

1. Identification Information

1.1 Citation Information

8.1 Originator: Dr. Dennis Allen

8.1 Originator: Ginger Ogburn-Matthews

8.1 Originator: Tracy Buck

8.1 Originator: Lynn Barker

8.1 Originator: Paul Kenny

8.2 Publication Date: 20060717

8.4 Title: Long-Term Large Mesozooplankton (Motile Epibenthos) Data for the North Inlet Estuary, Georgetown, South Carolina: 1981-2003

8.5 Edition: Second

8.6 Geospatial Data Presentation Form: comma delimited text and MS Excel spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Long-Term Epibenthos Monitoring Database for the North Inlet Estuary, South Carolina. LTER Data Set Code NIN008

8.7.2 Issue Identification: January 20, 1981 – December 22, 2003

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: This is just one database from a larger Ecosystem monitoring program that was funded by the National Science Foundation's (NSF) Long Term Ecological Research (LTER) Program and by the National Oceanic and Atmospheric Administration's (NOAA) National Estuarine Research Reserve (NERR) Program. Other North Inlet LTER and NERR ecological datasets are listed under the Cross Reference Section below.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/EPI/index.html>

1.2 Description

1.2.1 Abstract: Three consecutive tows of an epibenthic sled fitted with a 365-micron mesh net were used to collect small (1-20 mm) motile animals from just above the bottom of two estuarine tidal creek stations (designated BB and DD) every two weeks at the midday low tide in the North Inlet Estuary, SC. Since previous field studies indicated that stage of tide and time of day affected organism abundance in the epibenthic sled stations, it was necessary to make collections about every 14 days when the same tide stage occurs at the same time of day to keep these variables "constant". Thus, three sequential tows (known as replicates A, B, and C) were made with the same apparatus with the direction of the ebbing current along the same tow path when the end of the ebbing tide occurred near noon. Collections from 1981 through 1984 at a sandy inlet (DD) and a major marsh creek (BB) location allowed for a comparison of two habitat types. Beginning in 1985, only the BB site continued its biweekly triplicate sampling. The same gear, field deployment, and tow path have been used since sample number one, made on January 20, 1981. Physical data including air temperature, surface and bottom water temperature and salinity, dissolved oxygen, and water velocity and light penetration from the water's surface to the bottom at 50 cm intervals were recorded just before the epibenthic collections. These parameters are listed in the **EpiPhysicals81-2003** digital file.

Pericardid crustaceans (i.e. mysids, amphipods), chaetognaths, hydromedusae, larval shrimps, crabs, and fishes dominated the epibenthic catches. From 1981 through 1984 all organisms were identified under a microscope to species or lowest possible taxa for both sampling sites, BB and DD; larval fish species were measured and counted, and shrimp life stages were noted and counted. Beginning in 1985 with sample 100, the taxa categories counted were merged into fewer categories in order to speed up processing. Samples with a great number of organisms were split before taxa categories were counted. Counts were adjusted by the number of times the sample was split, and then converted to numbers per cubic meter of water filtered before average numbers per sample were calculated.

1.2.2 Purpose: Initially and in the short-term (1981-1984), this study was initiated to determine seasonal and inter-annual changes in the taxonomic/life stage composition and abundance of small motile epibenthic invertebrates and fishes (1-20 mm in length) in the major sub-tidal habitats of North Inlet estuary. In the long-term, this study was to document the long-term variability and trend in the composition and abundance of estuarine motile epibenthic invertebrates and larval fish populations within the North Inlet Estuary and to use the data to compare with other estuarine sites in the nation and in the world.

1.2.3. Supplemental Information: *LTER FAUNA Program (1981-1992)*

Other faunal collections: zooplankton (153 micron), macrobenthos [benthic animals (animals retained on a 0.5 millimeter mesh screen)], meiobenthos [benthic animals (animals retained on a 63 micron mesh screen)], and fish, shrimp, and crab collections were also made on the same day or usually within a few days of the epibenthos collections. The LTER FAUNA database includes the LTER MACRO (macrobenthos species), LTER MEIO (meiobenthos species), LTER ZPK (zooplankton), LTER EPI (epibenthic macrozooplankton), LTER NIFISH (nekton species), and LTER OLFISH (nekton species) databases. For more information on these databases, contact Baruch's Data Manager or go to <http://links.baruch.sc.edu/Data/index.html>.

Ancillary Databases:

There are eight ancillary datasets associated with the EPI database. The first seven can be found on the EPI.1981-2003.FinalPublish Archival DVD or Archived on Baruch's Data Rescue Server in the **EPI.1981-2003.Data** Directory:

1. **Myrophis81-08 files** are spreadsheets containing counts of *Myrophis* spp. From 1981-2008. Counts were completed by Dr. Dennis Allen in 2008 for a special east coast comparison project.
2. **LarvalFish.1981-84** Directory contains two folders: **FishLarvaeData** & **RawDataSheets.Scan**. **FishLarvaeData** holds four years (1/20/81 - 1/4/85) of larval and juvenile fish length computer files which were recorded and stored by species in separate digital data files. **RawDataSheets.Scan** contains all the scanned raw hardcopies of fish lengths (.jpg format); these were used to create the **FishLarvaeData** computer files. Not all scanned data were entered into computer files, which mean there are more data & species sheets than were entered. A manuscript was published from these data. **Microscope ocular calibration** sheet images are also located in the **AncillaryData** directory.
3. **Epibiomass1986Sheets** Directory contains macrozooplankton taxa biomass measurements sheets which were scanned into .jpg images.
4. **Flowmeter Calibrations** Directory contains scanned images of written calibration worksheets or the digital worksheet for each flowmeter used in the sampling net from the late 1970s to 2002. These calibration numbers are crucial for the calculation of the volume of water filtered for each tow, and therefore the number of organisms per cubic meter. The directory also contains EPISLED drawings along with calculations to determine $\#/m^3$.
5. Length measurements (carapace, uropod, & telson) were made of isolated adult and juvenile caridean shrimps from 1/20/81 - 1/9/82 epibenthic samples. 234 raw data sheets were scanned and archived in the **ShrimpLengths1981-82** folder in the **Ancillary Data** Folder in 2008. Data were stored by species, and files named with site and date. Note: no digital files were located.
6. According to earlier documentation, decapod shrimp life history and developmental staging information were recorded on data sheets, on file by cruise/date, and stored in a separate computer data file. As of the writing of this metadata, only 44 data sheets for 1984 & 1985 can be located. These were scanned and archived in the **DecapodLifeHistorySheets** directory. Note: no digital files were located.
7. **TropicalStormDennis1981** folder contains extra sampling BB & DD counts for a rain event during TS Dennis.
8. Detailed taxonomy and life stages were written on the original raw and adjusted counting sheets through cruise number 106, the end of the first 4 years. These sheets were also scanned and archived into jpeg images. These are in the **Version1Count.Id.Sheets** directory found on the **EPI.1981-2003.Raw Archive** DVD.

Publications:

- Allen, D.M. and D.L. Barker. 1990.** Interannual variability in larval fish recruitment to estuarine epibenthic habitats. *Marine Ecology Progress Series* 63:113-125.
- Houser, D.S. and D.M. Allen. 1996.** Zooplankton dynamics in an intertidal salt marsh basin. *Estuaries* 19:659-673
- Allen, D.M., V. Ogburn-Matthews, T. Buck, and E.M. Smith. 2008.** Mesozooplankton Responses to Climate Change and Variability in a Southeastern U.S. Estuary (1981-2003). *Journal of Coastal Research*, Special Issue No. 55: 95-110.

1.3 Time Period of Content:

9.3 Range of Dates/Times

9.3.1 Beginning Date: 19810118

9.3.3 Ending Date: 20031222

1.3.1 Currentness Reference: Observed

1.4 Status:

1.4.1 Progress: Complete

1.4.2 Maintenance and update frequency: As needed

99.1.5.1 Description of Geographic Extent: The North Inlet Estuary is located on the southeastern coast of the United States, approximately 10 kilometers east of Georgetown, South Carolina. The North Inlet Estuary is a bar-built Class C type estuary (Pritchard, 1955) and is a relatively small tidal estuary (area = 2630 hectares). It is composed of numerous winding tidal creeks dominated by *Spartina alterniflora* and is considered a pristine tidal estuary due to minimal anthropogenic impacts. The watershed drains a 24.8 square kilometer area of mostly pine forest and a moderately developed residential watershed to the north. Town Creek is a high salinity creek dominated by semi-diurnal tides. Rain input, primarily runoff, depresses salinities briefly (hours - days) depending on duration and frequency. Water temperatures mirror local air conditions: warm temperate.

Tow Site Descriptions and Locations: For further information, consult the online web location map ([EPITowPaths.jpg](#)).

The DD (Debidue) site near Town Creek mouth and the Inlet is characterized by a high energy sandy bottom with regular ridges and swales. Depth along the tow path averaged 3 to 4 meters at sampling time. The bottom is sand with little or no hard substrate (shell, rock). Seasonal growths of bryozoan and algae occur. Generally, little or no organic matter is collected in the epibenthic sled. The DD epibenthos tow path site was located at the confluence of Town Creek and Debidue Creek. The 100 m tow path followed a transect beginning at a fixed point on Debidue Island and followed the shoreline due south (approximately 5 meters from shore) in line with a large, heavily-vegetated dune on North Island. The tow path terminated on a line with the boilers of a sunken ship and the tip of Debidue Island (looking to the NE). Each tow lasted approximately 5 minutes depending on tidal velocity. Debidue Site: Begin of tow: 33°19'54.2" N, 79°09'57.8" W; End of tow: 33°19'46.0" N, 79°09'56.8" W.

The BB (Bread and Butter) site is located along Town Creek approximately 2 km from the inlet mouth. At this location the creek is bounded by extensive *Spartina alterniflora* marshes. The intertidal zone is covered by clusters of the American oyster (*Crassostrea virginica*), shell rubble and intermittent muddy flats. The bottom supports seasonal growths of sponges, algae, hydroids, bryozoans, and soft corals, as well as, oysters. Much of the bottom habitat is sandy mud covered by varying accumulations of detrital plant and fecal material. Depth along the tow path ranges from 2 to 4 meters at sampling time. The BB epibenthos tow path site is located along the western shoreline of Town Creek adjacent to the mouth of Clambank Creek. Each of the tows began at a small (1 m wide) drainage creek about 50m south of Clambank Creek confluence. The tow was started about 5 m from the edge of the marsh and ended about 30 m from the edge of the marsh. The tow path extended to a line between the Clambank tower and the first small drainage southwest of Boze's Creek mouth. Each tow lasted approximately 5 minutes depending upon tidal velocity. Bread and Butter Site: Begin of tow: 33°19'50.5" N, 79°11'18.5" W; End of tow: 33°20'00.1" N, 79°11'14.7" W.

Pritchard, D.W. 1955. Estuarine circulation patterns. Proc. Am. Soc. Civ. Eng. 81(717):1-11.

1.5.2 Bounding Rectangle Coordinates:

1.5.1.1 West Bounding Coordinate: -79.270

1.5.1.2 East Bounding Coordinate: -79.153

1.5.1.3 North Bounding Coordinate: 33.366

1.5.1.4 South Bounding Coordinate: 33.296

1.6 Keywords

1.6.1 Theme

1.6.1.1 Theme Keyword Thesaurus:	None
1.6.1.2 Theme Keyword:	ABUNDANCE
1.6.1.2 Theme Keyword:	MOTILE INVERTEBRATES
1.6.1.2 Theme Keyword:	ANIMALS
1.6.1.2 Theme Keyword:	EPIBENTHOS
1.6.1.2 Theme Keyword:	COASTAL
1.6.1.2 Theme Keyword:	ECOSYSTEMS
1.6.1.2 Theme Keyword:	ESTUARINE
1.6.1.2 Theme Keyword:	ESTUARY
1.6.1.2 Theme Keyword:	LONG-TERM
1.6.1.2 Theme Keyword:	LONG-TERM ECOLOGICAL RESEARCH
1.6.1.2 Theme Keyword:	LTER
1.6.1.2 Theme Keyword:	EPIBENTHIC
1.6.1.2 Theme Keyword:	MARSH
1.6.1.2 Theme Keyword:	MONITORING DATA
1.6.1.2 Theme Keyword:	SALT MARSH
1.6.2.2 Theme Keyword:	TAXA
1.6.2.2 Theme Keyword:	LARVAL SHRIMP
1.6.1.2 Theme Keyword:	MACROZOOPLANKTON
1.6.1.2 Theme Keyword:	LARVAL FISH
1.6.1.2 Theme Keyword:	TIDAL CREEK
1.6.1.2 Theme Keyword:	LIFE STAGE
1.6.1.2 Theme Keyword:	RECRUITMENT
1.6.1.2 Theme Keyword:	COUNTS
1.6.1.2 Theme Keyword:	ZOOPLANKTON

1.6.2 Place

1.6.2.1 Place Keyword Thesaurus:	None
1.6.2.2 Place Keyword:	ATLANTIC COAST
1.6.2.2 Place Keyword:	BREAD AND BUTTER CREEK
1.6.2.2 Place Keyword:	COASTAL
1.6.2.2 Place Keyword:	DEBIDUE CREEK
1.6.2.2 Place Keyword:	DEBORDIEU COLONY
1.6.2.2 Place Keyword:	EAST COAST
1.6.2.2 Place Keyword:	GEORGETOWN COUNTY
1.6.2.2 Place Keyword:	HOBCAW BARONY
1.6.2.2 Place Keyword:	NORTH INLET ESTUARY
1.6.2.2 Place Keyword:	SOUTH CAROLINA
1.6.2.2 Place Keyword:	SOUTHEAST COAST
1.6.2.2 Place Keyword:	TOWN CREEK
1.6.2.2 Place Keyword:	NORTH INLET
1.6.2.2 Place Keyword:	USA

1.6.3 Stratum

1.6.3.1 Stratum Keyword Thesaurus:	None
1.6.3.2 Stratum Keyword:	EPIBENTHIC

1.6.4 Temporal

1.6.4.1 Temporal Keyword Thesaurus:	None
1.6.4.2 Temporal Keyword:	DAY
1.6.4.2 Temporal Keyword:	BIWEEKLY
1.6.4.2 Temporal Keyword:	FORTNIGHTLY
1.6.4.2 Temporal Keyword:	MONTH
1.6.4.2 Temporal Keyword:	YEAR
1.6.4.2 Temporal Keyword:	1981
1.6.4.2 Temporal Keyword:	1982
1.6.4.2 Temporal Keyword:	1983
1.6.4.2 Temporal Keyword:	1984
1.6.4.2 Temporal Keyword:	1985
1.6.4.2 Temporal Keyword:	1986
1.6.4.2 Temporal Keyword:	1987
1.6.4.2 Temporal Keyword:	1988
1.6.4.2 Temporal Keyword:	1989
1.6.4.2 Temporal Keyword:	1990
1.6.4.2 Temporal Keyword:	1991
1.6.4.2 Temporal Keyword:	1992
1.6.4.2 Temporal Keyword:	1993
1.6.4.2 Temporal Keyword:	1994
1.6.4.2 Temporal Keyword:	1995
1.6.4.2 Temporal Keyword:	1996
1.6.4.2 Temporal Keyword:	1997
1.6.4.2 Temporal Keyword:	1998
1.6.4.2 Temporal Keyword:	1999
1.6.4.2 Temporal Keyword:	2000
1.6.4.2 Temporal Keyword:	2001
1.6.4.2 Temporal Keyword:	2002
1.6.4.2 Temporal Keyword:	2003
1.6.4.2 Temporal Keyword:	1981-2003
1.6.4.2 Temporal Keyword:	1980s
1.6.4.2 Temporal Keyword:	1990s

99.1.7 Taxonomy Information

99.1.7.1 Keywords

1.7.1.1 Taxonomic Keyword Thesaurus:	NONE
1.7.1.2 Taxonomic Keyword:	ANIMALS
1.7.1.2 Taxonomic Keyword:	EPIBENTHIC ANIMALS

1.7.1.2 Taxonomic Keyword:	COLLECTION
1.7.1.2 Taxonomic Keyword:	CLASS
1.7.1.2 Taxonomic Keyword:	FAMILY
1.7.1.2 Taxonomic Keyword:	GENUS
1.7.1.2 Taxonomic Keyword:	INVERTEBRATES
1.7.1.2 Taxonomic Keyword:	MULTIPLE SPECIES
1.7.1.2 Taxonomic Keyword:	SPECIES
1.7.1.2 Taxonomic Keyword:	CRUSTACEANS
1.7.1.2 Taxonomic Keyword:	PERICARIDAE
1.7.1.2 Taxonomic Keyword:	AMPHIPODS
1.7.1.2 Taxonomic Keyword:	MYSIDS
1.7.1.2 Taxonomic Keyword:	CHAETOGNATHS
1.7.1.2 Taxonomic Keyword:	HYDROMEDUSAE
1.7.1.2 Taxonomic Keyword:	SHRIMPS
1.7.1.2 Taxonomic Keyword:	CRABS
1.7.1.2 Taxonomic Keyword:	FISHES
1.7.1.2 Taxonomic Keyword:	ZOOPLANKTON
1.7.1.2 Taxonomic Keyword:	LARVAL SHRIMP
1.7.1.2 Taxonomic Keyword:	LARVAL CRAB
1.7.1.2 Taxonomic Keyword:	LARVAL FISH

99.1.7.2 Taxonomic System

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: D.M. Allen
 8.1 Originator: J.P. Clymer
 8.1 Originator: S.S Herman
 8.2 Publication Date: 1978
 8.4 Title: Fishes of the Hereford Inlet Estuary, southern New Jersey.
 8.6 Geospatial Data Presentation Form: Published Manuscript
 8.8 Publication Information:
 8.8.1 Publication Place: Bethlehem, PA
 8.8.2 Publisher: Lehigh University Press
 8.9 Other Citation Details: 138 pages

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.D. Barnes
 8.2 Publication Date: 1980
 8.4 Title: Invertebrate Zoology Fourth Ed
 8.6 Geospatial Data Presentation Form: Published Book
 8.8 Publication Information:
 8.8.1 Publication Place: Philadelphia, PA
 8.8.2 Publisher: Saunders College
 8.9 Other Citation Details: 1089 pages

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: F.H. Berry
 8.2 Publication Date: 1959
 8.4 Title: Young jack crevalles (*Caranx* species) off the Southeastern Atlantic coast of the United States.
 8.6 Geospatial Data Presentation Form: Scientific Publication
 8.8 Publication Information:
 8.8.1 Publication Place: unknown
 8.8.2 Publisher: Bur. Fish. Bull.
 8.9 Other Citation Details: 59(152): 417-535.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: F.H. Berry

8.1 Originator: L.E. Vogele

8.2 Publication Date: 1961

8.4 Title: Filefishes (Monacanthidae) of the Western North Atlantic.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 61(181): 61-109.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: T.A. Biffar

8.2 Publication Date: 1972a

8.4 Title: The genus *Callianassa* (Crustacea, Decapoda, Thalassinidae) in south Florida, with keys to the Western Atlantic species.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Bulletin of Marine Science

8.9 Other Citation Details: 21(3): 637-715.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: T.A. Biffar

8.2 Publication Date: 1972b

8.4 Title: New species of *Callianassa* (Decapoda, Thalassinidae) from the western Atlantic.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Crustaceana

8.9 Other Citation Details: 21(3): 225-236.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: H.B. Bigelow

8.1 Originator: W.C. Schroeder

8.2 Publication Date: 1953

8.4 Title: Fishes of the Gulf of Maine.

8.6 Geospatial Data Presentation Form: Published Book, First Revision

8.8 Publication Information:

8.8.1 Publication Place: United States Government Printing Office, Washington, D.C.

8.8.2 Publisher: Fishery Bulletin of the Fish and Wildlife Service

8.9 Other Citation Details: Fishery Bulletin 74, 577 pages; Contrib. No. 592, Woods Hole Ocean. Inst.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.C. Broad

8.2 Publication Date: 1957

8.4 Title: Larval development of *Palemonetes pugio* Holthius

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Biol. Bull.

