



## Davidson Seamount Taxonomic Guide

**U.S. Department of Commerce**

National Oceanic and Atmospheric Administration

National Ocean Service

Office of Ocean and Coastal Resource Management

**Office of National Marine Sanctuaries**



December 2008

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## **Davidson Seamount Taxonomic Guide**

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Silver Spring, Maryland  
December 2008

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## **COVER**

Top left: Unidentified yellow ruffled sponge (PORIFERA sp. 8).

Top right: Gorgonian coral (*Paragorgia arborea*).

Lower Left: Crinoids and corals, including feather star (*Florometra serratissima*), black coral (*Trissopathes pseudotristicha*), and primnoid coral (*Narella* sp.).

Lower Right: Deep sea toad (*Bathychaunax (Chaunax) coloratus*).

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## **SUGGESTED CITATION**

Burton, E.J. and L. Lundsten. 2008. Davidson Seamount Taxonomic Guide. Marine Sanctuaries Conservation Series ONMS-08-08. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 145 pp.

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## **ABSTRACT**

Davidson Seamount is one of the largest seamounts in U.S. waters and the first to be characterized as a “seamount.” In 2002 and 2006, the Monterey Bay National Marine Sanctuary (MBNMS) led two multi-institutional expeditions to characterize the geology and natural history of Davidson Seamount. Results from these expeditions to Davidson Seamount are adding to the scientific knowledge of seamounts, including the discovery of new species. In November 2008, the MBNMS boundary was expanded to include the Davidson Seamount. In addition, a management plan for Davidson Seamount was created to develop resource protection, education, and research strategies for the area. The purpose of this taxonomic guide is to create an inventory of benthic and mid-water organisms observed at the Davidson Seamount to provide a baseline taxonomic characterization. At least 237 taxa were observed and are presented in this guide; including 15 new or undescribed species (8 sponges, 3 corals, 1 ctenophore, 1 nudibranch, 1 polychaete, 1 tunicate) recently or currently being described by taxonomic experts. This is the first taxonomic guide to Davidson Seamount, and is intended to be revised in the future as we learn more about the seamount and the organisms that live there.

## **KEY WORDS**

Davidson Seamount, taxonomy, corals, sponges, invertebrates, fishes, marine protected area, MPA, deep sea, guide, images, exploration, ROV, Monterey Bay National Marine Sanctuary.

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## INTRODUCTION

Numerous seamounts of volcanic origin, diverse in size and shape, occur off the coast of California (Davis et al. 2002). Davidson Seamount is one of the largest seamounts in U.S. waters. It is located off central California, 120 km southwest of Monterey and 150 km west of Cambria (Fig. 1). It was the first to be characterized as a “seamount” in 1938 by the United States Board on Geographic Names, and was named in honor of the United States Coast and Geodetic Survey scientist George Davidson (Davidson Seamount 1990). The seamount is an inactive volcano, last erupting approximately 9.8 million years ago (David Clague pers comm). It has an atypical seamount shape, having northeast-trending ridges created by a type of volcanism only recently described by geologists (Davis et al. 2002). The seamount is 2,280 m tall, 42 km long, and 13 km wide, yet the summit is far below the ocean surface (1,250 m).

In 2002 and 2006, the Monterey Bay National Marine Sanctuary (MBNMS) led two multi-institutional expeditions to characterize the geology and natural history of the Davidson Seamount. Partners included the Monterey Bay Aquarium Research Institute (MBARI), Monterey Bay Aquarium (MBA), Moss Landing Marine Laboratories (MLML), National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the British Broadcasting Corporation (BBC). Results from these recent expeditions to Davidson Seamount are adding to the scientific knowledge of seamounts, including the discovery of new species.

