3.03	1.00	654	Y	Y	Y
Secondary consumer	Pygoplites diacanthus	Royal angelfish	Pomacanthidae	0.03	3.00	1.00	604		Y	Y
Secondary consumer	Valenciennea strigata	Blueband goby	Gobiidae	0.01	3.05	1.00	601		Y	Y
Secondary consumer	Hemigymnus fasciatus	Barred thicklip	Labridae	0.02	3.00	1.00	597		Y	Y
Secondary consumer	Coris aygula	Clown coris	Labridae	0.00	3.49	1.00	577		Y	Y
Secondary consumer	Labropsis xanthonota	Yellowback tubelip	Labridae	0.01	3.11	1.00	575		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Pseudojuloides cerasinus	Smalltail wrasse	Labridae	0.01	3.18	1.00	561	Y	Y	Y
Secondary consumer	Chaetodon punctatofasciatus	Spotband butterflyfish	Chaetodontidae	0.03	2.99	1.00	525			Y
Secondary consumer	Anampses cuvier	Pearl wrasse	Labridae	0.02	2.79	1.00	483	Y		
Secondary consumer	Halichoeres biocellatus	Red-lined wrasse	Labridae	0.01	3.00	1.00	480		Y	Y
Secondary consumer	Chaetodon trifascialis	Chevron butterflyfish	Chaetodontidae	0.03	2.97	1.00	479		Y	Y
Secondary consumer	Halichoeres margaritaceus	Pink-belly wrasse	Labridae	0.01	3.00	1.00	472		Y	Y
Secondary consumer	Anampses caeruleopunctatus	Bluespotted wrasse	Labridae	0.01	3.00	1.00	462		Y	Y
Secondary consumer	Sufflamen chrysopterum	Halfmoon triggerfish	Balistidae	0.02	3.15	1.00	460		Y	Y
Secondary consumer	Neocirrhites armatus	Flame hawkfish	Cirrhitidae	0.02	3.13	1.00	450		Y	Y
Secondary consumer	Chaetodon pelewensis	Sunset butterflyfish	Chaetodontidae	0.02	3.30	1.00	440		Y	Y
Secondary consumer	Chaetodon citrinellus	Speckled butterflyfish	Chaetodontidae	0.04	2.83	1.00	423		Y	Y
Secondary consumer	Thalassoma purpureum	Surge wrasse	Labridae	0.03	3.00	1.00	422	Y	Y	Y
Secondary consumer	Pomacanthus imperator	Emperor angelfish	Pomacanthidae	0.03	3.00	1.00	421		Y	Y
Secondary consumer	Sargocentron caudimaculatum	Silverspot squirrelfish	Holocentridae	0.02	2.96	1.00	411		Y	Y
Secondary consumer	Chaetodon lunulatus	Oval butterflyfish	Chaetodontidae	0.03	2.99	1.00	411	Y	Y	Y
Secondary consumer	Lutjanus fulvus	Blacktail snapper	Lutjanidae	0.02	2.97	0.96	405	Y	Y	Y
Secondary consumer	Labroides bicolor	Bicolor cleaner wrasse	Labridae	0.01	3.17	1.00	401		Y	Y
Secondary consumer	Cirrhitus pinnulatus	Stocky hawkfish	Cirrhitidae	0.02	3.00	1.00	383	Y	Y	Y
Secondary consumer	Coris flavovittata	Yellowstripe coris	Labridae	0.04	3.00	1.00	378	Y		
Secondary consumer	Cantherhines dumerilii	Whitespotted filefish	Monacanthidae	0.04	2.79	1.00	375	Y	Y	Y
Secondary consumer	Cheilinus trilobatus	Tripletail wrasse	Labridae	0.02	3.06	1.00	370		Y	Y
Secondary consumer	Lutjanus gibbus	Humpback red snapper	Lutjanidae	0.01	3.14	0.89	343		Y	Y
Secondary consumer	Chaetodon unimaculatus	Teardrop butterflyfish	Chaetodontidae	0.05	2.83	1.00	323	Y	Y	Y
Secondary consumer	Thalassoma trilobatum	Christmas wrasse	Labridae	0.02	2.97	1.00	313	Y	Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Mulloidichthys flavolineatus	Yellowstripe goatfish	Mullidae	0.01	3.06	1.00	307	Y	Y	Y
Secondary consumer	Anampses twistii	Yellowbreasted wrasse	Labridae	0.01	3.00	1.00	289		Y	Y
Secondary consumer	Mulloidichthys vanicolensis	Yellowfin goatfish	Mullidae	0.01	3.02	1.00	285	Y	Y	Y
Secondary consumer	Cirrhitichthys falco	Dwarf hawkfish	Cirrhitidae	0.02	2.98	1.00	283		Y	
Secondary consumer	Forcipiger longirostris	Longnose butterflyfish	Chaetodontidae	0.01	3.00	1.00	275	Y	Y	Y
Secondary consumer	Gnathodentex aureolineatus	Striped large-eye bream	Lethrinidae	0.03	3.06	0.91	269		Y	Y
Secondary consumer	Ostracion meleagris	Whitespotted boxfish	Ostraciidae	0.11	2.55	1.00	259	Y	Y	Y
Secondary consumer	Neoniphon sammara	Sammara squirrelfish	Holocentridae	0.03	2.89	0.92	256	Y	Y	Y
Secondary consumer	Plagiotremus goslinei	Biting blenny	Blenniidae	0.00	3.58	0.98	252	Y		
Secondary consumer	Pervagor spilosoma	Fantail filefish	Monacanthidae	0.03	2.95	1.00	247	Y		
Secondary consumer	Sargocentron spiniferum	Sabre squirrelfish	Holocentridae	0.02	3.12	0.93	237	Y	Y	Y
Secondary consumer	Chaetodon ephippium	Saddle butterflyfish	Chaetodontidae	0.02	3.06	1.00	235	Y	Y	Y
Secondary consumer	Coris centralis	Central Pacific coris	Labridae	0.01	3.25	1.00	232			Y
Secondary consumer	Parapercis clathrata	Latticed sandperch	Pinguipedidae	0.01	3.05	1.00	231		Y	
Secondary consumer	Plagiotremus tapeinosoma	Piano fangblenny	Blenniidae	0.01	2.91	0.98	214		Y	Y
Secondary consumer	Halichoeres marginatus	Dusky wrasse	Labridae	0.01	3.00	1.00	209		Y	
Secondary consumer	Bodianus loxozonus	Blackfin hogfish	Labridae	0.02	3.00	1.00	205		Y	Y
Secondary consumer	Bodianus axillaris	Axilspot hogfish	Labridae	0.02	3.00	1.00	204		Y	Y
Secondary consumer	Anampses chrysocephalus	Red tail wrasse	Labridae	0.02	2.79	1.00	201	Y		
Secondary consumer	Malacanthus brevirostris	Quakerfish	Malacanthidae	0.00	3.00	1.00	183	Y	Y	Y
Secondary consumer	Cirrhitichthys oxycephalus	Coral hawkfish	Cirrhitidae	0.02	2.98	1.00	168			Y
Secondary consumer	Plagiotremus ewaensis	Ewa blenny	Blenniidae	0.00	3.58	0.95	164	Y		
Secondary consumer	Pseudodax moluccanus	Chiseltooth wrasse	Labridae	0.01	3.01	1.00	160		Y	Y
Secondary consumer	Apolemichthys trimaculatus	Threespot angelfish	Pomacanthidae	0.07	2.72	1.00	157		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Pervagor aspricaudus	Orangetail filefish	Monacanthidae	0.03	2.95	1.00	155	Y		Y
Secondary consumer	Oplegnathus punctatus	Spotted knifejaw	Oplegnathidae	0.02	3.00	1.00	154	Y		Y
Secondary consumer	Halichoeres trimaculatus	Threespot wrasse	Labridae	0.03	2.74	1.00	154		Y	Y
Secondary consumer	Cheilinus oxycephalus	Snooty wrasse	Labridae	0.02	3.06	1.00	152		Y	Y
Secondary consumer	Chaetodon meyeri	Scrawled butterflyfish	Chaetodontidae	0.03	2.99	1.00	150			Y
Secondary consumer	Apolemichthys xanthopunctatus	Goldspotted angelfish	Pomacanthidae	0.07	2.72	1.00	145			Y
Secondary consumer	Myripristis earlei	Earl's soldierfish	Holocentridae	0.03	3.00	0.92	144			Y
Secondary consumer	Heniochus chrysostomus	Threeband pennantfish	Chaetodontidae	0.02	3.26	1.00	142		Y	
Secondary consumer	Sargocentron diadema	Crown squirrelfish	Holocentridae	0.03	2.96	0.92	140	Y	Y	Y
Secondary consumer	Novaculichthys taeniourus	Rockmover wrasse	Labridae	0.01	2.91	1.00	136	Y	Y	Y
Secondary consumer	Exallias brevis	Leopard blenny	Blenniidae	0.01	2.99	1.00	123	Y	Y	Y
Secondary consumer	Parapercis schauinslandii	Redspotted sandperch	Pinguipedidae	0.01	2.94	0.96	109	Y		Y
Secondary consumer	Chaetodon vagabundus	Vagabond butterflyfish	Chaetodontidae	0.03	2.97	1.00	100		Y	Y
Secondary consumer	Halichoeres melasmapomus	Cheekspot wrasse	Labridae	0.01	3.07	1.00	97		Y	Y
Secondary consumer	Pseudojuloides atavai	Polynesianwrasse	Labridae	0.01	3.18	1.00	96			Y
Secondary consumer	Chaetodon ulietensis	Pacific double-saddlebutterflyfish	Chaetodontidae	0.03	2.87	1.00	96		Y	Y
Secondary consumer	Parupeneus porphyreus	Whitesaddle goatfish	Mullidae	0.02	3.00	1.00	93	Y		
Secondary consumer	Parupeneus porphyreus		Mullidae	0.02	3.00	1.00	93	Y		
Secondary consumer	Apolemichthys arcuatus	Banded angelfish	Pomacanthidae	0.07	2.72	1.00	93	Y		
Secondary consumer	Rhinecanthus aculeatus	Blackbar triggerfish	Balistidae	0.05	2.64	1.00	86	Y	Y	Y
Secondary consumer	Hologymnosus doliatus	Pastel ringwrasse	Labridae	0.01	3.01	1.00	85		Y	Y
Secondary consumer	Bodianus prognathus	Longnose hogfish	Labridae	0.01	3.17	1.00	81			Y
Secondary consumer	Labroides pectoralis	Blackspot cleaner wrasse	Labridae	0.01	3.17	1.00	79			Y
Secondary consumer	Goniistius vittatus	Hawaiian morwong	Cheilodactylidae	0.02	3.06	0.91	77	Y		

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Sargocentron xantherythrum	Hawaiian squirrelfish	Holocentridae	0.02	3.05	0.93	73	Y		
Secondary consumer	Arothron meleagris	Guineafowl puffer	Tetraodontidae	0.41	2.70	1.00	72	Y	Y	Y
Secondary consumer	Aluterus scriptus	Scrawled filefish	Monacanthidae	0.00	3.00	1.00	70		Y	Y
Secondary consumer	Hemigymnus melapterus	Blackeye thicklip	Labridae	0.02	2.92	1.00	67		Y	
Secondary consumer	Cheilinus chlorourus	Floral wrasse	Labridae	0.02	2.99	1.00	66		Y	Y
Secondary consumer	Heniochus varius	Horned bannerfish	Chaetodontidae	0.03	3.00	1.00	59		Y	Y
Secondary consumer	Pseudobalistes flavimarginatus	Yellowmargin triggerfish	Balistidae	0.13	2.61	1.00	56		Y	Y
Secondary consumer	Amanses scopas	Broom filefish	Monacanthidae	0.02	2.87	1.00	52		Y	Y
Secondary consumer	Malacanthus latovittatus	Blue blanquillo	Malacanthidae	0.01	2.88	1.00	50		Y	Y
Secondary consumer	Labrichthys unilineatus	Tubelip wrasse	Labridae	0.02	3.00	1.00	50		Y	Y
Secondary consumer	Anampses meleagrides	Spotted wrasse	Labridae	0.02	2.79	1.00	50		Y	Y
Secondary consumer	Parupeneus barberinus	Dash-and-dot goatfish	Mullidae	0.01	3.12	0.90	46		Y	Y
Secondary consumer	Heniochus monoceros	Masked bannerfish	Chaetodontidae	0.02	3.21	1.00	46		Y	Y
Secondary consumer	Scolopsis lineata	Striped monocle bream	Nemipteridae	0.02	2.98	1.00	43			
Secondary consumer	Cheilinus fasciatus	Redbreast wrasse	Labridae	0.01	3.00	1.00	39		Y	
Secondary consumer	Plectorhinchus vittatus	Indian Ocean orientalsweetlips	Haemulidae	0.01	3.03	1.00	37		Y	
Secondary consumer	Balistoides viridescens	Titan triggerfish	Balistidae	0.02	3.02	1.00	37		Y	Y
Secondary consumer	Sebastapistes coniorta	Humpback nohu	Scorpaenidae	0.02	2.91	1.00	36	Y		
Secondary consumer	Cirrhitops hubbardi	Whitespotted hawkfish	Cirrhitidae	0.01	3.27	1.00	35			Y
Secondary consumer	Chaetodon bennetti	Bluelashed butterflyfish	Chaetodontidae	0.04	2.89	1.00	35		Y	Y
Secondary consumer	Apolemichthys griffisi	Griffis angelfish	Pomacanthidae	0.07	2.72	1.00	34			Y
Secondary consumer	Plagiotremus laudandus laudandus	Bicolour fangblenny	Blenniidae	0.00	3.58	0.87	33		Y	
Secondary consumer	Pseudocoris heteroptera	Torpedowrasse	Labridae	0.01	3.18	0.99	32			Y
Secondary consumer	Parapercis millepunctata	Black dotted sand perch	Pinguipedidae	0.01	3.05	1.00	30		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Neoniphon sp		Holocentridae	0.03	2.87	0.91	30	Y	Y	Y
Secondary consumer	Cheilinus undulatus	Humphead wrasse	Labridae	0.01	3.14	1.00	30		Y	Y
Secondary consumer	Anampses melanurus	White-spotted wrasse	Labridae	0.01	3.00	1.00	30		Y	Y
Secondary consumer	Stethojulis strigiventer	Three-line/Three-ribbon/Stripebelly wrasse	Labridae	0.02	2.88	1.00	29		Y	
Secondary consumer	Oxymonacanthus longirostris	Harlequin filefish	Monacanthidae	0.01	3.00	1.00	28		Y	
Secondary consumer	Bodianus mesothorax	Splitlevel hogfish	Labridae	0.02	3.00	1.00	27		Y	Y
Secondary consumer	Neoniphon opercularis	Blackfin squirrelfish	Holocentridae	0.01	3.00	1.00	25		Y	Y
Secondary consumer	Lethrinus obsoletus	Orange-striped emperor	Lethrinidae	0.02	3.03	0.97	25		Y	Y
Secondary consumer	Bodianus diana	Diana's hogfish	Labridae	0.02	3.00	1.00	25		Y	Y
Secondary consumer	Arothron nigropunctatus	Blackspotted puffer	Tetraodontidae	0.03	3.00	1.00	25		Y	Y
Secondary consumer	Cheilodipterus quinquelineatus	Five-lined cardinalfish	Apogonidae	0.02	3.00	0.96	23		Y	Y
Secondary consumer	Cheilio inermis	Cigar wrasse	Labridae	0.00	3.08	1.00	23	Y		Y
Secondary consumer	Bothus mancus	Flowery flounder	Bothidae	0.01	3.19	1.00	23		Y	Y
Secondary consumer	Diodon hystrix	Spot-fin porcupinefish	Diodontidae	0.19	2.47	1.00	22	Y	Y	Y
Secondary consumer	Chaetodon melannotus	Blackback butterflyfish	Chaetodontidae	0.03	3.05	1.00	20		Y	
Secondary consumer	Lethrinus rubrioperculatus	Spotcheek emperor	Lethrinidae	0.01	3.11	0.91	19		Y	Y
Secondary consumer	Caracanthus typicus	Hawaiian orbicularvelvetfish	Caracanthidae	0.01	3.32	1.00	18	Y		
Secondary consumer	Sargocentron microstoma	Smallmouth squirrelfish	Holocentridae	0.02	3.05	0.94	17		Y	Y
Secondary consumer	Heniochus singularius	Singular bannerfish	Chaetodontidae	0.03	3.00	1.00	17		Y	
Secondary consumer	Cymolutes lecluse	Sharp-headed wrasse	Labridae	0.01	3.18	1.00	16	Y		
Secondary consumer	Caracanthus maculatus	Spotted coral croucher	Caracanthidae	0.03	3.00	1.00	16		Y	Y
Secondary consumer	Balistoides conspicillum	Clown triggerfish	Balistidae	0.01	3.55	1.00	16		Y	Y
Secondary consumer	Arothron hispidus	White-spotted puffer	Tetraodontidae	0.06	2.76	1.00	15	Y	Y	Y
Secondary consumer	Pervagor janthinosoma	Blackbar filefish	Monacanthidae	0.01	3.26	1.00	14		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Halichoeres prosopeion	Twotone wrasse	Labridae	0.01	3.07	1.00	14		Y	
Secondary consumer	Mulloidichthys mimicus	Mimic goatfish	Mullidae	0.01	3.29	0.92	13	Y		Y
Secondary consumer	Hologymnosus annulatus	Ring wrasse	Labridae	0.01	3.25	0.99	13			Y
Secondary consumer	Chaetodon lineolatus	Lined butterflyfish	Chaetodontidae	0.07	2.62	1.00	13	Y	Y	Y
Secondary consumer	Centropyge multifasciata	Barred angelfish	Pomacanthidae	0.03	2.80	1.00	13		Y	Y
Secondary consumer	Paracirrhites xanthus	Yellow hawkfish	Cirrhitidae	0.02	3.13	1.00	12		Y	Y
Secondary consumer	Lethrinus harak	Thumbprint emperor	Lethrinidae	0.02	3.04	0.93	12		Y	
Secondary consumer	Diodon holocanthus	Long-spine porcupinefish	Diodontidae	0.07	2.78	1.00	12	Y		
Secondary consumer	Pervagor marginalis	Blackmargin filefish	Monacanthidae	0.03	2.95	1.00	11			Y
Secondary consumer	Bolbometopon muricatum	Green humphead parrotfish	Scaridae	0.02	3.04	1.00	11			Y
Secondary consumer	Pterois antennata	Broadbarred firefish	Scorpaenidae	0.02	3.01	1.00	10			Y
Secondary consumer	Plectorhinchus picus	Painted sweetlip	Haemulidae	0.01	3.09	0.96	10		Y	
Secondary consumer	Ostracion whitleyi	Whitley's box	Ostraciidae	0.13	2.52	1.00	10			Y
Secondary consumer	Neoniphon argenteus	Clearfin squirrelfish	Holocentridae	0.03	2.82	0.92	10		Y	
Secondary consumer	Dendrochirus barberi	Hawaiian lionfish	Scorpaenidae	0.02	2.91	1.00	10	Y		
Secondary consumer	Aspidontus taeniatus	False cleanerfish	Blenniidae	0.02	3.23	1.00	10		Y	
Secondary consumer	Aetobatus narinari	Spotted eagle ray	Myliobatidae	0.01	3.13	1.00	10	Y		Y
Secondary consumer	Parupeneus chrysonemus	Yellowbarbel goatfish	Mullidae	0.01	3.21	0.90	9			
Secondary consumer	Plagiotremus rhinorhynchos	Bluestriped fangblenny	Blenniidae	0.00	3.79	0.94	8		Y	Y
Secondary consumer	Gymnothorax eurostus	Abbott's moray eel	Muraenidae	0.00	3.30	1.00	8	Y		
Secondary consumer	Pentapodus caninus	Small-toothed whiptail	Nemipteridae	0.02	3.00	0.90	6			
Secondary consumer	Parupeneus crassilabris	Doublebar goatfish	Mullidae	0.01	3.13	0.90	6		Y	
Secondary consumer	Oplegnathus fasciatus	Barred knifejaw	Oplegnathidae	0.03	3.00	1.00	6			Y
Secondary consumer	Myripristis violacea	Lattice soldierfish	Holocentridae	0.04	2.94	0.91	6		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Echidna nebulosa	Snowflake moray	Muraenidae	0.00	3.35	1.00	6	Y		Y
Secondary consumer	Cheilodipterus artus	Wolf cardinalfish	Apogonidae	0.00	3.59	0.96	6		Y	
Secondary consumer	Parapercis sp	Sandperch species	Pinguipedidae	0.01	2.94	0.96	5		Y	Y
Secondary consumer	Amblyglyphidodon curacao	Staghorn damselfish	Pomacentridae	0.01	3.44	0.92	5			
Secondary consumer	Sargocentron ensifer	Yellow-stripedsquirrelfish	Holocentridae	0.02	3.05	0.91	4	Y		
Secondary consumer	Pteragogus enneacanthus	Cockerel wrasse	Labridae	0.01	3.02	1.00	4			
Secondary consumer	Pseudocoris aurantiofasciata	Rust-bandedwrasse	Labridae	0.01	3.18	0.97	4			Y
Secondary consumer	Platax orbicularis	Orbicular batfish	Ephippidae	0.04	2.95	1.00	4		Y	Y
Secondary consumer	Iniistius pavo	Peacock wrasse	Labridae	0.01	3.18	1.00	4	Y		
Secondary consumer	Cirrhilabrus punctatus	Dotted wrasse	Labridae	0.01	3.02	1.00	4		Y	
Secondary consumer	Balistes polylepis	Finescale triggerfish	Balistidae	0.02	3.08	0.93	4	Y		
Secondary consumer	Scorpaenodes parvipinnis	Lowfin scorpionfish	Scorpaenidae	0.03	3.00	1.00	3			
Secondary consumer	Rhinecanthus lunula	Halfmoon picassofish	Balistidae	0.03	2.87	1.00	3		Y	
Secondary consumer	Psilogobius mainlandi	Mainland's goby	Gobiidae	0.03	2.62	1.00	3			
Secondary consumer	Myrichthys magnificus	Magnificent snake eel	Ophichthidae	0.00	3.00	1.00	3			
Secondary consumer	Mulloidichthys pfluegeri	Orange goatfish	Mullidae	0.01	3.05	1.00	3	Y		
Secondary consumer	Lactoria fornasini	Thornback cowfish	Ostraciidae	0.40	1.93	1.00	3	Y		
Secondary consumer	Iniistius aneitensis	Yellowblotch razorfish	Labridae	0.01	3.18	1.00	3			Y
Secondary consumer	Hoplolatilus starcki	Bluehead tilefish	Malacanthidae	0.00	3.00	1.00	3			
Secondary consumer	Grammistes sexlineatus	Sixline soapfish	Serranidae	0.02	3.00	1.00	3			
Secondary consumer	Cymolutes praetextatus	Knifefish	Labridae	0.01	3.18	1.00	3			
Secondary consumer	Coris dorsomacula	Palebarred coris	Labridae	0.01	3.25	1.00	3			
Secondary consumer	Balistidae	Triggerfish species	Balistidae	0.02	3.08	1.00	2	Y		Y
Secondary consumer	Taeniura meyeni	Blotched fantail ray	Dasyatidae	0.01	3.00	1.00	2			Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Sebastapistes cyanostigma	Yellowspotted scorpionfish	Scorpaenidae	0.02	2.91	1.00	2			Y
Secondary consumer	Paraluteres prionurus	Blacksaddle filefish	Monacanthidae	0.01	3.26	1.00	2			
Secondary consumer	Gymnomuraena zebra	Zebra moray	Muraenidae	0.00	3.30	1.00	2	Y		
Secondary consumer	Fusigobius duospilus	Barenape goby	Gobiidae	0.01	3.02	1.00	2		Y	
Secondary consumer	Chaetodon rafflesii	Latticed butterflyfish	Chaetodontidae	0.03	2.99	1.00	2		Y	
Secondary consumer	Chaetodon flavocoronatus	Yellow-crowned butterflyfish	Chaetodontidae	0.05	2.81	1.00	2			
Secondary consumer	Amblycirrhitus bimacula	Twospot hawkfish	Cirrhitidae	0.01	3.27	1.00	2		Y	
Secondary consumer	Upeneus taeniopterus	Finstripe goatfish	Mullidae	0.01	3.22	0.90	1		Y	
Secondary consumer	Balistidae sp	Triggerfish species	Balistidae	0.02	3.08	1.00	1	Y		Y
Secondary consumer	Stethojulis trilineata	Fourline wrasse	Labridae	0.01	3.26	1.00	1		Y	
Secondary consumer	Sargocentron punctatissimum	Speckled squirrelfish	Holocentridae	0.02	3.05	0.93	1			
Secondary consumer	Polydactylus sexfilis	Sixfinger threadfin	Polynemidae	0.01	3.12	0.82	1			
Secondary consumer	Plectorhinchus gibbosus	Harry hotlips	Haemulidae	0.02	2.96	1.00	1		Y	
Secondary consumer	Neoniphon aurolineatus	Yellowstriped squirrelfish	Holocentridae	0.03	2.87	0.90	1			
Secondary consumer	Istigobius decoratus	Decorated goby	Gobiidae	0.02	2.69	1.00	1		Y	
Secondary consumer	Iniistius umbrilatus	Razor wrasse fish	Labridae	0.01	3.18	1.00	1	Y		
Secondary consumer	Gymnothorax melatremus	Dwarf moray	Muraenidae	0.00	3.00	1.00	1	Y		
Secondary consumer	Gobiodon citrinus	Poison goby	Gobiidae	0.06	2.44	1.00	1		Y	
Secondary consumer	Dasyatidae	Stingray species	Dasyatidae	0.01	3.35	1.00	1			
Secondary consumer	Chaetodon tinkeri	Hawaiian butterflyfish	Chaetodontidae	0.05	2.81	1.00	1	Y		
Secondary consumer	Choerodon jordani	Blackwedge tuskfish	Labridae	0.02	3.12	1.00	1		Y	
Secondary consumer	Brotula multibarbata	Goatsbeard brotula	Ophidiidae	0.00	4.47	1.00	1			
Secondary consumer	Belonoperca chabanaudi	Arrowhead soapfish	Serranidae	0.01	3.03	1.00	1			
Secondary consumer	Arothron stellatus	Starry toadfish	Tetraodontidae	0.09	2.67	1.00	1			