8.9 Other Citation Details: 112(2): 144-161, 4 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.C. Broad

8.2 Publication Date: 1957

8.4 Title: Larval development of the crustacean *Thor floridanus* Kingsley.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Journal of the Elisha Mitchell Scientific Society

8.9 Other Citation Details: 73(2): 317-328.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: W.K. Books

8.1 Originator: F.H. Herrick

8.2 Publication Date: 1892

8.4 Title: The embryology and metamorphosis of the Macrura

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Memoirs of the Natl. Acad. Sci. Fourth Memoir.

8.9 Other Citation Details: 5: 323-576, 57 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: F.A. Chace, Jr.

8.2 Publication Date: 1972

8.4 Title: The shrimps of the Smithsonian - Bredin Caribbean Expeditions with a summary of the West Indian shallow-water species (Crustacea: Decapoda: Natantia).

8.6 Geospatial Data Presentation Form: Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Smithsonian Contribution to Zoology.

8.9 Other Citation Details: No.98. 179 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.B. Colton, Jr.

8.2 Publication Date: 1963

8.4 Title: The eggs and larval stages of the butterfish, *Poronotus triacanthus*

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Copeia

8.9 Other Citation Details: No. 2, Pages 447-450.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.B. Colton, Jr.

8.1 Originator: W.G. Smith

8.1 Originator: A.W. Kendall, Jr.

8.1 Originator: P.L. Berrien

8.1 Originator: M.P. Fahay

8.2 Publication Date: 1979

8.4 Title: Principle spawning areas and times of marine fishes, Cape Sable to Cape Hatteras.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 76(4).

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.A. Croker

8.2 Publication Date: 1965

8.4 Title: Planktonic fish eggs and larvae of Sandy Hook Estuary.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Chesapeake Science

8.9 Other Citation Details: 6(2): 92-95.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: M.H. Dahlberg

8.2 Publication Date: 1972

8.4 Title: An Ecological Study of Georgia Coastal Fishes.

8.6 Geospatial Data Presentation Form: Scientific publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish and Wildlife Service, Fish. Bull.

8.9 Other Citation Details: 70(2): 323-353.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: M.D. Dahlberg

8.1 Originator: J.C. Conyers

8.2 Publication Date: 1973

8.4 Title: An ecological study of *Gobiosoma bosci* and *G. ginsburgi* (Pisces, Gobiidae) on the Georgia coast.

8.6 Geospatial Data Presentation Form: Scientific publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Bur. Fish. Bull.

8.9 Other Citation Details: 71(1): 279-287.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: E.E. Duebler, Jr.

8.2 Publication Date: 1958

8.4 Title: A comparative study of the postlarvae of three flounders (*Paralichthys*) in North Carolina.

8.6 Geospatial Data Presentation Form: Scientific publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Copeia

8.9 Other Citation Details: No. 2, 112-166 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S. Dobkin

8.2 Publication Date: 1968

8.4 Title: The larval development of a species of *Thor* (Caridea, Hippolytidae) from south Florida, U.S.A.

8.6 Geospatial Data Presentation Form: Scientific publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Crustaceana

8.9 Other Citation Details: Supplement 2: Studies on decapod larval development. pp. 1-18.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: H.M. Fields

8.2 Publication Date: 1962

8.4 Title: Pompanos (*Trachinotus* spp.) of the south Atlantic coast of the United States.

8.6 Geospatial Data Presentation Form: Scientific publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Bur. Fish. Bull.

8.9 Other Citation Details: 62(207): 189-222.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.A. Fritzsche, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages.

Vol. 5. Chaetodontidae through Ophidiidae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv., Biol. Serv. Prog.

8.9 Other Citation Details: 340 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: Kenneth L. Gosner

8.2 Publication Date: 1979

8.4 Title: A field guide to the Atlantic Seashore. Invertebrates and seaweeds of the Atlantic Coast from Cape Hatteras.

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: Boston, MA

8.8.2 Publisher: Houghton Mifflin Co

8.9 Other Citation Details: 329 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.W. Goy

8.1 Originator: A.J. Provenzano, Jr

8.2 Publication Date: 1978

8.4 Title: Larval development of the rare burrowing mud shrimp *Naushonia crangonoides* Kingsley (Decapoda: Thalassnidea; Laomediidae)

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Biological Bulletin

8.9 Other Citation Details: 154(2): 241-261.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R. Gurney

8.2 Publication Date: 1936a

8.4 Title: Notes on some decapod crustaceans of Bermuda. I. The larvae of *Leptochela* and *Latreutes*.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: London

8.8.2 Publisher: Zoological Society of London

8.9 Other Citation Details: Proceedings of the Zoological Society of London for 1935: 785-793, 6 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R. Gurney

8.2 Publication Date: 1942

8.4 Title: Larval development of decapod Crustacea.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: London

8.8.2 Publisher: Ray Society

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R. Gurney

8.1 Originator: M.V. Lebour

8.2 Publication Date: 1941

8.4 Title: On the larvae of certain crustacea Macrura from Bermuda

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: London

8.8.2 Publisher: J. Linn. Soc. Lond, Zool.

8.9 Other Citation Details: 41(277): 89-181, 26 figs.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.D. Hardy Jr, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages.
Vol.II. Anguillidae through Syngnathidae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv., Biol. Serv. Prog.

8.9 Other Citation Details: 458 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.D. Hardy Jr, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages.
Vol.III. Aphredocleridae through Rachycentridae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildlife Service, Biol. Serv. Prog.

8.9 Other Citation Details: 394 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.P.L. Hart

8.2 Publication Date: 1971

8.4 Title: Key to planktonic larvae of families of decapod crustacea of British Columbia.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Syesis

8.9 Other Citation Details: 4: 227-234.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.F. Hildebrand

8.1 Originator: L.E. Cable

8.2 Publication Date: 1930

8.4 Title: Development and life history of fourteen teleostean fishes at Beaufort, N.C

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 46: 383-488.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.F. Hildebrand

8.1 Originator: L.E. Cable

8.2 Publication Date: 1934

8.4 Title: Reproduction and development of whittings or kingfishes, drums, spot, croaker, and weakfishes or seatrouts, family Sciaenidae of the Atlantic coast of the United States.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 48(16): 41-117.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.F. Hildebrand

8.1 Originator: L.E. Cable

8.2 Publication Date: 1938

8.4 Title: Further notes on the development and life history of some teleosts at Beaufort, North Carolina.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Bull.U.S. Bur. Fish.

8.9 Other Citation Details: 48: 505-642.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.F. Hildebrand

8.1 Originator: W.C. Schroeder

8.2 Publication Date: 1972

8.4 Title: Fishes of the Chesapeake Bay

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: Washington, D.C.

8.8.2 Publisher: Smithsonian Institution Press

8.9 Other Citation Details: 388 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: H.D. Hoese

8.1 Originator: R.H. Moore

8.2 Publication Date: 1977

8.4 Title: Fishes of the Gulf of Mexico, Texas, Louisiana and adjacent waters.

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: College Station, Texas

8.8.2 Publisher: Texas A & M University Press.

8.9 Other Citation Details: 327 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: C.L. Hubbs

8.2 Publication Date: 1943

8.4 Title: Terminology of early stages of fishes.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Copeia

8.9 Other Citation Details: No. 4, page 260.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: G. David Johnson, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages.
Vol. IV. Carangidae through Ehippidae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv., Biol. Serv. Prog.

8.9 Other Citation Details: 314 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: P.W. Jones, ed.

8.1 Originator: F.D. Martin, ed.

8.1 Originator: J.D. Hardy, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages.
Vol. I. Acipenseridae through Ictaluridae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv., Biol. Serv. Prog.

8.9 Other Citation Details: 366 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A. Kuntz

8.1 Originator: L. Radcliff

8.2 Publication Date: 1915

8.4 Title: Notes on the embryology and larval development of twelve teleostean fishes.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv. Fish. Bull.

8.9 Other Citation Details: 35: 87-134.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: H. Kurata

8.2 Publication Date: 1970

8.4 Title: Studies on the life histories of decapod crustacea of Georgia.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: Sapelo Island, GA

8.8.2 Publisher: The University of Georgia Marine Institute.

8.9 Other Citation Details: 266 pages, 105 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: W.H. Lang

8.2 Publication Date: 1979

8.4 Title: Larval development of shallow water barnacles of the Carolinas (Cirripedia: Thoracica) with keys to naupliar stages.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: NOAA Technical Report

8.9 Other Citation Details: NMFS Circular 421

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.J. Lippson, ed.

8.1 Originator: R.L. Morgan, ed.

8.2 Publication Date: 1974

8.4 Title: Manual for identification of early developmental stages of fishes of the Potomac River estuary.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: Maryland

8.8.2 Publisher: Maryland Power Plant Siting Program

8.9 Other Citation Details: Misc. Publ. No. 13. 282 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.G. de Man

8.2 Publication Date: 1928

8.4 Title: A contribution to the knowledge of 22 species and 3 varieties of the genus *Callinassa* Leach.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Capita Zoologica 2

8.9 Other Citation Details: pt. 6, 1-56, 12 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.B. Manning

8.2 Publication Date: 1974

8.4 Title: Marine Flora and Fauna of the Northeastern United States. Crustacea: Stomatopoda.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: NOAA

8.9 Other Citation Details: NMFS Circ. 387.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: F.D. Martin, ed.

8.1 Originator: G.E. Drewcy, ed.

8.2 Publication Date: 1978

8.4 Title: Development of fishes of the Mid-Atlantic Bight. An atlas of egg, larval, and juvenile stages. Vol. VI. Stromateidae through Ogcocephalidae.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv., Biol. Serv. Program

8.9 Other Citation Details: 416 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.C. Moore, Ed.

8.2 Publication Date: 1969

8.4 Title: Treatise on Invertebrate Paleontology. Pt. R., Arthropoda 4 Vols. 1 and 2. .

8.6 Geospatial Data Presentation Form: unknown

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Geological Society of America and University of Kansas Press

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S.G. Morgan

8.1 Originator: A.J. Provenzano, Jr

8.2 Publication Date: 1979

8.4 Title: Development of pelagic larvae and postlarva of *Squilla empusa* (Crustacea, Stomatopoda), with an assessment of larval characters within the Squillidae.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 77(1): 61-90.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.S. Pearse

8.1 Originator: H.J. Humm

8.1 Originator: G.W. Wharton

8.2 Publication Date: 1942

8.4 Title: Ecology of sand beaches at Beaufort, N.C.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Ecological Monographs

8.9 Other Citation Details: 12: 135-190.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.C. Pearse

8.2 Publication Date: 1929

8.4 Title: Natural history and conservation of the redfish and other commercial Sciaenids on the Texas coast.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 44: 129-214.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.C. Pearse

8.2 Publication Date: 1941

8.4 Title: The young of some Marine fishes taken in lower Chesapeake Bay, Virginia, with special reference to the Gray Sea Trout, *Cynoscion regalis* (Bloch).

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: U.S. Fish Wildl. Serv. Fish. Bull.

8.9 Other Citation Details: 50(36): 79-102.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: E.L. Pierce

8.1 Originator: M.L. Wass

8.2 Publication Date: 1962

8.4 Title: Chaetognatha from the Florida current and coastal water of the Southeastern United States.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Bull. Mar. Sci. Gulf. Caribb.

8.9 Other Citation Details: 12(3): 403-431.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: H. Powles

8.1 Originator: B.W. Stender

8.2 Publication Date: 1978

8.4 Title: Taxonomic data on the early life history stages of Sciaenidae of the South Atlantic Bight of the United States.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: S.C. Marine Resources Center

8.9 Other Citation Details: Tech. Report No. 31. 64 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: G.H. Rees

8.2 Publication Date: 1959

8.4 Title: Larval development of the sand crab *Emerita talpoida* (Say) in the laboratory.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: unknown

8.8.2 Publisher: Biol. Bull.

8.9 Other Citation Details: 117(2): 356-370, 33 figs.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.L. Rice

8.1 Originator: A.J. Provenzano, Jr.

8.2 Publication Date: 1966

8.4 Title: The larval development of the West Indian sponge crab *Dromidia antillensis* (Decapoda: Dromiidae).

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: London

8.8.2 Publisher: Jour. of Zoology

8.9 Other Citation Details: 149: 297-319.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: M.H. Roberts

8.2 Publication Date: 1966

8.4 Title: Larval development of the decapod *Eucерamus praelongus* in laboratory culture.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Chesapeake Science

8.9 Other Citation Details: 9(2): 121-130

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: C.R. Robins, et al.

8.2 Publication Date: 1980

8.4 Title: A list of common and scientific names of fishes from the United States and Canada (Fourth Edition).

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: American Fisheries Society

8.9 Other Citation Details: Special Publication No.12, 174 pages

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: S. de A. Rodrigues

8.2 Publication Date: 1976

8.4 Title: Sobre a reproducao, embriologia e desenvolvimento larval de *Callichirus major* Say, 1818 (Crustacea, Decapoda Thalassinidea).

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Univ. S. Paulo

8.8.2 Publisher: Bolm. Zool.

8.9 Other Citation Details: 1:85-104

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: P.A. Sandifer

8.2 Publication Date: 1972

8.4 Title: Morphology and ecology of Chesapeake Bay decapod crustacean larvae.

8.6 Geospatial Data Presentation Form: Ph.D. dissertation

8.8 Publication Information:

8.8.1 Publication Place: University of Virginia

8.8.2 Publisher: Dept. of Marine Science

8.9 Other Citation Details: 531 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: P.A. Sandifer

8.2 Publication Date: 1974b

8.4 Title: Larval stages of the shrimp *Ogyrides limnicola* Williams 1955 (Decapoda, Caridea) obtained in the laboratory.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Crustaceana

8.9 Other Citation Details: 26(1): 37-60.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.N. Sastry

8.2 Publication Date: 1977

8.4 Title: The larval development of the Jonah Crab, *Cancer borealis* Stimpson, 1859 under laboratory conditions.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Crustaceana

8.9 Other Citation Details: 32(3): 290-303.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.N. Sastry

8.2 Publication Date: 1977

8.4 Title: The larval development of the Rock Crab, *Cancer imoritus* Say, 1817 under laboratory conditions.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Crustaceana

8.9 Other Citation Details: 32(2): 155-168.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: Michael D. Scherer, et al.

8.2 Publication Date: 1980

8.4 Title: Eggs and early larvae of smallmouth Flounder, *Etropus microstomus*.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 77(3): 708-712.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: W.L. Schmitt

8.2 Publication Date: 1968

8.4 Title: Crustaceans.

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: The Univ. of Michigan Press

8.9 Other Citation Details: 204 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: L.N. Scotton

8.1 Originator: R.E. Smith, et al.

8.2 Publication Date: 1973

8.4 Title: Pictorial guide to fish larvae of Delaware Bay, with information and bibliographies useful for the study of fish larvae.

8.6 Geospatial Data Presentation Form: Delaware Bay Report Series. Vol. 7.

8.8 Publication Information:

8.8.1 Publication Place: Univ. of Delaware

8.8.2 Publisher: College Marine Studies

8.9 Other Citation Details: 206 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: R.I. Smith, Ed.

8.2 Publication Date: 1964

8.4 Title: Keys to marine invertebrates of Woods Hole region.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: Woods Hole, Mass.

8.8.2 Publisher: Woods Hole Oceanographic Institute

8.9 Other Citation Details: Contribution No. 11. Marine Biological Laboratory, 208 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: W.G. Smith

8.1 Originator: M.P. Fahay

8.2 Publication Date: 1970

8.4 Title: Description of eggs and larvae of the summer flounder, *Paralichthys dentatus*.

8.6 Geospatial Data Presentation Form: Technical Report

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: U.S. Bur. Sportfish

8.9 Other Citation Details: Wildl. Res. Report 75. 21 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: M.T. Thompson

8.2 Publication Date: 1901

8.4 Title: Metamorphosis in the hermit crab.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Biol. Bull.

8.9 Other Citation Details: 2, abst. 16. p. 350-351.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: M.T. Thompson

8.2 Publication Date: 1903

8.4 Title: The Metamorphosis of the hermit crab.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Proc. Boston Soc. Natural Hist.

8.9 Other Citation Details: 31, 1904(4): 147-209, 7 plates.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: J.C.S. Wang

8.1 Originator: R.J. Kernehan

8.2 Publication Date: 1979

8.4 Title: Fishes of the Delaware estuaries: guide to the early life histories.

8.6 Geospatial Data Presentation Form: Technical Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: E.A. communications.

8.9 Other Citation Details: 410 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: W.W. Welsh

8.1 Originator: C.W. Breder

8.2 Publication Date: 1924

8.4 Title: Contributions to the life histories of Sciaenidae of the eastern United States coast.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 39: 141-201.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.B. Williams

8.2 Publication Date: 1965

8.4 Title: Marine decapod crustaceans of the Carolinas.

8.6 Geospatial Data Presentation Form: Scientific Publication

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Fish. Bull.

8.9 Other Citation Details: 65(1):296 p.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: A.B. Williams

8.2 Publication Date: 1984

8.4 Title: Shrimps, lobsters, and crabs of the Atlantic coast of the eastern United States, Maine to Florida.

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: Washington, D.C.