As part of a Joint Management Plan Review process, the National Marine Sanctuary Program (NMSP) determined that, “the Davidson Seamount requires protection from the take of or other injury to benthic organisms or those organisms living near the seafloor because of the seamount’s special ecological and fragile qualities and potential future threats that could adversely affect these qualities” (NOAA 2008a). In November 2008, the MBNMS boundary was expanded to include the Davidson Seamount (Department of Commerce 2008; Fig. 2). In addition, a management plan for Davidson Seamount was created to develop resource protection, education, and research strategies for the area (NOAA 2008b, c).

With the new sanctuary designation of Davidson Seamount, it is considered an area of special national significance. Until now, no seamounts were protected by the Monterey Bay National Marine Sanctuary or any other National Marine Sanctuary. Recent research suggests that this pristine area, with ancient and fragile species like deep-sea corals, may be an oasis necessary for maintaining healthy coastal populations in the MBNMS (McClain et al. *In Press*). The National Marine Sanctuary Program is the only group in NOAA with a mandate to conduct marine education, and it can now conduct public education on seamounts. Proximity of Davidson Seamount to the MBA and MBARI will greatly enhance education and research opportunities on what is already one of the best-studied seamounts in the world.

The purpose of this taxonomic guide is to create an inventory of benthic and mid-water organisms observed at the Davidson Seamount to provide a baseline taxonomic characterization. At least 237 taxa were observed and are presented in this guide; including 15 new or undescribed species (8 sponges, 3 corals, 1 ctenophore, 1 nudibranch, 1 polychaete, 1 tunicate) recently or currently being described by taxonomic experts. This is the first taxonomic guide for Davidson

Seamount, and is intended to be revised in the future as we learn more about the seamount and the organisms that live there.

## METHODS

The goals of the expedition in 2002 were to explore and characterize the geology and natural history of the seamount (see DeVogelaere et al. 2005), and to determine the age and growth of several deep-sea corals (see Andrews et al. 2005). Remotely operated vehicle (ROV) dive surveys were selected to include a subset of depths and habitats (base, flank, and crest) of the seamount (Fig. 1). Six full-day ROV dives were completed: two dives were conducted from base to crest on either side of the seamount (to include all depths and representative habitats); and four dives were conducted at the seamount crest, along ridges, or at deeper cones (to focus on the most diverse and interesting habitats relative to corals). Meanwhile, at the sea surface, a science team identified seabirds and marine mammals (but information on these taxa are not included in the guide).

In 2006, a model was developed and tested to predict suitable habitat for corals on the seamount. In addition, corals were collected for further age and growth investigations. Specific regions of the seamount were targeted for coral investigations during eight dives (Fig. 1). The BBC completed three dives using high-definition video for inclusion in the television series *Planet Earth*.

For both expeditions, we used MBARI's state-of-the-art research vessel *Western Flyer* and its deep-diving ROV *Tiburon*. The ROV was equipped with cameras, lights, manipulator arms, accurate positioning systems, and *in situ* pressure, temperature, dissolved oxygen, and conductivity sensors. To document habitat and species occurrence at the seamount, digital video (Panasonic E-550 Digital Betacam<sup>TM</sup> and Ikegami HDL-40 HD<sup>TM</sup>) was continuously recorded, supplemented by intermittent high-quality digital still images (Nikon® Coolpix® 990). Video frame grabs were collected and annotated using MBARI's computer video annotation programs, VICKI (Video Information Capture with Knowledge Inferencing; 2002) and VARS (Video Annotation and Reference System; 2006). During both expeditions, collection of video and still footage was primarily directed at or near the seafloor. Midwater footage however, was opportunistically collected.

Organisms were identified by expedition participants and other taxonomic experts. Most identifications were made using video or still images. Where either method did not suffice, specimens were collected and sent to taxonomic experts for further identification. A subset of specimens has been archived at MBARI, and may be available for further study (see "Specimens" section for contact information).