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Secondary consumer	Arothron mappa	Map puffer	Tetraodontidae	0.03	2.85	1.00	1		Y	
Primary consumer	Acanthurus nigrofuscus	Brown surgeonfish	Acanthuridae	0.03	3.03	0.91	6898	Y	Y	Y
Primary consumer	Stegastes fasciolatus	Pacific gregory	Pomacentridae	0.03	2.91	1.00	5241	Y	Y	Y
Primary consumer	Chlorurus sordidus	Daisy parrotfish	Scaridae	0.02	2.97	1.00	4697	Y	Y	Y
Primary consumer	Ctenochaetus striatus	Striated surgeonfish	Acanthuridae	0.02	3.06	0.91	4543		Y	Y
Primary consumer	Acanthurus nigricans	Whitecheek surgeonfish	Acanthuridae	0.07	2.67	1.00	4541	Y	Y	Y
Primary consumer	Centropyge flavissima	Lemonpeel angelfish	Pomacanthidae	0.03	2.80	1.00	3794		Y	Y
Primary consumer	Ctenochaetus strigosus	Spotted surgeonfish	Acanthuridae	0.02	3.00	1.00	3740	Y		Y
Primary consumer	Melichthys vidua	Pinktail triggerfish	Balistidae	0.01	3.55	1.00	3544	Y	Y	Y
Primary consumer	Naso lituratus	Orangespine unicornfish	Acanthuridae	0.01	3.25	0.97	3531	Y	Y	Y
Primary consumer	Acanthurus nigroris	Bluelined surgeonfish	Acanthuridae	0.02	2.94	1.00	2882	Y	Y	Y
Primary consumer	Acanthurus olivaceus	Orangespot surgeonfish	Acanthuridae	0.04	3.06	0.86	2687	Y	Y	Y
Primary consumer	Acanthurus triostegus	Convict surgeonfish	Acanthuridae	0.08	2.57	0.87	2374	Y	Y	Y
Primary consumer	Ctenochaetus cyanocheilus	Bluelip bristletooth	Acanthuridae	0.02	3.06	1.00	2300		Y	Y
Primary consumer	Zebrasoma flavescens	Yellow tang	Acanthuridae	0.01	3.16	1.00	2070	Y	Y	Y
Primary consumer	Chlorurus perspicillatus	Spectacled parrotfish	Scaridae	0.02	3.00	1.00	1923	Y		Y
Primary consumer	Canthigaster jactator	Hawaiian whitespotted toby	Tetraodontidae	0.04	2.82	1.00	1895	Y		Y
Primary consumer	Centropyge potteri	Russet angelfish	Pomacanthidae	0.07	2.58	1.00	1720	Y		Y
Primary consumer	Acanthurus lineatus	Lined surgeonfish	Acanthuridae	0.04	2.85	1.00	1521		Y	Y
Primary consumer	Acanthurus leucopareius	Whitebar surgeonfish	Acanthuridae	0.00	3.00	1.00	1515	Y		Y
Primary consumer	Naso unicornis	Bluespine unicornfish	Acanthuridae	0.02	3.04	0.96	1443	Y	Y	Y
Primary consumer	Scarus rubroviolaceus	Ember parrotfish	Scaridae	0.01	3.11	1.00	1436	Y	Y	Y
Primary consumer	Scarus psittacus	Common parrotfish	Scaridae	0.01	3.32	0.97	1339	Y	Y	Y
Primary consumer	Chrysiptera brownriggii	Surge damselfish	Pomacentridae	0.03	2.95	1.00	1338		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Primary consumer	Centropyge loricula	Flame angel	Pomacanthidae	0.03	2.80	1.00	1185	Y	Y	Y
Primary consumer	Scarus dubius	Regal parrot	Scaridae	0.02	2.97	0.97	1169	Y		Y
Primary consumer	Ctenochaetus marginatus	Striped-fin surgeonfish	Acanthuridae	0.02	3.06	0.95	1159			Y
Primary consumer	Scarus forsteni	Forsten's parrotfish	Scaridae	0.02	3.05	1.00	1128		Y	Y
Primary consumer	Stegastes aureus	Golden gregory	Pomacentridae	0.03	2.91	1.00	981		Y	Y
Primary consumer	Centropyge shepardi	Mango angelfish	Pomacanthidae	0.07	2.58	1.00	886			
Primary consumer	Acanthurus achilles	Achilles tang	Acanthuridae	0.03	3.00	1.00	847	Y	Y	Y
Primary consumer	Scaridae	Parrotfish species	Scaridae	0.02	2.96	0.97	813	Y	Y	Y
Primary consumer	Chromis iomelas	Half-and-half chromis	Pomacentridae	0.02	3.38	0.90	739		Y	
Primary consumer	Chrysiptera Ta`ūpou	Southseas devil	Pomacentridae	0.02	3.00	0.97	716		Y	
Primary consumer	Acanthurus blochii	Ringtail surgeonfish	Acanthuridae	0.03	3.03	0.93	700	Y	Y	Y
Primary consumer	Ctenochaetus Hawai`iensis	Chevron tang	Acanthuridae	0.02	3.01	1.00	572	Y	Y	Y
Primary consumer	Centropyge bispinosa	Twospined angelfish	Pomacanthidae	0.04	2.46	1.00	513		Y	
Primary consumer	Scarus frenatus	Bridled parrotfish	Scaridae	0.03	3.06	0.88	512		Y	Y
Primary consumer	Zebrasoma veliferum	Sailfin tang	Acanthuridae	0.03	2.87	1.00	508	Y	Y	Y
Primary consumer	Acanthurus pyroferus	Chocolate surgeonfish	Acanthuridae	0.02	3.00	1.00	505		Y	Y
Primary consumer	Cirripectes vanderbilti	Scarface blenny	Blenniidae	0.01	3.00	1.00	486	Y		Y
Primary consumer	Chrysiptera traceyi	Tracey's demoiselle	Pomacentridae	0.03	2.93	0.96	443			
Primary consumer	Chlorurus microrhinos	Steephead parrots	Scaridae	0.03	2.93	0.93	429		Y	Y
Primary consumer	Calotomus carolinus	Carolines parrotfish	Scaridae	0.01	3.17	1.00	425	Y	Y	Y
Primary consumer	Cirripectes variolosus	Red-speckled blenny	Blenniidae	0.01	3.00	1.00	412		Y	Y
Primary consumer	Acanthurus dussumieri	Eyestripe surgeonfish	Acanthuridae	0.04	2.87	0.93	404	Y		Y
Primary consumer	Zebrasoma scopas	Twotone tang	Acanthuridae	0.03	2.99	1.00	376		Y	Y
Primary consumer	Centropyge heraldi	Yellow angelfish	Pomacanthidae	0.03	3.00	1.00	326		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Primary consumer	Chlorurus japanensis	Palecheek parrotfish	Scaridae	0.02	3.04	1.00	323		Y	
Primary consumer	Chlorurus frontalis	Tan-faced parrotfish	Scaridae	0.02	3.04	1.00	278		Y	Y
Primary consumer	Scarus oviceps	Dark capped parrotfish	Scaridae	0.02	3.00	1.00	269		Y	Y
Primary consumer	Canthigaster coronata	Crowned puffer	Tetraodontidae	0.04	2.82	1.00	266	Y		
Primary consumer	Ctenochaetus binotatus	Twospot surgeonfish	Acanthuridae	0.04	2.87	0.91	257		Y	Y
Primary consumer	Scarus sp	Scarus genus species	Scaridae	0.02	2.96	0.97	249	Y	Y	Y
Primary consumer	Ctenochaetus flavicauda	Pale-tailed/Whitetail bristletooth	Acanthuridae	0.02	3.06	1.00	233		Y	Y
Primary consumer	Canthigaster solandri	Spotted sharpnose	Tetraodontidae	0.03	2.98	1.00	227		Y	Y
Primary consumer	Plectroglyphidodon phoenixensis	Phoenix devil	Pomacentridae	0.06	2.69	1.00	226		Y	Y
Primary consumer	Acanthurus guttatus	Whitespotted surgeonfish	Acanthuridae	0.00	3.00	1.00	206	Y	Y	Y
Primary consumer	Canthigaster amboinensis	Spider-eye puffer	Tetraodontidae	0.02	2.92	1.00	205	Y	Y	Y
Primary consumer	Scarus schlegeli	Yellowband parrotfish	Scaridae	0.02	2.97	0.98	204		Y	
Primary consumer	Scarus tricolor	Tricolour parrotfish	Scaridae	0.02	3.05	1.00	193		Y	Y
Primary consumer	Acanthurus sp	Acanthurus species	Acanthuridae	0.03	2.98	0.90	182	Y	Y	Y
Primary consumer	Cantherhines sandwichiensis	Sandwich isle file	Monacanthidae	0.01	3.26	1.00	177	Y		Y
Primary consumer	Cantherhines pardalis	Honeycomb filefish	Monacanthidae	0.02	3.07	1.00	158		Y	Y
Primary consumer	Centropyge fisheri	Orange angelfish	Pomacanthidae	0.07	2.58	1.00	156	Y	Y	Y
Primary consumer	Abudefduf sordidus	Blackspot sergeant	Pomacentridae	0.02	3.00	1.00	144	Y	Y	Y
Primary consumer	Acanthurus xanthopterus	Yellowfin surgeonfish	Acanthuridae	0.03	2.98	0.87	141	Y	Y	Y
Primary consumer	Zebrasoma rostratum	Longnose surgeonfish	Acanthuridae	0.03	2.99	1.00	130		Y	Y
Primary consumer	Calotomus zonarchus	Yellowbar parrot	Scaridae	0.02	2.97	1.00	125	Y	Y	Y
Primary consumer	Stegastes nigricans	Dusky farmerfish	Pomacentridae	0.04	3.01	0.94	118		Y	Y
Primary consumer	Acanthurus nigricauda	Epaulette surgeonfish	Acanthuridae	0.02	3.17	0.84	109		Y	Y
Primary consumer	Stegastes albifasciatus	Whitebar gregory	Pomacentridae	0.03	3.00	1.00	103		Y	Y

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Primary consumer	Chrysiptera biocellata	Twinspot damselfish	Pomacentridae	0.02	3.00	1.00	103		Y	
Primary consumer	Acanthurus maculiceps	White-freckled surgeonfish	Acanthuridae	0.03	2.95	0.83	91		Y	Y
Primary consumer	Kyphosus pacificus	Grey sea chub	Kyphosidae	0.03	2.86	1.00	87		Y	Y
Primary consumer	Chaetodon mertensii	Atoll butterflyfish	Chaetodontidae	0.00	3.79	1.00	86		Y	Y
Primary consumer	Chromis amboinensis	Ambon chromis	Pomacentridae	0.03	3.00	1.00	82		Y	Y
Primary consumer	Scarus globiceps	Globehead parrotfish	Scaridae	0.02	3.00	1.00	80		Y	Y
Primary consumer	Acanthurus leucocheilus	Palelipped surgeonfish	Acanthuridae	0.03	3.02	0.90	76		Y	Y
Primary consumer	Acanthuridae	Surgeonfish species	Acanthuridae	0.03	2.98	0.90	72	Y	Y	Y
Primary consumer	Plectroglyphidodon leucozonus	Singlebar devil	Pomacentridae	0.03	2.94	0.92	68			
Primary consumer	Cirripectes polyzona	Barred blenny	Blenniidae	0.00	3.00	1.00	58		Y	Y
Primary consumer	Centropyge bicolor	Bicolor angelfish	Pomacanthidae	0.02	3.00	1.00	55		Y	Y
Primary consumer	Scarus altipinnis	Filament-finned parrotfish	Scaridae	0.02	3.03	0.98	54		Y	Y
Primary consumer	Scarus spinus	Greensnout parrotfish	Scaridae	0.02	3.05	1.00	53		Y	Y
Primary consumer	Acanthurus albipectoralis	Whitefin surgeonfish	Acanthuridae	0.03	2.98	0.91	53		Y	Y
Primary consumer	Chrysiptera glauca	Grey demoiselle	Pomacentridae	0.02	3.00	1.00	49		Y	
Primary consumer	Scarus niger	Dusky parrotfish	Scaridae	0.01	3.16	0.98	42		Y	Y
Primary consumer	Kyphosus cinerascens	Blue seachub	Kyphosidae	0.03	2.86	1.00	38	Y	Y	Y
Primary consumer	Naso tonganus	Bulbnose unicornfish	Acanthuridae	0.01	3.25	1.00	37		Y	
Primary consumer	Cetoscarus ocellatus	Bicolour parrotfish	Scaridae	0.02	3.00	1.00	36		Y	
Primary consumer	Ctenochaetus sp	Bristletooth	Acanthuridae	0.02	3.06	0.92	33		Y	Y
Primary consumer	Siganus argenteus	Streamlined spinefoot	Siganidae	0.01	3.15	0.90	32		Y	
Primary consumer	Stegastes lividus	Blunt snout gregory	Pomacentridae	0.03	2.91	1.00	27		Y	Y
Primary consumer	Scarus ghobban	Blue-barred parrotfish	Scaridae	0.02	3.04	0.97	27		Y	Y
Primary consumer	Plectroglyphidodon sindonis	Rock damselfish	Pomacentridae	0.03	2.94	0.90	25	Y		

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Primary consumer	Kyphosus sandwicensis	Pacific chub	Kyphosidae	0.03	2.86	1.00	24			
Primary consumer	Canthigaster valentini	Valentinni's sharpnosepuffer	Tetraodontidae	0.04	2.94	1.00	22		Y	Y
Primary consumer	Cantherhines verecundus	Shy filefish	Monacanthidae	0.01	3.26	1.00	21	Y		
Primary consumer	Scarus festivus	Festive parrotfish	Scaridae	0.02	2.97	0.95	19		Y	Y
Primary consumer	Chanos chanos	Milkfish	Chanidae	0.00	3.39	0.84	19		Y	Y
Primary consumer	Chaetodon semeion	Dotted butterflyfish	Chaetodontidae	0.03	2.99	1.00	18		Y	Y
Primary consumer	Scarus dimidiatus	Yellowbarred parrotfish	Scaridae	0.02	2.96	1.00	15		Y	
Primary consumer	Canthigaster janthinoptera	Honeycomb toby	Tetraodontidae	0.04	2.82	1.00	15		Y	Y
Primary consumer	Scarus xanthopleura	Red parrotfish	Scaridae	0.02	3.03	0.94	14		Y	
Primary consumer	Scarus fuscocaudalis	Darktail parrotfish	Scaridae	0.02	2.97	0.97	14			
Primary consumer	Abudefduf septemfasciatus	Banded sergeant	Pomacentridae	0.03	3.15	0.93	14		Y	Y
Primary consumer	Scaridae sp	Parrotfish species	Scaridae	0.02	2.96	0.97	12	Y	Y	Y
Primary consumer	Hipposcarus longiceps	Pacific longnoseparrotfish	Scaridae	0.02	3.00	1.00	12		Y	Y
Primary consumer	Amblygobius phalaena	Banded goby	Gobiidae	0.02	2.83	1.00	9		Y	
Primary consumer	Kyphosus vaigiensis	Brassy chub	Kyphosidae	0.02	3.04	0.95	8			
Primary consumer	Centropyge interruptus	Japanese angelfish	Pomacanthidae	0.07	2.58	1.00	8			
Primary consumer	Centropyge vrolikii	Pearlscale angelfish	Pomacanthidae	0.07	2.58	1.00	7			Y
Primary consumer	Ostracion cubicus	Yellow boxfish	Ostraciidae	0.13	2.52	1.00	6		Y	Y
Primary consumer	Siganus spinus	Little spinefoot	Siganidae	0.02	3.09	0.97	4			
Primary consumer	Naso brachycentron	Humpback unicornfish	Acanthuridae	0.03	3.04	0.90	4		Y	
Primary consumer	Canthigaster epilampra	Lantern toby	Tetraodontidae	0.04	2.82	1.00	4	Y		
Primary consumer	Kyphosus Hawai`iensis	Hawaiian chub	Kyphosidae	0.03	2.86	1.00	3			
Primary consumer	Cirripectes obscurus	Gargantuan blenny	Blenniidae	0.01	3.15	1.00	3	Y		
Primary consumer	Cirripectes stigmaticus	Red-streaked blenny	Blenniidae	0.02	2.91	1.00	2		Y	

Consumer group	Species	Common name	Common family	LW A	LW B	Conversion factor	Freq.	Main HI	Am.Samoa	PRIA
Primary consumer	Canthigaster bennetti	Bennett's sharpnose puffer	Tetraodontidae	0.04	2.82	1.00	2		Y	
Primary consumer	Acanthuridae sp	Surgeonfish species	Acanthuridae	0.03	2.98	0.90	1	Y	Y	Y
Primary consumer	Siganus punctatus	Goldspotted spinefoot	Siganidae	0.01	3.28	0.89	1			
Primary consumer	Centropyge multicolor	Multicolor angelfish	Pomacanthidae	0.07	2.58	1.00	1			Y
Primary consumer	Canthigaster rivulata	Brown-lined puffer	Tetraodontidae	0.04	2.82	1.00	1			

Appendix 8: Random stratified sites surveyed at each island per year

Table A.8. The total number of sites surveyed per island (ordered by region) per year under the depth stratified random sampling design, using the stationary point count method to survey the fish assemblage.

Region	Island	2009	2010	2011	2012	2013	Total
NWHI	Kure	43	25		20		88
NWHI	Midway	53		30			83
NWHI	Pearl & Hermes		41	18	31		90
NWHI	Lisianski	19	25	9	25		78
NWHI	Laysan	14		23			37
NWHI	Gardner			12			12
NWHI	Maro	39		25			64
NWHI	French Frigate		27	8	15		50
NWHI	Necker	13		8			21
NWHI	Nihoa			8			8
Main HI	Ni`ihau		16			26	42
Main HI	Kaua`i		26			37	63
Main HI	O`ahu		40		35	64	89
Main HI	Moloka`i		10		50	39	99
Main HI	Lāna`i		16		29	29	74
Main HI	Maui		33		49	34	116
Main HI	Hawai`i		43			58	101
Mariana Arch.	Farallon de Pajaros	7		12			19
Mariana Arch.	Maug	21		30			51
Mariana Arch.	Asuncion	13		20			33
Mariana Arch.	Agrihan	14		20			34
Mariana Arch.	Pagan	21		29			50
Mariana Arch.	Ala-Gug-Sar	19		24			43
Mariana Arch.	Saipan	23		30			53
Mariana Arch.	Tinian	14		19			33
Mariana Arch.	Aguijan	6		13			19
Mariana Arch.	Rota	14		24			38
Mariana Arch.	Guam	25		133			158
PRIA	Wake	29		30			59
PRIA	Johnston		39		35		74
PRIA	Kingman		33		49		82
PRIA	Palmyra		40		42		82
PRIA	Howland		16		39		55
PRIA	Baker		21		24		45
PRIA	Jarvis		30		42		72
Am.Samoa	Swains		24		38		62
Am.Samoa	Ofu & Olosega		30		30		60
Am.Samoa	Ta`ū		24		22		46
Am.Samoa	Tutuila		127		85		212
Am.Samoa	Rose		34		48		82

Appendix 9: Site level data

Table A.9. Site level data for regions surveyed in 2012–2013. Displaying region, island, date surveyed, site number, geographic co-ordinates, depth (m), fish biomass by consumer group and size class and percentage hard coral cover. Pri. consumers = primary consumers, sec.consumers = secondary consumers, TL = total length.