8.8.2 Publisher: Smithsonian Institution Press

8.9 Other Citation Details: 550 pages.

99.1.7.2.1 Classification System/Authority

99.1.7.2.1.1 Classification System Citation

8.1 Originator: C.E. Wood

8.2 Publication Date: 1974

8.4 Title: Key to the Natantia (Crustacea, Decapoda) of the coastal waters on the Texas coast.

8.6 Geospatial Data Presentation Form: Book

8.8 Publication Information:

8.8.1 Publication Place: Unknown

8.8.2 Publisher: Contrib. in Mar. Sci

8.9 Other Citation Details: 18: 35-54.

99.1.7.2.4 Taxonomic Procedures:

Taxonomic descriptions, notes, & drawings can be found in the Epibenthos Archival Notebook located in the BMFL computer lab. Pericarid crustaceans (i.e. mysids, amphipods), chaetognaths, hydromedusae, larval shrimps and crabs and larval fishes dominated the epibenthic catches. From 1981 through 1984 for both sampling sites, all organisms were identified under a microscope to species or otherwise to the lowest possible taxa, using the identification keys described above. Larval fish species were measured, and shrimp life stages were noted and counted. In 1985, after the first 4 year's data were synthesized, the over 200 taxa and life stage categories were merged into 30 taxa counting categories. This reduced counting/identification protocol was maintained throughout the sample workup procedures through the year 2003.

However, it was determined in 2005 that the some of the taxa on the 1981-1984 counting sheets had been improperly placed onto the 30 categories new data entry sheet. Therefore in 2005 and 2006, the data and categories on the 81-84 counting sheet were carefully reviewed, regrouped and re-tallied. New data entry sheets were filled out with these new tallied 81-84 data to be congruous with the later data. Here are the classifications that were made:

Penaeus larvae + juvenilesAll life stages of *Acetes*All life stages of *Lucifer*All life stages of *Periclimenes*All life stages of *Latreutes*

Less common Other Shrimp Adults

Larval & Juvenile life stages of the OAS
category, except adults

All Fish Species: Yolk sac+larvae+postlarva+Juvenile

All life stages of all Crab species, except adults

Leeches, nudibranchs, seaspiders, brittle stars,
adult fish, adult crabs, & others*Penaeus* Post Larvae*Acetes* (in their own category as an Adult Shrimp)*Lucifer* (in their own category as an Adult Shrimp)*Periclimenes* (in their own category as an Adult Shrimp)*Latreutes* (in their own category as an Adult Shrimp)Other Adult Shrimp (OAS) all other Adult Shrimps, except
Acetes, *Lucifer*, *Periclimenes*, and *Latreutes*. They each have
their own category. All life stages of *Trachypenaeus* and
Neopontonoids were included in OAS, as only juveniles and
adults were primarily seen.Unidentified Shrimp Larvae (USL), all other larval and
juvenile shrimps, except *Trachypenaeus* and *Neopontonoids*.

Unidentified Fish Larvae

Crab Megalopae; does not include Pinnotherids

Other Animals

Other Animals

99.1.7.4 Taxonomic Classification**99.1.7.4.1 Taxon Rank Name:** Kingdom**99.1.7.4.2 Taxon Rank Value:** Animalia**99.1.7.4.3 Applicable Common Name:** Animals**99.1.7.4.1 Taxon Rank Name:** Phylum**99.1.7.4.2 Taxon Rank Value:** Coelenterata**99.1.7.4.3 Applicable Common Name:** Cnidarians**99.1.7.4.3 Applicable Common Name:** Coelenterates**99.1.7.4.1 Taxon Rank Name:** Phylum**99.1.7.4.2 Taxon Rank Value:** Chaetognatha**99.1.7.4.3 Applicable Common Name:** Arrow Worms**99.1.7.4.3 Applicable Common Name:** Chaetognaths**99.1.7.4.1 Taxon Rank Name:** Phylum**99.1.7.4.2 Taxon Rank Value:** Mollusca**99.1.7.4.3 Applicable Common Name:** Molluscs**99.1.7.4.1 Taxon Rank Name:** Class**99.1.7.4.2 Taxon Rank Value:** Gastropoda**99.1.7.4.3 Applicable Common Name:** snails or gastropods**99.1.7.4.1 Taxon Rank Name:** Phylum**99.1.7.4.2 Taxon Rank Value:** Mollusca**99.1.7.4.3 Applicable Common Name:** Molluscs**99.1.7.4.1 Taxon Rank Name:** Class**99.1.7.4.2 Taxon Rank Value:** Bivalvia or Pelecypoda**99.1.7.4.3 Applicable Common Name:** Bivalves or clams**99.1.7.4.1 Taxon Rank Name:** Phylum**99.1.7.4.2 Taxon Rank Value:** Arthropoda**99.1.7.4.3 Applicable Common Name:** Arthropodes**99.1.7.4.1 Taxon Rank Name:** Subphylum**99.1.7.4.2 Taxon Rank Value:** Crustacea**99.1.7.4.3 Applicable Common Name:** Crustaceans

99.1.7.4.1 Taxon Rank Name: Class
99.1.7.4.2 Taxon Rank Value: Malacostraca
99.1.7.4.1 Taxon Rank Name: Subclass
99.1.7.4.2 Taxon Rank Value: Eumalacostraca
99.1.7.4.1 Taxon Rank Name: Superorder
99.1.7.4.2 Taxon Rank Value: Peracarida

99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Amphipoda
99.1.7.4.2 Applicable Common Name: Amphipods
99.1.7.4.1 Taxon Rank Name: Suborder
99.1.7.4.2 Taxon Rank Value: Gammaridea
99.1.7.4.2 Applicable Common Name: Gammarid amphipods
99.1.7.4.1 Taxon Rank Name: Suborder
99.1.7.4.2 Taxon Rank Value: Caprellidea
99.1.7.4.2 Applicable Common Name: skeleton shrimp, whale lice
99.1.7.4.1 Taxon Rank Name: Infraorder
99.1.7.4.2 Taxon Rank Value: Caprellida
99.1.7.4.2 Applicable Common Name: skeleton shrimps

99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Isopoda
99.1.7.4.2 Applicable Common Name: Isopods
99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Mysida
99.1.7.4.2 Applicable Common Name: Opossum shrimp

99.1.7.4.1 Taxon Rank Name: Subclass
99.1.7.4.2 Taxon Rank Value: Hoplocarida
99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Stomatopoda
99.1.7.4.2 Applicable Common Name: Mantis shrimps

99.1.7.4.1 Taxon Rank Name: Phylum
99.1.7.4.2 Taxon Rank Value: Arthropoda
99.1.7.4.3 Applicable Common Name: Arthropods
99.1.7.4.1 Taxon Rank Name: Subphylum
99.1.7.4.2 Taxon Rank Value: Crustacea
99.1.7.4.3 Applicable Common Name: Crustaceans
99.1.7.4.1 Taxon Rank Name: Class
99.1.7.4.2 Taxon Rank Value: Malacostraca
99.1.7.4.1 Taxon Rank Name: Subclass
99.1.7.4.2 Taxon Rank Value: Eumalacostraca
99.1.7.4.1 Taxon Rank Name: Superorder
99.1.7.4.2 Taxon Rank Value: Eucarida
99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Decapoda
99.1.7.4.2 Applicable Common Name: crabs, crayfish, lobsters, shrimp
99.1.7.4.1 Taxon Rank Name: Suborder
99.1.7.4.2 Taxon Rank Value: Dendrobranchiata
99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Penaeoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Penaeidae
99.1.7.4.2 Applicable Common Name: penaeid shrimps

99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Sergestoidae
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Luciferidae

99.1.7.4.1 Taxon Rank Name: Suborder
99.1.7.4.2 Taxon Rank Value: Pleocyemata
99.1.7.4.1 Taxon Rank Name: Infraorder
99.1.7.4.2 Taxon Rank Value: Caridea
99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Palaemonoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Palaemonidae

99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Alpheoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Alpheidae
99.1.7.4.2 Applicable Common Name: snapping shrimps

99.1.7.4.1 Taxon Rank Name: Infraorder
99.1.7.4.2 Taxon Rank Value: Thalassinidea
99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Callianassoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Callianassidae
99.1.7.4.2 Applicable Common Name: ghost shrimps
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Upogebiidae
99.1.7.4.2 Applicable Common Name: mud shrimps

99.1.7.4.1 Taxon Rank Name: Order
99.1.7.4.2 Taxon Rank Value: Decapoda
99.1.7.4.2 Applicable Common Name: crabs, crayfish, lobsters, shrimp
99.1.7.4.1 Taxon Rank Name: Suborder
99.1.7.4.2 Taxon Rank Value: Pleocyemata
99.1.7.4.1 Taxon Rank Name: Infraorder
99.1.7.4.2 Taxon Rank Value: Brachyura
99.1.7.4.2 Applicable Common Name: short-tailed crabs, true crabs
99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Portunoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Portunidae
99.1.7.4.2 Applicable Common Name: Swimming crabs
99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Ocypodoidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Ocypodidae
99.1.7.4.2 Applicable Common Name: Fiddler crabs, ghost crabs

99.1.7.4.1 Taxon Rank Name: Superfamily
99.1.7.4.2 Taxon Rank Value: Pinnotheroidea
99.1.7.4.1 Taxon Rank Name: Family
99.1.7.4.2 Taxon Rank Value: Pinnotheridae
99.1.7.4.2 Applicable Common Name: Pea crabs

1.7 Access Constraints:

None; however, it is strongly recommended that these data be acquired directly from the Belle W. Baruch Institute for Marine and Coastal Sciences and not indirectly through other sources which may have changed the data in some way.

1.8 Use Constraints:

Following academic courtesy standards, the PIs (originators), the North Inlet Long-Term Ecological Research (LTER) Program, the University of South Carolina's Belle W. Baruch Institute for Marine and Coastal Sciences, and Grantor (see Data Set Credit section) should be fully acknowledged in any subsequent publications in which any part of these data are used. **Use of the data without completely reading and understanding the metadata is not recommended.** The Baruch Institute,

Baruch Institute researchers, and Grantor are not responsible for the use and/or misuse of data from this database. See the section on Distribution Liability for more information.

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program:

NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration.

Please use this citation for data use in publications:

Allen, D.M., V. Ogburn-Matthews, T. Buck, D.L. Barker, and P.D. Kenny. 2006. *Long-Term Large Mesozooplankton (Motile Epibenthos) Data for the North Inlet Estuary, Georgetown, South Carolina: 1981-2003*. Online publication: <http://links.baruch.sc.edu/Data/EPI/index.html>. USC Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA.

1.9 Point of Contact:

10.2 Contact Organization Primary

10.2.1 Contact Organization:

Univ. of South Carolina's Baruch Marine Field Laboratory

10.2.2 Contact Person:

Dr. Dennis Allen

10.3 Contact Position:

Director and Research Professor

10.4 Contact Address

10.4.1 Address Type:

Mailing Address

10.4.2 Address:

USC Baruch Marine Field Laboratory

10.4.2 Address:

PO Box 1630

10.4.3 City:

Georgetown

10.4.4 State or Province:

South Carolina

10.4.5 Postal Code:

29440

10.4.6 Country:

USA

10.5 Contact Voice Telephone:

(843) 546-6219

10.8 Contact Electronic Mail Address:

dallen@belle.baruch.sc.edu

1.11 Data Set Credit:

Please use this in the acknowledgements section in publications:

The National Science Foundation provided funding for both the large and small mesozooplankton monitoring projects, under grants DEB 8012165 and BSR 8514326, to the North Inlet Long-Term Ecological Research (LTER) Program, Belle W. Baruch Institute, University of South Carolina, with Dr. F. J. Vernberg, as project director. From 1993 through 2003, data collection was supported by the University of South Carolina (USC) and the National Oceanic & Atmospheric Administration (NOAA) through the Office of Ocean and Coastal Resource Management, Estuarine Reserves Division (initial award number NA270R0322-01 October 15, 1992). The North Inlet – Winyah Bay National Estuarine Research Reserve, overseen by the USC's Belle W. Baruch Institute for Marine and Coastal Sciences, is in charge of gathering, managing, and distributing these data for research, education, and coastal zone management purposes. Several researchers and data managers, with many technicians and volunteers contributed to the dataset.

1.14 Native Data Set Environment

Counting sheets underwent three revisions as we become more familiar with the taxa and their relative abundance/importance over time. All data on the counting sheets is actual raw count data based on whatever portion of the sample was processed. The original count sheet was used through cruise number 35 Rep A, 1981 through part of June of 1982. Notes on taxonomy and life history were written on the first 99 replicated sample sheets (first four years) for the record. A simplified sheet with fewer categories and no entry slots for life history stages/sex was used for cruises 100-145 to speed up processing time. When analysis of data showed that much was lost in lumping genera and species into more general categories, and when time became available, reprocessing of those samples was done to upgrade the data base. The final counting sheet (sample #145-present) was consistent with a full screen manager program, called Easy Entry. It includes sub-categories which provide resolution on the broader categories in the upper portion of the sheet.

From 1981-1984, the raw data from the counting sheets were entered into a TEXT database, using a Full Screen Manager data entry program, and then later archived in TEXT format on the University of South Carolina's Columbia Campus mainframe computer. This was accomplished by using the Virtual Machine/System Product (VM/SP) Conversational Monitor System (CMS). From 1985 the Easy Entry Personal computer program was used to enter the count data. In the early 1990's, data files were archived on a SUN workstation at the Baruch Institute Data Management Office and on 8mm tapes at the main campus in Columbia. Data were processed using SAS statistical analysis programs and, later, Microsoft Excel.

Data rescue steps in 2005-2008: Final archived data are maintained in Microsoft Excel 2003 and duplicates are saved in comma delimited text (.csv) format. Some process files are also available in text formats. Final data were graphed in Sigma Plot version 8.02. The final rescued data for publication, archival and dissemination are in MS Excel (XLS) version 2003 and comma separated value (CSV) formats, programs are in text (TXT) and Statistical Analysis System (SAS) language Release 8.02 and SAS Windows Version 5.0.2195, documentation files are in text (TXT) and MS Word (DOC) version 2003 format, and graphics were created in SigmaPlot version 9.0 & 10.0 and were archived as JPG images.

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Dr. Dennis Allen

8.1 Originator: Ginger Ogburn-Matthews

8.1 Originator: Paul Kenny

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.1 Originator: North Inlet – Winyah Bay National Estuarine Research Reserve (NIW NERR)

8.2 Publication Date: 20040930

8.4 Title: Long-Term Low Tide Monitoring Data for Fishes, Shrimps, & Crabs in Oyster Landing Creek, North Inlet Estuary, Georgetown, South Carolina: 1983-2003.

8.5 Edition: Second

8.6 Geospatial Data Presentation Form: comma delimited digital text data and Microsoft Excel spreadsheets. Documentation is in Microsoft Word and text formats.

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: The 1983 through June 1993 data were collected under the auspices and protocols of the Long-Term Ecological Research (LTER) Program. This database called, NIN10 - LTER Oyster Landing Biweekly Fish Sampling, was originally published on the LTER Program's website from 1993 to 1996. Data collected from June 1993 through 2003 was collected under the auspices of the North Inlet - Winyah Bay National Estuarine Research Reserve's monitoring program.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/OLLT.Nekton/index.html>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Dr. Dennis Allen

8.1 Originator: Virginia Ogburn-Matthews

8.1 Originator: Paul Kenny

8.1 Originator: Tracy Buck

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.1 Originator: North Inlet – Winyah Bay National Estuarine Research Reserve (NIW NERR)

8.2 Publication Date: unpublished

8.4 Title: Long-Term High Tide Marsh Enclosure Data for Fishes, Shrimps, & Crabs in Oyster Landing Basin, North Inlet Estuary, Georgetown, South Carolina: 1994-2007.

8.6 Geospatial Data Presentation Form: comma delimited digital text data and Microsoft Excel spreadsheets. Documentation is in Microsoft Word and text formats.

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: Robert J. Feller

8.2 Publication Date: 20040917

8.4 Title: Long-Term Ecological Research (LTER) Macrobenthos Data for the North Inlet Estuary, Georgetown, South Carolina: 1981-1992

8.6 Geospatial Data Presentation Form: comma delimited text and MS Excel spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Macrobenthos Long-Term Monitoring Database for the North Inlet and Winyah Bay Estuaries, South Carolina

8.7.2 Issue Identification: January 20, 1981 – January 31, 1992

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: LTER Data Set Code NIN013

8.10 Online linkage: <http://links.baruch.sc.edu/Data/MACRO/index.html>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina

8.1 Originator: North Inlet – Winyah Bay National Estuarine Research Reserve (NIW NERR)

8.1 Originator: Belle W. Baruch Institute of Coastal Ecology and Forest Science, Clemson University

8.2 Publication Date: 200301

8.4 Title: Long-Term Rainfall Monitoring Database (RAINDAZE) for Hobcaw Barony and the North Inlet Estuary, Georgetown, South Carolina: 1978 – 2001.

8.5 Edition: First Edition

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Meteorological Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: April 1, 1978 – December 31, 2001

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: The Belle W. Baruch Institute for Marine Biology and Coastal Research, Baruch Marine Field Lab, University of South Carolina

8.9 Other Citation Details: The 1997 through 2001 data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP), but the data are not considered official SWMP data until the year 2000. This metadata document was produced by Baruch's Data Managers, and is independent of the NERR/CDMO version of the data and metadata.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/RAINDAZE/RAINDAZEhome.htm>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: F.J. Vernberg

8.1 Originator: B. Kjerfve

8.1 Originator: W.K. Michener

8.2 Publication Date: 20011219

8.4 Title: Long Term Ecological Research (LTER) Climate Data with Water Parameters from North Inlet Meteorological Station, North Inlet Estuary, Georgetown, South Carolina: 1982-1996.

8.5 Edition: Second Edition

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: The Belle W. Baruch Institute for Marine Biology and Coastal Research, Baruch Marine Field Lab, University of South Carolina

8.9 Other Citation Details: LTER Data Set Code: NIN001

8.10 Online Linkage: <http://links.baruch.sc.edu/Data/LTERMET/Itermet.htm>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: D. Allen

8.1 Originator: E. Chipouras

8.2 Publication Date: 20020701

8.4 Title: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve Meteorological Data, North Inlet Estuary, Georgetown, South Carolina: 1997 – 1999.

8.6 Geospatial Data Presentation Form: comma delimited text and spreadsheet

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: The Belle W. Baruch Institute for Marine Biology and Coastal Research, Baruch Marine Field Lab, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP), but the data were not considered official SWMP data until the year 2000. This database and the associated metadata are the Baruch Institute's versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NERR SWMP protocols.

8.10 Online Linkage: <http://links.baruch.sc.edu/Data/NERRMET/NERRmet.htm>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.1 Originator: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: Dennis Allen

8.1 Originator: Wendy Allen

8.1 Originator: Erik Smith

8.1 Originator: Andrew Lohrer

8.1 Originator: Chris Buzzelli

8.1 Originator: Amy Cook

8.1 Originator: Tracy Buck

8.1 Originator: Jennifer Keesee

8.1 Originator: Jennifer Jarrell

8.2 Publication Date: 20060331

8.4 Title: North Inlet – Winyah Bay (NIW) National Estuarine Research Reserve Meteorological Data, North Inlet Estuary, Georgetown, South Carolina: 2000 – 2004.