After each cruise, preliminary video annotations were edited at MBARI's Video Lab. Species were identified to the lowest possible taxon. In many instances, species names were not known and common names were assigned to animals. As a result, this taxonomic guide was created to identify known and unknown species. Video and still images of unknown species were reviewed

with taxonomic experts to assign species names, if available. In addition, biological tissues from select species collected during dives aided in species identification.

This taxonomic guide summarizes biological observations made during 6 ROV dives completed during May 17-24, 2002, and 11 ROV dives completed during January 26- February 4, 2006, aboard the R/V *Western Flyer* using the ROV *Tiburon*. Biological observations are described from ~140 hours of ROV video and sample collections (primarily on the seafloor).

## HOW TO USE THIS GUIDE

### Format

Organisms in this guide are presented in taxonomic order, starting with Phylum Foraminifera (xenophyophores) and ending with Subphylum Vertebrata (fishes). Organisms are identified to the lowest possible taxon. The header of each page lists a portion of the classification scheme, and continues below in table form with image and identification information. An example of the guide format is provided in Table 1.

### Classification

The classification schemes for several taxonomic groups (e.g., sponges, corals) are currently undergoing, or in need of, revision by the larger research community. This guide is not intended as a new classification system, but instead presents the organisms observed at Davidson Seamount using recent classification schemes, and cites the respective reference(s).

Identification information is provided on the right side of the table including, taxonomic classification continued from the header, scientific name (or lowest taxonomic identification), common name, taxonomic classification reference, identifier reference, video identifiability, and depth range observed at Davidson Seamount. If an organism could not be identified to at least the genus level, the lowest possible taxonomic name was assigned (in capital letters), labeled “sp.”, numbered if more than one taxa was observed and could be differentiated (e.g., PORIFERA sp. 1, PORIFERA sp. 2), or labeled “spp.” if more than one taxon was observed and could not be differentiated (e.g., RADIOLARIA spp.; ZOARCIDAE spp.). In the latter case, a representative image was used for the “spp.” group, if available.

### Common Name

Some common names are well established, and are used where available. Where common names are not available (e.g., unidentified organisms, no accepted common name), descriptive common names are assigned until further identification is possible.

### Taxonomic Classification Reference

The reference used to classify an organism is cited, and the full reference is located in the *References* section of the guide.

### Identifier Reference

The person(s) who helped identify an organism is cited (in alphabetical order), and listed in the *Personal Communications* section of the guide.

### Video Identifiability

Descriptions of the video identifiability scheme are as follows:

Confirmed: This organism has been collected and/or has been definitively identified by a taxonomic expert for MBARI or MBNMS.

Provisional: This organism is very likely to be this taxon based on an investigation by MBARI or MBNMS staff (literature search, consultation with outside taxonomic experts, etc.).

Unconfirmed: The status of this organism is pending field collection and further taxonomic investigation, or the description and naming of a new species.

### Observed Depth

The depth range where the organism was observed during the 2002 and 2006 Davidson Seamount expeditions is provided in meters. This guide is also intended as an inventory of organisms, so taxonomic information is provided whether an image was available or not. The latter occurred when an organism could be identified with moving video but not with a still image or video framegrab.

### Images

An image is located on the left side of the table (including image credit). Occasionally, red lasers (as many as four) are visible in images. The bottom two horizontal lasers are approximately 29 cm apart.

Table 1. An example of the guide format and brief explanation of notation.

<i>Phylum</i>	<i>Further classification (e.g., Family name)</i>
<i>Class</i>	<i>Scientific name</i>
<i>Order</i>	<i>Common name</i>
<i>Image</i>	<i>Taxonomic classification reference</i> <i>Person(s) who identified organism</i> <i>Video Identifiability</i>
	<i>Observed depth range in meters (m)</i>
<i>Image Credit</i>	