								Fish biomass (g m–2)								Benthos
Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Johnston	3/2/2012	JOH-279	16.69196	−169.41222	19.65	4.63	3.867	8.807	2.7834	20.088	10.49	1.063	8.5395	10.5
2012	PRIA	Johnston	3/2/2012	JOH-263	16.69143	−169.4322	16.35	7.767	1.714	16.82	27.691	53.988	9.798	37.69	6.5015	15
2012	PRIA	Johnston	3/2/2012	JOH-299	16.72141	−169.53863	6.15	24.26	5.705	0	0	29.963	13.14	16.82	0	5
2012	PRIA	Johnston	3/2/2012	JOH-221	16.71642	−169.56078	23.3	10.38	3.87	11.87	12.829	38.951	17.75	15.49	5.7104	2
2012	PRIA	Johnston	3/2/2012	JOH-215	16.74111	−169.54635	16	7.951	5.482	37.55	3.8127	54.801	15.82	18.03	20.954	5
2012	PRIA	Johnston	3/2/2012	JOH-245	16.73963	−169.5279	12	4.772	1.06	3.664	0	9.4967	5.832	1.852	1.8129	20
2012	PRIA	Johnston	3/2/2012	JOH-233	16.73568	−169.53694	5.3	8.275	6.98	2.251	0.6927	18.199	14.98	3.22	0	20
2012	PRIA	Johnston	3/2/2012	JOH-205	16.70857	−169.55938	5	17.4	1.615	19.7	25.967	64.683	41.66	11.89	11.135	3.5
2012	PRIA	Johnston	3/3/2012	JOH-223	16.77386	−169.42786	21.65	18.2	13.38	23.86	22.382	77.822	30.88	40.08	6.8671	20
2012	PRIA	Johnston	3/3/2012	JOH-213	16.7688	−169.42361	14.95	19.22	10	2.947	7.6509	39.82	18.23	21.59	0	13
2012	PRIA	Johnston	3/3/2012	JOH-239	16.76373	−169.42696	10.3	35.61	3.527	18.13	0.8861	58.145	30.16	19.39	8.596	9
2012	PRIA	Johnston	3/3/2012	JOH-227	16.77578	−169.50344	23.85	10.18	8.312	3.879	3.1686	25.541	15	10.55	0	7.5
2012	PRIA	Johnston	3/3/2012	JOH-219	16.77441	−169.50522	14.05	12.62	5.481	12.01	2.819	32.935	14.37	18.57	0	6.5
2012	PRIA	Johnston	3/3/2012	JOH-235	16.76967	−169.50422	5.6	14.65	8.587	1.836	0.1112	25.19	20.7	4.488	0	52.5
2012	PRIA	Johnston	3/3/2012	JOH-295	16.75966	−169.49515	5.9	7.183	1.485	32.08	0.0933	40.839	8.761	9.809	22.27	5
2012	PRIA	Johnston	3/3/2012	JOH-209	16.7652	−169.52416	5.6	45.32	3.262	4.782	40.917	94.285	29.58	63.65	1.0546	7.5
2012	PRIA	Johnston	3/4/2012	JOH-229	16.67095	−169.56569	22.5	75.79	26.41	48.85	57.722	208.77	3.036	175.9	29.83	5.5
2012	PRIA	Johnston	3/4/2012	JOH-237	16.69761	−169.55796	8.45	42.15	3.29	9.277	5.2875	60.006	31.75	28.26	0	3
2012	PRIA	Johnston	3/4/2012	JOH-234	16.73445	−169.54688	2.35	15.2	3.875	1.29	0	20.363	16.54	3.827	0	25
2012	PRIA	Johnston	3/4/2012	JOH-249	16.71606	−169.54281	12.7	24.09	4.588	0.581	0.6902	29.949	19.06	10.89	0	20
2012	PRIA	Johnston	3/4/2012	JOH-280	16.68644	−169.48048	16.3	21.74	17.67	14.07	26.424	79.902	39.76	40.14	0	12.5
2012	PRIA	Johnston	3/4/2012	JOH-267	16.69539	−169.50414	14.1	40.02	6.695	0	3.5265	50.243	28.66	21.58	0	3
2012	PRIA	Johnston	3/4/2012	JOH-259	16.73165	−169.48183	8.05	16.09	6.223	0	0.2639	22.579	13.7	8.876	0	6
2012	PRIA	Johnston	3/4/2012	JOH-261	16.73024	−169.51694	8.3	27.28	36.63	11.48	12.889	88.289	21.32	66.97	0	15
2012	PRIA	Johnston	3/4/2012	JOH-297	16.74135	−169.50821	5.65	27.06	4.142	0	0.6544	31.853	18.19	13.66	0	12.5
2012	PRIA	Johnston	3/5/2012	JOH-289	16.66369	−169.54838	25.15	0	1.438	6.545	0	7.982	0.483	7.499	0	1.5
2012	PRIA	Johnston	3/5/2012	JOH-265	16.72162	−169.48278	10.7	14.65	5.412	23.92	0	43.988	13.07	22.32	8.596	7.5
2012	PRIA	Johnston	3/5/2012	JOH-293	16.76514	−169.484	3.6	7.78	7.585	0.178	0.6902	16.232	12.85	3.38	0	5.5
2012	PRIA	Johnston	3/5/2012	JOH-296	16.76463	−169.46965	9.15	14.24	4.802	1.379	0.4353	20.853	10.23	10.62	0	10
2012	PRIA	Johnston	3/5/2012	JOH-266	16.77563	−169.46617	9.1	15.2	2.698	24.01	0.0784	41.984	14.35	4.909	22.723	6.5
2012	PRIA	Johnston	3/5/2012	JOH-236	16.74263	−169.5325	8.4	21.96	3.855	2.807	0.4556	29.079	10.73	18.35	0	14

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Johnston	3/5/2012	JOH-232	16.7638	–169.51702	3.7	9.896	2.957	9.942	2.5128	25.308	14.24	11.06	0	35
2012	PRIA	Johnston	3/5/2012	JOH-247	16.75182	–169.43967	11.45	6.619	2.363	0	0.827	9.8088	9.143	0.666	0	12.5
2012	PRIA	Johnston	3/5/2012	JOH-269	16.73362	–169.45345	14.35	3.932	2.082	44.35	0	50.364	5.228	7.95	37.186	2.5
2012	PRIA	Johnston	3/5/2012	JOH-257	16.71598	–169.45999	14.9	13.53	2.949	28.44	0	44.914	14.6	4.102	26.207	3
2012	PRIA	Howland	3/11/2012	HOW-187	0.824476	–176.62401	25.65	20.17	14.24	310.6	103.01	448.04	58.7	123.9	265.46	20
2012	PRIA	Howland	3/11/2012	HOW-161	0.82282	–176.62477	13.7	6.425	7.253	26.55	1239.8	1280.1	21.55	39.37	1219.1	37.5
2012	PRIA	Howland	3/11/2012	HOW-155	0.815424	–176.62413	5.15	30.84	9.778	14.5	8.7744	63.897	35.54	28.35	0	35
2012	PRIA	Howland	3/11/2012	HOW-133	0.803304	–176.62106	4.7	23.96	7.526	20.92	33.694	86.104	41.55	44.56	0	22.5
2012	PRIA	Howland	3/11/2012	HOW-177	0.806302	–176.62155	15	4.958	8.007	36.36	17.387	66.709	32.29	34.42	0	32.5
2012	PRIA	Howland	3/11/2012	HOW-172	0.809127	–176.6221	15	23.62	23.02	37.89	78.01	162.54	58.32	87.57	16.657	32.5
2012	PRIA	Howland	3/11/2012	HOW-191	0.822075	–176.61804	17.75	27.57	35.67	63.04	24.436	150.72	42.13	61.26	47.33	40
2012	PRIA	Howland	3/11/2012	HOW-168	0.810576	–176.6226	12	16.95	7.602	59.44	48.524	132.52	55.78	59.57	17.17	45
2012	PRIA	Howland	3/11/2012	HOW-151	0.798751	–176.62024	2.65	11.69	117.5	12.53	3.4177	145.15	21.81	15.27	108.07	45
2012	PRIA	Howland	3/11/2012	HOW-179	0.821641	–176.61945	12.6	34.26	23.06	29.76	1845.8	1932.9	50.98	49.46	1832.4	25
2012	PRIA	Howland	3/12/2012	HOW-185	0.819346	–176.61542	23.05	12.77	12.42	236.4	105.95	367.55	125.1	57.94	184.5	22.5
2012	PRIA	Howland	3/12/2012	HOW-163	0.82143	–176.61793	15.9	21.91	16.04	47.65	12.44	98.045	35.53	51.79	10.719	22.5
2012	PRIA	Howland	3/12/2012	HOW-210	0.812694	–176.62337	13.2	9.987	8.731	28.1	23.846	70.66	40.59	30.07	0	35
2012	PRIA	Howland	3/12/2012	HOW-173	0.82358	–176.62279	17.35	14.5	14.83	24.94	17.696	71.967	31.37	40.6	0	32.5
2012	PRIA	Howland	3/12/2012	HOW-209	0.813912	–176.62371	5.75	7.951	11.65	31.52	8.4913	59.61	24.39	35.22	0	37.5
2012	PRIA	Howland	3/12/2012	HOW-189	0.789622	–176.6155	22.45	22.64	16.21	358.1	50.798	447.73	37.31	109.9	300.49	35
2012	PRIA	Howland	3/12/2012	HOW-167	0.790338	–176.61643	11.45	30.51	32.08	190.8	77.597	330.94	32.83	84.13	213.99	30
2012	PRIA	Howland	3/12/2012	HOW-159	0.796689	–176.61951	1.7	19.88	5.899	109.6	0.3152	135.73	15.39	29.98	90.358	12.5
2012	PRIA	Howland	3/12/2012	HOW-219	0.799822	–176.62076	4.05	12.96	14.36	17.85	8.4185	53.586	31.19	22.4	0	55
2012	PRIA	Howland	3/12/2012	HOW-218	0.801576	–176.62114	16.65	15.67	5.418	83.98	55.659	160.72	18.97	85.84	55.902	25
2012	PRIA	Howland	3/13/2012	HOW-213	0.807967	–176.62193	26	9.702	2.663	18.04	65.172	95.572	58.96	36.61	0	20
2012	PRIA	Howland	3/13/2012	HOW-214	0.806645	–176.62133	2	65.06	11.26	13.59	0.2629	90.172	14.86	74.21	1.0995	15
2012	PRIA	Howland	3/13/2012	HOW-225	0.793866	–176.61813	6.15	7.255	6.519	66.64	5.7927	86.208	19.78	27.41	39.019	17.5
2012	PRIA	Howland	3/13/2012	HOW-215	0.805421	–176.62124	11.1	90.05	14	32.75	27.286	164.08	24.35	48.83	90.899	35
2012	PRIA	Howland	3/13/2012	HOW-224	0.796367	–176.61948	20.35	17.83	9.008	41.47	50.617	118.92	45.17	73.74	0	17.5
2012	PRIA	Howland	3/13/2012	HOW-162	0.802546	–176.60972	21.8	18.25	34.22	50.26	51.011	153.74	53.17	100.6	0	22.5
2012	PRIA	Howland	3/13/2012	HOW-176	0.80128	–176.60994	15.1	26.33	8.202	198.3	78.456	311.31	44.31	114.8	152.19	35
2012	PRIA	Howland	3/13/2012	HOW-216	0.803918	–176.62104	4.4	31.37	17.36	22.78	11.54	83.048	45.17	37.88	0	47.5
2012	PRIA	Howland	3/13/2012	HOW-212	0.808301	–176.62189	5	19.88	34.03	22.12	12.918	88.947	25.48	63.46	0	47.5
2012	PRIA	Howland	3/14/2012	HOW-175	0.80704	–176.60976	24.4	21.48	23.25	50.87	30.44	126.03	31.66	88.52	5.8587	7.5
2012	PRIA	Howland	3/14/2012	HOW-150	0.795167	–176.61125	14.5	25.37	16.73	32.43	53.989	128.52	72.6	55.92	0	50
2012	PRIA	Howland	3/14/2012	HOW-154	0.790273	–176.61419	14.65	14.79	41.57	70.28	95.687	222.33	83.58	109.6	29.166	32.5
2012	PRIA	Howland	3/14/2012	HOW-223	0.795062	–176.619	20.65	16.96	5.325	20.41	9.9046	52.598	26.71	25.88	0	25