8.5 Edition: Second Edition

8.6 Geospatial Data Presentation Form: comma delimited digital data and Microsoft Excel spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Meteorological Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: January 1, 2000 – December 31, 2004

8.8 Publication Information:

8.8.1 Publication Place: Baruch Marine Field Laboratory, Georgetown, SC USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) for the North Inlet – Winyah Bay Reserve, which is hosted by the Baruch Marine Field Lab. This metadata document was produced by Baruch's data managers, to the Baruch Institute's data management standards. Both data and metadata may vary from the NERR/CDMO versions.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/NERRMET.2000-2004/NERRmet.2000-2004.htm>

8.11 Larger Work Citation

8. Citation Information

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 1995

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: comma separated and tab-delimited digital data (spreadsheet)

8.8 Publication Place: Georgetown, South Carolina

8.8.1 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://nerrs.noaa.gov/Monitoring/> and <http://nerrs.noaa.gov/Monitoring/History.html>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Elizabeth Blood (Daily Estuarine Surface Water Nutrient Chemistry and Water Quality Data)

8.1 Originator: Leonard Robert Gardener (Suspended Sediments)

8.1 Originator: Richard Zingmark (Phytoplankton Biomass - Chlorophyll a and Phaeophytin)

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.2 Publication Date: 19981120

8.4 Title: Long Term Ecological Research (LTER) Daily Estuarine Surface Water Nutrient and Water Quality, Suspended Sediment, and Chlorophyll a Data for the North Inlet Estuary, Georgetown, SC: 1978-1993

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.5 Edition: First Edition

8.7 Series Information:

8.7.1 Series Name: Baruch Institute's Water Chemistry, Chlorophyll a, and Suspended Sediment Long-Term Monitoring Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: September 1, 1978 - June 30, 1993

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina

8.9 Other Citation Details: LTER Data Set Codes: NIN003, NIN004, NIN005; Datasets were merged together

8.10 Online Linkage: <http://links.baruch.sc.edu/Data/LTERDWS/LTERDWSIntroPage.htm>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine Biology and Coastal Research

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: 20030328

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Surface Water Nutrient, Suspended Sediment, and Chlorophyll a Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 1993-2001

8.5 Edition: Second Edition

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Water Chemistry, Chlorophyll a, and Suspended Sediment Long-Term Monitoring Database for the North Inlet Estuary, South Carolina

8.7.2 Issue Identification: June 30, 1993 - December 31, 2001

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine Biology and Coastal Research, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the North Inlet-Winyah Bay NERR. The National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) began their own protocols in the year 2002.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/NERRWCHEM/NERRWCHEM.IntroPage.htm>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: Wendy Allen

8.1 Originator: Chris Buzzelli

8.1 Originator: Tracy Buck

8.1 Originator: Bill Johnson

8.1 Originator: Jennifer Keessee

8.1 Originator: Sarah Foote

8.2 Publication Date: 2005

8.4 Title: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve (NERR) Estuarine Surface Water Nutrient and Chlorophyll a Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 2002-2004

8.6 Geospatial Data Presentation Form: tab delimited text (spreadsheet) in yearly files

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: http://cdmo.baruch.sc.edu/QueryPages/data_metadata_select.cfm

8.11 Larger Work Citation:

8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 1995

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://nerrs.noaa.gov/Monitoring/> and <http://nerrs.noaa.gov/Monitoring/History.html>

1.14 Cross Reference:

8. Citation Information

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet-Winyah Bay (NIW) National Estuarine Research Reserve

8.2 Publication Date: 20031121

8.4 Title: North Inlet-Winyah Bay National Estuarine Research Reserve's (NERR) Estuarine Water Quality Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 1993-2002

8.6 Geospatial Data Presentation Form: comma delimited digital data and spreadsheet

8.7 Series Information

8.7.1 Series Name: Baruch Institute's Water Quality Long-Term Monitoring Database for the North Inlet and Winyah Bay Estuaries, South Carolina

8.7.2 Issue Identification: October 25, 1993 - December 31, 2002

8.8 Publication Information:

8.8.1 Publication Place: Belle W. Baruch Marine Field Laboratory, Georgetown, South Carolina, USA

8.8.2 Publisher: Belle W. Baruch Institute for Marine and Coastal Sciences, University of South Carolina

8.9 Other Citation Details: These data were collected under the auspices and protocols of the North Inlet-Winyah Bay NERR. The National Estuarine Research Reserve's (NERR's) System-Wide Monitoring Program (SWMP) protocols took effect in 1995. This database and the associated metadata are the Baruch Institute's versions, are independent of the NERR/CDMO versions, and follow Baruch's quality control and assurance procedures in addition to NERR SWMP protocols.

8.10 Online linkage: <http://links.baruch.sc.edu/Data/WATQUAL93-02/WATQUAL93-02.html>

1.14 Cross Reference:

8. Citation Information:

8.1 Originator: Belle W. Baruch Institute for Marine and Coastal Sciences

8.1 Originator: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve

8.1 Originator: Wendy Allen

8.1 Originator: Chris Buzzelli

8.1 Originator: Tracy Buck

8.1 Originator: Erik Smith

8.2 Publication Date: 2005

8.4 Title: North Inlet - Winyah Bay (NIW) National Estuarine Research Reserve (NERR) Estuarine Water Quality Data for the North Inlet and Winyah Bay Estuaries, Georgetown, South Carolina: 2003-04

8.6 Geospatial Data Presentation Form: tab delimited text (spreadsheet) in yearly files

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: http://cdmo.baruch.sc.edu/QueryPages/data_metadata_select.cfm

8.11 Larger Work Citation:

8. Citation Information:

8.1 Originator: National Oceanic and Atmospheric Administration (NOAA)

8.1 Originator: Office of Ocean and Coastal Resource Management (OCRM)

8.1 Originator: National Estuarine Research Reserve System (NERR)

8.2 Publication Date: 1995

8.4 Title: NERR System-Wide Monitoring Program (SWMP)

8.6 Geospatial Data Presentation Form: tab delimited text (spreadsheet)

8.8 Publication Information:

8.8.1 Publication Place: Georgetown, South Carolina

8.8.2 Publisher: NERR Centralized Data Management Office

8.10 Online Linkage: <http://nerrs.noaa.gov/Monitoring/> and <http://nerrs.noaa.gov/Monitoring/History.html>

1.16 Analytical

1.16.1 Analytical Tool Description:

Data Entry and Editing Programs

Program Names: **EPI, LIFESM, EPISHORT** (Original 1981-1984 mainframe Entry Screens (Samples 1-100) (Renamed to **EPI.Original18EntryScreens, EPI.OrigLifeStage7Screens, EPI.ShortLifeStageScreens**)

Function: These entry screens were written by the Baruch Institute's data management staff in order to enter, edit, and manage the long-term Epibenthic Macrozooplankton collection dataset using the CMS/VM system before personal computers were in common use. All handwritten count data from the counting sheets were entered and managed using these Entry Screenprograms. There are as many as 18 data entry screens, and data were entered by date/sample and replicate.

Output Filename: Naming Convention: LE##NI, where ## is the coded sample number. A new file was created/entered for each sample date; all three sequential tows for both sites, BB and DD were in each file. Organism abundance is expressed as numbers of organisms.

Location: LE1NI to LE100NI files exist and are archived on the EPI.1981-2003.Process Archive CD in the OriginalEntryScreen81-84Data.Prog/LECountDataFiles directory. Programs are archived on the Process Archive CD in the OriginalEntryScreen81-84Data.Prog/OrigEntryScreens directory. Copies of the screens can be found in the Epibenthos Archive Notebook in the BMFL computer Lab.

Program Names: **LEMSSOUT, LEARRAY, MLEMSOUT, LEPISUMS, SLEMSOUT** (Samples 1-100 SAS programs)

Function: **LEMSSOUT**-provides a formatted hardcopy of the file "LE##NI" which is similar to the format of the data entry sheets to allow for easy editing. Organism abundance is expressed as numbers of organisms.

Function: **LEARRAY**-converts raw data as numbers of organisms to numbers per cubic meter; thereby converting the file "LE##NI" to the file "MLE##NI".

Function: **MLEMSOUT**- provides a formatted hardcopy of the file "MLE##NI" designed to enable proofing of sample information and number per cubic meter against original raw data sheets; abundance is expressed as numbers of organisms per cubic meter.

Function: **LEPISUMS**- sums like-organisms into a more easily workable dataset; creates the file "SLE##NI".

Function: **SLEMSOUT**- provides a formatted hardcopy of the file "SLE##NI" in numbers per cubic meter.

Location: These programs are archived on the Process Archive CD in the OriginalEntryScreen81-84Data.Prog/SASPrograms directory. Original program documentation can be found in the Epibenthos Archive Notebook in the BMFL computer Lab. MLE##NI & SLE##NI files exist and are archived in the OriginalEntryScreen81-84Data.Prog directory.

Program Name: **81-84RawData2NewCategories** (2006 SAS program)

Program Lineage: Original Program: "MLEMSOUT"

Function: infiles the original LE sample files 1-100 and converts them to the same taxa counting categories as the 1985-2003 years' counting groups. This was used to compare original 267 taxa fields to final data for final analysis and publication.

Usage Documentation: Infiles 267 taxa fields, creates file, "Newtaxa", assigns 267 taxa into 30 categories, creates hardcopy forms and a form that can be exported into excel with correct date format mm/dd/yyyy. This was used to create new BWKEPI81-84.dat files to be compatible with the 85-03 files (see below). This was part of the data rescue and archival project that was undertaken in 2005-2006.

Location: The programs and files are located on the **EPIProcess Archive CD** in the **Data Rescue2006.1981-2003EasyEntry** directory and were used to merge the 1981-84 data with the 85-03 data category files.

Program Name: **81-82aRawCntsIn.AdjCntsOut** (for 1981-1982 Raw Count data)

Function: This SAS program reads in 1981 and 1982A BwkEpi RAW Count Easy Entry data, creates an array, calculates Adjusted Numbers (by multiplying the raw numbers by the multiplication factor) for each taxa in the array for each sample and replicate. The 1981 and half of the 1982 data must be converted into adjusted counts first to be compatible with the rest of the 1982, 1983, and 1984 Adjusted Count data!

Infile Filename: BWKEPI81.DAT & BKEPI82A.DAT. These are BwkEpi Easy Entry Digital files.

Location: The programs & files are located on the **EPIProcess Archive CD** in the same directory as above.

Program Name: **EasyXlsAdjCountIn.MNo3M81-84.EpiOut** (for 1981-1984 data)

Program Lineage: Original=nu.m3.meanout by Scott Chapel, 1992

Function: This SAS program reads in Easy Entry BwkEpi Adjusted RAW Count SPREADSHEET data, creates an array, calculates number/M3 for each taxon in the array for each sample and replicate and the mean for each taxa by sample/date.

Infile Filename: AdjustCount81-84EasyXls.Sp.txt. This is BwkEpi spreadsheet merged adj. 1981-1984 files from above.

Note: Do not use 1983-84 bwkepi EasyEntry digital files for any analysis! The entry fields in the program were not large enough to hold some splits over 9 and mysid numbers over 10,000. Use the Excel spreadsheet.

Location: The programs and files are located on the **EPIProcess Archive CD** in the same directory as above.

Easy Entry Programs and Screens Descriptions (1990 programs for 1985-2005 data (Samples after cruise 100))

Easy Entry is a DOS-based data entry program; this application with its customized Easy Entry screens was used to enter Epibenthic data. The final version of the Biweekly Epibenthos Entry program has two entry screens; the first handles the physical sample information and major taxa categories, and the second is for further detail of count data for particular species of shrimp and fish larvae. The major taxa category “unidentified shrimp larvae” count value on the first screen should be equal to or greater than sum of the individual shrimp larvae taxa counts on the second screen; the value should equal the total number of shrimp larvae. Likewise, the major taxa category “unidentified fish larvae” count value should equal to or be greater than the sum of the identified individual fish larvae counts; the value should equal the total number of fish larvae. All original biweekly count data (1981-2003) can be entered, read, and edited in this program.

Note: Do not use 1983-84 bwkepi Easy text files for any analysis! The entry fields in the program were not large enough to hold sample splits over 9 and mysid numbers over 10,000.

Program Names: Easy Help File, EasyEd.exe, and Easy.Exe files are the main application programs needed for the screen programs below. The programs below were written by the Baruch Institute’s data management staff in order to enter, edit, and otherwise manage the long-term Epibenthic collection data.

Screen Program Names: EPI.FLB, BWKEPI.EAS, BWKEPI2.EAS, BWKEPICT.EAS, BWKEPILST, BWKEPI2.LST

Function: All handwritten count data from the counting sheets were entered and managed using these Easy Entry programs. There are two data entry screens, and data were entered by date/sample and replicate.

Infile and Output Filename: Infile filename was BWKEPIXX (XX=YEAR), and it was created and then appended each time new biweekly samples for the year were entered. It saves over itself anytime edits were made. A newly created file had the same naming convention. No separate output file exists.

Easy Entry Usage Documentation: See the “EPIBENTHOS DATA ENTRY AND EDITING PROTOCOL” documentation.

Location: The documentation (file name = BWKEPIEasyEntry.Metadata) & program files are located in the EPIProcess Archive CD in the **EasyEntryEPI.DOSPrograms** directory. Hardcopies of the documentation is located in the Metadata Section in the Epibenthos Archive Notebook in the BMFL computer lab.

Program Name: Hardcopy.bwkepi.newdate (2003 SAS program)

Program Lineage: Original Program: “hardcopy.bwkepi” and “hardcpy.zeros”

Function: SAS program that creates a hardcopy of the IBM “Easy Entry” raw or adjusted count digital text data for easy verification and editing. $RPT = (FLOEND - FLOSTART) \text{ REVS PER TOW}$ is calculated; $NO3M = (RPT/RPM) * 0.13$ NUMBER OF CUBIC METERS is calculated. Under the Libraries/Work part of SAS when running the program, a spreadsheet version is created. This can be exported into Excel and processed further. Exported Spreadsheet from this program is merged and used in EasyXlsAdjCountIn.MNo3M81-83.EpiOut program below.

Infile Filename: BWKEPIXX.DAT (XX=YEAR).

Location: EPI.SAS.Programs directory on the EPI.1981-2003.Process Archive CD. Hardcopies of the program are located in the Metadata Section in the Epibenthos Archive Notebook in the BMFL computer lab.

Data Processing and Analyses Programs

Program Names: ESTAMEAN, EPIRANK, SUBSET EPISUMS (1980’s SAS programs for 1981-84 data)

Function: ESTAMEAN –calculates the mean abundance ($\#/m^3$) by station of specified organisms from SLE##NI files.

Function: EPIRANK –ranks organisms by descending mean abundance using the resulting output file from ESTAMEAN.

Function: SUBSET EPISUMS – creates a file listing the station, sample, tow, and number of organisms ($\#/m^3$) from SLE##NI files.

Location: These programs are archived on the Process Archive CD in the OriginalEntryScreen81-84Data.Prog/SASPrograms directory. Original program documentation can be found in the Epibenthos Archive Notebook in the BMFL computer Lab. MLE##NI & SLE##NI files exist and are archived in the OriginalEntryScreen81-84Data.Prog directory.

Program Name: input.bwkepi (used for replicated LTER NIN.EPI data files from 1981-1992)

Function: This is a SAS program which reads in the archived replicated LTER NIN.EPI data files from 1981-1992.

Infile Filename: epi.dat1-273; Original name: LTER.NIN.EPI.1_273.

Location: Program and data files are located on the EPI.1981-2003.Process Archive CD in the **EPI1981-92.LTERNIN.NoCuMeter.Yearly** directory

Program Name: BwkCountIn.No3M.Meanout (for 1985 data and after)

Program Lineage: Original=nu.m3.meanout by Scott Chapel, 1992- later by Ginger Ogburn-Matthews:
number.perm3.meanout.sas

Function: This SAS program reads in Easy Entry BwkEpi 1985-2003 yearly data files, calculates number/M3 for each taxa in the array for each sample and replicate and the mean for each taxa by sample/date.

Infile Filename bwkepi_.dat or txt 85-2003 yearly files for 1985 and after

Location: **EPI.SAS.Programs** directory on the EPI.1981-2003.Process Archive CD; 85-03 data files are located in **DataRescue2006.1981-2003EasyEntry** directory. Hardcopies of the program are located in the Metadata Section in the Epibenthos Archive Notebook in the BMFL computer lab.

1.16.2 Tool Access Information

1.16.2.2 Tool Access Instructions

The SAS programs and Easy Entry files listed above have been archived in digital form (SAS language and in text form) on the EPI.1981-2003.PROCESS Archive CD. *Easy Entry* programs can be found in the **EasyEntryEPI.DOSPrograms** Directory. These programs only run in the DOS mode or window. The SAS programs described above are located in the **EPI.SAS.Programs** Directory. The latest programs and entry screens were also archived as hardcopies in the Epibenthos Archive Notebook, which is kept at the Baruch Marine Field Laboratory in the Data Management Computer Lab.

1.16.2.3. Tool Computer and Operating System

As of the year 2006, the computer is a 2 GHz machine running Windows 2003 Professional with SAS Release 8.02 and SAS Windows Version 5.0.26. SAS and Easy Entry programs can be run on any computer operating system that will run the SAS software package and/or Easy Entry application. The earliest programs from the early 1980s will have to be modified because they were run on mainframe computers. The later programs may or may not need to be modified in order to run properly with newer computer operating systems or versions of SAS/Easy Entry. For more information about the SAS or Easy Entry programs used in the EPI database, contact the Baruch Marine Field Lab's Data Manager.

1.16.3 Tool Contact

10.2 Contact Organization Primary

10.1.2 Contact Organization:

Univ. of South Carolina's Baruch Institute

10.1.1 Contact Person:

Ginger Ogburn-Matthews

10.3 Contact Position:

Research Data Manager & Analyst

10.4 Contact Address

10.4.1 Address Type:

Mailing Address

10.4.2 Address:

USC Baruch Marine Field Lab

10.4.2 Address:

PO Box 1630

10.4.3 City:

Georgetown

10.4.4 State or Province:

South Carolina

10.4.5 Postal Code:

29442

10.4.6 Country:

USA

10.5 Contact Voice Telephone:

(843) 546-6219 Ext 225

10.8 Contact Electronic Mail Address:

ginger@belle.baruch.sc.edu

2. Data Quality Information

2.1 Attribute Accuracy

2.1.1 Attribute Accuracy Report:

Animals were identified by trained technicians using identification keys and overseen by the primary investigator. Every effort was made to ensure that identifications were consistent and correct. Information on Anomalous/Erroneous data that may help clarify differences between the raw data sheets and final database, may be found in the **Completeness Report** Section of this document under the **Anomalies** headings. Additional clarification on identification practices and discrepancies throughout the course of the database can be found in the **Entity and Attribute Overview** section of this document.