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Howland	3/14/2012	HOW-192	0.815909	−176.61317	22.75	20.42	22.71	86.54	55.878	185.55	42.82	101.5	41.232	32.5
2012	PRIA	Howland	3/14/2012	HOW-186	0.812083	−176.61158	28.7	4.7	17.24	49.72	7.516	79.172	18.12	43.96	17.089	6
2012	PRIA	Howland	3/14/2012	HOW-012	0.808917	−176.61044	13.5	11.27	21.57	48.79	20.412	102.05	48.08	32.95	21.028	25
2012	PRIA	Howland	3/14/2012	HOW-180	0.821113	−176.62671	13.85	7.001	13.91	42.18	2.9963	66.09	22.47	26.81	16.809	32.5
2012	PRIA	Howland	3/14/2012	HOW-152	0.815683	−176.62435	5	30.17	10.35	26.35	10.465	77.332	35.95	41.38	0	45
2012	PRIA	Howland	3/14/2012	HOW-183	0.811735	−176.623	22.2	8.555	3.735	37.91	89.418	139.62	97.12	33.1	9.3971	17.5
2012	PRIA	Baker	3/15/2012	BAK-177	0.206579	−176.47803	25.15	14.84	12.73	260.7	52.748	341.04	41.24	80.75	219.05	17.5
2012	PRIA	Baker	3/15/2012	BAK-183	0.203835	−176.4684	20.65	26.44	21.49	295.5	141.42	484.88	47.68	234.2	202.97	37.5
2012	PRIA	Baker	3/15/2012	BAK-151	0.204005	−176.47149	14	20.49	15.3	18.06	24.249	78.093	44.28	33.81	0	37.5
2012	PRIA	Baker	3/15/2012	BAK-159	0.201088	−176.46609	10.4	18.52	14.55	48.94	20.254	102.26	42.17	42.91	17.177	55
2012	PRIA	Baker	3/15/2012	BAK-135	0.189858	−176.46966	5.3	9.587	5.449	2.285	5.5775	22.899	15.07	7.832	0	42.5
2012	PRIA	Baker	3/15/2012	BAK-181	0.20578	−176.47954	20.7	47.19	10.23	59.92	11.925	129.27	14.87	85.02	29.384	20
2012	PRIA	Baker	3/15/2012	BAK-157	0.204894	−176.47636	12.1	25.08	10.66	17.22	20.116	73.082	28.29	44.79	0	45
2012	PRIA	Baker	3/15/2012	BAK-132	0.196662	−176.46791	4.55	7.867	3.048	0.354	10.271	21.539	19.82	1.716	0	3
2012	PRIA	Baker	3/15/2012	BAK-171	0.194587	−176.45913	16.8	5.346	10.19	61.32	5.8977	82.748	19.25	10.27	53.228	65
2012	PRIA	Baker	3/15/2012	BAK-173	0.199507	−176.46402	11.9	11.31	15.29	43.29	18.347	88.236	34.44	40.39	13.405	72.5
2012	PRIA	Baker	3/15/2012	BAK-161	0.201407	−176.46612	11.75	12.33	7.02	89.85	22.65	131.84	33.29	23.46	75.088	55
2012	PRIA	Baker	3/16/2012	BAK-179	0.190714	−176.45806	20.85	26.34	16.67	196.5	34.169	273.73	49.94	76.3	147.48	45
2012	PRIA	Baker	3/16/2012	BAK-185	0.200035	−176.46194	27.1	7.74	10.91	356.9	69.843	445.38	33.79	112.5	299.12	55
2012	PRIA	Baker	3/16/2012	BAK-163	0.193355	−176.46499	7.25	18.53	9.735	2.019	12.84	43.127	31.15	11.98	0	42.5
2012	PRIA	Baker	3/16/2012	BAK-156	0.193369	−176.46171	11.25	16.66	7.177	27.15	10.109	61.093	24.08	21.99	15.023	60
2012	PRIA	Baker	3/16/2012	BAK-138	0.188287	−176.47756	4.4	27.07	7.647	2.22	11.468	48.403	33.12	15.28	0	60
2012	PRIA	Baker	3/16/2012	BAK-242	0.189284	−176.48637	3.05	48.04	6.702	0.525	0.3333	55.6	25.05	30.55	0	15
2012	PRIA	Baker	3/16/2012	BAK-153	0.18843	−176.48042	9.5	26.24	13.55	26.63	8.634	75.063	34.74	28.32	12.003	32.5
2012	PRIA	Baker	3/17/2012	BAK-230	0.199073	−176.48478	25.55	13.09	10.85	49.56	120.76	194.27	46.53	128.1	19.627	12.5
2012	PRIA	Baker	3/17/2012	BAK-175	0.19548	−176.48669	12.3	81.99	16.54	17.83	18.279	134.64	84.5	50.14	0	20
2012	PRIA	Baker	3/17/2012	BAK-145	0.194956	−176.48664	4.85	76.12	16.68	220	1.4954	314.33	56.3	64.67	193.36	6.5
2012	PRIA	Baker	3/17/2012	BAK-232	0.200006	−176.48407	12.15	23.16	16.02	102.2	28.386	169.78	32.82	46.95	90.011	22.5
2012	PRIA	Baker	3/17/2012	BAK-189	0.192388	−176.48861	23	25.74	9.213	99.66	95.695	230.31	57.65	113.3	59.324	7.5
2012	PRIA	Baker	3/17/2012	BAK-162	0.190741	−176.48881	10.5	24.64	15.19	104.5	15.382	159.67	45.45	112.5	1.758	55
2012	AM.SAMOA	Swains	3/21/2012	SWA-117	−11.04567	−171.07788	23.75	2.153	20.05	217.2	81.009	320.41	15.27	66.93	238.21	42.5
2012	AM.SAMOA	Swains	3/21/2012	SWA-107	−11.04705	−171.08523	16.15	4.193	4.586	20.08	22.994	51.852	22.18	25.25	4.4167	75
2012	AM.SAMOA	Swains	3/21/2012	SWA-073	−11.04696	−171.08489	5	4.725	2.79	1.236	12.86	21.611	21.61	0	0	35
2012	AM.SAMOA	Swains	3/21/2012	SWA-065	−11.04747	−171.08569	4.5	3.06	3.688	5.776	7.1189	19.643	15.61	4.037	0	55
2012	AM.SAMOA	Swains	3/21/2012	SWA-063	−11.04785	−171.08708	8.25	7.939	2.582	13.52	3.1061	27.15	15.02	6.418	5.7104	45
2012	AM.SAMOA	Swains	3/21/2012	SWA-085	−11.05014	−171.09101	4.9	4.83	4.565	8.372	15.828	33.594	25.61	7.98	0	30
2012	AM.SAMOA	Swains	3/21/2012	SWA-111	−11.06206	−171.06895	27.35	4.657	8.927	249	43.828	306.44	17.07	45.39	243.98	17.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Swains	3/21/2012	SWA-109	–11.0482	–171.08929	18.6	27.02	3.182	25.14	35.791	91.13	13.72	77.41	0	27.5
2012	AM.SAMOA	Swains	3/21/2012	SWA-067	–11.05267	–171.09214	3.5	18.07	5.905	10.19	6.0204	40.181	23.99	16.19	0	17.5
2012	AM.SAMOA	Swains	3/21/2012	SWA-089	–11.05404	–171.09196	3.8	56.77	4.671	11.99	6.6146	80.046	28.23	40.75	11.073	15
2012	AM.SAMOA	Swains	3/21/2012	SWA-077	–11.05515	–171.09166	3.5	38.7	17.6	63.92	4.8714	125.09	26.77	33.52	64.812	10.5
2012	AM.SAMOA	Swains	3/21/2012	SWA-074	–11.04628	–171.08008	27.35	6.814	7.761	8.938	14.084	37.597	14.91	22.69	0	15
2012	AM.SAMOA	Swains	3/22/2012	SWA-125	–11.06694	–171.0837	25.05	5.949	4.974	8.78	40.637	60.34	14.3	32.68	13.36	12.5
2012	AM.SAMOA	Swains	3/22/2012	SWA-061	–11.06694	–171.08316	3.65	6.299	6.773	13.12	13.493	39.689	23.45	9.321	6.9196	42.5
2012	AM.SAMOA	Swains	3/22/2012	SWA-083	–11.06776	–171.08203	4.45	5.453	8.131	5.026	12.659	31.268	26.34	4.933	0	50
2012	AM.SAMOA	Swains	3/22/2012	SWA-105	–11.06687	–171.07519	22.65	7.945	5.91	13.82	17.071	44.743	13.21	25.76	5.7687	15
2012	AM.SAMOA	Swains	3/22/2012	SWA-087	–11.06596	–171.07408	12.75	11.68	3.491	9.737	12.322	37.225	13.05	17.35	6.8258	25
2012	AM.SAMOA	Swains	3/22/2012	SWA-108	–11.06464	–171.0725	4.4	5.711	16.39	9.213	6.7701	38.08	19.26	18.82	0	15
2012	AM.SAMOA	Swains	3/22/2012	SWA-121	–11.06126	–171.08949	25.95	8.134	3.22	9.141	25.627	46.122	24.5	21.62	0	20
2012	AM.SAMOA	Swains	3/22/2012	SWA-119	–11.05769	–171.09145	14	7.957	1.689	15.14	11.396	36.186	22.91	13.27	0	45
2012	AM.SAMOA	Swains	3/22/2012	SWA-101	–11.06029	–171.09008	4.9	8.672	6.448	17.25	5.5433	37.915	19.75	18.16	0	75
2012	AM.SAMOA	Swains	3/22/2012	SWA-079	–11.06293	–171.08746	5	19.57	16.78	21.97	13.655	71.978	31.79	40.19	0	65
2012	AM.SAMOA	Swains	3/22/2012	SWA-081	–11.06404	–171.08662	5.3	16.67	9.614	109	10.862	146.16	19.78	103.9	22.489	55
2012	AM.SAMOA	Swains	3/22/2012	SWA-064	–11.06836	–171.07889	15.4	3.052	1.35	8.389	8.3727	21.165	14.03	7.14	0	40
2012	AM.SAMOA	Swains	3/23/2012	SWA-129	–11.05377	–171.06409	27	2.34	2.952	13.84	23.365	42.499	8.973	33.53	0	12.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-115	–11.04789	–171.06818	11.3	9.168	6.933	710.3	16.651	743.01	16.31	726.7	0	20
2012	AM.SAMOA	Swains	3/23/2012	SWA-071	–11.04956	–171.06747	5	11.62	4.662	4.959	7.6512	28.888	20.26	8.632	0	11.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-112	–11.0581	–171.06507	15.35	5.169	6.932	5.029	5.7311	22.861	14.56	8.305	0	22.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-126	–11.04579	–171.07044	23.5	6.195	4.745	11.29	41.454	63.686	22.95	40.74	0	22.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-069	–11.04598	–171.07704	5.75	9.037	3.194	5.416	13.987	31.634	27.49	4.147	0	45
2012	AM.SAMOA	Swains	3/23/2012	SWA-113	–11.04552	–171.07461	15.5	5.345	6.425	5.495	15.447	32.713	17.82	14.89	0	60
2012	AM.SAMOA	Swains	3/23/2012	SWA-090	–11.04717	–171.06911	4.75	15.87	4.453	81.73	29.391	131.44	40.84	19.26	71.348	22.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-075	–11.05977	–171.06669	13.7	3.601	3.132	2.628	36.094	45.455	19.23	26.23	0	45
2012	AM.SAMOA	Swains	3/23/2012	SWA-123	–11.06149	–171.06824	23.25	6.953	3.63	11.63	18.575	40.784	17.86	22.92	0	35
2012	AM.SAMOA	Swains	3/23/2012	SWA-122	–11.05623	–171.09207	25	20.38	8.458	19.37	44.062	92.272	22.76	56.46	13.05	37.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-106	–11.06478	–171.07241	13.95	8.108	3.136	8.536	9.4933	29.274	17.87	11.4	0	27.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-120	–11.05272	–171.0647	13.95	3.142	26.61	13.7	29.599	73.048	18.94	40.04	14.069	27.5
2012	AM.SAMOA	Swains	3/23/2012	SWA-078	–11.0678	–171.07767	6	7.773	12.73	11.41	9.7194	41.628	21.23	20.4	0	40
2012	AM.SAMOA	Tutuila	3/25/2012	TUT-584	–14.29318	–170.65851	23.2	7.405	3.979	3.27	2.9052	17.559	12.28	5.274	0	15
2012	AM.SAMOA	Tutuila	3/25/2012	TUT-572	–14.29044	–170.66538	13.95	12.26	5.205	1.972	2.7261	22.16	19.09	3.073	0	15
2012	AM.SAMOA	Tutuila	3/25/2012	TUT-573	–14.30155	–170.68104	13.95	11.39	4.856	0.2	2.6746	19.118	19.12	0	0	15
2012	AM.SAMOA	Tutuila	3/25/2012	TUT-557	–14.30065	–170.67731	5.4	23.05	2.936	0.344	0.359	26.693	26.69	0	0	15
2012	AM.SAMOA	Tutuila	3/25/2012	TUT-551	–14.29117	–170.67448	3.45	7.355	5.894	0.424	0.2372	13.91	12.79	1.124	0	50
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-513	–14.28834	–170.63475	12.7	17.55	3.32	1.538	97.844	120.25	36.21	84.04	0	17.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-514	–14.31263	–170.64486	15.05	36.16	5.513	12.02	2.5063	56.198	21.65	21.56	12.987	15
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-508	–14.31482	–170.65252	13.55	8.927	3.685	1.795	0.6437	15.05	11.4	3.648	0	1
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-561	–14.32822	–170.69406	25.45	7.23	56.09	6.373	19.163	88.861	42.68	46.18	0	9
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-501	–14.32306	–170.69777	2.05	12.38	2.666	0	0.1148	15.156	15.16	0	0	14
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-502	–14.33394	–170.70095	7.55	3.4	2.724	1.525	0.5865	8.236	6.908	1.328	0	37.5
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-610	–14.33854	–170.71665	13.15	7.332	4.401	4.463	2.0836	18.281	15.38	2.906	0	17.5
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-586	–14.27413	–170.62023	2.3	39.64	3.109	0.671	1.6137	45.034	23.25	21.78	0	15
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-588	–14.29513	–170.62432	22.75	29.28	16.45	5.803	44.554	96.081	33.57	62.51	0	32.5
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-504	–14.28248	–170.63649	11.85	16.79	4.112	3.631	1.5206	26.049	14.95	11.1	0	10
2012	AM.SAMOA	Tutuila	4/1/2012	TUT-515	–14.30945	–170.64268	14.15	11.19	2.851	4.708	3.2389	21.99	16.01	5.982	0	50
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-542	–14.2679	–170.71757	10.2	24.47	13.67	16.13	15.704	69.975	18.39	41.44	10.145	25
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-506	–14.2705	–170.7194	5.7	12.81	5.984	1.619	0.2571	20.667	9.625	11.04	0	25
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-556	–14.27761	–170.72395	13.2	28.08	2.345	3.287	7.7704	41.485	17.82	23.67	0	25
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-503	–14.282	–170.73301	8.05	11.1	7.018	7.832	2.3937	28.34	12.4	15.94	0	25
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-527	–14.28766	–170.75897	24.8	10.87	3.848	4.649	10.688	30.057	17.8	12.26	0	8.5
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-526	–14.29078	–170.80027	8.7	15.82	1.896	3.799	1.4784	22.995	12.92	10.07	0	22.5
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-536	–14.25261	–170.69825	7.15	3.082	6.463	0.967	1.6574	12.169	8.217	3.952	0	65
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-517	–14.25374	–170.70042	4.5	4.048	2.316	0.067	0.0722	6.5023	6.502	0	0	10
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-548	–14.27825	–170.73566	27.25	21.24	5.997	3.047	1.4186	31.706	12.8	18.91	0	52.5
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-563	–14.28919	–170.74226	12.5	8.974	3.663	2.254	3.7134	18.604	12.43	6.171	0	16.5
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-596	–14.29242	–170.75163	10.7	32.24	8.943	8.502	1.3448	51.032	11.66	39.37	0	25
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-520	–14.27827	–170.80919	23.3	22.97	7.117	7.944	0.632	38.666	20.07	18.59	0	26.5
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-539	–14.29694	–170.81097	4.45	32.2	3.29	1.405	0.3259	37.225	15.41	21.82	0	45
2012	AM.SAMOA	Tutuila	4/2/2012	TUT-628	–14.29236	–170.77363	4.15	22.83	4.823	0.553	0.1273	28.328	15.14	13.19	0	5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-593	–14.36869	–170.77892	29.4	12.34	3.646	9.11	70.48	95.574	78.63	8.345	8.596	50
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-595	–14.36132	–170.80754	23.95	19.25	3.877	9.91	28.59	61.627	17.3	37.79	6.5358	17.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-505	–14.35328	–170.78839	20.5	14.74	6.925	4.388	2.3738	28.431	19.21	9.224	0	37.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-546	–14.33572	–170.79619	13.05	16.97	4.603	1.056	1.0708	23.702	14.05	9.653	0	42.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-511	–14.33389	–170.8088	10.35	36.65	8.272	9.322	24.029	78.277	24.92	39.7	13.652	27.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-591	–14.3353	–170.80775	21.75	12.52	2.136	14.14	3.1121	31.903	14.77	17.13	0	15
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-562	–14.36002	–170.7338	24.75	20.27	4.76	8.625	53.626	87.283	21.08	66.21	0	32.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-544	–14.36472	–170.73862	14.9	34.35	4.882	2.963	2.6464	44.84	16.95	27.89	0	17.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-549	–14.35984	–170.75014	5.65	48.03	3.611	2.582	0.8731	55.097	16.9	38.2	0	17.5
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-695	–14.36109	–170.78735	29	15.09	8.163	11.02	33.488	67.763	13.93	53.83	0	30
2012	AM.SAMOA	Tutuila	4/3/2012	TUT-663	–14.36011	–170.78081	7.15	29.71	1.341	0.747	0.0544	31.853	8.421	23.43	0	5
2012	AM.SAMOA	Tutuila	4/4/2012	TUT-691	–14.23845	–170.66872	26.6	3.386	2.997	2.518	3.6891	12.59	8.96	3.631	0	6
2012	AM.SAMOA	Tutuila	4/4/2012	TUT-516	–14.23416	–170.66949	22.1	36.3	4.151	3.737	8.9089	53.1	20.79	32.31	0	36.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-583	–14.2305	–170.69618	27.15	5.706	5.311	3.433	38.844	53.294	36.6	16.7	0	6.5
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-541	–14.24259	–170.68012	19.9	45.5	181.1	6.846	119.95	353.42	12.67	156.3	184.41	20
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-579	–14.23926	–170.67577	15.1	14.57	5.413	2.435	0.5396	22.96	10.75	12.21	0	50
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-521	–14.25093	–170.59951	24.8	23.84	11.74	18.11	2.5594	56.255	14.59	35.33	6.3416	15
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-653	–14.25492	–170.60462	4.55	11.44	3.506	0.34	1.6896	16.971	11.61	5.36	0	35
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-554	–14.24501	–170.56652	12.05	5.318	138.5	21.5	0.763	166.05	5.356	2.972	157.72	2.5
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-630	–14.24541	–170.56329	16.6	3.145	1.729	1.637	0.7309	7.2418	6.092	1.15	0	1.5
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-525	–14.25079	–170.56281	3.05	23.63	2.198	1.748	0.3699	27.947	19.51	8.437	0	10
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-509	–14.24795	–170.62508	10.2	33.18	44.43	7.388	25.506	110.5	31.39	79.11	0	37.5
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-519	–14.25544	–170.62369	11.25	77.88	7.803	2.093	4.1775	91.955	17.11	74.84	0	15.5
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-558	–14.25439	–170.59125	23.8	11.86	14.03	77.15	19.931	122.96	10.71	101	11.225	35
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-577	–14.2561	–170.59417	4.95	19.63	7.331	11.15	3.2378	41.35	20.15	21.2	0	35
2012	AM.SAMOA	Tutuila	4/5/2012	TUT-500	–14.24864	–170.5852	25.6	25.53	28.34	21.88	72.132	147.88	13.93	116.4	17.526	15
2012	AM.SAMOA	Tutuila	4/6/2012	TUT-597	–14.22548	–170.64703	25	23.74	6.368	22.01	54.616	106.74	21.67	79.3	5.7687	11.5
2012	AM.SAMOA	Tutuila	4/6/2012	TUT-568	–14.22591	–170.64551	29.2	49.24	4.161	31.44	19.597	104.43	26.55	45.99	31.896	5.5
2012	AM.SAMOA	Tutuila	4/6/2012	TUT-598	–14.24707	–170.6462	21.85	23.94	9.221	5.53	47.427	86.117	47.56	38.56	0	15
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-518	–14.27188	–170.54048	24.15	29.94	6.495	6.033	15.696	58.168	21.82	36.35	0	17.5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-510	–14.28035	–170.54165	21.25	12.53	3.078	2.495	3.6854	21.791	12.56	9.235	0	5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-580	–14.28012	–170.5467	12.55	2.697	2.872	6.936	1.0167	13.521	7.047	6.474	0	11.5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-531	–14.29286	–170.55654	8.8	5.124	3.407	0.509	0.7146	9.7546	9.139	0.616	0	4
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-523	–14.29919	–170.57356	14.8	22.04	4.226	1.929	19.08	47.276	30.94	16.34	0	11
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-545	–14.30105	–170.58071	16.25	24.29	2.677	1.813	4.6589	33.439	17.58	15.86	0	15
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-661	–14.28113	–170.59382	4.1	38.35	12.66	1.729	10.783	63.519	25.1	38.42	0	20
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-555	–14.25552	–170.55954	10.4	8.48	4.174	0	0.3856	13.04	6.569	6.472	0	5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-543	–14.25317	–170.56245	11.1	19.45	7.873	21.51	4.0819	52.91	18.08	29.38	5.4504	31
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-594	–14.26082	–170.55996	4.45	16.23	4.003	1.141	0.1647	21.539	18.35	3.186	0	15
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-571	–14.27418	–170.57212	7.9	28.9	7.806	9.276	3.6085	49.587	28.31	13.06	8.2147	11.5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-559	–14.27516	–170.57548	2.95	18.54	2.573	0	0.3089	21.418	21.42	0	0	3.5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-552	–14.28032	–170.56119	24.8	20.56	10.62	5.456	6.947	43.579	10.82	19.78	12.987	6.5
2012	AM.SAMOA	Tutuila	4/7/2012	TUT-533	–14.29797	–170.57251	17.4	54.56	10.82	10.98	72.727	149.1	21.89	96.01	31.201	15
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-585	–14.31141	–170.64798	22.3	20.14	6.649	3.985	2.0453	32.823	21.61	11.22	0	7.5
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-578	–14.2814	–170.60821	22	7.903	4.259	0.648	5.2973	18.107	9.522	8.585	0	7.5
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-560	–14.28437	–170.56357	26.85	27.29	20	29.06	62.465	138.81	14.42	73.1	51.296	15
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-537	–14.28159	–170.59485	14.6	15.17	3.04	5.153	1.9391	25.298	11.01	14.29	0	20
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-550	–14.30339	–170.59264	24.2	10.2	1.95	0.749	0.8079	13.711	9.415	4.296	0	5
2012	AM.SAMOA	Tutuila	4/8/2012	TUT-534	–14.28527	–170.60012	18.3	5.875	3.374	1.186	0.7759	11.211	7.777	3.434	0	1.5
2012	AM.SAMOA	Tutuila	4/9/2012	TUT-624	–14.29231	–170.67552	26.35	3.106	13.62	5.025	1.4767	23.226	9.657	13.57	0	22.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Tutuila	4/10/2012	TUT-637	–14.29039	–170.67546	3.3	17.15	3.607	0.542	0.615	21.913	21.91	0	0	40
2012	AM.SAMOA	Tutuila	4/12/2012	TUT-590	–14.30526	–170.59894	16.5	15.97	86.95	13.94	6.6914	123.56	72.29	43.05	8.2147	25
2012	AM.SAMOA	Tutuila	4/12/2012	TUT-507	–14.27401	–170.61549	14.4	15.57	30.87	6.676	20.194	73.308	10.92	62.39	0	22.5
2012	AM.SAMOA	Tutuila	4/12/2012	TUT-529	–14.27533	–170.61561	24.5	13.43	7.93	3.593	12.784	37.742	12.68	25.06	0	7.5
2012	AM.SAMOA	Tutuila	4/12/2012	TUT-566	–14.27617	–170.61189	22.1	8.842	17.56	4.739	1.576	32.712	8.553	24.16	0	7.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-339	–14.53508	–168.14761	25.6	11.87	8.008	60.66	13.19	93.73	14.93	29.2	49.602	12.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-315	–14.54043	–168.14509	10.95	18.39	5.77	14.61	8.4671	47.229	21.44	15.07	10.719	17.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-319	–14.54471	–168.14138	10.85	27.08	10.99	12.68	6.8653	57.618	26.01	31.61	0	16.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-314	–14.53775	–168.14683	4.85	12.13	2.955	37.57	9.8288	62.483	14.68	21.95	25.854	7.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-347	–14.55097	–168.13888	21.3	12.67	9.32	3.404	12.884	38.278	24.52	13.76	0	7.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-331	–14.55032	–168.13862	12.15	14.92	7.076	6.656	5.6023	34.255	15.2	19.05	0	11.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-329	–14.54823	–168.13777	14.8	6.106	1.182	4.282	2.6688	14.24	8.089	6.151	0	27.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-345	–14.55595	–168.14912	22.95	13.75	2.384	57.4	8.1204	81.657	13.88	33.31	34.468	25
2012	AM.SAMOA	Rose	4/18/2012	ROS-327	–14.5547	–168.14623	12.7	7.231	2.068	60.88	8.372	78.548	16.5	32.88	29.173	31.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-305	–14.55484	–168.14694	5.85	10.3	13.5	106	3.1761	132.97	14.94	84.99	33.042	30
2012	AM.SAMOA	Rose	4/18/2012	ROS-332	–14.55788	–168.15302	12.35	12.14	12.71	3.433	5.4693	33.75	24.14	9.606	0	27.5
2012	AM.SAMOA	Rose	4/18/2012	ROS-349	–14.56017	–168.15952	21.65	18.19	2.663	28.36	6.2015	55.416	17.36	12.21	25.841	27.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-371	–14.54488	–168.14702	1.2	1.579	5.775	0.524	0.0324	7.9106	3.088	4.823	0	9
2012	AM.SAMOA	Rose	4/19/2012	ROS-341	–14.53016	–168.14915	25.75	12.27	3.726	19.59	60.15	95.736	14.64	81.09	0	19
2012	AM.SAMOA	Rose	4/19/2012	ROS-317	–14.53188	–168.14917	9.75	18.26	4.34	23.01	21.764	67.382	17.05	39.61	10.719	20
2012	AM.SAMOA	Rose	4/19/2012	ROS-321	–14.52988	–168.15274	7.75	39.68	4.211	17.45	4.8605	66.198	31.52	24.54	10.145	8.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-325	–14.53087	–168.15538	15.75	23.39	14.1	9.978	4.725	52.198	16.11	36.09	0	10
2012	AM.SAMOA	Rose	4/19/2012	ROS-323	–14.53622	–168.16348	15.05	22.24	5.278	4.018	4.3599	35.895	24.6	11.29	0	12.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-309	–14.53703	–168.16632	4.1	55.85	8.044	5.821	3.5543	73.267	25.05	32.05	16.172	5
2012	AM.SAMOA	Rose	4/19/2012	ROS-308	–14.53564	–168.16107	4.75	36.38	3.845	6.704	8.3142	55.24	20.9	34.34	0	2.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-352	–14.55296	–168.16572	21.2	13.33	10.76	31.82	12.413	68.324	20.82	32.46	15.04	17.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-335	–14.55179	–168.16655	14.9	31.63	6.039	8.093	6.573	52.336	21.92	30.42	0	22.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-301	–14.55633	–168.16296	4.4	39.61	3.904	47.71	6.6256	97.844	24.16	73.68	0	27.5
2012	AM.SAMOA	Rose	4/19/2012	ROS-337	–14.55014	–168.16769	12.7	25.57	7.186	32.1	41.977	106.84	23.52	54.58	28.733	20
2012	AM.SAMOA	Rose	4/19/2012	ROS-333	–14.54191	–168.17257	9.65	15.4	1.578	3.643	8.2498	28.872	20.79	1.255	6.8258	17.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-377	–14.55122	–168.15065	13.2	0.988	3.242	1.465	2.5247	8.2204	7.282	0.939	0	12.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-355	–14.55163	–168.14959	1.25	1.102	10.52	1.607	1.2172	14.446	4.279	10.17	0	2.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-365	–14.55437	–168.15419	1	5.693	8.487	4.171	0.0172	18.369	3.859	14.51	0	2
2012	AM.SAMOA	Rose	4/20/2012	ROS-375	–14.55172	–168.15935	7.7	11.69	11.28	4.017	3.4544	30.443	8.19	22.25	0	10
2012	AM.SAMOA	Rose	4/20/2012	ROS-373	–14.55275	–168.15855	1.1	0.289	2.454	0.827	1.9952	5.565	2.461	3.104	0	7
2012	AM.SAMOA	Rose	4/20/2012	ROS-364	–14.54149	–168.14845	0.85	0.767	3.198	1.911	0.0113	5.8874	2.255	3.633	0	6.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-363	–14.55316	–168.15374	1.5	13.77	21.11	3.285	15.375	53.541	3.971	49.57	0	5.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Rose	4/20/2012	ROS-360	–14.55208	–168.15169	1.25	1.081	13.58	3.468	1.0357	19.17	3.78	15.39	0	6.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-320	–14.52893	–168.15036	12.3	24	5.07	4.709	2.3392	36.117	22.2	13.91	0	15
2012	AM.SAMOA	Rose	4/20/2012	ROS-311	–14.5462	–168.14015	4.7	15.68	5.927	2.456	27.817	51.878	30.39	21.49	0	25
2012	AM.SAMOA	Rose	4/20/2012	ROS-340	–14.54688	–168.13805	21.8	17.33	11.25	51.25	10.936	90.769	24.03	40.1	26.637	30
2012	AM.SAMOA	Rose	4/20/2012	ROS-350	–14.54728	–168.16991	25.2	18.52	5.804	41.81	3.2707	69.406	18.67	22.6	28.133	10
2012	AM.SAMOA	Rose	4/20/2012	ROS-306	–14.56005	–168.15715	5.25	21.24	19.6	41.11	10.265	92.221	32.88	24.09	35.25	15
2012	AM.SAMOA	Rose	4/20/2012	ROS-367	–14.55172	–168.16208	1	3.913	3.543	9.265	0.1139	16.835	6.901	1.337	8.596	7.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-357	–14.5438	–168.16428	1.25	0.03	0.086	0	0.0042	0.1205	0.121	0	0	0
2012	AM.SAMOA	Rose	4/20/2012	ROS-369	–14.54031	–168.16203	1.65	6.22	4.643	5.814	0.0738	16.75	5.133	11.62	0	6.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-353	–14.54005	–168.161	2.15	3.493	9.629	2.159	0.6455	15.927	10.75	5.173	0	5
2012	AM.SAMOA	Rose	4/20/2012	ROS-379	–14.54171	–168.16253	9.6	1.101	2	0	1.2246	4.3259	3.169	1.156	0	1.5
2012	AM.SAMOA	Rose	4/20/2012	ROS-361	–14.54427	–168.14725	1.6	0.682	10.76	0.302	0.4841	12.232	2.406	9.826	0	10.5
2012	AM.SAMOA	Rose	4/21/2012	ROS-342	–14.53493	–168.16112	20.65	24.36	5.774	8.5	4.5113	43.142	28.98	14.16	0	20
2012	AM.SAMOA	Rose	4/21/2012	ROS-343	–14.53821	–168.17207	27.15	11.64	10.02	7.169	4.6045	33.433	11.61	21.82	0	22.5
2012	AM.SAMOA	Rose	4/21/2012	ROS-324	–14.53373	–168.15891	10.5	31.97	4.322	27.46	3.8681	67.625	23.25	44.37	0	12.5
2012	AM.SAMOA	Rose	4/21/2012	ROS-307	–14.53341	–168.15778	4	127.6	11.41	68.67	24.634	232.31	28.91	60.6	142.8	11
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-061	–14.26766	–169.49728	22.7	58.86	7.232	7.305	26.518	99.91	16.91	43.7	39.3	27.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-073	–14.24904	–169.5046	10.25	57.89	24.81	9.538	11.192	103.43	21.15	74.44	7.8483	45
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-093	–14.21911	–169.5137	4.7	11.46	10.28	1.925	0.0249	23.695	9.26	14.44	0	2.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-062	–14.24708	–169.50579	23.8	11.64	4.896	20.15	2.0908	38.773	12.8	17.38	8.596	22.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-071	–14.25616	–169.50083	10.75	26.16	35.31	7.36	4.565	73.396	14.83	58.56	0	40
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-065	–14.21524	–169.49902	23	44.41	8.76	4.319	3.3444	60.834	19.83	32.68	8.3232	15
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-067	–14.21025	–169.42511	21.15	12.05	5.889	3.495	3.3879	24.819	16.49	8.33	0	6.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-095	–14.21192	–169.43376	6	23.13	4.477	3.922	0.2281	31.755	19.6	12.15	0	11
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-081	–14.21025	–169.4528	8.25	6.649	2.663	1.328	0.4618	11.101	8.341	2.761	0	12.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-083	–14.21442	–169.47382	9.5	19.54	21.57	4.101	4.6127	49.83	25.35	24.48	0	37.5
2012	AM.SAMOA	Ta`ū	4/22/2012	TA`Ū-085	–14.21426	–169.5039	13.95	23.86	3.961	1.367	0.6977	29.89	15.59	14.3	0	20
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-063	–14.27251	–169.48324	24.6	66.25	51.03	37.34	101.56	256.18	20.48	116.3	119.39	25
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-077	–14.2741	–169.48565	13.1	13.44	4.023	5.26	1.5247	24.245	14.02	10.22	0	22.5
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-075	–14.25948	–169.42235	12.45	30.01	31.42	3.785	2.3516	67.567	28.26	39.31	0	21
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-091	–14.2389	–169.4195	10.4	15.94	19.26	3.619	3.4893	42.305	16.52	25.79	0	35
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-101	–14.2404	–169.41858	27.45	31.47	4.192	19.96	7.0121	62.642	9.816	35.09	17.735	22.5
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-105	–14.26525	–169.47773	22.85	28.68	5.699	16.22	93.143	143.74	22.98	120.8	0	22.5
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-080	–14.25481	–169.46947	12.5	47.59	15.82	5.581	4.5879	73.58	19.1	54.48	0	15
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-103	–14.25193	–169.46394	24	5.551	3.81	3.403	1.2826	14.047	10.07	3.978	0	9
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-087	–14.2544	–169.42038	9.8	49.17	6.803	1.763	16.403	74.14	24.99	49.15	0	27.5
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-098	–14.22442	–169.4183	4.45	10.26	3.229	0.177	8.7736	22.437	14.52	7.917	0	8.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	AM.SAMOA	Ta`ū	4/23/2012	TA`Ū-097	–14.21921	–169.41797	4.75	15.86	3.778	0.976	1.5845	22.198	10.87	11.32	0	9
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-471	–14.18895	–169.60391	22	33.35	17.15	29.11	49.34	128.95	32.72	76.34	19.882	20
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-451	–14.18903	–169.62012	17.5	15.53	5.042	6.913	2.1197	29.609	14.67	14.94	0	30
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-465	–14.19141	–169.60999	13.35	65.83	47.99	29.64	31.506	174.97	23.54	136.7	14.768	42.5
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-424	–14.16661	–169.60838	4.65	63.48	9.109	2	0.9827	75.574	36.08	39.49	0	14
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-479	–14.16555	–169.62893	19.85	15.62	16.31	15.25	1.1818	48.362	14.53	25.01	8.8294	7.5
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-459	–14.15585	–169.6183	12.25	41.97	24.46	22.6	53.482	142.51	23.94	111.7	6.8258	22.5
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-475	–14.18452	–169.6068	21.1	66.37	12	13.32	55.591	147.29	35.62	85.43	26.243	47.5
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-447	–14.19172	–169.61601	10.45	26.62	26.39	9.049	24.832	86.892	39.18	47.71	0	32.5
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-452	–14.16136	–169.60811	13.7	65.81	60.56	26.77	23.764	176.9	26.36	134	16.583	35
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-443	–14.16482	–169.62522	1.95	36.33	5.827	2.323	2.4353	46.919	26.84	20.08	0	30
2012	AM.SAMOA	Ofu & Olosega	4/24/2012	OLO-469	–14.14994	–169.61646	21.8	23.17	60.23	5.186	5.1248	93.717	36.07	57.65	0	37.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-477	–14.18557	–169.67602	27.35	11.18	4.916	1.544	1.1551	18.791	13.79	5.001	0	8
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-449	–14.16348	–169.68736	15.65	63.72	39.86	105.5	6.9696	216.06	25.18	81.33	109.55	13
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-478	–14.16974	–169.68701	22.15	21.09	12.17	5.535	40.26	79.06	17.43	61.63	0	27.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-437	–14.16414	–169.6831	5.8	35.2	8.768	7.652	0.4689	52.093	27.71	24.38	0	22.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-455	–14.16306	–169.68298	9.1	42.87	9.89	2.545	2.6221	57.931	10.67	24.33	22.932	20
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-446	–14.15865	–169.67746	6.25	79	13.95	24.25	0.0976	117.3	40	58.37	18.934	5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-481	–14.18112	–169.65246	22.75	12.8	5.545	6.855	47.631	72.836	31.46	41.37	0	22.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-457	–14.17672	–169.64881	14.9	54.44	14.51	5.7	1.8806	76.526	26.7	49.83	0	24
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-426	–14.17628	–169.68091	3.65	53.31	3.872	3.839	0.1117	61.135	19.89	41.24	0	17.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-433	–14.17356	–169.68123	6.25	42.94	21.98	1.637	0.7864	67.35	24.26	43.09	0	57.5
2012	AM.SAMOA	Ofu & Olosega	4/25/2012	OFU-474	–14.17517	–169.68287	23.2	26.31	3.438	4.824	10.608	45.179	33.55	11.63	0	25
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OLO-445	–14.17762	–169.62791	15.55	49.51	19.52	28.73	2.2776	100.04	21.91	63.62	14.505	27.5
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-476	–14.15394	–169.68387	24.4	25.59	8.484	2.18	2.6826	38.934	30.36	8.571	0	5
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-473	–14.15999	–169.66822	21.15	29.18	10.21	7.536	21.627	68.551	20.18	48.37	0	27.5
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-429	–14.17916	–169.65142	5.8	22.36	4.297	11.45	5.3262	43.436	26.77	16.67	0	20
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-422	–14.16419	–169.65581	21.4	16.37	6.101	3.605	4.5271	30.599	17.56	13.04	0	8.5
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-467	–14.16204	–169.66716	13.75	42.66	14.94	10.74	42.264	110.6	24.13	86.47	0	20
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OLO-480	–14.15197	–169.61758	23.65	44.48	12.73	77.52	58.629	193.36	14.09	119.2	60.119	25
2012	AM.SAMOA	Ofu & Olosega	4/26/2012	OFU-425	–14.16418	–169.63244	3.45	75.51	41.97	4.829	3.7401	126.05	24.64	101.4	0	15
2012	PRIA	Jarvis	5/3/2012	JAR-215	–0.370989	–160.0102	21	33.33	34.69	476	123.69	667.74	88.61	169.7	409.45	57.5
2012	PRIA	Jarvis	5/3/2012	JAR-243	–0.371934	–160.01146	10.05	44.84	17.12	289	27.048	378	46.37	97.83	233.8	45
2012	PRIA	Jarvis	5/3/2012	JAR-230	–0.379562	–160.01566	15.85	86.95	10.33	622.6	150.42	870.31	67.27	146.7	656.32	47.5
2012	PRIA	Jarvis	5/3/2012	JAR-255	–0.381072	–160.00964	4.25	48.62	10.34	25.94	3.7781	88.673	25.82	16.41	46.439	15
2012	PRIA	Jarvis	5/3/2012	JAR-263	–0.376803	–160.01408	3.8	84.18	15.21	141.7	29.803	270.92	41.5	74.52	154.9	12.5
2012	PRIA	Jarvis	5/3/2012	JAR-218	–0.381904	–159.99802	22.95	6.837	10.84	2012	181.07	2210.4	34.27	282.5	1893.7	30

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								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Jarvis	5/3/2012	JAR-259	–0.379195	–159.9816	6.75	27.98	42.49	57.21	38.396	166.09	46.43	97.8	21.854	20
2012	PRIA	Jarvis	5/3/2012	JAR-262	–0.381338	–159.98648	3.95	32.8	8.337	28.35	17.17	86.664	27.65	39.7	19.315	12.5
2012	PRIA	Jarvis	5/3/2012	JAR-223	–0.382266	–159.98171	10.85	60.97	7.917	137.7	252.42	459.05	229.4	127.1	102.63	30
2012	PRIA	Jarvis	5/3/2012	JAR-228	–0.382258	–160.00231	14.85	27.89	24.79	457.2	66.209	576.08	48.53	193.2	334.35	37.5
2012	PRIA	Jarvis	5/4/2012	JAR-217	–0.373536	–159.97296	25.5	47.12	80.19	589.2	235.29	951.78	119.1	277.7	555.02	25
2012	PRIA	Jarvis	5/4/2012	JAR-229	–0.36895	–159.98019	6.95	14.89	11.65	50.44	68.924	145.91	74.22	49.4	22.289	27.5
2012	PRIA	Jarvis	5/4/2012	JAR-231	–0.371661	–159.97608	7.45	50.59	8.083	129.8	53.35	241.77	52.15	63.64	125.98	20
2012	PRIA	Jarvis	5/4/2012	JAR-245	–0.375005	–159.97571	11.05	36.87	18.73	62.35	31.542	149.49	53.41	41.09	54.982	20
2012	PRIA	Jarvis	5/4/2012	JAR-241	–0.379508	–159.97349	10.65	41.52	17.09	187.5	43.504	289.62	58.13	71.84	159.65	17.5
2012	PRIA	Jarvis	5/4/2012	JAR-247	–0.381904	–159.97833	10.2	29.35	12.01	211.9	70.313	323.57	81.91	66.94	174.72	7.5
2012	PRIA	Jarvis	5/4/2012	JAR-265	–0.381414	–159.99666	5.05	169.9	14.17	104.3	11.477	299.76	109.2	81.01	109.52	5
2012	PRIA	Jarvis	5/4/2012	JAR-207	–0.381708	–160.01155	21.95	8.849	21.8	493.4	132.53	656.55	42.57	186.2	427.77	37.5
2012	PRIA	Jarvis	5/4/2012	JAR-249	–0.371997	–160.01053	4	83.11	8.073	143.6	11.567	246.34	61.04	27.51	157.79	9
2012	PRIA	Jarvis	5/5/2012	JAR-211	–0.361515	–160.00228	23.9	24.65	21.72	246.2	14.921	307.45	38.02	80.04	189.39	16
2012	PRIA	Jarvis	5/5/2012	JAR-237	–0.36223	–159.99624	10.05	37.43	18.36	6.338	30.911	93.042	33.53	59.51	0	7.5
2012	PRIA	Jarvis	5/5/2012	JAR-268	–0.362569	–159.99892	5.6	19.07	8.588	44.81	15.047	87.518	15.07	42.14	30.304	7.5
2012	PRIA	Jarvis	5/5/2012	JAR-220	–0.363595	–160.00512	14	35.82	8.772	27.81	10.155	82.552	42	40.55	0	22.5
2012	PRIA	Jarvis	5/5/2012	JAR-264	–0.367063	–160.0068	3.75	86.21	8.215	15.3	10.347	120.08	35.12	76.82	8.1352	12.5
2012	PRIA	Jarvis	5/5/2012	JAR-219	–0.361585	–159.99902	12.3	71.35	146.2	290.3	55.347	563.24	52.85	222.5	287.93	12.5
2012	PRIA	Jarvis	5/5/2012	JAR-235	–0.363056	–159.99101	12.9	123.9	19.04	123.4	16.695	283.04	41.46	66.33	175.26	17.5
2012	PRIA	Jarvis	5/5/2012	JAR-216	–0.364824	–159.98407	22.65	14.03	12.53	119.1	1432.3	1578	38.25	63.89	1475.9	6
2012	PRIA	Jarvis	5/5/2012	JAR-225	–0.37327	–159.97857	8.35	14.78	17.31	36.18	13.026	81.301	25.97	34.12	21.212	22.5
2012	PRIA	Jarvis	5/5/2012	JAR-221	–0.375176	–159.98007	7.6	21.85	61.57	52.75	19.787	155.95	35.5	73.98	46.466	15
2012	PRIA	Jarvis	5/5/2012	JAR-213	–0.369543	–159.97681	22.8	26.68	116.6	240.4	301.91	685.53	98.48	426.7	160.33	20
2012	PRIA	Jarvis	5/5/2012	JAR-239	–0.374154	–159.97471	7.5	47.46	12.72	4.074	74.838	139.1	56.49	82.6	0	10
2012	PRIA	Jarvis	5/5/2012	JAR-233	–0.373793	–159.97626	10.3	29.03	11.8	89.93	13.084	143.85	33.71	26.14	84.003	27.5
2012	PRIA	Jarvis	5/6/2012	JAR-236	–0.363627	–159.98857	11.95	45.63	20.86	47.32	23.044	136.85	40.34	82.04	14.475	26.5
2012	PRIA	Jarvis	5/6/2012	JAR-224	–0.36687	–159.98245	6.85	28.15	6.802	11.3	28.005	74.257	39.33	34.92	0	7.5
2012	PRIA	Jarvis	5/6/2012	JAR-201	–0.379075	–159.97148	24.9	17.13	73.46	494	91.199	675.83	64.88	169.9	441.08	27.5
2012	PRIA	Jarvis	5/6/2012	JAR-257	–0.369248	–159.98424	4.35	1.557	1.631	0	2.271	5.4597	5.46	0	0	3.5
2012	PRIA	Jarvis	5/6/2012	JAR-266	–0.372952	–159.98391	4.6	51.27	17.29	5.97	9.4177	83.942	23.22	60.73	0	15
2012	PRIA	Jarvis	5/6/2012	JAR-267	–0.381389	–159.99999	6.85	97.81	7.076	118.1	2.1	225.09	53.3	67.43	104.36	15
2012	PRIA	Jarvis	5/6/2012	JAR-242	–0.377307	–159.9758	9	41.35	18.54	118	36.823	214.75	55.02	54.51	105.21	14
2012	PRIA	Jarvis	5/6/2012	JAR-246	–0.378503	–159.97727	7.55	29.96	12.51	36.3	41.158	119.92	43.9	62.33	13.693	12.5
2012	PRIA	Jarvis	5/6/2012	JAR-269	–0.382068	–160.00353	6.55	74.41	16.83	2.077	0.3522	93.664	38.99	54.68	0	35
2012	PRIA	Jarvis	5/6/2012	JAR-261	–0.375579	–160.01323	5.15	61.05	12.28	88.04	5.6133	166.99	37.73	34.88	94.387	23.5
2012	PRIA	Kingman	5/9/2012	KIN-187	6.379363	–162.36778	25	12.22	21.53	556.5	80.222	670.51	38.21	118.7	513.56	20

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Kingman	5/9/2012	KIN-204	6.381617	−162.37681	8.8	24.07	37.42	175.9	25.167	262.51	47.29	67.98	147.24	55
2012	PRIA	Kingman	5/9/2012	KIN-217	6.382785	−162.38639	5.55	23.87	70.35	233.7	12.307	340.25	38.63	86.18	215.44	35
2012	PRIA	Kingman	5/9/2012	KIN-215	6.381887	−162.40539	6.05	14.46	9.805	79.1	6.5309	109.89	24.66	13.44	71.8	12.5
2012	PRIA	Kingman	5/9/2012	KIN-193	6.382894	−162.43873	16.55	17.47	15.44	19.85	24.425	77.185	26.53	50.65	0	25
2012	PRIA	Kingman	5/9/2012	KIN-211	6.399268	−162.33775	15.45	16.72	16.05	291.8	35.394	360	32.72	79.09	248.19	27.5
2012	PRIA	Kingman	5/9/2012	KIN-190	6.4207	−162.35988	20.5	22.66	12.45	346.3	54.11	435.48	38.72	67.47	329.29	25
2012	PRIA	Kingman	5/9/2012	KIN-208	6.424562	−162.36609	15.3	8.119	7.358	206.9	71.833	294.19	33.95	68.41	191.83	17.5
2012	PRIA	Kingman	5/9/2012	KIN-205	6.43696	−162.38523	9.2	14.93	8.128	208.5	10.174	241.76	17.61	59.3	164.86	35
2012	PRIA	Kingman	5/9/2012	KIN-182	6.453532	−162.40713	21.1	18.62	30.03	606.9	184.16	839.71	64.13	181.6	594.01	30
2012	PRIA	Kingman	5/10/2012	KIN-202	6.380283	−162.41165	10.05	36.87	60.3	435.2	58.539	590.88	39.18	122.9	428.76	30
2012	PRIA	Kingman	5/10/2012	KIN-222	6.380419	−162.4194	6.05	6.308	8.609	35.44	8.6573	59.014	21.5	15.1	22.415	35
2012	PRIA	Kingman	5/10/2012	KIN-186	6.378273	−162.42253	21.45	708.2	12.12	427.2	84.951	1232.5	48.48	95.24	1088.8	30
2012	PRIA	Kingman	5/10/2012	KIN-197	6.389252	−162.47141	16.75	20.33	19.09	66.39	5.3705	111.18	26.27	32.19	52.718	20
2012	PRIA	Kingman	5/10/2012	KIN-196	6.387503	−162.4628	17	22.66	6.108	123	6.8321	158.59	19.55	28.82	110.22	15
2012	PRIA	Kingman	5/10/2012	KIN-195	6.450075	−162.41072	14.4	23.53	12.56	135	6.647	177.75	24.54	30.34	122.87	45
2012	PRIA	Kingman	5/10/2012	KIN-191	6.440499	−162.41979	13.05	16.91	5.72	78.99	15.825	117.45	17.59	32.79	67.065	42.5
2012	PRIA	Kingman	5/10/2012	KIN-185	6.415026	−162.44787	20.8	15.4	17.22	222.3	16.93	271.86	27.55	36.15	208.15	35
2012	PRIA	Kingman	5/10/2012	KIN-201	6.406772	−162.45278	10.05	12.33	11.51	15.22	8.6807	47.743	15.24	32.5	0	25
2012	PRIA	Kingman	5/10/2012	KIN-183	6.386728	−162.47897	25.05	28.83	18.64	212.9	36.459	296.82	40.06	113.8	142.99	42.5
2012	PRIA	Kingman	5/11/2012	KIN-173	6.418836	−162.39726	21.55	21.98	7.49	35.06	0.8872	65.417	12.08	42.61	10.719	20
2012	PRIA	Kingman	5/11/2012	KIN-232	6.418257	−162.3674	10.6	25.32	10.87	21.64	2.079	59.916	18.2	33.04	8.6801	22.5
2012	PRIA	Kingman	5/11/2012	KIN-225	6.405527	−162.35376	21.1	8.737	6.174	297	9.0413	321	16	30.81	274.19	7.5
2012	PRIA	Kingman	5/11/2012	KIN-226	6.385581	−162.37474	12.4	33.86	7.707	38.9	2.5923	83.06	18.03	47.85	17.177	47.5
2012	PRIA	Kingman	5/11/2012	KIN-237	6.386562	−162.38845	4.95	127.3	15.21	149.6	50.844	342.96	51.19	120	171.75	47.5
2012	PRIA	Kingman	5/11/2012	KIN-198	6.445667	−162.39767	10.8	15.62	7.561	82.96	1.4152	107.56	12.43	17.55	77.58	32.5
2012	PRIA	Kingman	5/11/2012	KIN-171	6.409336	−162.39449	25.85	21.4	3.903	166.4	5.5094	197.16	18.29	19.8	159.06	7.5
2012	PRIA	Kingman	5/11/2012	KIN-248	6.390195	−162.3595	9.75	29.52	4.505	82.55	1.8917	118.47	13.63	31.33	73.507	30
2012	PRIA	Kingman	5/11/2012	KIN-257	6.400351	−162.34959	25.65	7.411	12.71	529.1	2.8353	552.07	10.87	27.1	514.1	12.5
2012	PRIA	Kingman	5/11/2012	KIN-244	6.390962	−162.3479	11.4	8.166	9.767	295.5	3.2137	316.65	9.084	152.7	154.89	17.5
2012	PRIA	Kingman	5/11/2012	KIN-252	6.38407	−162.36355	4.25	52.49	4.377	27.46	2.5172	86.845	52.14	21.01	13.693	5
2012	PRIA	Kingman	5/12/2012	KIN-246	6.396873	−162.38777	25.7	11.65	3.003	2.716	1.0752	18.447	9.392	9.054	0	22.5
2012	PRIA	Kingman	5/12/2012	KIN-245	6.401367	−162.38556	11.8	19.59	8.863	28.03	23.244	79.729	19.1	50.59	10.036	27.5
2012	PRIA	Kingman	5/12/2012	KIN-247	6.405979	−162.3705	9.9	20.93	24.51	127.4	8.5471	181.38	19.4	55.77	106.21	40
2012	PRIA	Kingman	5/12/2012	KIN-241	6.411584	−162.35893	3.5	53.9	9.298	68.26	11.885	143.34	31.08	57.06	55.206	17.5
2012	PRIA	Kingman	5/12/2012	KIN-251	6.384034	−162.36892	3.6	50.56	7.844	20.78	0.6066	79.79	27.72	43.28	8.791	25
2012	PRIA	Kingman	5/12/2012	KIN-165	6.384095	−162.43497	26.45	27.33	37.24	266.2	16.454	347.26	26.22	67.89	253.15	30
2012	PRIA	Kingman	5/12/2012	KIN-175	6.387675	−162.42472	15.2	24.79	24.92	41.66	6.3581	97.727	21.6	48.23	27.896	32.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Kingman	5/12/2012	KIN-242	6.386771	−162.39621	9.45	70.35	10.55	81.33	10.704	172.94	31.58	79.44	61.914	22.5
2012	PRIA	Kingman	5/12/2012	KIN-249	6.388219	−162.36785	25.85	44.74	8.552	28.75	0.5895	82.631	9.023	62.89	10.719	10
2012	PRIA	Kingman	5/12/2012	KIN-255	6.390509	−162.34936	20.35	6.364	5.964	146.5	0.3029	159.09	6.734	14.94	137.42	7.5
2012	PRIA	Kingman	5/13/2012	KIN-189	6.379465	−162.3642	21.45	59.8	35.22	281.7	107.38	484.15	60.36	172.8	250.98	15
2012	PRIA	Kingman	5/13/2012	KIN-170	6.393213	−162.39493	21.55	28.47	19.49	34.29	6.8658	89.12	19.36	51.82	17.938	15
2012	PRIA	Kingman	5/13/2012	KIN-258	6.385121	−162.37016	21.3	27.54	8.545	88.08	0.9532	125.12	20.6	25.8	78.715	17.5
2012	PRIA	Kingman	5/13/2012	KIN-188	6.420329	−162.35925	21.65	17.77	7.138	364.9	217.6	607.43	27.94	243.1	336.39	30
2012	PRIA	Kingman	5/13/2012	KIN-203	6.430816	−162.37585	11.1	13.27	12	130.8	29.303	185.34	21.24	47.52	116.58	22.5
2012	PRIA	Kingman	5/13/2012	KIN-207	6.440882	−162.39148	9.3	39.03	11.81	226.4	3.2877	280.52	16.58	57.61	206.33	42.5
2012	PRIA	Kingman	5/13/2012	KIN-179	6.389392	−162.44299	17.35	26.83	22.81	20.12	10.783	80.533	25.4	55.13	0	32.5
2012	PRIA	Kingman	5/13/2012	KIN-200	6.382682	−162.43731	14.7	28.38	17.16	78.45	19.939	143.92	29.23	51.94	62.758	20
2012	PRIA	Palmyra	5/14/2012	PAL-255	5.8714	−162.12527	7.4	41.89	23.01	68.7	11.742	145.33	43.67	42.01	59.659	6.5
2012	PRIA	Palmyra	5/14/2012	PAL-300	5.865879	−162.12226	20.45	42.3	34.25	235.2	1343.5	1655.3	74.68	154.5	1426.1	20
2012	PRIA	Palmyra	5/14/2012	PAL-229	5.866598	−162.10932	9.65	23.25	16.37	44.54	23.373	107.54	47.25	52.08	8.2147	30
2012	PRIA	Palmyra	5/14/2012	PAL-277	5.866943	−162.10192	5.15	16.42	10.74	32.38	8.1054	67.639	24.68	13.59	29.374	35
2012	PRIA	Palmyra	5/14/2012	PAL-314	5.883391	−162.14011	22.15	24.62	17.65	28.63	6.2627	77.161	29.56	34.08	13.53	25
2012	PRIA	Palmyra	5/14/2012	PAL-261	5.88333	−162.13147	12.15	37.76	8.74	27.49	3.7688	77.76	31.88	27.54	18.339	10
2012	PRIA	Palmyra	5/14/2012	PAL-309	5.887868	−162.14034	24	18.52	22.81	35.63	6.7978	83.759	27.38	28.08	28.3	15
2012	PRIA	Palmyra	5/14/2012	PAL-251	5.867219	−162.11833	9.9	64.73	36.02	30.8	11.991	143.54	52.58	80.23	10.719	17.5
2012	PRIA	Palmyra	5/14/2012	PAL-273	5.869902	−162.12034	5.95	22.13	5.585	8.813	3.5548	40.087	28.16	11.92	0	7.5
2012	PRIA	Palmyra	5/14/2012	PAL-298	5.869928	−162.13066	21.95	61.09	33.56	112.4	46.059	253.08	68.81	108.6	75.669	30
2012	PRIA	Palmyra	5/15/2012	PAL-307	5.861227	−162.01748	21.1	42.92	35.07	81.1	42.838	201.92	33.69	122.7	45.519	32.5
2012	PRIA	Palmyra	5/15/2012	PAL-209	5.864947	−162.01529	9.9	3.913	9.021	43.93	6.1929	63.057	16.54	4.006	42.507	32.5
2012	PRIA	Palmyra	5/15/2012	PAL-305	5.862591	−162.02716	21.55	28.2	19.8	66.16	386.2	500.36	106.1	167.4	226.94	42.5
2012	PRIA	Palmyra	5/15/2012	PAL-213	5.871919	−162.03556	7.45	17.25	37.72	72.16	0.9089	128.04	16.06	57.75	54.226	10
2012	PRIA	Palmyra	5/15/2012	PAL-272	5.869586	−162.08833	5.35	27.27	94.01	32.34	17.682	171.3	36.1	135.2	0	22.5
2012	PRIA	Palmyra	5/15/2012	PAL-301	5.870479	−162.14945	19.5	177.8	304.4	202.4	140.53	825.2	62.05	206.1	557.09	30
2012	PRIA	Palmyra	5/15/2012	PAL-254	5.861551	−162.12796	16.45	23.77	24.15	32.31	32.37	112.6	45.89	58.49	8.2147	22.5
2012	PRIA	Palmyra	5/15/2012	PAL-295	5.869411	−162.08744	23.95	31.53	7.846	31.03	42.284	112.69	35.4	77.29	0	12.5
2012	PRIA	Palmyra	5/15/2012	PAL-215	5.870006	−162.08093	10.05	43.38	63.13	34.36	21.509	162.38	50.38	103.8	8.2147	17.5
2012	PRIA	Palmyra	5/15/2012	PAL-282	5.866721	−162.05752	4.05	32.15	132.4	72.6	30.015	267.2	28.36	204.5	34.353	30
2012	PRIA	Palmyra	5/17/2012	PAL-321	5.89785	−162.14113	26.2	15.16	17.14	47.88	110.39	190.57	28.61	143	18.934	35
2012	PRIA	Palmyra	5/17/2012	PAL-245	5.894174	−162.14344	12.15	20.41	11.22	6.869	13.361	51.853	24.53	27.32	0	32.5
2012	PRIA	Palmyra	5/17/2012	PAL-323	5.897734	−162.09033	21.4	11.7	28.87	280	1679	1999.6	23.9	138.3	1837.4	12.5
2012	PRIA	Palmyra	5/17/2012	PAL-233	5.898425	−162.07094	10.8	22.45	22.67	129.4	16.194	190.75	30.59	79.76	80.396	20
2012	PRIA	Palmyra	5/17/2012	PAL-319	5.891064	−162.04981	24.9	33.65	30.37	272.2	65.286	401.46	25.78	149.2	226.52	17.5
2012	PRIA	Palmyra	5/17/2012	PAL-223	5.883606	−162.03624	13.05	31.15	36.44	155.8	45.514	268.93	32.53	109.9	126.45	15