2.1.2 Quantitative Attribute Accuracy Assessment

2.1.2.1 Attribute Accuracy Value

These accuracy descriptions are for the replicated number per cubic meter data file, not the calculated mean data file.

<u>Parameter</u>	<u>Number of Decimal Places</u>
Date of sample (DATE)	0
Sample Number (SAMPLE)	0
Sample Time (SAMTIME)	0
Surface Temperature (STEMP)	1
Bottom Temperature (BTEMP)	1
Surface Salinity (SSAL)	1
Bottom Salinity (BSAL)	1
Revolutions Per Meter (RPM)	2
Flowmeter Initial Reading (FLOSTART)	0
Flowmeter Final Reading (FLOEND)	0
Revolutions Per Tow (RPT)	0
Number of times sample was Split (SPLITS)	0
Multiplication Factor (XFACTOR)	0
Number per cubic meter (NO3M)	4
NO3M Epibenthos taxon or taxa category count	2

2.1.2.2 Attribute Accuracy Explanation:

DATE: The date values are integers and have no decimal places assigned to them, they are accurate to the whole number. The date can be as much as several days different from other fauna collections due to weather, tide, or boat conditions.

SAMPLE: The sample numbers are whole numbers (sequential counts & integers) and have no decimals places assigned to them.

SAMTIME: The time values are integers and have no decimal places assigned to them. Time is generally considered to be accurate to within 5 minutes.

STEMP & BTEMP: The surface water temperature readings were taken with a conductivity meter accurate to the nearest tenth of a degree Celsius. Values are reported in degrees Celsius with one decimal place.

SSAL & BSAL: The surface and bottom water salinity readings were taken with a conductivity meter, which reads in parts per

thousand and is accurate to the nearest tenth. Values are reported in parts per thousand with one decimal place.

RPM = This value is determined by calibrating each flowmeter. An average number of revolutions is calculated at slow, medium, and fasting walking speeds over 25 yards or 50yards in a swimming pool. Two decimal places were kept when averaging 9 whole numbers.

FLOSTART = The initial reading of the flowmeter before tow deployment. There is no decimal point to read.

FLOSTART = The end reading of the flowmeter after tow deployment. There is no decimal point to read.

RPT = FLOSTART – FLOSTART. Both are whole numbers.

SPLITS = The number of times the sample was split before organisms were counted. There were no partial splits.

XFACTOR = The number of times the taxa or category should be multiplied by to account for the number of times the sample was split.

NO3M = Calculation of $RPT/RPM \times 0.13$ ($0.13 = \text{net diameter}$); multiplication of 2 numbers with 2 decimal places each; therefore, 4 decimal places were kept.

All Epibenthos Animal Count Parameters = the number of individuals per cubic meter of water volume was calculated by dividing the adjusted counts (whole numbers) by NO3M. Count accuracy is dependent on the identification skills of the technician processing the sample. For the purpose of this database, the calculated number of individuals per cubic meter of water volume is reported with two decimal places, despite the fact that only whole organisms were counted and recorded. Whole numbers are used for all count data entry in the Easy Entry Screens.

2.2 Logical Consistency Report: Beginning in 1995, the taxa categories of bivalves and gastropods were not consistently counted. Therefore, they were removed when calculating the Total Epibenthos category for the entire 1981-2003 database.

2.3 Completeness Report:

The MS Excel final data files were verified for typographical errors by both the Epibenthos Data Technician and the Rescue Project Data Manager. The following schedule provides availability information for the final data set, however, there may be missing data within these availability periods. In particular, several unprocessed samples were destroyed when Hurricane Hugo struck the coast of South Carolina (September 21, 1989) and partially destroyed the field lab facilities. The missing and anomalous data documentation pertains only to Baruch's final rescued/published 2006 data set, and may differ from earlier versions of the database. All occurrences of missing data were marked with a period in the final database.

General Data Availability (mm/dd/yyyy):

Bread and Butter Site:

01/20/1981 – 12/30/1994 (samples 1-346): 3 replicates (A, B, C)

01/13/1995 – 12/22/2003 (samples 347-568): 2 replicates (A & B); however, 3rd replicate available for sorting analysis. Note: statistical analysis in 2003 showed that processing/counting replicates A&B verses A, B, &C was not statistically different. Therefore, out of the 3 existing replicates for each date only 2 (usually replicates A&B) were processed and data analyzed for 01/13/1995 – 12/22/2003.

Debidue Site:

01/20/1981 – 01/04/1985: 3 replicates (A, B, C; 99 samples)

Missing samples & data

Unprocessed BB-site samples were broken and/or lost when Hurricane Hugo destroyed the Field Laboratory 9/21/89. Lost samples/replicates were:

Date	Sample/Replicate
11/18/1987	170 Rep A
02/16/1988	176 Rep C
03/17/1988	178 Rep C
06/10/1988	184 Rep C
12/07/1988	196 Rep A + Rep C
03/20/1989	203 Rep B
04/03/1989	204 Rep B
04/18/1989	205 Rep A
06/29/1989	210 Rep B
07/31/1989	212 Rep B

Other missing data:

Date	Sample/Replicate
05/21/1998	430 Rep B + Rep C
11/27/2001	517 Rep B + Rep C
09/23/2003	562 Rep B + Rep C

430 & 562: both had only 1 replicate (A) collected due to the sled &/or net getting lost during tidal creek sampling.

517: only 2 reps were collected; rep#2 flowmeter revolutions very, very low, (field notebook states "FM not working").

Samples where n should equal 3 but are two (n=2): 103, 170, 176, 178, 184, 203, 204, 205, 210, 212, 228, 235, 258

Samples where n should equal 3 but is one (n=1): 196

Samples where n should equal 2 but are one (n=1): 430, 517, 562

The sample replicates below were deleted because their NO₃M values were corrupting the count data. See procedures for this determination.

DATE	SAMPLE	Replicate	NO ₃ M Value	NO ₃ M Range
03/05/1985	103	C	42.04	16.94
03/23/1990	228	A	19.69	18.92
07/03/1990	235	C	35.85	10.46
06/10/1991	258	A	19.88	20.06

Procedures used for the determination of outliers for flowmeter data (NO₃M & RPT)

The 1981 – 2003 replicate data (Reps A & B for 1995 – 2003) were merged together into one large file for a total of 1465 records. The data were sorted in ascending order by the following variables: NO₃M, date, and replicate. The top 1% and bottom 1% (top and bottom 15 records = 30 records total) were removed from the database to remove outliers. An average NO₃M, 1 Standard Deviation, and 2 Standard Deviation were calculated from the filtered data. The average = 34.71, 1SD = 4.14, and 2SD = 8.28 NO₃M. 2SD was used to evaluate the replicated NO₃M values in the database.

The range of NO₃M values for each sample (replicate n = 2 or 3) was then calculated for the original 1981-2003 database. Any sample that had a NO₃M range greater than 2SD (8.28) was noted for further investigation. A total of 31 or 2 % of the samples fit this criterion.

To evaluate whether or not the RPT (or NO3M) value for each replicate was “out of line” or in error, the total number of organisms, total number of particular taxa, and the number per cubic meter values of each sample’s replicate were compared against one another. If one of the replicate’s NO3M value created (when calculated) an order of magnitude or more difference in the number of a particular taxa from the other(s) AND the total number of organisms and major categories were not relational to the volume of water filtered, the NO3M value was changed. Either it was recalculated using the average of the other two replicates, or if there were three replicates, the replicate with outlier NO3M-value was deleted. Four of the 31 samples with three replicates were deleted because of outlier 2SD NO3 data (see list above). No change was made to the other 27 samples/replicates with NO3M ranges outside 2SD. These were samples: 59, 67, 77, 87, 98, 180, 234, 236, 326, 338, 342, 378, 388, 433, 439, 451, 453, 456, 463, 466, 470, 480, 483, 498, 501, 540, and 544.

Bottom salinity and temperature were not taken until cruise #41 (8-31-82). Water velocity and light readings did not begin until cruise #100 (1-18-85). Water depth was not consistently taken until cruise #16 (8-26-81).

Taxonomic Data Anomalies

In 2003, the early counting categories of unidentified fish and shrimp larvae on the original 1985-1995 counting sheets were reexamined for accuracy. Each sample replicate was examined and processed under the microscope by either Tracy Buck or Sarah Foose. New taxa count edits were noted on each sheet, if appropriate. Afterwards, the new correct taxa counts were made in the appropriate BWKEPIxx.dat (or.txt) Easy Entry digital file. Also, Sarah Foose re-examined the 1981-1984 original counting sheets for category compliance with the later years; taxa category groupings changed several times over the course of the project. These samples’ taxa were not reprocessed (identified) because of the trustworthiness of the identifications by the technician. Based on the original 1981-84 counting sheets, Sarah transferred the correct taxa category grouping counts onto a counting sheet that was used from 1996 through 2003. Ginger Ogburn-Matthews created the adjusted counts (if necessary) and BWKEPI81-84.dat digital files. Now all data categories are streamlined from 1981-2003. See “**Process Description**” below for more information. BB & DD gravid counts from 1981-1985 (samples 1-99) were also added to the correct taxa category.

DD samples 1A through 58A (10 May 1983) did not have the “Callianassids” category divided into *Callianassa* larvae and *Upogebia* larvae on the counting sheet; there is no value in the *Upogebia* larvae category for these samples/replicates. The few “Callianassids” that were found in these samples were placed in the *Callianassa* larvae category in the final data tables (see DD.Orig81-84AdjCounts2NewCateg file). Total unidentified shrimp counts were also verified to ensure the Callianassid counts were included into the final tallies in the database.

Starting at 59B, the “Callianassids” category was divided into *Callianassa* larvae and *Upogebia* larvae tallies on the adjusted raw counting sheets. These tallies were reviewed, and counts were adjusted based on the multiplication factor. Adjusted counts for the *Callianassa* larvae and/or *Upogebia* larvae categories were entered by hand into the final digital rescue file: **DD.Orig81-84AdjCounts2NewCateg** (this file was derived from the original LE files. See Process Step below). Total unidentified shrimp counts were verified to ensure the Callianassid counts were included into the final tallies in the database.

On counting sheets 100-145, counts entered under two categories, fish larvae and other fishes were combined to get “Total Fish Larvae” which later became the “Unidentified Fish Larvae” category. This was verified in 2003 and again in 2006.

On counting sheets 1-99 add number entered in "gravid" column to get total number of adults of that taxon. (Note: in the data rescue process in 2005-06, we found that this addition was not carried out in the original 1992 LTER published database “epi.dat1-273”; therefore, the Data Rescue Manager went back to the raw counting sheets and re-tallied the categories with gravid individuals, edited the database, and created final yearly digital files

Fish larvae were misplaced for the 1986 February and March samples 126-129 before sub-categories could be counted. Also, it was determined that in April and May of 1986 (samples 130 through 133), Pinfish and Spot were not counted as part of the subcategory count procedure described earlier. Therefore, there are missing data for these two subcategories for samples 126 through 133.

Samples 100 through 105 (January 18, 1985 through April 3, 1985) did not have the amphipod categories divided up into the two subcategories, gammarids and caprellids. Therefore the data for those two categories were denoted as missing.

Physical measurements and Data Anomalies

Light meter readings were incorrectly read on cruises 100-110 and on several other cruises. These incorrect data are recorded in the Fauna Field Data books. The physical data set (Cruises 100-274) referred to in this documentation has been corrected to reflect accurate values. The field data books have not been altered and do not correspond completely with the digital data set.

Technicians in the 1990s misinterpreted on how to calculate the final light value using the light meter range and value numbers. The old documentation gives the formula: Range value (or Scale) X Reading value X 0.1 to obtain a value in watts. This would be the formula if the sensor was a pyronometer. However, in 2002, the light sensor company was contacted and verified that what we have been using is **quantum** sensor; therefore the final light value is determined differently. The correct value is read directly off of the meter, based on the Range value (or Scale) and is not calculated. See the **Methodology Section** below for instructions on how to read the meter.

Bottom Water Temperature value of 15.5°C on June 10, 1991 (Cruise#258) was found by the Rescue Data Manager to be anomalous. The field notebook was consulted, and this value was verified as being entered correctly into the database. However, since bottom temperatures rarely vary more than a degree from the surface temperatures and since the two week intervals either side of this bottom temperature were in the 20°C range, the data manager concluded it is in error. Either the technician misread the instrument, wrote the value down incorrectly, or the instrumentation malfunctioned.

Dissolved Oxygen readings above 10.0 mg/l from Dec 1996 to February 1997 (Cruise#394-398) were found by the Rescue Data Manager to be anomalous. The field notebook was consulted, and these values were verified as being entered correctly into the database. Both the surface and bottom DO measurements were unusually high and correlated with each other. No explanation of these high readings was given in the field notebook, except one date did mention very high current velocities. Therefore, there is no reason to expect these values are in error; but should be used with caution.

Cruise #257. The zooplankton and epibenthos fauna were not collected on the same day. Zpk was done on 5-27-91 and Epi was collected on 5-28-91. Therefore, the physical information for these two days have been arranged to coincide with each fauna collection's date. The Epi physical data set mentioned above reflects the information taken on 5-28-91, not the previous day. However, water depth (2.8 m) in the data set was taken from the zpk day (5-27-92).

RPT= Revolutions Per Tow Problems & Changes Made (RPT = FLOEND - FLOSTART)

When the flowmeter for each tow did not rotate the expected amount (approximately 7000 to 10000 revolutions), due to fouling, tide eddies, or flowmeter malfunction, the RPT was corrected, usually by averaging the other 2 good replicate's RPT. The following samples had changes made to its RPT values.

Date	Sample#	Rep	OldRPT	New RPT	FloStart	FloEnd	NewNO3M
12/21/1981	24	A	8	10201	429831	440032	36.5124
12/15/1982	48	C	1170	7934	19435	27369	29.8703
06/09/1998	431	B	470	9851	15431	25282	36.2067
07/02/2001	507	A	19030	8104	108654	116758	30.4222

1/13/1983 50C calculation of NO3M (35.91) on entry sheet was incorrect. Corrected number is 35.5906

2005 & 2006 Edits made to Time data in Digital Easy Entry Files.

Date	Sample
04/03/1985	105 Rep B 1032 replaced with correct time: 1039
04/03/1985	105 Rep C 1032 replaced with correct time: 1046
12/20/1988	197 Rep A 1055 replaced with correct time: 1042
03/06/1989	202 Rep B 1100 replaced with correct time: 1107
07/27/1992	286 Rep C 1053 replaced with correct time: 1109
04/16/1996	378 Rep B 1211 replaced with correct time: 1225
08/19/2002	535 Rep A 0936 replaced with correct time: 0836
10/17/2002	539 Rep A 1000 replaced with correct time: 0953
10/17/2002	539 Rep B 0830 replaced with correct time: 1002
12/17/2002	543 Rep A 1100 replaced with correct time: 1051
10/17/2002	543 Rep B 1051 replaced with correct time: 1100

2.5 Lineage

2.5.1 Methodology

2.5.1.1 Methodology Type: Field Collection Procedures and Protocols

2.5.1.3 Methodology Description: Overall Epibenthic Zooplankton Field Collection Protocol

Since previous field studies indicated that stage of tide and time of day affected organism abundance at the epibenthic sled stations, it was necessary to make collections about every 14 days when the same tide stage occurs at the same time of day to keep these variables "constant". Thus, three sequential tows were made with the same apparatus along the same tow path when the end of the ebbing tide occurred near noon. Replicated biweekly measurements were made to allow for statistical comparisons of means among dates. Comparisons of abundance between years provided information on long term trends. Collections at a sandy inlet and a major marsh creek location allowed for a comparison of two habitat types. The same gear, field deployment, and tow paths have been used since sample no. 1.

A series of three sequential tows were made at each of 2 stations at two week intervals 1.5 to 2 hours prior to low tide. All collections were made during the late morning (9 - 11 am) hours. An epibenthic sled (see description) was towed behind an outboard boat motoring approximately 2 knots faster than the ebbing tidal current. All tows were made moving with the tidal flow along a marked tow path 100 m in length. Tows usually lasted approximately 5 minutes depending upon tidal velocity. Volume of water filtered was estimated with a torpedo shaped *General Oceanics flowmeter* model 2040 mounted in the mouth of the net. Flowmeter readings were recorded before and after each tow.

Upon sample retrieval, the contents of the net were concentrated in the removable cod end and transferred into a pre-labeled Nalgene jar and 100% buffered formalin stained with Rose Bengal added to bring the final concentration to 5 - 10% formalin. In the event of a large catch of sponge, algae, shell, or an oversized organism (greater than or equal to 1 liter volume), the sample was poured into a bucket and the excess material rinsed, noted, and discarded. The remaining sample was then sieved through a fine mesh net (less than or equal to 365 micron), placed in a pre-labeled jar, and preserved. Samples were returned to the lab for analysis.

Epibenthic Sled Gear Description: The apparatus consists of a rectangular steel frame (51 x 30 cm) mounted on 3 skis which orient the mouth of a #2 (365 micron) Nitex, 1/2 meter mouth diameter standard conical plankton net perpendicular to the creek bottom. The apparatus does not dig into the sediment, but does collect soft-bodied sessile invertebrates (sponges, bryozoans, etc.) in addition to small motile organisms within 30 cm of the bottom. A 12 meter tow rope tied to the leading point of the sled chassis allowed for the best contact between the skis and the bottom along most of the tow paths. See online web photos and drawings for more information at <http://links.baruch.sc.edu/Data/EPI/metadata/EPIMetadata.html>.

For complete detailed information for biweekly sampling cruises for all fauna, including vendors for nets, and other important information for Estuarine sampling, go to the 2008 documentation: "Protocols for Biweekly Fauna Cruise" in the Metadata section of the Archival notebook or online at the link above.

2.5.1 Methodology

2.5.1.1 Methodology Type: Field Collection Procedures and Protocols

2.5.1.3 Methodology Description: Physical Field Data collection

Field technician(s) recorded physical data in waterproof Field Notebooks prior to Epibenthos collections. These data were hand entered into a separate digital data file named: **FaunaPhysicals81-03**. Field observations about water, weather, wind, etc were also included in the Field Notebook. Water observations would include water color, clarity, and water from Winyah Bay intruding into the North Inlet system. Comments included about anything unusual such as unusually high or low tide, or storm events that might have an effect on the sample data.

A conductivity meter was used to determine the surface and bottom water temperature and water salinity values. Beginning on June 16, 1993 (sample 308) these variables and depth were measured with a Hydrolab water quality instrument. Prior to this time, depth values were estimated from the 0.5 meter marked zooplankton nets. On September 28, 1993, dissolved oxygen measurements were made with the Hydrolab probe.