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2012	PRIA	Palmyra	5/17/2012	PAL-278	5.867235	−162.10935	5.85	64.36	15.55	236.3	10.873	327.12	33.03	68.76	225.33	17.5
2012	PRIA	Palmyra	5/18/2012	PAL-317	5.887331	−162.04281	25.6	14.4	20.74	256.7	62.1	353.91	21.67	171	161.23	20
2012	PRIA	Palmyra	5/18/2012	PAL-249	5.87697	−162.02066	5.75	3.09	4.916	0.819	3.7725	12.597	12.6	0	0	37.5
2012	PRIA	Palmyra	5/18/2012	PAL-303	5.871932	−162.0032	14	11.96	7.205	124.6	5.3844	149.14	16.11	42.53	90.498	35
2012	PRIA	Palmyra	5/18/2012	PAL-302	5.865797	−162.00966	22.65	35.68	17.13	324.7	163.99	541.48	66.5	252.3	222.71	25
2012	PRIA	Palmyra	5/18/2012	PAL-247	5.867302	−162.0105	9.55	13.4	5.685	52.58	11.287	82.956	16.55	55.69	10.719	37.5
2012	PRIA	Palmyra	5/18/2012	PAL-306	5.863962	−162.03315	21.9	10.94	21.22	95.78	143.97	271.91	111.5	110.6	49.817	27.5
2012	PRIA	Palmyra	5/18/2012	PAL-275	5.875024	−162.11522	4.25	61.52	238.5	74.94	6.6963	381.62	51.15	54.39	276.08	17.5
2012	PRIA	Palmyra	5/18/2012	PAL-253	5.866809	−162.11319	7.45	42.27	30.84	41.38	30.175	144.66	51.08	74.27	19.317	20
2012	PRIA	Palmyra	5/19/2012	PAL-322	5.897435	−162.10931	23.65	16.35	14.93	69.14	38.643	139.06	31.99	68.27	38.808	17.5
2012	PRIA	Palmyra	5/19/2012	PAL-239	5.896222	−162.11681	8.95	29.99	10.41	23.38	5.6998	69.487	30.63	28.14	10.719	20
2012	PRIA	Palmyra	5/19/2012	PAL-203	5.896954	−162.1317	14.15	77.57	66.77	131.2	21.932	297.51	31.88	139.2	126.46	30
2012	PRIA	Palmyra	5/19/2012	PAL-313	5.881061	−162.14718	22.25	39.46	25.12	59.86	28.029	152.46	22.44	92.87	37.15	17.5
2012	PRIA	Palmyra	5/19/2012	PAL-311	5.879382	−162.15567	20.1	18.04	23.56	33.98	19.485	95.066	33.6	61.46	0	7.5
2012	PRIA	Palmyra	5/19/2012	PAL-263	5.885723	−162.11838	4.3	43.01	11.21	3.632	1.8519	59.701	31.62	28.08	0	27.5
2012	PRIA	Palmyra	5/19/2012	PAL-274	5.87662	−162.11462	3.4	42.38	8.297	52.1	4.1964	106.97	42.2	14.36	50.411	67.5
2013	MHI	Maui	8/2/2013	MAI-430	20.76042	−156.48109	20.5	9.6	8.822	1.808	0.6007	20.832	15.88	4.948	0	70
2013	MHI	Maui	8/2/2013	MAI-447	20.75611	−156.46478	4.9	3.273	2.579	5.163	0.2059	11.22	4.79	4.416	2.0142	27.5
2013	MHI	Maui	8/2/2013	MAI-587	20.71947	−156.45785	12.5	8.938	11.98	7.693	11.583	40.189	21.52	18.67	0	75
2013	MHI	Maui	8/2/2013	MAI-438	20.67286	−156.44864	16.3	3.232	4.721	0.255	0.4412	8.6494	5.493	3.157	0	15
2013	MHI	Maui	8/2/2013	MAI-439	20.5895	−156.4157	12.35	7.638	4.181	0.141	15.857	27.818	6.988	20.83	0	27.5
2013	MHI	Maui	8/2/2013	MAI-432	20.70869	−156.45578	19.7	9.27	1.985	4.503	0.1128	15.871	10.51	5.366	0	67.5
2013	MHI	Maui	8/2/2013	MAI-449	20.73141	−156.4586	3.5	6.857	1.687	0	3.5834	12.127	8.521	3.606	0	40
2013	MHI	Maui	8/2/2013	MAI-435	20.64672	−156.447	9.95	6.284	2.365	0.105	0.1412	8.8952	7.37	1.525	0	42.5
2013	MHI	Maui	8/2/2013	MAI-441	20.63803	−156.45287	10.25	6.894	3.416	0.332	0.377	11.019	7.293	3.725	0	20
2013	MHI	Maui	8/2/2013	MAI-433	20.64979	−156.44357	4.35	13.31	1.791	6.474	0.0664	21.637	13.45	8.187	0	32.5
2013	MHI	Maui	8/2/2013	MAI-430	20.760416	−156.481090	20.5	9.60	8.82	1.81	0.60	20.83	15.88	4.95	0.00	70
2013	MHI	Maui	8/2/2013	MAI-447	20.756114	−156.464777	4.9	3.27	2.58	5.16	0.21	11.22	4.79	4.42	2.01	27.5
2013	MHI	Maui	8/2/2013	MAI-587	20.719467	−156.457848	12.5	8.94	11.98	7.69	11.58	40.19	21.52	18.67	0.00	75
2013	MHI	Maui	8/2/2013	MAI-438	20.672859	−156.448636	16.3	3.23	4.72	0.25	0.44	8.65	5.49	3.16	0.00	15
2013	MHI	Maui	8/2/2013	MAI-439	20.589497	−156.415704	12.35	7.64	4.18	0.14	15.86	27.82	6.99	20.83	0.00	27.5
2013	MHI	Maui	8/2/2013	MAI-432	20.708687	−156.455779	19.7	9.27	1.87	4.50	0.11	15.76	10.39	5.37	0.00	67.5
2013	MHI	Maui	8/2/2013	MAI-449	20.731409	−156.458602	3.5	6.86	1.69	0.00	3.58	12.13	8.52	3.61	0.00	40
2013	MHI	Maui	8/2/2013	MAI-435	20.646716	−156.447001	9.95	6.28	2.37	0.10	0.14	8.90	7.37	1.53	0.00	42.5
2013	MHI	Maui	8/2/2013	MAI-441	20.638031	−156.452868	10.25	6.89	3.42	0.33	0.38	11.02	7.29	3.73	0.00	20
2013	MHI	Maui	8/2/2013	MAI-433	20.649794	−156.443572	4.35	13.31	1.79	6.47	0.07	21.64	13.45	8.19	0.00	32.5
2013	MHI	Hawai`i	8/3/2013	HAW-416	20.22456	−155.73706	10.15	8.575	7.067	4.355	0.6336	20.631	8.59	12.04	0	10

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Hawai`i	8/3/2013	HAW-402	20.24327	−155.75887	28.5	15.73	9.006	12.27	17.596	54.599	6.299	18.72	29.579	5
2013	MHI	Hawai`i	8/3/2013	HAW-469	20.24433	−155.77398	5.1	0.08	2.324	0	0.0249	2.4288	1.783	0.645	0	3.5
2013	MHI	Hawai`i	8/3/2013	HAW-468	20.24934	−155.79703	5.15	1.218	2.319	0.424	0.7333	4.6949	3.911	0.784	0	7
2013	MHI	Hawai`i	8/3/2013	HAW-433	20.26169	−155.8247	13.6	16.8	19.02	5.78	2.9796	44.574	12.8	31.77	0	12.5
2013	MHI	Hawai`i	8/3/2013	HAW-398	20.2703	−155.84219	24.05	48.58	28.46	21.87	2.5558	101.47	13.68	69.84	17.955	7.5
2013	MHI	Hawai`i	8/3/2013	HAW-397	20.1975	−155.70913	22.35	21.45	20.6	5.058	1.9043	49.015	5.78	38.18	5.0576	5
2013	MHI	Hawai`i	8/3/2013	HAW-431	20.19613	−155.71175	11.35	13	24.71	1.457	0.0687	39.231	5.649	33.58	0	5
2013	MHI	Hawai`i	8/3/2013	HAW-448	20.2506	−155.79246	12.9	28.83	14.2	10.42	15.209	68.651	13.14	55.51	0	10
2013	MHI	Hawai`i	8/3/2013	HAW-395	20.25749	−155.80384	24.25	20.44	5.163	0	0.019	25.627	7.045	18.58	0	6.5
2013	MHI	Hawai`i	8/3/2013	HAW-407	20.2676	−155.84732	14.9	13.44	4.637	1.701	0.8913	20.668	6.973	13.69	0	5
2013	MHI	Hawai`i	8/3/2013	HAW-460	20.24362	−155.8899	5.65	6.268	4.814	0.129	1.7672	12.978	11.34	1.637	0	5
2013	MHI	Hawai`i	8/4/2013	HAW-765	19.12053	−155.92019	27.2	10.81	4.766	2.586	10.027	28.187	8.742	19.45	0	42.5
2013	MHI	Hawai`i	8/4/2013	HAW-506	19.13675	−155.91902	18	3.8	13.32	27.96	11.404	56.485	27.51	27.92	1.0546	72.5
2013	MHI	Hawai`i	8/4/2013	HAW-487	19.15302	−155.91551	4.85	21.83	3.961	0.803	1.0939	27.692	13.38	14.32	0	15
2013	MHI	Hawai`i	8/5/2013	HAW-631	19.83253	−155.08038	23.4	49.8	16.67	7.892	2.291	76.648	8.245	63.35	5.0576	5
2013	MHI	Hawai`i	8/5/2013	HAW-643	19.74482	−155.05386	11.25	10.06	2.539	0.548	0.0834	13.234	7.442	5.792	0	37.5
2013	MHI	Hawai`i	8/5/2013	HAW-748	19.73666	−155.01568	3.15	10.77	4.865	0.331	0.7439	16.708	16.71	0	0	5
2013	MHI	Hawai`i	8/5/2013	HAW-629	19.74557	−155.02553	23.1	20.18	15.22	15.09	3.8931	54.389	18.42	35.97	0	27.5
2013	MHI	Hawai`i	8/5/2013	HAW-640	19.74691	−155.05798	11.1	17.89	3.327	0.645	0.7399	22.602	10.38	12.22	0	35
2013	MHI	Hawai`i	8/5/2013	HAW-649	19.66451	−154.97485	12.35	2.461	4.132	0.031	0.7912	7.4148	4.828	2.587	0	20
2013	MHI	Hawai`i	8/5/2013	HAW-632	19.74419	−155.0468	22.6	1.939	4.507	1.954	2.3433	10.744	6.245	4.499	0	70
2013	MHI	Hawai`i	8/5/2013	HAW-664	19.77316	−155.08776	4.5	10.83	7.814	0	3.5409	22.188	15.81	6.381	0	15
2013	MHI	Hawai`i	8/6/2013	HAW-642	19.46009	−154.8348	14.4	24.96	7.937	4.573	4.0438	41.518	16.8	24.71	0	12.5
2013	MHI	Hawai`i	8/6/2013	HAW-625	19.44146	−154.8574	21.55	17.57	10.05	1.168	15.865	44.651	25.19	19.47	0	7.5
2013	MHI	Hawai`i	8/6/2013	HAW-648	19.40857	−154.90093	11.7	10.86	5.352	5.707	5.1028	27.027	14.83	6.529	5.6723	17.5
2013	MHI	Hawai`i	8/6/2013	HAW-754	19.38145	−154.93578	14.25	26.04	9.868	5.381	51.725	93.011	16.52	76.5	0	20
2013	MHI	Hawai`i	8/6/2013	HAW-662	19.39416	−154.92583	5.65	13.51	4.202	0	0.9531	18.669	18.24	0.432	0	15
2013	MHI	Hawai`i	8/6/2013	HAW-759	19.49032	−154.81463	23	37.94	9.273	5.018	4.518	56.745	15.65	41.1	0	22.5
2013	MHI	Hawai`i	8/6/2013	HAW-750	19.44336	−154.85563	14.4	34.99	15.07	4.586	5.7475	60.393	32.74	27.66	0	17.5
2013	MHI	Hawai`i	8/6/2013	HAW-751	19.42718	−154.87537	21.8	10.49	8.741	1.808	0.3422	21.384	8.336	13.05	0	9
2013	MHI	Hawai`i	8/6/2013	HAW-663	19.42318	−154.88391	5.5	0.259	2.033	0	0.1511	2.4434	2.443	0	0	17.5
2013	MHI	Hawai`i	8/6/2013	HAW-757	19.36724	−154.95484	11.75	12.83	9.17	5.204	2.6183	29.82	15.46	14.36	0	15
2013	MHI	Hawai`i	8/6/2013	HAW-755	19.3734	−154.9464	12.05	11.13	11.36	2.495	4.5303	29.522	14.36	14.11	1.0546	15
2013	MHI	Hawai`i	8/7/2013	HAW-679	19.08246	−155.54523	23.7	4.162	9.289	12.75	11.779	37.984	23.8	5.998	8.1912	17.5
2013	MHI	Hawai`i	8/7/2013	HAW-697	19.04886	−155.55204	13.6	12.95	4.073	2.285	1.6916	21.004	13.59	7.414	0	27.5
2013	MHI	Hawai`i	8/7/2013	HAW-735	19.03912	−155.55667	12.75	30.89	7.067	14.18	11.66	63.804	29.61	32.09	2.1093	12.5
2013	MHI	Hawai`i	8/7/2013	HAW-687	19.00462	−155.58382	15.2	21.96	9.303	0.34	3.1087	34.715	21.13	13.59	0	15

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Hawai`i	8/7/2013	HAW-733	18.96727	−155.61379	4.25	34.19	2.573	0.247	0.2865	37.299	11.22	26.08	0	5
2013	MHI	Hawai`i	8/7/2013	HAW-705	19.13277	−155.5024	12.7	55.28	5.604	4.151	2.922	67.953	9.905	58.05	0	20
2013	MHI	Hawai`i	8/7/2013	HAW-719	19.10353	−155.53123	9	34.85	4.56	1.478	2.9716	43.858	29.82	14.04	0	32.5
2013	MHI	Hawai`i	8/7/2013	HAW-700	19.08268	−155.54811	22.7	6.896	4.302	11.87	2.0819	25.152	8.261	6.746	10.145	15
2013	MHI	Hawai`i	8/7/2013	HAW-721	19.02497	−155.56913	5.85	28.99	9.925	3.656	22.128	64.704	42.05	22.66	0	14
2013	MHI	Hawai`i	8/7/2013	HAW-675	18.9636	−155.60637	22.4	7.165	3.118	6.07	1.0985	17.452	11.87	5.582	0	70
2013	MHI	Hawai`i	8/7/2013	HAW-732	18.91923	−155.68496	10.6	20.75	7.228	1.515	3.7991	33.294	19.55	13.75	0	7.5
2013	MHI	Hawai`i	8/8/2013	HAW-532	20.03786	−155.83679	8.7	10.48	12.8	2.755	5.5174	31.548	20.46	11.08	0	20
2013	MHI	Hawai`i	8/8/2013	HAW-486	19.98997	−155.83813	19.35	11.22	8.617	1.774	0.4556	22.065	15.91	6.159	0	32.5
2013	MHI	Hawai`i	8/8/2013	HAW-591	19.94641	−155.87149	1.6	9.385	6.385	0.375	1.5495	17.694	16.5	0.821	0.3719	27.5
2013	MHI	Hawai`i	8/8/2013	HAW-549	19.91792	−155.89317	6.8	6.066	0.846	0.159	0.502	7.573	7.573	0	0	33.5
2013	MHI	Hawai`i	8/8/2013	HAW-583	19.91123	−155.89698	2.2	12.1	1.79	0.21	1.1625	15.258	14.44	0.821	0	60
2013	MHI	Hawai`i	8/8/2013	HAW-526	19.89859	−155.90916	7.55	5.204	1.778	1.422	0.6949	9.1001	5.995	3.106	0	65
2013	MHI	Hawai`i	8/8/2013	HAW-488	20.063	−155.85326	22.3	5.634	2.307	1.802	0.2638	10.006	6.418	3.588	0	12.5
2013	MHI	Hawai`i	8/8/2013	HAW-540	20.00345	−155.8333	15.75	7.371	44.2	7.975	34.742	94.288	84.47	9.818	0	35
2013	MHI	Hawai`i	8/8/2013	HAW-582	19.97724	−155.83395	3.4	9.063	2.906	0	5.8014	17.77	13.9	3.874	0	50
2013	MHI	Hawai`i	8/8/2013	HAW-492	19.9391	−155.88289	18.75	18.24	19.23	4.499	5.3579	47.331	40.44	6.887	0	32.5
2013	MHI	Hawai`i	8/8/2013	HAW-617	19.89316	−155.90632	4.6	17.44	2.139	0.105	1.6372	21.326	19.43	1.895	0	57.5
2013	MHI	Hawai`i	8/8/2013	HAW-535	19.87847	−155.91609	8.5	10.27	11.2	2.414	0.177	24.055	11.84	12.22	0	40
2013	MHI	Hawai`i	8/8/2013	HAW-623	19.8621	−155.92813	12.45	8.165	3.317	6.93	9.6074	28.019	18.15	9.869	0	40
2013	MHI	Maui	8/9/2013	MAI-493	20.81489	−156.06313	8.8	41.47	9.861	6.403	0.8583	58.597	13.07	45.53	0	4
2013	MHI	Maui	8/9/2013	MAI-486	20.85534	−156.12395	24.3	22.68	12.65	3.274	0.7716	39.374	4.609	34.76	0	3.5
2013	MHI	Maui	8/9/2013	MAI-488	20.86477	−156.14077	13.85	45.18	11.81	5.24	1.4808	63.701	7.471	43.24	12.987	4
2013	MHI	Maui	8/9/2013	MAI-572	20.85941	−156.14049	4.9	8.347	6.269	0	0.0954	14.711	7.942	6.769	0	2.5
2013	MHI	Maui	8/9/2013	MAI-568	20.88077	−156.17862	24.1	25.64	9.996	11.84	6.8631	54.339	16.45	28.83	9.0605	5
2013	MHI	Maui	8/9/2013	MAI-500	20.91567	−156.21738	12.1	21.25	13.73	0.327	7.1267	42.434	14.12	28.31	0	3.5
2013	MHI	Maui	8/9/2013	MAI-471	20.81943	−156.06585	23.2	6.985	3.293	0.752	0.7475	11.778	6.242	5.536	0	3.5
2013	MHI	Maui	8/9/2013	MAI-484	20.82797	−156.10058	4.05	12.06	6.012	0.791	15.422	34.29	26.16	8.131	0	22.5
2013	MHI	Maui	8/9/2013	MAI-492	20.84505	−156.12125	21.05	28.93	32.88	35.45	5.0388	102.29	38.38	62.92	0.9886	13.5
2013	MHI	Maui	8/9/2013	MAI-571	20.89575	−156.1962	13.65	17.35	9.674	1.296	0.5268	28.846	10.87	17.98	0	10
2013	MHI	Maui	8/9/2013	MAI-497	20.90755	−156.21247	16.4	6.25	9.192	2.143	0.4019	17.986	5.58	12.41	0	3
2013	MHI	Maui	8/9/2013	MAI-477	20.93379	−156.23528	22.95	1.089	7.389	0	0	8.4781	3.114	5.364	0	1.5
2013	MHI	Maui	8/9/2013	MAI-493	20.814886	−156.063135	8.8	41.47	9.86	6.40	0.86	58.60	13.07	45.53	0.00	4
2013	MHI	Maui	8/9/2013	MAI-486	20.855337	−156.123946	24.3	22.68	12.65	3.27	0.77	39.37	4.61	34.76	0.00	3.5
2013	MHI	Maui	8/9/2013	MAI-488	20.864773	−156.140770	13.85	45.18	11.81	5.24	1.48	63.70	7.47	43.24	12.99	4
2013	MHI	Maui	8/9/2013	MAI-572	20.859412	−156.140487	4.9	8.35	6.27	0.00	0.10	14.71	7.94	6.77	0.00	2.5
2013	MHI	Maui	8/9/2013	MAI-568	20.880767	−156.178622	24.1	25.64	10.00	11.84	6.86	54.34	16.45	28.83	9.06	5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Maui	8/9/2013	MAI-500	20.915670	–156.217380	12.1	21.25	13.73	0.33	7.13	42.43	14.12	28.31	0.00	3.5
2013	MHI	Maui	8/9/2013	MAI-471	20.819433	–156.065849	23.2	6.98	3.29	0.75	0.75	11.78	6.24	5.54	0.00	3.5
2013	MHI	Maui	8/9/2013	MAI-484	20.827971	–156.100578	4.05	12.06	6.01	0.79	15.42	34.29	26.16	8.13	0.00	22.5
2013	MHI	Maui	8/9/2013	MAI-492	20.845052	–156.121254	21.05	28.93	32.88	35.45	5.04	102.29	38.38	62.92	0.99	13.5
2013	MHI	Maui	8/9/2013	MAI-571	20.895749	–156.196200	13.65	17.35	9.67	1.30	0.53	28.85	10.87	17.98	0.00	10
2013	MHI	Maui	8/9/2013	MAI-497	20.907551	–156.212466	16.4	6.25	9.19	2.14	0.40	17.99	5.58	12.41	0.00	3
2013	MHI	Maui	8/9/2013	MAI-477	20.933789	–156.235279	22.95	1.09	7.39	0.00	0.00	8.48	3.11	5.36	0.00	1.5
2013	MHI	Maui	8/10/2013	MAI-472	20.91798	–156.69872	3.65	4.261	2.098	0.313	3.0137	9.6853	8.717	0.968	0	35
2013	MHI	Maui	8/10/2013	MAI-480	20.87631	–156.68547	7.15	1.377	1.993	0.32	9.9475	13.637	13.64	0	0	22.5
2013	MHI	Maui	8/10/2013	MAI-576	20.8488	–156.66217	9.4	0.563	1.608	0	1.5691	3.7406	3.741	0	0	5
2013	MHI	Maui	8/10/2013	MAI-470	20.82309	–156.63266	4.7	0.361	1.836	0.16	0.3373	2.6951	2.535	0.16	0	1.5
2013	MHI	Maui	8/10/2013	MAI-474	20.83161	–156.64108	5.2	0.422	1.652	0	2.2696	4.3437	3.825	0.518	0	4
2013	MHI	Maui	8/10/2013	MAI-478	20.8526	–156.66441	6.9	1.108	0.614	0	0.2692	1.9914	1.023	0.968	0	3.5
2013	MHI	Maui	8/10/2013	MAI-468	20.92632	–156.69717	1.95	27.02	8.577	1.854	5.3095	42.764	35.8	6.183	0.7768	15
2013	MHI	Maui	8/10/2013	MAI-464	20.86186	–156.67585	7.95	7.131	3.492	0.361	0.5684	11.553	7.668	3.884	0	42.5
2013	MHI	Maui	8/10/2013	MAI-482	20.8466	–156.65783	2.85	0.25	0.877	0	0	1.1272	1.127	0	0	4.5
2013	MHI	Maui	8/10/2013	MAI-481	20.83435	–156.65094	8.35	3.742	4.713	1.331	0.2009	9.9858	6.412	2.384	1.1892	7.5
2013	MHI	Maui	8/10/2013	MAI-583	20.85585	–156.66659	3.3	7.24	2.436	0.144	9.9743	19.794	9.811	9.983	0	22.5
2013	MHI	Maui	8/10/2013	MAI-565	20.8598	–156.6741	8.35	9.782	4.252	1.238	0.0904	15.363	6.572	8.791	0	27.5
2013	MHI	Maui	8/10/2013	MAI-472	20.917977	–156.698721	3.65	4.26	2.10	0.31	3.01	9.69	8.72	0.97	0.00	35
2013	MHI	Maui	8/10/2013	MAI-480	20.876305	–156.685469	7.15	1.38	1.99	0.32	9.95	13.64	13.64	0.00	0.00	22.5
2013	MHI	Maui	8/10/2013	MAI-576	20.848803	–156.662168	9.4	0.56	1.61	0.00	1.57	3.74	3.74	0.00	0.00	5
2013	MHI	Maui	8/10/2013	MAI-470	20.823086	–156.632665	4.7	0.36	1.84	0.16	0.34	2.70	2.53	0.16	0.00	1.5
2013	MHI	Maui	8/10/2013	MAI-474	20.831606	–156.641085	5.2	0.42	1.65	0.00	2.27	4.34	3.83	0.52	0.00	4
2013	MHI	Maui	8/10/2013	MAI-478	20.852598	–156.664409	6.9	1.11	0.61	0.00	0.27	1.99	1.02	0.97	0.00	3.5
2013	MHI	Maui	8/10/2013	MAI-468	20.926321	–156.697168	1.95	27.02	8.58	1.85	5.31	42.76	35.80	6.18	0.78	15
2013	MHI	Maui	8/10/2013	MAI-464	20.861858	–156.675855	7.95	7.13	3.49	0.36	0.57	11.55	7.67	3.88	0.00	42.5
2013	MHI	Maui	8/10/2013	MAI-482	20.846599	–156.657830	2.85	0.25	0.88	0.00	0.00	1.13	1.13	0.00	0.00	4.5
2013	MHI	Maui	8/10/2013	MAI-481	20.834349	–156.650937	8.35	3.74	4.71	1.33	0.20	9.99	6.41	2.38	1.19	7.5
2013	MHI	Maui	8/10/2013	MAI-583	20.855853	–156.666594	3.3	7.24	2.44	0.14	9.97	19.79	9.81	9.98	0.00	22.5
2013	MHI	Maui	8/10/2013	MAI-565	20.859800	–156.674095	8.35	9.78	4.25	1.24	0.09	15.36	6.57	8.79	0.00	27.5
2013	MHI	Moloka`i	8/11/2013	MOL-482	21.04763	–156.9266	4.75	25.89	3.064	0.13	0	29.08	17.66	11.42	0	40
2013	MHI	Moloka`i	8/11/2013	MOL-471	21.06391	–156.98067	9.2	1.788	2.719	0	0.0135	4.5206	3.438	1.083	0	30
2013	MHI	Moloka`i	8/11/2013	MOL-493	21.07069	–156.9977	1.3	0.283	0.552	0	0	0.8351	0.835	0	0	5
2013	MHI	Moloka`i	8/11/2013	MOL-451	21.06972	–157.01452	20.5	9.218	10.11	14.59	4.0842	38.007	12.06	17.75	8.1912	32.5
2013	MHI	Moloka`i	8/11/2013	MOL-448	21.08717	–157.1067	12.6	4.024	1.603	3.148	0.0901	8.865	4.412	4.453	0	77.5
2013	MHI	Moloka`i	8/11/2013	MOL-456	21.08684	–157.0799	2.25	28.65	2.908	0	0	31.557	17.17	14.38	0	5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Moloka`i	8/11/2013	MOL-465	21.04681	–156.93979	19.3	20	7.351	2.076	4.4321	33.859	25.15	8.713	0	55
2013	MHI	Moloka`i	8/11/2013	MOL-467	21.05541	–156.95994	11.05	124.4	2.108	5.705	0.8277	133.06	122.2	10.84	0	60
2013	MHI	Moloka`i	8/11/2013	MOL-490	21.0593	–156.96112	4.85	15.73	4.572	9.366	0	29.667	12.84	16.83	0	47.5
2013	MHI	Moloka`i	8/11/2013	MOL-445	21.08371	–157.1205	20.9	9.067	3.141	8.586	13.246	34.041	24.38	9.658	0	81.5
2013	MHI	Moloka`i	8/11/2013	MOL-489	21.0893	–157.12201	1.7	24.83	3.919	2.108	0	30.86	23.71	7.148	0	13.5
2013	MHI	Moloka`i	8/11/2013	MOL-461	21.08337	–157.1328	10.3	8.626	2.198	7.58	0.0291	18.434	10	8.431	0	65
2013	MHI	Moloka`i	8/11/2013	MOL-482	21.047628	–156.926597	4.75	25.89	3.06	0.13	0.00	29.08	17.66	11.42	0.00	40
2013	MHI	Moloka`i	8/11/2013	MOL-471	21.063914	–156.980669	9.2	1.79	2.72	0.00	0.01	4.52	3.44	1.08	0.00	30
2013	MHI	Moloka`i	8/11/2013	MOL-493	21.070694	–156.997703	1.3	0.28	0.55	0.00	0.00	0.84	0.84	0.00	0.00	5
2013	MHI	Moloka`i	8/11/2013	MOL-451	21.069722	–157.014522	20.5	9.22	10.11	14.59	4.08	38.01	12.06	17.75	8.19	32.5
2013	MHI	Moloka`i	8/11/2013	MOL-448	21.087173	–157.106696	12.6	4.02	1.60	3.15	0.09	8.86	4.41	4.45	0.00	77.5
2013	MHI	Moloka`i	8/11/2013	MOL-456	21.086840	–157.079898	2.25	28.65	2.91	0.00	0.00	31.56	17.17	14.38	0.00	5
2013	MHI	Moloka`i	8/11/2013	MOL-465	21.046809	–156.939787	19.3	20.00	7.35	2.08	4.43	33.86	25.15	8.71	0.00	55
2013	MHI	Moloka`i	8/11/2013	MOL-467	21.055409	–156.959935	11.05	124.42	2.11	5.70	0.83	133.06	122.22	10.84	0.00	60
2013	MHI	Moloka`i	8/11/2013	MOL-490	21.059305	–156.961115	4.85	15.73	4.57	9.37	0.00	29.67	12.84	16.83	0.00	47.5
2013	MHI	Moloka`i	8/11/2013	MOL-445	21.083710	–157.120501	20.9	9.07	3.14	8.59	13.25	34.04	24.38	9.66	0.00	81.5
2013	MHI	Moloka`i	8/11/2013	MOL-489	21.089300	–157.122008	1.7	24.83	3.92	2.11	0.00	30.86	23.71	7.15	0.00	13.5
2013	MHI	Moloka`i	8/11/2013	MOL-461	21.083370	–157.132798	10.3	8.63	2.20	7.58	0.03	18.43	10.00	8.43	0.00	65
2013	MHI	Kaua`i	8/13/2013	KAU-253	22.14425	–159.28875	13.75	0.113	3.091	0.178	0.0059	3.3875	1.782	1.605	0	1
2013	MHI	Kaua`i	8/13/2013	KAU-228	22.08074	–159.29588	19.55	0.27	2.858	0	2.2693	5.3974	4.139	1.259	0	2
2013	MHI	Kaua`i	8/13/2013	KAU-248	22.04769	–159.31018	16.55	2.305	3.679	0	1.3603	7.345	2.541	4.804	0	1
2013	MHI	Kaua`i	8/13/2013	KAU-298	21.99459	–159.33639	4.7	1.94	2.596	0	0.002	4.538	3.026	1.512	0	1
2013	MHI	Kaua`i	8/13/2013	KAU-262	21.95563	–159.33087	15.15	0.034	2.525	5.058	0.0702	7.6862	1.204	1.425	5.0576	1
2013	MHI	Kaua`i	8/13/2013	KAU-294	21.93601	–159.35266	5.45	15.77	4.229	0.141	6.4839	26.623	16.21	10.41	0	10
2013	MHI	Kaua`i	8/13/2013	KAU-227	21.9113	–159.37993	18.8	2.923	3.871	0.005	2.4874	9.2861	6.298	2.988	0	5
2013	MHI	Kaua`i	8/13/2013	KAU-286	21.8974	–159.39515	15.8	0.029	2.69	0	0.4012	3.1203	1.515	1.605	0	3
2013	MHI	Kaua`i	8/13/2013	KAU-231	21.99785	–159.32879	20	1.653	5.276	0	3.7161	10.645	4.982	5.664	0	4
2013	MHI	Kaua`i	8/13/2013	KAU-246	21.96228	–159.32777	11.15	12.69	31.23	5.777	5.4066	55.099	16.68	38.42	0	10
2013	MHI	Kaua`i	8/13/2013	KAU-276	21.95617	–159.33746	4	21.67	2.08	0	0.7452	24.49	7.575	16.92	0	16.5
2013	MHI	Ni`ihau	8/14/2013	NII-207	21.95723	–160.06936	5.4	8.388	2.117	0.835	0.0854	11.425	1.634	9.791	0	5.5
2013	MHI	Ni`ihau	8/14/2013	NII-197	21.90111	–160.07099	23.15	14.53	4.87	31.56	3.7947	54.758	6.463	22.91	25.383	5
2013	MHI	Ni`ihau	8/14/2013	NII-215	21.88904	–160.08385	10.7	42.35	121.4	25.69	8.9849	198.38	37.16	126.4	34.796	15
2013	MHI	Ni`ihau	8/14/2013	NII-209	21.8786	–160.11467	4.5	0.143	26.01	0	0	26.148	6.465	19.68	0	0
2013	MHI	Ni`ihau	8/14/2013	NII-205	21.86897	–160.14998	4.1	16.28	4.597	12.7	0.1609	33.734	6.606	27.13	0	11.5
2013	MHI	Ni`ihau	8/14/2013	NII-190	21.83896	–160.16314	23.7	12.86	12.2	11.21	10.002	46.276	2.635	23.12	20.517	1
2013	MHI	Ni`ihau	8/14/2013	NII-204	21.82393	–160.1837	9.35	0.543	2.867	0	3.3728	6.7821	2.191	4.591	0	3.5
2013	MHI	Ni`ihau	8/14/2013	NII-199	21.94093	–160.07127	15.95	3.593	5.142	0.178	0.8652	9.7784	9.028	0.75	0	5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Ni`ihau	8/14/2013	NII-206	21.91621	–160.079	4.9	11.15	43.9	19.73	1.6326	76.412	27.51	29.17	19.731	2
2013	MHI	Ni`ihau	8/14/2013	NII-195	21.87901	–160.0904	27.3	8.614	8.86	31.58	14.12	63.176	2.667	40.22	20.289	1
2013	MHI	Ni`ihau	8/14/2013	NII-303	21.85087	–160.16359	12.55	0.031	2.117	0	0.0234	2.1716	2.172	0	0	4
2013	MHI	Ni`ihau	8/14/2013	NII-194	21.81438	–160.18243	24.1	0.146	2.742	0	0.2766	3.165	1.815	1.35	0	3.5
2013	MHI	Ni`ihau	8/14/2013	NII-210	21.80734	–160.19023	15.5	1.695	4.53	17.13	1.1587	24.514	5.958	1.425	17.131	5
2013	MHI	Ni`ihau	8/14/2013	NII-272	21.78182	–160.21471	3.9	46.06	11	4.336	7.2679	68.671	21.49	37.27	9.9089	14
2013	MHI	Ni`ihau	8/14/2013	NII-207	21.957230	–160.069358	5.4	8.39	2.12	0.84	0.09	11.43	1.63	9.79	0.00	5.5
2013	MHI	Ni`ihau	8/14/2013	NII-197	21.901113	–160.070988	23.15	14.53	4.87	31.56	3.79	54.76	6.46	22.91	25.38	5
2013	MHI	Ni`ihau	8/14/2013	NII-215	21.889042	–160.083847	10.7	42.35	121.36	25.69	8.98	198.38	37.16	126.42	34.80	15
2013	MHI	Ni`ihau	8/14/2013	NII-209	21.878596	–160.114668	4.5	0.14	26.01	0.00	0.00	26.15	6.46	19.68	0.00	0
2013	MHI	Ni`ihau	8/14/2013	NII-205	21.868972	–160.149981	4.1	16.28	4.60	12.70	0.16	33.73	6.61	27.13	0.00	11.5
2013	MHI	Ni`ihau	8/14/2013	NII-190	21.838962	–160.163144	23.7	12.86	12.20	11.21	10.00	46.28	2.64	23.12	20.52	1
2013	MHI	Ni`ihau	8/14/2013	NII-204	21.823926	–160.183698	9.35	0.54	2.87	0.00	3.37	6.78	2.19	4.59	0.00	3.5
2013	MHI	Ni`ihau	8/14/2013	NII-199	21.940927	–160.071268	15.95	3.59	5.14	0.18	0.87	9.78	9.03	0.75	0.00	5
2013	MHI	Ni`ihau	8/14/2013	NII-206	21.916205	–160.078995	4.9	11.15	43.90	19.73	1.63	76.41	27.51	29.17	19.73	2
2013	MHI	Ni`ihau	8/14/2013	NII-195	21.879009	–160.090398	27.3	8.61	8.86	31.58	14.12	63.18	2.67	40.22	20.29	1
2013	MHI	Ni`ihau	8/14/2013	NII-303	21.850868	–160.163588	12.55	0.03	2.12	0.00	0.02	2.17	2.17	0.00	0.00	4
2013	MHI	Ni`ihau	8/14/2013	NII-194	21.814380	–160.182434	24.1	0.15	2.74	0.00	0.28	3.17	1.81	1.35	0.00	3.5
2013	MHI	Ni`ihau	8/14/2013	NII-210	21.807339	–160.190234	15.5	1.69	4.53	17.13	1.16	24.51	5.96	1.42	17.13	5
2013	MHI	Ni`ihau	8/14/2013	NII-272	21.781820	–160.214714	3.9	46.06	11.00	4.34	7.27	68.67	21.49	37.27	9.91	14
2013	MHI	Kaua`i	8/15/2013	KAU-363	22.16839	–159.70054	13.25	52.87	32.99	33.81	11.369	131.03	23.16	85.6	22.27	6.5
2013	MHI	Kaua`i	8/15/2013	KAU-346	22.16369	–159.69747	3.05	37.41	2.372	0.821	31.358	71.959	8.108	63.85	0	7.5
2013	MHI	Kaua`i	8/15/2013	KAU-330	22.1417	–159.76622	25.8	3.476	4.972	1.586	0.042	10.075	1.813	8.262	0	3
2013	MHI	Kaua`i	8/15/2013	KAU-352	22.1183	–159.73855	2.75	7.787	3.359	3.95	0.0197	15.116	6.743	8.373	0	2
2013	MHI	Kaua`i	8/15/2013	KAU-333	22.08782	–159.77669	19.75	8.156	12.66	0	0.1409	20.961	4.535	16.43	0	2.5
2013	MHI	Kaua`i	8/15/2013	KAU-341	22.16819	–159.72291	21.5	31.93	8.747	12.62	4.4731	57.774	9.613	22.94	25.217	2.5
2013	MHI	Kaua`i	8/15/2013	KAU-357	22.16778	–159.68681	12.4	14.84	11.29	1.338	6.0287	33.501	10.51	22.99	0	5.5
2013	MHI	Kaua`i	8/15/2013	KAU-348	22.15611	–159.71093	3.15	11.38	2.515	1.411	2.4121	17.718	8.394	9.325	0	3
2013	MHI	Kaua`i	8/15/2013	KAU-361	22.15461	–159.72221	9.7	25.97	7.349	0.062	0.1777	33.561	9.143	24.42	0	6
2013	MHI	Kaua`i	8/15/2013	KAU-347	22.12306	–159.73647	7.1	17.59	3.039	1.6	0.3666	22.591	8.486	14.1	0	3.5
2013	MHI	Kaua`i	8/15/2013	KAU-320	22.10336	–159.76027	23.5	5.815	15.83	5.619	1.5546	28.821	20.92	6.181	1.7173	6.5
2013	MHI	Ni`ihau	8/16/2013	NII-259	21.98708	–160.12524	14.65	0.003	2.481	5.034	0.4313	7.9492	1.8	6.149	0	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-249	21.95996	–160.17195	19.2	39.72	8.372	12.29	5.2084	65.597	15.25	50.34	0	1
2013	MHI	Ni`ihau	8/16/2013	NII-300	21.94105	–160.17774	16.65	13.33	3.675	9.522	0.1302	26.66	0.845	8.648	17.167	0.5
2013	MHI	Ni`ihau	8/16/2013	NII-285	21.9281	–160.18484	4.9	276.9	5.952	3.1	2.1717	288.17	15.53	260.2	12.468	12.5
2013	MHI	Ni`ihau	8/16/2013	NII-297	21.90993	–160.21649	16.15	49.17	16.44	19.46	2.0565	87.13	11.12	54.97	21.044	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-251	21.96618	–160.14099	21.75	21.85	9.205	16.62	1.4322	49.105	6.823	25.66	16.622	2.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Ni`ihau	8/16/2013	NII-296	21.95337	–160.1468	16.05	46.45	26.74	37.41	10.769	121.38	9.19	86.36	25.827	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-286	21.93802	–160.16508	2.65	23.15	5.829	7.009	1.3923	37.376	5.39	31.99	0	3
2013	MHI	Ni`ihau	8/16/2013	NII-293	21.93568	–160.20241	21.45	22.2	20.57	8.273	0.6533	51.69	5.697	45.99	0	1
2013	MHI	Ni`ihau	8/16/2013	NII-287	21.90959	–160.20206	5.2	16.06	2.473	3.301	0.0053	21.844	7.347	14.5	0	1
2013	MHI	Ni`ihau	8/16/2013	NII-268	21.8842	–160.23492	6.35	75.46	13.74	8.408	2.9246	100.53	32.04	68.49	0	3
2013	MHI	Ni`ihau	8/16/2013	NII-259	21.987083	–160.125235	14.65	0.00	2.48	5.03	0.43	7.95	1.80	6.15	0.00	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-249	21.959964	–160.171950	19.2	39.72	8.37	12.29	5.21	65.60	15.25	50.34	0.00	1
2013	MHI	Ni`ihau	8/16/2013	NII-300	21.941052	–160.177742	16.65	13.33	3.67	9.52	0.13	26.66	0.84	8.65	17.17	0.5
2013	MHI	Ni`ihau	8/16/2013	NII-285	21.928105	–160.184842	4.9	276.95	5.95	3.10	2.17	288.17	15.53	260.17	12.47	12.5
2013	MHI	Ni`ihau	8/16/2013	NII-297	21.909935	–160.216487	16.15	49.17	16.44	19.46	2.06	87.13	11.12	54.97	21.04	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-251	21.966178	–160.140994	21.75	21.85	9.21	16.62	1.43	49.11	6.82	25.66	16.62	2.5
2013	MHI	Ni`ihau	8/16/2013	NII-296	21.953370	–160.146803	16.05	46.45	26.74	37.41	10.77	121.38	9.19	86.36	25.83	1.5
2013	MHI	Ni`ihau	8/16/2013	NII-286	21.938018	–160.165075	2.65	23.15	5.83	7.01	1.39	37.38	5.39	31.99	0.00	3
2013	MHI	Ni`ihau	8/16/2013	NII-293	21.935677	–160.202412	21.45	22.20	20.57	8.27	0.65	51.69	5.70	45.99	0.00	1
2013	MHI	Ni`ihau	8/16/2013	NII-287	21.909591	–160.202065	5.2	16.06	2.47	3.30	0.01	21.84	7.35	14.50	0.00	1
2013	MHI	Ni`ihau	8/16/2013	NII-268	21.884204	–160.234915	6.35	75.46	13.74	8.41	2.92	100.53	32.04	68.49	0.00	3
2013	MHI	Kaua`i	8/17/2013	KAU-266	21.88104	–159.49099	15.8	27.4	11.79	0.241	0.6524	40.089	10.05	30.04	0	11.5
2013	MHI	Kaua`i	8/17/2013	KAU-223	21.86981	–159.51187	29.1	0.067	1.78	0	0.128	1.9749	1.975	0	0	2
2013	MHI	Kaua`i	8/17/2013	KAU-252	21.88916	–159.56745	13.8	3.289	11.98	0	1.3226	16.591	5.851	10.74	0	10
2013	MHI	Kaua`i	8/17/2013	KAU-292	21.8929	–159.6084	4.85	3.259	6.327	0.443	2.206	12.235	10.48	1.759	0	11.5
2013	MHI	Kaua`i	8/17/2013	KAU-297	21.89968	–159.61136	4.45	10.01	2.752	1.089	0.1394	13.986	10.04	3.948	0	16
2013	MHI	Kaua`i	8/17/2013	KAU-283	21.91752	–159.658	16.55	1.68	6.392	0.096	2.6461	10.813	9.406	1.407	0	6.5
2013	MHI	Kaua`i	8/17/2013	KAU-274	21.95393	–159.70635	9.3	0.059	0.096	0	0.0118	0.1667	0.167	0	0	2
2013	MHI	Kaua`i	8/17/2013	KAU-281	21.95539	–159.70066	5.25	0.1	0.206	0.045	0.0327	0.3838	0.384	0	0	2
2013	MHI	Kaua`i	8/17/2013	KAU-267	21.87837	–159.47192	3.7	13.79	6.9	1.648	1.2748	23.617	10.27	13.35	0	7.5
2013	MHI	Kaua`i	8/17/2013	KAU-271	21.87811	–159.47684	10.2	45.81	9.049	1.654	0.8212	57.336	11.06	46.28	0	3
2013	MHI	Kaua`i	8/17/2013	KAU-226	21.88107	–159.49982	19.85	1.022	4.221	0	2.0946	7.3378	1.649	5.689	0	1
2013	MHI	Kaua`i	8/17/2013	KAU-217	21.888	–159.57213	18.9	0.752	9.483	0	0.4033	10.638	6.828	3.81	0	20
2013	MHI	Kaua`i	8/17/2013	KAU-263	21.91213	–159.65217	16.2	0.76	3.997	0.007	0	4.7641	1.858	2.906	0	4.5
2013	MHI	Kaua`i	8/17/2013	KAU-251	21.95108	–159.67921	6.75	0.03	0.109	0	0	0.1388	0.139	0	0	2
2013	MHI	Kaua`i	8/17/2013	KAU-291	21.95187	–159.7026	12.85	2.208	7.462	0	1.8654	11.535	9.004	2.531	0	8.5
2013	MHI	O`ahu	8/18/2013	OAH-524	21.6997	–158.02915	14.2	13.96	8.203	1.892	4.4512	28.504	14.83	13.68	0	4
2013	MHI	O`ahu	8/18/2013	OAH-508	21.68698	–158.04889	23.4	2.424	4.738	0	0.1768	7.3391	3.305	4.034	0	5.5
2013	MHI	O`ahu	8/18/2013	OAH-554	21.67846	–158.04152	3.15	0.647	2.073	0	0.1004	2.8197	2.82	0	0	7
2013	MHI	O`ahu	8/18/2013	OAH-504	21.62143	–158.10065	23.9	2.131	4.466	0	0.8908	7.4884	5.742	1.746	0	20
2013	MHI	O`ahu	8/18/2013	OAH-532	21.60149	–158.11759	9.4	0.55	4.365	0.085	6.1615	11.161	8.885	2.276	0	4.5
2013	MHI	O`ahu	8/18/2013	OAH-523	21.58317	–158.16212	3.9	8.788	3.958	0.258	0.0467	13.051	9.854	3.197	0	10

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	O`ahu	8/18/2013	OAH-522	21.66921	–158.06214	11.1	0.222	2.585	0	0.0234	2.831	2.831	0	0	1
2013	MHI	O`ahu	8/18/2013	OAH-537	21.61841	–158.09855	8.65	12.56	9.222	0.134	2.1436	24.061	12.27	11.79	0	10
2013	MHI	O`ahu	8/18/2013	OAH-558	21.59508	–158.11047	4.05	6.203	4.002	0.684	0.5026	11.391	9.403	1.988	0	20
2013	MHI	O`ahu	8/18/2013	OAH-549	21.59095	–158.1215	3.45	0.091	2.439	0.145	0.1095	2.7834	2.639	0.145	0	7
2013	MHI	O`ahu	8/18/2013	OAH-515	21.59451	–158.14942	27.35	3.782	5.397	0.24	1.0853	10.504	7.766	2.739	0	47.5
2013	MHI	O`ahu	8/18/2013	OAH-511	21.59315	–158.15797	23.9	5.91	9.874	0.564	0.1165	16.464	8.136	8.328	0	42.5
2013	MHI	O`ahu	8/18/2013	OAH-524	21.699704	–158.029154	14.2	13.96	8.20	1.89	4.45	28.50	14.83	13.68	0.00	4
2013	MHI	O`ahu	8/18/2013	OAH-508	21.686984	–158.048895	23.4	2.42	4.74	0.00	0.18	7.34	3.30	4.03	0.00	5.5
2013	MHI	O`ahu	8/18/2013	OAH-554	21.678461	–158.041521	3.15	0.65	2.07	0.00	0.10	2.82	2.82	0.00	0.00	7
2013	MHI	O`ahu	8/18/2013	OAH-504	21.621434	–158.100646	23.9	2.13	4.47	0.00	0.89	7.49	5.74	1.75	0.00	20
2013	MHI	O`ahu	8/18/2013	OAH-532	21.601491	–158.117585	9.4	0.55	4.36	0.08	6.16	11.16	8.89	2.28	0.00	4.5
2013	MHI	O`ahu	8/18/2013	OAH-523	21.583172	–158.162124	3.9	8.79	3.96	0.26	0.05	13.05	9.85	3.20	0.00	10
2013	MHI	O`ahu	8/18/2013	OAH-522	21.669213	–158.062136	11.1	0.22	2.59	0.00	0.02	2.83	2.83	0.00	0.00	1
2013	MHI	O`ahu	8/18/2013	OAH-537	21.618414	–158.098546	8.65	12.56	9.22	0.13	2.14	24.06	12.27	11.79	0.00	10
2013	MHI	O`ahu	8/18/2013	OAH-558	21.595084	–158.110473	4.05	6.20	4.00	0.68	0.50	11.39	9.40	1.99	0.00	20
2013	MHI	O`ahu	8/18/2013	OAH-549	21.590949	–158.121503	3.45	0.09	2.44	0.14	0.11	2.78	2.64	0.14	0.00	7
2013	MHI	O`ahu	8/18/2013	OAH-515	21.594508	–158.149417	27.35	3.78	5.40	0.24	1.09	10.50	7.77	2.74	0.00	47.5
2013	MHI	O`ahu	8/18/2013	OAH-511	21.593152	–158.157968	23.9	5.91	9.87	0.56	0.12	16.46	8.14	8.33	0.00	42.5
2013	MHI	Moloka`i	8/19/2013	MOL-505	21.18395	–157.25198	7.85	1.195	14.21	0.176	0.3093	15.885	6.443	9.442	0	1
2013	MHI	Moloka`i	8/19/2013	MOL-509	21.13993	–157.29331	7.25	0.243	5.009	0.004	352.13	357.38	208.2	149.2	0	1
2013	MHI	Moloka`i	8/19/2013	MOL-502	21.12186	–157.30438	13.15	78.92	26.5	1.64	12.924	119.97	22.63	87.99	9.3594	14
2013	MHI	Moloka`i	8/19/2013	MOL-500	21.08781	–157.29736	19.25	5.227	11.78	0	0.6082	17.614	3.727	13.89	0	1
2013	MHI	Moloka`i	8/19/2013	MOL-506	21.09063	–157.29026	7.15	4.315	2.152	0	1.1258	7.5935	2.8	4.793	0	2.5
2013	MHI	Moloka`i	8/19/2013	MOL-512	21.0844	–157.24283	3	32.37	2.461	0.939	0.1439	35.913	6.435	29.48	0	11
2013	MHI	Moloka`i	8/19/2013	MOL-514	21.08532	–157.25718	4.65	5.27	3.778	1.555	0.6599	11.263	6.489	4.774	0	12.5
2013	MHI	Moloka`i	8/19/2013	MOL-497	21.07987	–157.25769	18.65	9.302	5.549	9.688	0.7438	25.283	12.33	12.95	0	20.5
2013	MHI	Moloka`i	8/19/2013	MOL-501	21.16082	–157.29008	28.75	58.81	12.41	1.025	27.033	99.276	27.04	48.32	23.92	7.5
2013	MHI	Moloka`i	8/19/2013	MOL-508	21.10531	–157.31183	9.5	5.759	3.462	0	0.4504	9.6716	4.789	4.882	0	7.5
2013	MHI	Moloka`i	8/19/2013	MOL-516	21.10414	–157.30966	3.65	4.01	3.55	0	0.4863	8.047	6.588	1.459	0	6.5
2013	MHI	Moloka`i	8/19/2013	MOL-510	21.09668	–157.31423	12.45	2.607	2.753	0	371.46	376.82	4.635	0.967	371.22	16.5
2013	MHI	Moloka`i	8/19/2013	MOL-499	21.08159	–157.28633	25.6	21.41	7.648	0.913	1.8369	31.809	8.839	22.97	0	11.5
2013	MHI	Moloka`i	8/19/2013	MOL-513	21.09088	–157.28107	3.7	8.941	1.492	0	0.0515	10.484	5.35	5.134	0	1.5
2013	MHI	Moloka`i	8/19/2013	MOL-505	21.183945	–157.251978	7.85	1.20	14.21	0.18	0.31	15.89	6.44	9.44	0.00	1
2013	MHI	Moloka`i	8/19/2013	MOL-509	21.139927	–157.293314	7.25	0.24	5.01	0.00	352.13	357.38	208.18	149.21	0.00	1
2013	MHI	Moloka`i	8/19/2013	MOL-502	21.121863	–157.304380	13.15	78.92	26.50	1.64	12.92	119.97	22.63	87.99	9.36	14
2013	MHI	Moloka`i	8/19/2013	MOL-500	21.087811	–157.297363	19.25	5.23	11.78	0.00	0.61	17.61	3.73	13.89	0.00	1
2013	MHI	Moloka`i	8/19/2013	MOL-506	21.090629	–157.290262	7.15	4.32	2.15	0.00	1.13	7.59	2.80	4.79	0.00	2.5