Underwater light readings were taken with a LI-COR LI-193SB Underwater Spherical Quantum Sensor using a LI-COR LI-185B Quantum/Radiometer/Photometer. To OPERATE: First, the FUNCTION knob was turned to "Sensor in air", and light measurements of the surrounding air were made. Then the FUNCTION knob was turned to "Sensor in water", and light measurements in water were made at the surface and at 50cm depth increments, down to the bottom. The RANGE knob was placed either on multiples of 10 (10, 100, 1000, 1×10^4) or 3 (3, 30, 300, 3000, 3×10^4). Each time the RANGE knob was placed on the lowest possible scale without the needle pegging out at the high or low end. Then the reading was recorded, depending on the RANGE knob: if the Range was on the 10-scale, then the reading was taken from the top of the dial (values 0 to 1.0); if on the 3-scale, the reading was taken from the bottom of the dial (values 0 to 3). The correct value is read directly

off of the meter, based on the Range value (or scale). Both the RANGE value and SCALE value were recorded in the field notebook, and then converted to the correct PAR value within the physical dataset spreadsheet. Recording these numbers rather than recording only the PAR value allows for detection of possible errors due to reading the wrong scale. The value is determined directly by using the RANGE to determine what the SCALE is reading. For example: a SCALE of 300 would indicate that the bottom scale (0-3) should be read as 0-300; therefore, a reading of 1.25 from the bottom scale would indicate of PAR value of $125 \mu\text{mol s}^{-1} \text{m}^{-2}$. Beginning on December 29, 2005, a LI-COR Model LI-1400 datalogger replaced the LI-COR LI-185B Quantum/Radiometer/Photometer. This datalogger allows for sensor-specific multipliers to be stored in the datalogger and then a direct digital readout of PAR in $\mu\text{mol s}^{-1} \text{m}^{-2}$ is given. This direct reading is what was recorded in the field notebook. During the period between 12/29/05 and 7/21/06, the "light in air" value was measured using a LI-COR Model LI-192SA Underwater Quantum Sensor rather than the LI-193SB Spherical Quantum Sensor. The LI-193SB was still used for the **underwater** PAR measurements during this period, and was then used to make the "light in air" reading as well beginning again on 8/7/06.

Water velocity was measured in meters per second using a Marsh McBirney Model 201D Portable Water Current Meter. The sensor (dark bulb above torpedo-shaped weight) was deployed into the water, and beginning at the water's surface (determined by the ring attachment: when it reaches the surface of the water) water velocity readings were measured and at 1/2 depth meter increments (marked on the cable) until the bottom was reached. Each measurement reading was allowed to stabilize before it was recorded.

2.5.1 Methodology

2.5.1.1 Methodology Type: Laboratory Procedures and Protocols

2.5.1.3 Methodology Description: Lab Analysis

Prior to counting, the sample is sieved through a $365\mu\text{m}$ mesh sieve, rinsed with water, and the 10% formalin/saltwater solution is saved for archiving the sample after processing. For the 1981-1984 samples, the rinsed sample was placed in a graduated beaker and sample volume recorded. In the event the volume of settled material was excessive (greater than or equal to 100 ml), the sample was divided with a plankton splitter until a workable fraction was obtained (never less than 12.5% of original volume). From 1985 onward, enough water was added to the beaker to the dilute sample for ease of ID. The need of sample splitting was determined either through scanning a couple of petri dish "plates" or visual inspection of the sample in the beaker. If it needed splitting, then the sample was poured into the plankton splitter, and split up to 3 times depending on the density of organisms within the sample. All samples were then poured into a plastic petri dish and sorted under the microscope.

Sorting is done under a binocular dissecting microscope at 6 - 12X. All organisms of appropriate size (greater than or equal to 365 micron) are enumerated. (See Section 5. Entity and Attribute Information for a listing of common taxa)

During the first year (1/20/81-1/9/82), 100 of each species of mysids, decapod larvae, juveniles, and adults; cumaceans; stomatopods; isopods; fish eggs, larvae, and juveniles (up to 100 per species per replicate) and rare organisms were isolated. All isolated specimens were stored by appropriate taxon in labeled flint vials and preserved in 10% formalin buffered and stained with Rose Bengal. Vials were stored by station and cruise for future analysis and reference.

Following sorting and enumeration the counted sample was recombined with the unsorted portion (if any), placed in a labeled 500 ml flint jar, preserved with buffered and stained 10% formalin solution and stored for future reference.

2.5.1 Methodology

2.5.1.1 Methodology Type: Laboratory Procedures and Protocols

2.5.1.3 Methodology Description: Subsampling of samples and taxonomic groups

Sub-categories (dominant genera) of unidentified shrimp and fish larvae were determined by the following procedures. The unidentified shrimp larvae category was subdivided into the following sub-categories: penaeid post-larvae, Palaemonetes spp., Alpheus spp., Upogebia spp., Callinassa spp. and others. The larval fish category was subdivided into *Leiostomus xanthurus*., *Anchoa* spp., *Gobiosoma* spp., *Lagodon rhomboides*, and other fish larvae (includes yolk sac larvae, larvae, postlarvae, and juveniles).

In 1981-1982: The replicate with the largest counts of unidentified shrimp larvae was selected and recounted. At least 10 total unidentified shrimp larvae (USL) were necessary for a recount. Up to 100 randomly selected shrimp larvae were counted and the percentages of each sub- category were derived. The resulting percentages were then used to estimate the proportion of the total unidentified shrimp larvae in each replicate that the dominant genera comprised. The newly generated numbers of individuals were treated as count data and used to generate means and error terms for each sub-category as though those sub-categories were actually counted.

1981-1982: In the data rescue process in June of 2006, if there was an actual count number for one of the subcategories (usually Penaeids and Callinassids) on the original counting sheet, it was placed into the newer 32 category counting sheet. The remaining subcategory numbers were based on their percent (from procedure above) X (total number of USL – the actual subcategory count). Fish larvae were identified and counted on the original counting sheet and were transferred to the 32 category counting sheet.

1983-84: All sub-categories (unidentified shrimp and fish larvae) for each replicate were counted.

May 1, 1985 through Nov. 14, 1986 (samples 107-145): The same procedure to create count numbers for shrimp larvae subcategories in 1981-82 was used to generate numbers for unidentified shrimp larvae and larval fish sub-categories. Fish larvae were misplaced for the 1986 February and March cruises 126-129 before sub-categories could be counted. Also, it was determined that in April and May of 1986 (samples 130 through 133), Pinfish and Spot were not counted as part of the subcategory count procedure described earlier. Therefore, there are missing data for these subcategories.

In 2003, Tracy Buck and Sarah Foose reviewed winter samples from Nov. 1985 - Nov. 1986, to verify Spot and Pinfish identifications and counts. These new numbers were placed into the final database. Since there were no raw count sheets to verify numbers from, no actual numbers could be obtained for the all the subcategories (like in the 1981-1982 2006 Data Rescue Process, see above), except those winter samples that the Epi-Counting Research Specialists (Buck & Foose) provided.

December 2, 1986 through April 3, 1989 (samples 146-204): All sub-categories of unidentified shrimp and unidentified fish larvae were counted for each replicate. In 2003, the subcategory data for fall-winter of 1987, all of 1988, and up through April 3, 1989 were verified by Sarah Foose.

April 18, 1989 through December 19, 1991 (samples 205-271): The same procedure that was used in 1981-82 was used to generate numbers for the shrimp and larval fish subcategories. The Fall 1989 through winter 1990 and Fall of 1991 fish larvae were re-counted by Sarah Foose and Tracy Buck. The 1989, 1990, 1991 all fish subcategory counts were verified in 2003 by Sarah Foose. No additional data rescue was performed on these data in 2006, since there were no original count sheets to verify the numbers.

1987-1994: In 2003, the winter samples (Nov-May) of these years were reviewed by Tracy Buck and Sarah Foose for Larval fish identification/count verification (Primarily Spot and Pinfish). If incorrect, the new numbers were placed into the final bwkepiXX.dat database. They also verified numbers within the subcategory, Penaeid Shrimp Larvae, for summer samples from 1987-1994.

2.5.1 Methodology

2.5.1.1 Methodology Type: Count data processing

2.5.1.3 Methodology Description: Calculation of numbers of taxa per cubic meter

Raw sample sheets contained raw counts of phyla, class, family, genera, and/or species for all organisms encountered. Total numbers of organisms per sample/replicate were calculated using the following 2 equations:

Equation 1: Total Organisms

$$n \times MF = T$$

n = raw count
MF = multiplication factor for subsampling (sample splits)
T = total organisms per sample/replicate

Equation 2: Water Volume

$$\frac{\text{revs/tow}}{\text{revs/meter}} \times A(m^2) = V(m^3)$$

revs/tow = flowmeter revolutions per tow
revs/meter = average flowmeter calibration
A(m²) = area of net mouth which is 0.13 m²

The values for the parameters for these equations were entered into the data entry sheet, and the SAS program calculated the final numbers.

2.5.1 Methodology

2.5.1.1 Methodology Type: Laboratory Procedures and Protocols of Ancillary Data

2.5.1.3 Methodology Description: Lab Length Analysis of Larval Fishes

From 1/21/84 - 1/4/85, up to 100 of each species of fish larvae were isolated from each sample date and station. The first 100 encountered in replicates A, B, or C were placed in labeled vials and stored until length measurements were made. Larvae were measured using vernier calipers for larger specimens (> or = 10mm) or an ocular micrometer for small specimens (< or = 10mm). Standard Lengths (SL) and Notochord Lengths (NL) were recorded to the nearest 0.1mm with the ocular micrometer. Fish Egg Diameters (ED) were measured and recorded to the nearest 0.01mm. Ocular Units of the three microscopes used to determine sizes were calibrated to millimeters at different magnifications. This calibration sheet was scanned in 2008, and the image is located in the Ancillary Data Folder.

2.5.1 Methodology

2.5.1.1 Methodology Type: Laboratory Procedures and Protocols of Ancillary Data

2.5.1.3 Methodology Description: EpiMacroZooplankton Biomass Determination

16 x 20 mm plastic Petri dishes were washed in 70% acetone and dried in a drying oven at 60°C. Aluminum pans were weighed on a Cahn 29 Electrobalance, and the weights were recorded after one minute. The pans were placed in labeled Petri dishes and put into the drying oven for 24 hours. They were removed from the oven and immediately placed in the desiccator. Fifteen minutes were allowed for the pans to cool to room temperature. The aluminum pans were removed from the dishes and weighed on the Electrobalance. The weight was recorded after one minute. The pans were placed back into the petri dishes, and the dishes were replaced in the oven to dry for an additional six hours. The pans were then reweighed. Since no significant difference was found between the two weights, it was decided that weights could be measured after 24-hr. Organisms were isolated and rinsed in distilled water to remove excess salts. They were placed in pre-weighed aluminum pans and dried for 24-hours at 60°C. Pans with the organisms were placed in the desiccator for fifteen minutes, then weighed and the weights recorded after one minute. Dry weights were then calculated.

2.5.3.1 Process Description:

Data Entry:

Counting sheets underwent three revisions as we became more familiar with the taxa and their relative abundance & importance over time. Copies of counting sheets used during different periods are included with this documentation. The original sheet was used for cruises 1 through 99 (Jan 1985). Notes on taxonomy and life history were written on these sheets for the record. A simplified sheet with fewer categories and no entry slots for life history stages/sex was used for cruises 100-145 to speed up processing time. When analysis of data showed that much was lost in lumping genera and species into more general categories, reprocessing of those samples was done to upgrade the database. On counting sheets 100-145, counts entered under the two categories, fish larvae and other fishes, need to be combined to get total fish larvae. The final counting sheet (145-present) was consistent with the Easy Entry full screen manager. It includes sub-categories which provide resolution on the broader categories in the upper portion of the sheet. All data on the counting sheets is actual raw count data based on whatever portion of the sample was processed. (In the data rescue process of 2005-06, it was determined that counting sheets from June 2, 1982 – December 20, 1984 (sample 35 Replicate B – sample 98 Replicate C) contained the **adjusted count** for the number of splits that were made, and were not actual raw counts. This means that the raw count had already been multiplied by the XFACTOR. (No actual raw counts or raw counting sheets were found for this time frame/sample numbers.)

Multiple levels of entry verification were performed. Data from samples 1-99 were initially checked for entry errors by Beth Thomas (the data management assistant) who originally entered the data on the full-screen management entry programs. Once all data entry errors were corrected, hard copies of the data on the system were sent to Lynn Barker (the Research Specialist who counted the samples) to proof against the original raw data sheets. All data on the system from samples 1-99 were certified error-free by Lynn Barker (date 3-28-86).

Samples 100-245 were entered by Jan Blakely using the Easy Entry program. Ginger Ogburn-Mathews and Jan Blakely edited and verified samples 100-245. Paul Kenny and Jan Blakely entered and verified samples 246-346. All samples 100-346 (Jan 1985 – Dec 1994) were certified error free. Research Technicians, Tracy Buck and Sarah Foose, counted and entered the biweekly 1995-2003 sample data using Easy Entry screens. They also performed editing and verification. Tracy tested to see if the mean of 2 replicates was significantly different from the mean of all 3 replicates. It was statistically shown that there was no significant difference; so as a result, only 2 of the 3 replicates (usually replicates A & B) were counted for each sample during the 1995 – 2003 time frame. It was also determined that some flowmeter calibrations were calculated incorrectly for data before 1995; corrections were made to the Easy Entry 1985-1995 databases. Tracy and Sarah re-organized the Biweekly Easy Entry data files into yearly files. Note that SPECIES1 'Species #1' in the Easy Entry Program is the placeholder for *Lagodon rhomboides*, pinfish. The SAS programs have been modified to make this change.

2005-06 Data Rescue Project:

As part of the 2005-06 Data Rescue Project, the Data Manager performed quality assurance and quality control procedures on the early counted and formatted 1981 – 1984 digital data. The 1981 – 1984 BB biweekly data sheets were reviewed and re-entered into a digital yearly file, using the *Easy Entry* Database Form with the 30 taxa groupings, and were verified for errors against the raw counting sheets. This was done to ensure that the categories used for the early years (1981-1984) were consistent with the rest of the data (through 2004). Error-checking included merging all of the original LE1-99NI digital files which contain over 260 variables (taxon fields) and running the SAS program, “81-84RawData2NewCategories”, which infiles the original LE files and converts them to the same taxa counting categories as the 1985-2003 years counting groups. This original data output was used to compare our newly entered *Easy Entry* Database Form with the 30 taxa groupings.

Process undertaken: the raw data sheet numbers were reviewed and re-categorized based on the 30 presently used taxa groupings. 1981 and ½ of 1982 had both raw and adjusted counts on the sheets, so were therefore, most easily reclassified into its proper taxa grouping and verifiable. June of 1982 through 1984 only had the adjusted counts written on the sheets (no raw count tallies for individual taxa), so we had to assume that these adjusted numbers were correct. Several of the adjusted counts (for splitting) on the Original Counting Sheet for some taxa did not equal our calculated value (Raw Count x Multiplication factor), while the rest of the taxa's adjusted counts on the sheet were correct. It was also found that some taxa were counted and their numbers were not carried over into the raw or adjusted count column. Therefore, during the data rescue of 1981-May 1982 data, we exclusively used the raw count x the multiplication factor to calculate the final Adjusted Count numbers for each taxa or taxon group. Counts of taxa that were not carried over into the raw or adjusted count column were now also included into our new 1981-May 1982 biweekly database.

All 1981-April 1985 BB site taxa category data were reexamined for accuracy by the Data rescue data manager in July of 2006. This included the addition of gravid individuals into the correct taxon category.

For site DD, data category verification used the program, "81-84RawData2NewCategories", which infiles the original LE files and converts them to the same taxa counting categories as the 1985-2003 years counting groups. The original LE1-100 DD (30 Category Rescue output) data was used to compare with the "Final" 1992 LTERNIN1-273 data (which has the 30 taxa groupings). It was determined that only the digital data for *Callianassa* sp and *Upogebia* larvae categories needed to be re-entered using the protocol categories for BB. Also, using the program, it was discovered that the Goby, Pinfish, and Crab Megalopae category numbers differed from the "Final" 1992 LTERNIN1-273 data. All new rescued DD data categories are now correct; the *Callianassa* and *Upogebia* categories were re-entered into the Rescue created DD.Orig81-84AdjCounts2NewCategory File. See anomalous section above for more details. In 2008, the addition of gravid individuals from 1981-1984 (samples 1-99) were placed into the correct taxa/taxon category.

The Data Manager merged all of the 1985-2003 biweekly Easy Entry data into one file using SAS, changed the date format to mm/dd/yyyy, and exported it into Microsoft Excel. All flowmeter information, including number per cubic meter, were reviewed and changed if necessary using the procedures described in the *Anomalous Data* section under the **Data Quality Information** heading above.

All data were then merged into one large 1981-2003 spreadsheet file with only 30 categories. All data were examined for appropriate reporting accuracy and subsequently formatted. In some instances, this required returning to the raw data to obtain the original readings/observations. Missing data markers were inserted and all missing data were documented (see the Missing Data Document) for both physical parameters and count data.

Several variables from the *Easy Entry* database were no longer necessary in the final 1981-2003 Epibenthic database because all values were zero. These were SPECIES2, SPECIES3, SPECIES4, SPECIES5, SPECIES6, and SPECIES7.

Final data for each count parameter were converted to averages of all replicates for each sample. These data were then graphed, as an additional QA/QC measure, and for publication on Baruch's website. Both the graphs and spreadsheets containing averages for each taxon are available as part of the EPI final database.

The Rescue Data Manager examined all previous documentation, including information from Research Technicians that might pertain to missing or anomalous/erroneous data. This documentation and other information from data management personnel were compiled into this metadata document. The Rescue Data Manager also used the Integrated Taxonomic Information System on-line database, <http://www.itis.gov>, to complete taxonomic documentation for the database. Also as part of the 2005-06 Data Rescue Project, all final data were formatted, graphed, documented, and archived.

Data storage location and medium

Also as part of the 2005-06 Data Rescue Project, all raw datasheets, including Counting Sheets, Data Entry Sheets, and Field Notebooks, were scanned into digital .JPG images and archived on the EPI.1981-2003Raw Archive DVD. All raw hardcopies are maintained by Baruch's Data Management Office and are stored in an archive cabinet at the Baruch Marine Field Lab. All process data, programs, documentation, and graphic files were archived on the EPI.1981-2003Process CD. Finally, all final data, documentation, and graphics were published on the EPI.1981-2003.Final Published DVD, on Baruch's website at <http://links.baruch.sc.edu/data/EPI/index.html>, and in the EPI Archive Notebook as hardcopies. The Data Rescue Server also contains a backup copy of all the raw, process, and final archived data files.

2.5.2.3 Process Date: 2006

3 Spatial Data Organization Information:

3.1 Indirect Spatial Reference:

Hobcaw Barony and the North Inlet Estuary are located in Georgetown County, South Carolina, USA

3.2 Direct Spatial Reference Method: Point

5. Entity and Attribute Information:

5.2 Overview Description:

5.2.1 Entity and Attribute Overview:

Final EPI file **BBEpi.NoM3.1981-2003** variable names (in order of occurrence in the database), value type and size (in total number of digits and number of decimal places format), and the value measurement range (maximum and minimum recorded values; may include anomalous data) with its unit of measurement. *Range of measurement values are actual highest and lowest values collected during the database timeframe.

<u>Variable</u>	<u>Type and Maximum Size of Value.Number of Decimal Places</u>	<u>*Range of Measurement and Units</u>
DATE (mm/dd/yyyy)	Integer	1-12, 1-31, 1981-2003
STATION	Scalar, Alpha	BB, DD
SAMPLE	Integer	1 – 568
SAMTIME (hhmm; 24 hour)	Scalar, Integer	0807 - 1452
REPLICAT	Scalar, Alpha	A, B, C
FLOWNO	Scalar, Integer	1300 – 9623 no units (an ID No.)
RPM	Real 4.2	29.50 – 39.00 revolutions per meter
DATECAL (mm/dd/yyyy)	Integer	1-12, 1-31, 1980-2002
FLOSTART	Scalar, Integer	0172 - 999926
FLOEND	Scalar, Integer	9393 - 1009597
RPT	Scalar, Integer	2198 - 17500
SPLITS	Integer	0 - 4
XFACTOR	Integer	1, 2, 4, 8, 16
NO3M	Real 4.2	7.83 – 64.32
HYDROMED	Real 4.2	0.00 – 53.33 number per cubic meter
CHAETOGN	Real 5.2	0.00 – 206.84 number per cubic meter
GASTROPO	Real 3.2	0.00 – 2.22 number per cubic meter
BIVALVES	Real 4.2	0.00 – 28.59 number per cubic meter
STOMATOP	Real 3.2	0.00 – 2.23 number per cubic meter
UNIDSHRI	Real 4.2	0.00 – 96.04 number per cubic meter
ACETES	Real 5.2	0.00 – 351.15 number per cubic meter
LUCIFER	Real 4.2	0.00 – 13.04 number per cubic meter
PERICLIM	Real 4.2	0.00 – 12.51 number per cubic meter
LATREUTE	Real 3.2	0.00 – 4.49 number per cubic meter
OTHASHR	Real 4.2	0.00 – 27.52 number per cubic meter
CRABMEGA	Real 5.2	0.00 – 241.55 number per cubic meter
PINNOTHE	Real 4.2	0.00 – 43.23 number per cubic meter
GAMAMPH	Real 5.2	0.00 – 269.50 number per cubic meter
CAPAMPH	Real 4.2	0.00 – 39.73 number per cubic meter
ISOPODS	Real 3.2	0.00 – 4.80 number per cubic meter
CUMACEAN	Real 4.2	0.00 – 54.06 number per cubic meter
MYSIDS	Real 6.2	0.00 – 1496.04 number per cubic meter
FISHEGGS	Real 4.2	0.00 – 14.85 number per cubic meter
UNIDFLAR	Real 5.2	0.00 – 267.86 number per cubic meter
OTHERS	Real 4.2	0.00 – 42.80 number per cubic meter
PALAEJAR	Real 4.2	0.00 – 48.73 number per cubic meter
ALPHELAR	Real 4.2	0.00 – 46.72 number per cubic meter
CALLILAR	Real 4.2	0.00 – 11.90 number per cubic meter
UPOGELAR	Real 3.2	0.00 – 9.00 number per cubic meter
PENAEPLA	Real 3.2	0.00 – 5.72 number per cubic meter
GOBYLAR	Real 5.2	0.00 – 259.82 number per cubic meter
ANCHOLAR	Real 4.2	0.00 – 11.60 number per cubic meter
LEIOSLAR	Real 4.2	0.00 – 13.71 number per cubic meter
LAGODLAR	Real 4.2	0.00 – 10.64 number per cubic meter
TOTEPI	Real 6.2	0.40 – 1594.49 number per cubic meter

File BBEpi.NoM3.1981-2003 variable attributes:

DATE = date that the sample was collected (not necessarily processed or analyzed) in mm/dd/yyyy format.

STATION = two letter code designation for the tidal marsh creek, within North Inlet Estuary, where the Epibenthic sample was collected. (BB = Bread and Butter site, DD = Debidue site)

SAMPLE = the sample number, assigned in sequential order (in increments of 1), to the Epibenthic collection, based on date.

SAMTIME = the Eastern Standard Time that the Epibenthic sample was collected in hhmm military 24 hour format.

REPLICAT = the replicate letter, assigned in sequential order (in increments of 1 letter), to each “replicated” tow for each sample/date. The replicate was a sequential tow, one right after another, not taken simultaneously with the other replicates.

FLOWNO = a unique number given to each flowmeter before deployment. Used as an identification mark.

RPM = flowmeter revolutions per meter. This value is determined by calibrating each flowmeter. An average number of revolutions is taken at slow, medium, and fasting walking speeds over 25 meters in a swimming pool.

DATECAL = is the date that the flowmeter was calibrated. Needed because the same flowmeter could be used over the years, but the calibration value (RPM) could change.

FLOSTART = the initial reading of the flowmeter before tow deployment.

FLOEND = the end reading of the flowmeter after tow deployment.

RPT = flowmeter’s revolutions per tow and is calculated by subtraction: FLOEND – FLOSTART.

SPLITS = the number of times the sample was split before organisms were identified and counted. There were no partial splits.

XFACTOR = a multiplication factor based on number of times the sample was split; the taxa or category should be multiplied by this XFACTOR to account for the entire sample. Example: if the total sample was split once (1 time), only half of the sample was processed, so the taxa or category should be multiplied by 2.

NO3M = number per cubic meter and is the volume of water filtered by the sample net during each tow. It is determined by the calculation: $RPT/RPM \times 0.13m^2$ (area of net mouth).

Taxon Abundance = Counts per sample were converted to the number of individuals per cubic meter of water volume by dividing the taxa abundance by the NO3M for each replicate. See list below for taxa/category definitions.

HYDROMED = Hydromedusae

CHAETOGN = Chaetognaths

GASTROPO = Gastropods

BIVALVES = Bivalves

STOMATOP = Stomatopods

UNIDSHRI (Unidentified Shrimp larvae) = PALAELAR+ALPHELAR+CALLILAR+UPOGELAR+PENAEPLA+All other unidentified shrimp larvae (except Trachypenaeus: juveniles and adults were considered as OTHASHR = Other adult shrimp); see below for definitions of shrimp larvae code names

ACETES = *Acetes* spp. (all life stages, but were mostly adult shrimp)

LUCIFER = *Lucifer* spp. (all life stages, but were mostly adult shrimp)

PERICLIM = *Periclimenes* spp. (all life stages, but were mostly adult shrimp)

LATREUTE = *Latreutes* spp. (all life stages, but were mostly adult shrimp)

OTHASHR = Other adult shrimp (all other adult shrimp that were not counted in the *Acetes*, *Lucifer*, *Periclimenes*, or *Latreutes* spp. categories). Note: Total Adult Shrimps = ACETES+LUCIFER+PERICLIM+LATREUTE+OTHASHR

CRABMEGA = Crab megalopae+crab juveniles

PINNOTHE = Pinnotherid juveniles

GAMAMPH = Gammarid amphipods

CAPAMPH = Caprellid amphipods

ISOPODS = Isopods

CUMACEAN = Cumaceans

MYSIDS = Mysids

FISHEGGS = Fish eggs

UNIDFLAR (Unidentified fish larvae) = GOBYLAR+ANCHOLAR+LEIOSLAR+LAGODLAR+All other unidentified fish larvae; see below for definitions of fish larvae code names. These would include yolk sac larvae, larval, post-larval and juvenile stages.

OTHERS = Other animals; includes the following: leeches, nudibranchs, sea spiders (pycnogonids), brittlestars, adult fish, adult crabs, polychaetes, and others.

TOTEPI (Total Epibenthic Organisms) = HYDROMED+CHAETOGN+STOMATOP+UNIDSHRI+ACETES+ LUCIFER+ PERICLIM+ LATREUTE+OTHASHR+CRABMEGA+ PINNOTHE+GAMAMPH+CAPAMPH+ISOPODS+ CUMACEAN+ MYSIDS+FISHEGGS+UNIDFLAR+OTHERS. Bivalves and gastropods were not consistently counted; therefore, they were not included in the Total Epibenthos calculation for the entire 1981-2003 database.

Categories below give further definitions of shrimp and fish taxa which occur in the “**Unidentified Shrimp Larvae**” and “**Unidentified Fish Larvae**” categories listed above. **They are not to be included in the TOTAL epibenthos calculations.**

Unidentified Shrimp larvae (Total Shrimp Larvae)

PALAEELAR = *Palaemonetes* spp.larvae

ALPHELAR = *Alpheus* spp.larvae

CALLILAR = *Callinassa* spp.larvae

UPOGELAR = *Upogebia* spp.larvae

PENAEPLA = *Penaeus* spp.postlarvae

Other unidentified shrimp larvae

Unidentified Fish Larvae (Total Fish Larvae)

GOBYLAR = Goby larvae

ANCHOLAR = *Anchoa* spp. larvae

LEIOSLAR = *Leiostomus xanthurus* larvae

LAGODLAR = *Lagodon rhomboides* larvae

Other unidentified fish larvae

Final EPI file **BBEpi.Means.1981-2003** variable names (in order of occurrence in the database), value type and size (in total number of digits and number of decimal places format), and the value measurement range (*maximum and minimum averaged values; may include anomalous data) with its unit of measurement.

<u>Variable</u>	Type and Maximum Size of <u>Value.Number of Decimal Places</u>	<u>*Range of Measurement and Units</u>
SAMPLE	Integer	1 – 568
DATE (mm/dd/yyyy)	Integer	1-12, 1-31, 1981-2003
HYDROMED	Real 4.2	0.00 – 49.43 mean number per cubic meter
CHAETOGN	Real 5.2	0.00 – 167.44 mean number per cubic meter
GASTROPO	Real 3.2	0.00 – 1.36 mean number per cubic meter
BIVALVES	Real 4.2	0.00 – 26.12 mean number per cubic meter
STOMATOP	Real 3.2	0.00 – 1.45 mean number per cubic meter
UNIDSHRI	Real 4.2	0.00 – 65.64 mean number per cubic meter
ACETES	Real 5.2	0.00 – 206.70 mean number per cubic meter
LUCIFER	Real 3.2	0.00 – 9.77 mean number per cubic meter
PERICLIM	Real 4.2	0.00 – 10.29 mean number per cubic meter
LATREUTE	Real 3.2	0.00 – 4.05 mean number per cubic meter
OTHASHR	Real 4.2	0.00 – 16.18 mean number per cubic meter
CRABMEGA	Real 5.2	0.00 – 145.75 mean number per cubic meter
PINNOTHE	Real 4.2	0.00 – 39.93 mean number per cubic meter
GAMAMPH	Real 5.2	0.00 – 131.83 mean number per cubic meter
CAPAMPH	Real 4.2	0.00 – 20.86 mean number per cubic meter
ISOPODS	Real 3.2	0.00 – 3.94 mean number per cubic meter
CUMACEAN	Real 4.2	0.00 – 37.29 mean number per cubic meter
MYSIDS	Real 5.2	0.00 – 986.74 mean number per cubic meter
FISHEGGS	Real 4.2	0.00 – 10.82 mean number per cubic meter
UNIDFLAR	Real 5.2	0.00 – 214.34 mean number per cubic meter
OTHERS	Real 4.2	0.00 – 20.55 mean number per cubic meter
PALAEELAR	Real 4.2	0.00 – 29.77 mean number per cubic meter
ALPHELAR	Real 4.2	0.00 – 31.41 mean number per cubic meter
CALLILAR	Real 3.2	0.00 – 8.49 mean number per cubic meter
UPOGELAR	Real 3.2	0.00 – 7.33 mean number per cubic meter
PENAEPLA	Real 3.2	0.00 – 4.82 mean number per cubic meter
GOBYLAR	Real 5.2	0.00 – 206.48 mean number per cubic meter
ANCHOLAR	Real 3.2	0.00 – 9.33 mean number per cubic meter
LEIOSLAR	Real 4.2	0.00 – 12.27 mean number per cubic meter
LAGODLAR	Real 3.2	0.00 – 6.94 mean number per cubic meter
TOTEPI	Real 6.2	0.40 – 1054.36 mean number per cubic meter

File BBEpi.Means.1981-2003 variable attributes

This file's variable attributes are the same as the **BBEpi.NoM3.1981-2003** except for the calculation for each taxon's abundance. The variables were calculated by averaging the number of individuals per cubic meter of water volume by the number of replicates (either 2 or 3).

The file **EpiPhysicals81-2003** variable names (in order of occurrence in the database), value type and size (in total number of digits.number of decimal places format), and the value measurement range (*maximum and minimum recorded values, may include anomalous data) with its unit of measurement.

Variable	Type and Total Size of	
	Value.Number of Decimal Places	*Range of Measurement and Units
Cruise	Integer	1-568
Month	Integer	1-12 (mm)
Day	Integer	1-31 (dd)
Year	Integer	1981-2003 (yyyy)
Time	Integer	0745-1436 (hhmm; 24 hour)
Date (mm/dd/yyyy)	Integer	1-12, 1-31, 1981-2003
DEPTH	Real 2.1	1.5-4.5 meters
BTEMP	Real 4.2	4.00-35.20 degrees Celsius
BSAL	Real 4.2	16.00-37.80 parts per thousand
BDO	Real 4.2	2.67-13.80 milligrams per liter
STEMP	Real 4.2	3.30-35.10 degrees Celsius
SSAL	Real 4.2	5.90-37.60 parts per thousand
SDO	Real 4.2	2.68-13.70 milligrams per liter
VEL-50	Real 3.2	0.02-0.85 meters per second
VEL-150	Real 3.2	0.00-0.75 meters per second
VELABBOT	Real 3.2	0.00-0.69 meters per second
BVEL	Real 3.2	0.00-0.52 meters per second
LIGHT-50	Real 6.2	0.12-2500.00 micromoles per second per square meter
LIGHT-150	Real 6.2	0.50-1100.00 micromoles per second per square meter
LIGHTABBOT	Real 5.2	0.00-440.00 micromoles per second per square meter
BLIGHT	Real 5.2	0.00-380.00 micromoles per second per square meter

File EpiPhysicals81-2003 variable attributes

CRUISE# = the Epibenthos sample number, assigned in sequential order (in increments of 1).

MONTH = month that the sample was collected (not necessarily processed or analyzed) in mm format.

Day = day that the sample was collected (not necessarily processed or analyzed) in dd format.

Year = year that the sample was collected (not necessarily processed or analyzed) in yyyy format.

Time = Eastern Standard Time that the physical variables were sampled in hhmm (military 24 hour) format.

DEPTH = water depth as measured from the marked lines on the 153 micron zooplankton nets.

BTEMP, BSAL, BDO = bottom water temperature (°C), salinity, and dissolved oxygen (mg/L) measured prior to the Epibenthos tows. These were measured at the stationary 153 µm zooplankton BB sample collection site.

STEMP, SSAL, SDO = surface water temperature (°C) salinity, and dissolved oxygen (mg/L) measured prior to the Epibenthos tows. These were measured at the stationary 153 µm zooplankton BB sample collection site.

VEL-50, VEL-150, VELABBOT, BVEL = water velocity readings (m/s) at 50 cm and 150 cm depths, and water velocities at one level above the bottom and at the tidal creek bottom. The reading one level above the bottom could be 5 to 50 cm above the bottom depth.

LIGHT-50, LIGHT-150, LIGHTABBOT, BLIGHT = light measurement values (units = µmol s⁻¹ m⁻²) of the ambient water at 50 and 150 cm depths, and ambient water light values at one level above the bottom and at the tidal creek bottom. The reading one level above the bottom could be 5 to 50 cm above the bottom depth.

The following table describes variables in the **FishLarvaeData** files (each species has its own data file for a total of 15 files):

Variable & column designation

SPECIES 1-5 LOCATION \$ 8-9 REPLICAT \$ 10 SAMPLE 11-14 TYPE \$ 16-18
GEARTYPE \$ 20-24 LENGTH 26-35 WEIGHT 36-44 MEASTYPE 46-47;

Variable	Type and Total Size of	
	Value	Number of Decimal Places
SPECIES	Integer	4, 12, 13, 18, 40, 59, 95, 113, 121, 122, 124, 125
LOCATION	Alpha	BB, DD
REPLICAT	Scalar, Alpha	A, B, C
SAMPLE	Integer	1 to 99
TYPE	Alpha	EPI
GEARTYPE	Alpha, Integer	ES365
LENGTH	Real 4.2	0.01 to 20.00 millimeters
WEIGHT	Real	Fields are blank; does not occur in data files
MEASTYPE	Alpha	ED, NL, SL

FishLarvaeData variable attributes

SPECIES = species codes used in creating the data files. See list below for code designations.

Species Code	Scientific Name	Common Name
12	Anchoa mitchilli	bay anchovy
95	Anchoa spp.	anchovy-unidentified
13	Bairdiella chrysoura	silver perch
124	Blenniidae species	blennies, multiple species
40	Cynoscion regalis	weakfish
123		Fish Eggs
52	Gobiosox strumosus	skilletfish
122	Gobiosoma Species	Sp 1 & 2
59	Lagodon rhomboides	pinfish
4	Leiostomus xanthurus	spot
18	Micropogonias undulatus	Atlantic croaker
121	Myrophis punctatus	speckled worm eel
113	Symphurus plagiusa	blackcheek tonguefish
125	Unidentified Sciaenids	unidentified drums & croakers

LOCATION = two letter code designation for the tidal marsh creek, within North Inlet Estuary, where the Epibenthic sample was collected. (BB = Bread and Butter site, DD = Debidue site)

REPLICAT = the replicate letter, assigned in sequential order (in increments of 1 letter), to each “replicated” tow for each sample/date. The replicate was a sequential tow, one right after another, not taken simultaneously with the other replicates.

SAMPLE = the sample number, assigned in sequential order (in increments of 1) to the Epibenthic collection, based on date.

TYPE = Type of sampling collection-database type. EPI = Epibenthos

GEARTYPE = Type of sampling collection gear and net mesh used: ES365 = Epibenthic Sled; 365 micron mesh.

LENGTH = length measurement of each individual of each species type, measured by vernier calipers or ocular micrometer.

Ocular Units of the three microscopes used to determine sizes were calibrated to millimeters at different

magnifications. This calibration sheet was scanned in 2008, and the image is located in the **FishLarvaeData** Folder.