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								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Moloka`i	8/19/2013	MOL-512	21.084396	–157.242825	3	32.37	2.46	0.94	0.14	35.91	6.44	29.48	0.00	11
2013	MHI	Moloka`i	8/19/2013	MOL-514	21.085321	–157.257181	4.65	5.27	3.78	1.56	0.66	11.26	6.49	4.77	0.00	12.5
2013	MHI	Moloka`i	8/19/2013	MOL-497	21.079871	–157.257695	18.65	9.30	5.55	9.69	0.74	25.28	12.33	12.95	0.00	20.5
2013	MHI	Moloka`i	8/19/2013	MOL-501	21.160821	–157.290075	28.75	58.81	12.41	1.02	27.03	99.28	27.04	48.32	23.92	7.5
2013	MHI	Moloka`i	8/19/2013	MOL-508	21.105308	–157.311829	9.5	5.76	3.46	0.00	0.45	9.67	4.79	4.88	0.00	7.5
2013	MHI	Moloka`i	8/19/2013	MOL-516	21.104143	–157.309656	3.65	4.01	3.55	0.00	0.49	8.05	6.59	1.46	0.00	6.5
2013	MHI	Moloka`i	8/19/2013	MOL-510	21.096678	–157.314228	12.45	2.61	2.75	0.00	371.46	376.82	4.64	0.97	371.22	16.5
2013	MHI	Moloka`i	8/19/2013	MOL-499	21.081587	–157.286328	25.6	21.41	7.65	0.91	1.84	31.81	8.84	22.97	0.00	11.5
2013	MHI	Moloka`i	8/19/2013	MOL-513	21.090883	–157.281068	3.7	8.94	1.49	0.00	0.05	10.48	5.35	5.13	0.00	1.5
2013	MHI	Moloka`i	8/20/2013	MOL-443	21.17694	–156.76639	4.1	96.27	5.29	7.103	3.0587	111.72	28.97	82.75	0	1.5
2013	MHI	Moloka`i	8/20/2013	MOL-435	21.1686	–156.84092	8.65	8.321	72.74	1.855	1.5271	84.448	17.02	67.42	0	1
2013	MHI	Moloka`i	8/20/2013	MOL-430	21.16802	–156.86231	22.75	15.36	7.771	0.012	1.2427	24.381	6.405	6.814	11.162	1
2013	MHI	Moloka`i	8/20/2013	MOL-444	21.17069	–156.93566	4.1	0.783	9.214	0	4.2317	14.228	8.29	5.938	0	1
2013	MHI	Moloka`i	8/20/2013	MOL-426	21.18591	–156.9461	25	27.25	6.216	6.572	6.2335	46.275	16.39	29.88	0	11.5
2013	MHI	Moloka`i	8/20/2013	MOL-437	21.18218	–156.94722	12.5	32.92	17.11	5.641	17.382	73.05	22.42	50.63	0	13.5
2013	MHI	Moloka`i	8/20/2013	MOL-441	21.1754	–156.75033	4.3	23.09	5.605	2.856	4.6992	36.254	19	16.2	1.0546	3.5
2013	MHI	Moloka`i	8/20/2013	MOL-438	21.17746	–156.77569	15.25	7.618	17.13	0	0.9624	25.713	8.901	16.81	0	1.5
2013	MHI	Moloka`i	8/20/2013	MOL-425	21.1762	–156.78884	22.95	21.83	26.92	5.449	1.4908	55.688	4.911	50.78	0	2
2013	MHI	Moloka`i	8/20/2013	MOL-440	21.16553	–156.84961	3	0.41	1.567	0.035	0.1158	2.1278	2.128	0	0	13
2013	MHI	Moloka`i	8/20/2013	MOL-436	21.16909	–156.87167	12.05	0.768	8.909	1.175	6.4714	17.323	10.52	6.803	0	5
2013	MHI	Moloka`i	8/20/2013	MOL-429	21.16691	–156.87683	18.5	10.5	5.912	1.491	1.8282	19.736	5.572	14.16	0	1
2013	MHI	Moloka`i	8/20/2013	MOL-439	21.17159	–156.9232	9.9	30.16	13.84	2.121	5.0649	51.187	15.36	35.82	0	4
2013	MHI	Moloka`i	8/20/2013	MOL-443	21.176944	–156.766395	4.1	96.27	5.29	7.10	3.06	111.72	28.97	82.75	0.00	1.5
2013	MHI	Moloka`i	8/20/2013	MOL-435	21.168598	–156.840919	8.65	8.32	72.74	1.85	1.53	84.45	17.02	67.42	0.00	1
2013	MHI	Moloka`i	8/20/2013	MOL-430	21.168022	–156.862310	22.75	15.36	7.77	0.01	1.24	24.38	6.41	6.81	11.16	1
2013	MHI	Moloka`i	8/20/2013	MOL-444	21.170687	–156.935657	4.1	0.78	9.21	0.00	4.23	14.23	8.29	5.94	0.00	1
2013	MHI	Moloka`i	8/20/2013	MOL-426	21.185909	–156.946097	25	27.25	6.22	6.57	6.23	46.27	16.39	29.88	0.00	11.5
2013	MHI	Moloka`i	8/20/2013	MOL-437	21.182184	–156.947224	12.5	32.92	17.11	5.64	17.38	73.05	22.42	50.63	0.00	13.5
2013	MHI	Moloka`i	8/20/2013	MOL-441	21.175399	–156.750328	4.3	23.09	5.61	2.86	4.70	36.25	19.00	16.20	1.05	3.5
2013	MHI	Moloka`i	8/20/2013	MOL-438	21.177457	–156.775694	15.25	7.62	17.13	0.00	0.96	25.71	8.90	16.81	0.00	1.5
2013	MHI	Moloka`i	8/20/2013	MOL-425	21.176199	–156.788845	22.95	21.83	26.92	5.45	1.49	55.69	4.91	50.78	0.00	2
2013	MHI	Moloka`i	8/20/2013	MOL-440	21.165525	–156.849615	3	0.41	1.57	0.04	0.12	2.13	2.13	0.00	0.00	13
2013	MHI	Moloka`i	8/20/2013	MOL-436	21.169088	–156.871671	12.05	0.77	8.91	1.18	6.47	17.32	10.52	6.80	0.00	5
2013	MHI	Moloka`i	8/20/2013	MOL-429	21.166907	–156.876826	18.5	10.50	5.91	1.49	1.83	19.74	5.57	14.16	0.00	1
2013	MHI	Moloka`i	8/20/2013	MOL-439	21.171589	–156.923202	9.9	30.16	13.84	2.12	5.06	51.19	15.36	35.82	0.00	4
2013	MHI	Lāna`i	8/21/2013	LAN-238	20.88844	–156.85221	17.85	9.326	8.641	6.692	3.3455	28.005	6.702	21.3	0	17.5
2013	MHI	Lāna`i	8/21/2013	LAN-249	20.88515	–156.85482	2.5	14.48	1.391	0.465	0	16.338	11.73	4.609	0	27.5

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	Lāna`i	8/21/2013	LAN-242	20.90388	–156.87534	7.2	12.79	2.493	1.222	0.4251	16.931	11.17	5.764	0	42.5
2013	MHI	Lāna`i	8/21/2013	LAN-313	20.91598	–156.89784	2.95	7.464	3.663	0	0	11.127	7.697	3.43	0	7.5
2013	MHI	Lāna`i	8/21/2013	LAN-309	20.92708	–156.93919	19.55	0.051	2.353	0	0.0984	2.5022	1.857	0.645	0	6
2013	MHI	Lāna`i	8/21/2013	LAN-255	20.92447	–156.94203	1.9	1.252	2.536	0.824	0	4.612	3.788	0.824	0	6
2013	MHI	Lāna`i	8/21/2013	LAN-250	20.92758	–156.96729	9.05	0.621	5.502	1.717	1.0977	8.9374	7.22	0	1.7173	4
2013	MHI	Lāna`i	8/21/2013	LAN-312	20.92634	–156.968	2.75	5.876	5.391	0	0.3227	11.59	6.929	4.661	0	10
2013	MHI	Lāna`i	8/21/2013	LAN-252	20.88109	–156.84683	8.25	4.073	4.013	4.716	0.0056	12.808	5.91	6.898	0	69.5
2013	MHI	Lāna`i	8/21/2013	LAN-239	20.89887	–156.86178	20.3	25.47	11.01	18.33	32.569	87.388	13.34	69.25	4.7967	20
2013	MHI	Lāna`i	8/21/2013	LAN-243	20.90838	–156.88388	1.85	4.786	1.283	0	0	6.0688	3.894	2.175	0	3
2013	MHI	Lāna`i	8/21/2013	LAN-241	20.92537	–156.89893	22.7	32.01	14.38	0	3.3665	49.755	5.22	27.37	17.168	5.5
2013	MHI	Lāna`i	8/21/2013	LAN-244	20.926	–156.91587	14.55	11.79	12.84	17.24	0.1367	42.007	9.416	30.87	1.7173	10
2013	MHI	Lāna`i	8/21/2013	LAN-254	20.92319	–156.91714	3.3	26.96	5.885	3.849	0.5308	37.226	14.06	23.16	0	7.5
2013	MHI	Lāna`i	8/21/2013	LAN-237	20.92964	–157.00462	4.2	0.088	1.287	0	0	1.3753	1.375	0	0	2
2013	MHI	Lāna`i	8/22/2013	LAN-292	20.81281	–156.80439	1.95	0.039	0.503	0	0	0.5421	0.542	0	0	1
2013	MHI	Lāna`i	8/22/2013	LAN-264	20.80496	–156.8038	13.55	20.52	20.42	18.97	33.098	93.013	26.18	56.4	10.428	27.5
2013	MHI	Lāna`i	8/22/2013	LAN-285	20.77728	–156.82345	2.5	5.556	3.599	1.055	0.0783	10.288	7.516	2.772	0	27.5
2013	MHI	Lāna`i	8/22/2013	LAN-277	20.74099	–156.87515	14.5	10.73	3.074	9.415	17.827	41.042	29.34	6.648	5.0576	35
2013	MHI	Lāna`i	8/22/2013	LAN-272	20.74276	–156.87604	8	13.81	3.401	0.28	0.5755	18.063	10.93	7.128	0	17.5
2013	MHI	Lāna`i	8/22/2013	LAN-302	20.73498	–156.92741	13.4	4.178	7.106	0.76	3.6079	15.652	11.82	3.831	0	35
2013	MHI	Lāna`i	8/22/2013	LAN-295	20.73549	–156.93912	5	12.02	4.722	0.045	6.1932	22.98	20.4	2.58	0	15
2013	MHI	Lāna`i	8/22/2013	LAN-289	20.793	–156.81121	3.75	16.95	2.836	1.116	0.2864	21.192	7.318	13.87	0	10.5
2013	MHI	Lāna`i	8/22/2013	LAN-265	20.77903	–156.82091	17.85	18.08	6.527	18.03	17.328	59.962	11.6	39.04	9.3305	25
2013	MHI	Lāna`i	8/22/2013	LAN-269	20.76213	–156.83345	8.95	27.02	4.899	7.951	3.0164	42.889	16.96	25.93	0	26
2013	MHI	Lāna`i	8/22/2013	LAN-284	20.73538	–156.91141	3.45	8.806	9.73	0	11.572	30.108	21.23	8.878	0	30
2013	MHI	Lāna`i	8/22/2013	LAN-283	20.73609	–156.91657	14.35	5.099	9.514	4.483	2.0412	21.137	4.729	16.41	0	7.5
2013	MHI	Lāna`i	8/22/2013	LAN-261	20.73477	–156.925	4	39.86	4.926	0.424	21.073	66.286	13.89	52.4	0	25
2013	MHI	Lāna`i	8/22/2013	LAN-257	20.73436	–156.94338	19.25	6.687	7.301	4.464	0.9609	19.412	9.579	9.833	0	11
2013	MHI	Lāna`i	8/22/2013	LAN-283	20.736090	–156.916575	14.35	5.10	9.51	4.48	2.04	21.14	4.73	16.41	0.00	7.5
2013	MHI	Lāna`i	8/22/2013	LAN-261	20.734766	–156.924998	4	39.86	4.93	0.42	21.07	66.29	13.89	52.40	0.00	25
2013	MHI	Lāna`i	8/22/2013	LAN-257	20.734364	–156.943379	19.25	6.69	7.30	4.46	0.96	19.41	9.58	9.83	0.00	11
2013	MHI	O`ahu	9/18/2013	OAH-569	21.33592	–158.14233	26.85	0.159	2.829	0	0.0436	3.0322	1.427	1.605	0	4
2013	MHI	O`ahu	9/18/2013	OAH-605	21.33044	–158.12559	4.6	4.612	4.461	0.218	2.0097	11.3	9.774	1.525	0	10
2013	MHI	O`ahu	9/18/2013	OAH-578	21.32364	–158.13306	11.6	2.035	6.728	4.24	1.7805	14.783	7.835	2.978	3.9694	5
2013	MHI	O`ahu	9/18/2013	OAH-572	21.37052	–158.14582	12.55	3.152	4.8	0.026	6.6143	14.592	6.622	7.97	0	10
2013	MHI	O`ahu	9/18/2013	OAH-587	21.39665	–158.18396	12.55	9.173	3.797	0	0.2898	13.26	2.577	10.68	0	3.5
2013	MHI	O`ahu	9/18/2013	OAH-604	21.41394	–158.18151	5.25	1.492	3.213	0	0	4.7051	2.695	2.01	0	2
2013	MHI	O`ahu	9/18/2013	OAH-630	21.43304	–158.18753	5.4	4.525	3.178	3.247	0.0456	10.995	7.748	3.247	0	15

Year	Region	Island	Date	Site	Latitude	Longitude	Depth (m)	Fish biomass (g m–2)								Benthos
								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	O`ahu	9/18/2013	OAH-910	21.50546	–158.23932	22.05	7.506	13.53	1.413	5.4822	27.926	15.61	11.29	1.0246	4
2013	MHI	O`ahu	9/18/2013	OAH-629	21.54117	–158.23987	11.85	1.709	8.282	0	2.3129	12.304	5.217	7.087	0	3
2013	MHI	O`ahu	9/18/2013	OAH-585	21.42258	–158.1869	6.95	2.704	2.927	0	0.7048	6.3356	6.336	0	0	7
2013	MHI	O`ahu	9/18/2013	OAH-586	21.43641	–158.1904	5.95	1.532	2.732	7.781	0.0672	12.113	3.813	8.3	0	6
2013	MHI	O`ahu	10/21/2013	OAH-453	21.52124	–157.8093	25.4	2.943	12.55	0	0.6569	16.152	6.299	9.853	0	10
2013	MHI	O`ahu	10/21/2013	OAH-438	21.56156	–157.83668	11.15	33.05	6.375	0.832	9.6493	49.905	13.21	36.69	0	16.5
2013	MHI	O`ahu	10/21/2013	OAH-445	21.58318	–157.86468	7.8	0.311	3.146	0	0.166	3.623	2.656	0.967	0	6.5
2013	MHI	O`ahu	10/21/2013	OAH-492	21.58095	–157.8743	3.7	5.896	2.815	0.412	0	9.1229	8.106	1.017	0	10
2013	MHI	O`ahu	10/21/2013	OAH-451	21.608	–157.88315	21.1	17	11.66	0.093	1.909	30.663	8.37	22.29	0	7.5
2013	MHI	O`ahu	10/21/2013	OAH-432	21.50356	–157.79842	16.95	24.71	4.621	3.841	1.2861	34.46	5.508	28.95	0	30
2013	MHI	O`ahu	10/21/2013	OAH-485	21.55445	–157.82811	14.15	0.607	3.339	0.564	0.2274	4.737	3.791	0.946	0	27.5
2013	MHI	O`ahu	10/21/2013	OAH-444	21.57091	–157.85567	6	0.486	2.081	0	0.1577	2.7242	2.724	0	0	22.5
2013	MHI	O`ahu	10/21/2013	OAH-421	21.57988	–157.85533	19.2	0.244	2.845	0.439	0.3895	3.9176	3.479	0.439	0	22.5
2013	MHI	O`ahu	10/24/2013	OAH-401	21.40005	–157.70278	12.65	10.02	5.665	0.489	0.5354	16.707	6.567	10.14	0	35
2013	MHI	O`ahu	10/24/2013	OAH-437	21.41353	–157.72683	6.05	7.562	3.266	0.863	0.0596	11.751	8.358	3.393	0	15
2013	MHI	O`ahu	10/24/2013	OAH-403	21.43422	–157.71831	15.8	0.562	3.458	0	0.0323	4.0519	4.052	0	0	25
2013	MHI	O`ahu	10/24/2013	OAH-417	21.46425	–157.7434	25.75	0.264	3.028	17.53	1.3738	22.193	4.543	0.14	17.51	3
2013	MHI	O`ahu	10/24/2013	OAH-466	21.47487	–157.78332	9.15	28.82	8.61	1.237	0.8475	39.517	9.247	30.27	0	22.5
2013	MHI	O`ahu	10/24/2013	OAH-495	21.47225	–157.78984	4.45	0.31	0.722	0.843	0.1089	1.9838	1.141	0.843	0	3
2013	MHI	O`ahu	10/24/2013	OAH-382	21.3903	–157.68739	19.2	8.044	6.13	0	0	14.174	5.582	8.592	0	32.5
2013	MHI	O`ahu	10/24/2013	OAH-428	21.4035	–157.71571	4.85	12.03	3.067	0.012	8.1164	23.231	11.06	12.17	0	5.5
2013	MHI	O`ahu	10/24/2013	OAH-418	21.41811	–157.73792	3.85	0.019	0.119	0	0	0.1381	0.138	0	0	6
2013	MHI	O`ahu	10/24/2013	OAH-384	21.44368	–157.71986	23.6	7.47	3.949	0	0.1432	11.563	3.257	8.305	0	10
2013	MHI	O`ahu	10/24/2013	OAH-404	21.46088	–157.71639	11.95	8.336	5.508	0	3.3058	17.15	15.07	2.082	0	35
2013	MHI	O`ahu	10/24/2013	OAH-462	21.4661	–157.76427	11.85	7.168	3.781	0.051	0.4757	11.475	8.526	2.949	0	17.5
2013	MHI	O`ahu	10/25/2013	OAH-435	21.37308	–157.70016	3.85	0.419	0.246	0	0	0.6653	0.665	0	0	3.5
2013	MHI	O`ahu	10/25/2013	OAH-439	21.36064	–157.7012	4.9	1.101	2.48	0	0.0788	3.66	1.615	2.045	0	4
2013	MHI	O`ahu	10/25/2013	OAH-400	21.35174	–157.67991	10.55	31.7	9.228	2.366	0.4057	43.696	4.9	38.8	0	45
2013	MHI	O`ahu	10/25/2013	OAH-386	21.32102	–157.65196	26.65	0.393	3.171	0	0	3.5642	2.449	1.115	0	2.5
2013	MHI	O`ahu	10/25/2013	OAH-406	21.28141	–157.67052	10.9	9.275	2.814	0.47	1.0452	13.604	9.218	4.386	0	27.5
2013	MHI	O`ahu	10/25/2013	OAH-385	21.38614	–157.68228	28.6	0.072	2.279	0	0.2124	2.5624	2.267	0.295	0	1
2013	MHI	O`ahu	10/25/2013	OAH-392	21.36151	–157.68292	11.75	6.235	3.277	0.017	0.0187	9.5473	9.04	0.507	0	20
2013	MHI	O`ahu	10/25/2013	OAH-450	21.34288	–157.68428	3	3.232	3.179	0.144	0	6.5541	6.407	0.147	0	1
2013	MHI	O`ahu	10/25/2013	OAH-414	21.33209	–157.66128	16.35	4.779	9	1.992	1.3426	17.114	8.067	9.047	0	3.5
2013	MHI	O`ahu	10/25/2013	OAH-391	21.29929	–157.64966	13.95	14.9	5.599	0.281	4.6913	25.473	17.72	7.75	0	5
2013	MHI	O`ahu	10/31/2013	OAH-458	21.6261	–157.90638	10	0.802	7.458	0.16	0.1938	8.6142	4.048	4.567	0	12.5
2013	MHI	O`ahu	10/31/2013	OAH-449	21.6389	–157.90761	9.4	8.956	4.175	0.049	0.8745	14.055	8.392	5.663	0	8.5

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								Pri. consumer	Sec. consumer	Piscivores	Planktivores	All fishes	0–20 cm TL	20–50 cm TL	>50 cm TL	Hard coral (%)
2013	MHI	O`ahu	10/31/2013	OAH-491	21.65245	–157.91713	5.45	0.207	0.953	0	0	1.1601	1.16	0	0	1
2013	MHI	O`ahu	10/31/2013	OAH-447	21.68333	–157.92962	13.2	2.195	3.951	0	0.0754	6.2216	3.91	2.312	0	2
2013	MHI	O`ahu	10/31/2013	OAH-419	21.68878	–157.92548	25.85	0.186	2.61	0	0.1924	2.9887	1.055	1.933	0	1
2013	MHI	O`ahu	10/31/2013	OAH-429	21.61849	–157.89598	12.15	0.189	11.21	0.013	0.2229	11.632	5.28	6.352	0	4.5
2013	MHI	O`ahu	10/31/2013	OAH-474	21.63493	–157.91299	4.8	2.601	2.73	0.062	0.0047	5.3975	5.397	0	0	12.5
2013	MHI	O`ahu	10/31/2013	OAH-423	21.70444	–157.94084	26.5	10.57	5.202	0	1.0484	16.82	4.807	12.01	0	3

Contact us

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