WEIGHT = weight measurement of each individual of each species type. This field was blank in each species data files, so it is assumed that the weights of individuals were not taken.

MEASTYPE = The type of measurement that was made on each individual. Designations: Standard Lengths (SL), Notochord Lengths (NL), Fish Egg Diameters (ED).

Data Rescue information March 2006: Here are the Larval Fish original files names downloaded from Univ. of SC mainframe and their new names created in March 2006:

<u>ORIGINAL NAME</u>	<u>NEW FILE NAME</u>
LEANCM1N	ANCHMITC
LEANCS1N	ANCHSPP
LEBAIRCH	BAIRCHRY
LEBLEL1N	BLENSPP
LECYNREG	CYNOREGA
LEEGGS1N	FISHEGGS
LEGOBSP1	GOBISP1
LEGOBSP2	GOBISP2
LEGOBS1N	GOBISTRU
LELAGR1N	LAGORHOM
LELEX1N	LEIOXANT
MEAN.LENGTHS	MEAN.LENGTH.PROGRAM
LEMICU1N	MICRUNDU
LEMYRP1N	MYROPUNC
LESYMP1N	SYMPPLAG
LEUNISCI	UIDSCIAN

Myrophis81-08 Ancillary Data files (AdjCnts & MeanSTD)

<u>Variable</u>	<u>Type and Total Size of Value.Number of Decimal Places</u>	<u>Range of Measurement and Units</u>
DATE	Integer	1-12, 1-31, 1981-2008; (mm/dd/yyyy)
A	Integer	0 - 29
B	Integer	0 - 35
C	Integer	0 - 26
SAMPLE	Integer	1 to 673
DATE	Integer	1-12, 1-31, 1981-2008; (mm/dd/yyyy)
FREQUENCY	Integer	1, 2, 3
MMYROPHIS	Real 3.2	0.00 - 1.67 average number per cubic meter
STDMYROPHIS	Real 3.2	0.00 - 0.55 standard deviation #/m3

Myrophis81-08AdjCnts & Myrophis81-08MeanSTD variable attributes

DATE = Day, month, year that the sample was taken, not processed.

A, B, C = Epibenthos Replicate A, B, or C's adjusted *Myrophis* counts for the sample/replicate. Tows were sequential.

SAMPLE = the sample number, assigned in sequential order (in increments of 1) to the Epibenthic collection, based on date.

FREQUENCY = sample size (n); is the number of replicates (A, B, C) per sample/date which was used to calculate the mean.

MMYROPHIS = Average number (#/m3) of *Myrophis* per sample/date, using the **Myrophis81-08AdjCnts** data file.

STDMYROPHIS = Standard deviation calculated using the **Myrophis81-08AdjCnts** data file

5.2.2 Entity and Attribute Detail Citation:

Definitions were developed by Baruch Institute's researchers, data managers, and technicians; no published standards for entity definitions were used to define the entities used in this dataset. However, the general use of these entity type definitions are understood by biological communities at large.

6. Distribution Information

6.1 Distributor:

10.2 Contact Organization Primary

10.1.2 Contact Organization:

Univ. of South Carolina's Baruch Institute

10.1.1 Contact Person:

Ginger Ogburn-Matthews

10.3 Contact Position:

Research Data Manager & Analyst

10.4 Contact Address

10.4.1 Address Type:

Mailing Address

10.4.2 Address:

USC Baruch Marine Field Lab

10.4.2 Address:	PO Box 1630
10.4.3 City:	Georgetown
10.4.4 State or Province:	South Carolina
10.4.5 Postal Code:	29442
10.4.6 Country:	USA
10.5 Contact Voice Telephone:	(843) 546-6219 extension 225
10.7 Contact Facsimile Telephone:	(843) 546-1632
10.8 Contact Electronic Mail Address:	ginger@belle.baruch.sc.edu

6.2 Resource Description:

Data Set Identification names:

North Inlet LTER Epibenthos NIN08
 Large Mesozooplankton database
 EPI or Epibenthos
 Long-Term Macrozooplankton
 Motile Epibenthic Zooplankton
 Larval Fishes & Shrimps

The **EPI1981-2003 Archive File & Directory Documentation** describes the raw, process, and final files and programs created and used throughout the creation, verification, and archival of this database. A hardcopy of the document is in the Epibenthos Archival Notebook in the BMFL computer lab and is also accessible online at

<http://links.baruch.sc.edu/Data/EPI/metadata/EPI.1981-2003%20Archive%20Directory%20Documentation.pdf%20>.

Identification of FINAL PUBLISHED Directories and Files:

The EPI.1981-2003.Final Publish Archive CD contain the complete final 1981-2003 database, graphics, metadata, and scope images of key taxa. The Final Published 1981-2003 CD contains the following files in the following directories:

EPI.1981-2003.FINAL PUBLISHED Archive CD (Directory Size: 658 Mb, 156 folders, 2,234 files)

EPI.1981-2003.METADATA (Directory Size: 31.3 Mb, 2 folders, 72 files)

Flowmeter Calibrations	(Folder size: 27.7 Mb, 42 jpg files 6 excel files)
Photos.Images	(Folder size: 1.1 Mb, 2 jpg files)
SledSetupFront.jpg	
OrigFaunaTeamCodEnd.jpg	
EPIBENTHOS.1981-2003.METADATA.doc, rtf, & .txt	
PROTOCOLS FOR BIWEEKLY FAUNA CRUISE.doc & .rtf	
BwkEPIEasyEntry.Metadata.doc & .rtf	
Epi.30TaxaCategDefinitions.doc, rtf, & .txt	
EpiNetMeasuremnts.jpg	
Epi.Zpk.NetOrdering.jpg	
BB.DD.EpitowPaths.jpg	
EPISLED.AreaCalc.jpg	
SpotRemovalNotes.pgs1-2.jpg	
2vs3Rep.STDVarMean.ResultTable.xls & csv	
Ttest2&3Reps.doc, rtf, & txt	

ERF TALKS 2005.07 (Directory Size: 118 Mb, 43 folders, 437 files)

ERF2005EpiZpk	(Folder size: 50.9 Mb, 29folders, 211 files)
ERF07.Climate.Fish.Epi	(Folder size: 67.5 Mb, 12 folders, 225 files)

EPICLIMATE81-03 MANUSCRIPT2008 (Directory Size: 68.8Mb, 17 folders, 167files) This Directory contains the final data grouped by biweek, season, quarter, and annual means, final tables and graphics, and scans of the final edited proofs from the Journal of Coastal Research editors.

Final Epi Bwk Seas Data	(Folder size: 6.8 Mb, 6 folders, 71 files)
FinalData	(Folder size: 6.7 Mb, 15 files)
FinalFigsTables	(Folder size: 45.1 Mb, 7 folders, 61 files)
MSProofs	(Folder size: 10.1 Mb, 20 files)

MICROSCOPE PHOTOS (Directory Size: 57.2 Mb, 6 folders, 49 images)

Amphipods	(Folder size: 6.1 Mb, 5 images)
Caprellids & Gammarids	
CrabMegalopae	(Folder size: 2.4 Mb, 2 images)
<i>Callianectes</i> sp.	
FishLarvae	(Folder size: 7.5 Mb, 7 images)
Anchoa sp., Flounder sp., Croaker, and unidentified	
OtherAdultShrimp	(Folder size: 11.2 Mb, 10 images)
<i>Acetes</i> sp., <i>Lucifer</i> sp., <i>Trachypenaeus</i> sp., and unidentified	
Others	(Folder size: 9.1 Mb, 7 images)
Squid, Porcellanid zoea, egg casing	
UshrimpLarvae	(Folder size: 9.6 Mb, 8 images)
<i>Callinassa</i> sp., <i>Alpheus</i> sp., <i>Palaemonetes</i> sp., and unidentified	
Chaetognath.jpg	2 images
Cumaceans.jpg	3 images
Fish Egg	2 images
Mysid.jpg	3 images
Stomatopod.jpg	2 images

EPI.1981-2003.DATA (Directory Size: 360 Mb, 79 folders, 1,432 files)

BBEpi.Means.1981-2003.xls & .csv
BBEpi.NoM3.1981-2003.xls & .csv
DD81-84.EpiAll.MeansOut.xls & .csv
DD81-84.EpiAll.NoM3Out.xls & .csv
EpiPhysicals81-2003.xls & .csv

AncillaryData (Folder Size: 357 Mb, 78 folders, 1,422 file)

Myrophis81-08.xls & .csv files are spreadsheets containing counts of *Myrophis* spp. from 1981-2008.
MicroscopeOcularCalibrations are jpg images of ocular conversions to millimeters at different magnifications.
1985BBMegalopTaxaCnts is a jpg image of a raw counting sheet for 1985 which separates crab megalopae.

DecapodLifeHistorySheets (Folder Size: 10.7 Mb, 44 files) According to earlier documentation, decapod shrimp life history and developmental staging information were recorded on data sheets by cruise/date. Forty-four data sheets for 1984 & 1985 were located & scanned and archived in the folder.

Epibiomass1986Sheet (Folder Size: 14.6 Mb, 15 files) contains epibenthos taxon biomass measurements sheets and methodology from a brown laboratory notebook which were scanned into jpg image formats.

Flowmeter Calibrations (Folder Size: 28.4 Mb, 57 files) contains scanned images of written calibration worksheets or the digital worksheet for each flowmeter used in the sampling net from the late 1970s to 2002. These calibration numbers are crucial for the calculation of the volume of water filtered for each tow, and therefore the number of organisms per cubic meter. The directory also contains EPISLED drawings along with calculations to determine $\#/m^3$.

LarvalFish (Folder Size: 249 Mb, 55 folders, 1,055 files) contains two folders: **FishLarvaeData & RawDataSheets.Scan**. **FishLarvaeData** holds four years (1/20/81 - 1/4/85) of larval and juvenile fish length computer files which were recorded and stored by species in separate digital data files. **RawDataSheets.Scan** contains all the scanned raw hardcopies of fish lengths (.jpg format); these were used to create the **FishLarvaeData** computer files. Not all scanned data were entered into computer files, which mean there are more data & species sheets than were entered. A manuscript was published from these data.

ShrimpLengths1981-82 (Folder Size: 50.6 Mb, 17 folders, 234 files) contain 234 length measurement (carapace, uropod, & telson) sheets from isolated adult and juvenile caridean shrimps from 1/20/81 - 1/9/82 epibenthic samples. Folders were stored by species, and files named with site and date.

TropicalStormDennis1981 folder contains 10 extra sampling BB & DD counts for a rain event during TS Dennis.

EPI.1981-2003.GRAPHICS (Directory Size: 21.7 Mb, 3 folders, 74 files)

BBEpibenthos81-2003 (Folder size: 8.0 Mb, 30 files) All the image files below have the naming convention: "TaxaName.BB1981-2003.jpg". Example (Acetes.BB1981-2003.jpg) and are plots of mean number per cubic meter.

Acetes	FishLarvae	PenaeidLarvae
All others	GammAmphipod	Perclimenes
AlpheusLarv	Gobylarvae	PinfishLarvae
AnchoaLarvae	Hydromedusae	Pinnotherids
CallinassaLarv	Isopods	ShrimpLarvae

CaprellAmphipod	Latreutes	SpotLarvae
Chaetognath	Lucifer	Stomatopod
CrabMega	Mysid	TotalEpibenthos
Cumacean	OtherAdultShrimp	UpogebiaLarv
FishEggs	PalaemonetesLarv	

Final81-03BwkMeanGraphs.JNB is a SigmaPlot 10.0 File which was used to create the .jpg files above.

BBEpiPhysicals (Folder size: 4.1 Mb, 12 files) All are jpg files except for the SigmaPlot Original File

BottLight	SurfLight	SurfDO
BottSalinity	SurfSalinity	depth
BottVelocity	SurfVelocity	MonthBotWatTempSal
BottWaterTemp	SurfWaterTemp	depth

PhysicalsGraphs.gom.JNB is a SigmaPlot 10.0 File which was used to create the .jpg files above.

DDEpibenthos81-84 (Folder size: 9.8 Mb, 32 files) All the image files below have the naming convention:

“TaxaName.DD81-84.jpg”. This directory also contains plots for bivalves and gastropods since they were consistently counted. Plots are mean number per cubic meter \pm 1 standard deviation.

Acetes	FishLarvae	PenaeidLarvae
All others	GammAmphipod	Perclimenes
AlpheusLarv	GobyLarvae	PinfishLarvae
AnchoaLarvae	Hydromedusae	Pinnotherids
CallianassaLarv	Isopods	ShrimpLarvae
CaprellAmphipod	Latreutes	SpotLarvae
Chaetognath	Lucifer	Stomatopod
CrabMega	Mysid	TotalEpibenthos
Cumacean	OtherAdultShrimp	UpogebiaLarv
FishEggs	PalaemonetesLarv	Bivalves & Gastropods

DDMeanStd81-84Plots.JNB is a SigmaPlot 10.0 File which was used to create the .jpg files above.

Identification of PROCESS Archive Directories and Files:

The EPI.1981-2003.PROCESS Archive CD contains various “process” files created over the course of the database. These files include SAS programs, EASY ENTRY programs, process versions of the dataset, multiple versions of metadata and other documentation, and the files used to create the final graphics in the SigmaPlot graphing software package. The [EPI.1981-2003 Archive File & Directory Documentation](#) file contains more detailed descriptions of the Process Data Archive CD contents.

PROCESS DATA Archive CD Contents: (60.4 Mb, 21 Folders, 220 Files)

DataRescue2006.1981-2003EasyEntry (54.0 Mb, 14 Folders, 154 Files)

81-84programs

BBEasyEpi81-84.New

DDSite1981-1984 Work

EasyEpiFiles.85-03

Mean#.M3.Calc

EasyEntryEPI.DOSPrograms (377 Kb, 1 Folder, 15 Files)

Epi.EarlyMetadata (3.4 Mb, 20 Files)

EPLSAS.Programs (313 Kb, 9 Files)

EPI1981-92.LTERNIN.NoCuMeter.Yearly (2 Mb, 20 Files)

QrtlyVSBwkData.Results (1.4 Kb, 1 File)

BB.DD.EpiTowPaths.ppt = powerpoint image of the BB & DD sampling stations within North Inlet

Identification of RAW Archive Directories and Files:

The EPI.1983-2003RAW Data Archive DVD contain scanned digital images of the raw count data sheets and field notebooks for the Epibenthos database, as well as, images of the laboratory notebooks and data sheets containing raw data for the ancillary Biomass databases. The following data can be found on the Archival CDs or Archived on Baruch's Data Rescue Server. The [EPI.1981-2003 Archive File & Directory Documentation](#) file contains more detailed descriptions of the RAW Data Archive CD file contents.

RAW DATA Archive DVD Contents: (1.52 Gb, 76 Folders, 4,150 Files)

EasyEntryData.1981-2003 Directory (BWKEPI81-03.txt – BB & DD sites)

EPI.ZPK FieldNoteBooks Directory (jpgs – BB & DD sites, all years)

OriginalEntryScreen81-84Data.Prog Directory (txt data files & SAS programs)

Version 1Count.IdSheets Directory (jpgs – BB & DD sites, 1981-85)

AdjustedCountSheets (jpgs – BB & DD sites, 1981-1985)

RawCountSheets (jpgs – BB & DD sites, 1981-82)

Version 2Count.IDSheets Directory (jpgs – BB site, 1981-2003)

6.3 Distribution Liability:

According to the Belle W. Baruch Institute for Marine Biology and Coastal Research:

The datasets are only as good as the quality assurance and quality control procedures outlined in the Metadata. The user bears all responsibility for its subsequent use in any further analyses or comparisons. No warranty expressed or implied is made regarding the accuracy or utility of any data collected, managed, or disseminated for general or scientific purposes by the Belle W. Baruch Institute for Marine Biology and Coastal Research. This disclaimer applies both to individual use of the data and aggregate use with other data. It is strongly required that these data be directly acquired from the Belle W. Baruch Institute for Marine Biology and Coastal Research and not indirectly through other sources which may have changed the data in some way. It is strongly recommended that careful attention be paid to the contents of the metadata file associated with these data. Neither the Belle W. Baruch Institute for Marine Biology and Coastal Research, the National Science Foundation, nor the National Oceanic & Atmospheric Administration's Office of Ocean and Coastal Resource Management, Estuarine Reserves Division shall be held liable for the use and/or misuse of the data described and/or contained herein.

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program:

The dataset enclosed within this package/transmission is only as good as the quality assurance/quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

6.4 Standard Order Process

6.4.2. Digital Form

6.4.2.1 Digital Transfer Information

6.4.2.1.1. Format Name: EXCEL (.XLS), WORD (.DOC), Comma Separate Value (.CSV), Text (.TXT), Adobe Acrobat (.PDF) or .jpg (for graphics) format.

6.4.2.1.2 Format Version Number: Microsoft Office Professional 2000, Adobe Acrobat 6.0

6.4.2.1.6 File Decompression Technique: No compression applied

6.4.2.2 Digital Transfer Option

6.4.2.2.1.1 Computer Contact Information

6.4.2.2.1.1.1 Network Address

6.4.2.2.1.1.1 Network Resource Name: <http://links.baruch.sc.edu/Data/EPI/index.html>

6.4.3 Fees: None

6.5 Custom Order Process:

If requesting Non-digital (Paper (hard copy) printout), a fee of \$50 per hour (with a one-hour minimum) plus the cost of supplies will be imposed. As an offline option, CD and DVDs are available at the cost of \$5.00 each. This fee pays for the CD or DVD, the creation of the CD/DVD, and mailing charges.

7. Metadata Reference Information

7.1 Metadata Date: 20060414

7.2 Metadata Review Date: 20080718

7.4 Metadata Contact:

10.2 Contact Organization Primary

10.1.2 Contact Organization:

10.1.1 Contact Person:

10.3 Contact Position:

10.4 Contact Address

10.4.1 Address Type:

10.4.2 Address:

10.4.2 Address:

10.4.3 City:

10.4.4 State or Province:

10.4.5 Postal Code:

10.4.6 Country:

10.5 Contact Voice Telephone:

10.7 Contact Facsimile Telephone:

10.8 Contact Electronic Mail Address:

10.9 Hours of Service:

Univ. of South Carolina's Baruch Institute

Ginger Ogburn-Matthews

Research Data Manager & Analyst

Mailing Address

USC Baruch Marine Field Lab

PO Box 1630

Georgetown

South Carolina

29442

USA

(843) 546-6219 Extension 225

(843) 546-1632

ginger@belle.baruch.sc.edu

8:30 am to 4:30 pm EST/EDT Monday - Friday

7.5 Metadata Standard Name:

Content Standard for Digital Geospatial Metadata, Part 1: Biological Data Profile

7.6 Metadata Standard Version: FGDC-STD_001.1-1999