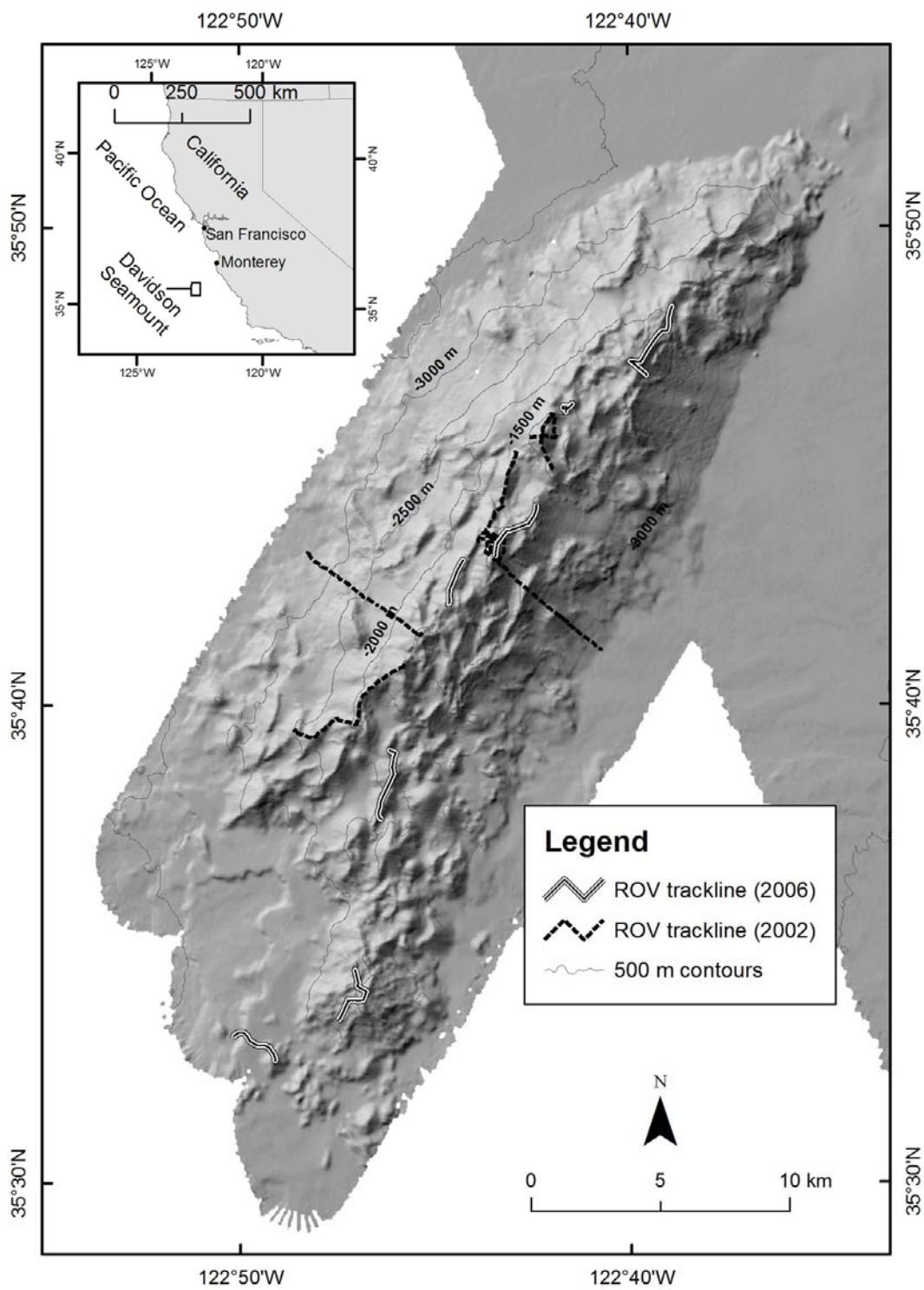


Figure 1. Davidson Seamount and tracklines of 2002 and 2006 remotely operated vehicle (ROV) dives. Credit: Chad King, SIMoN/MBNMS.

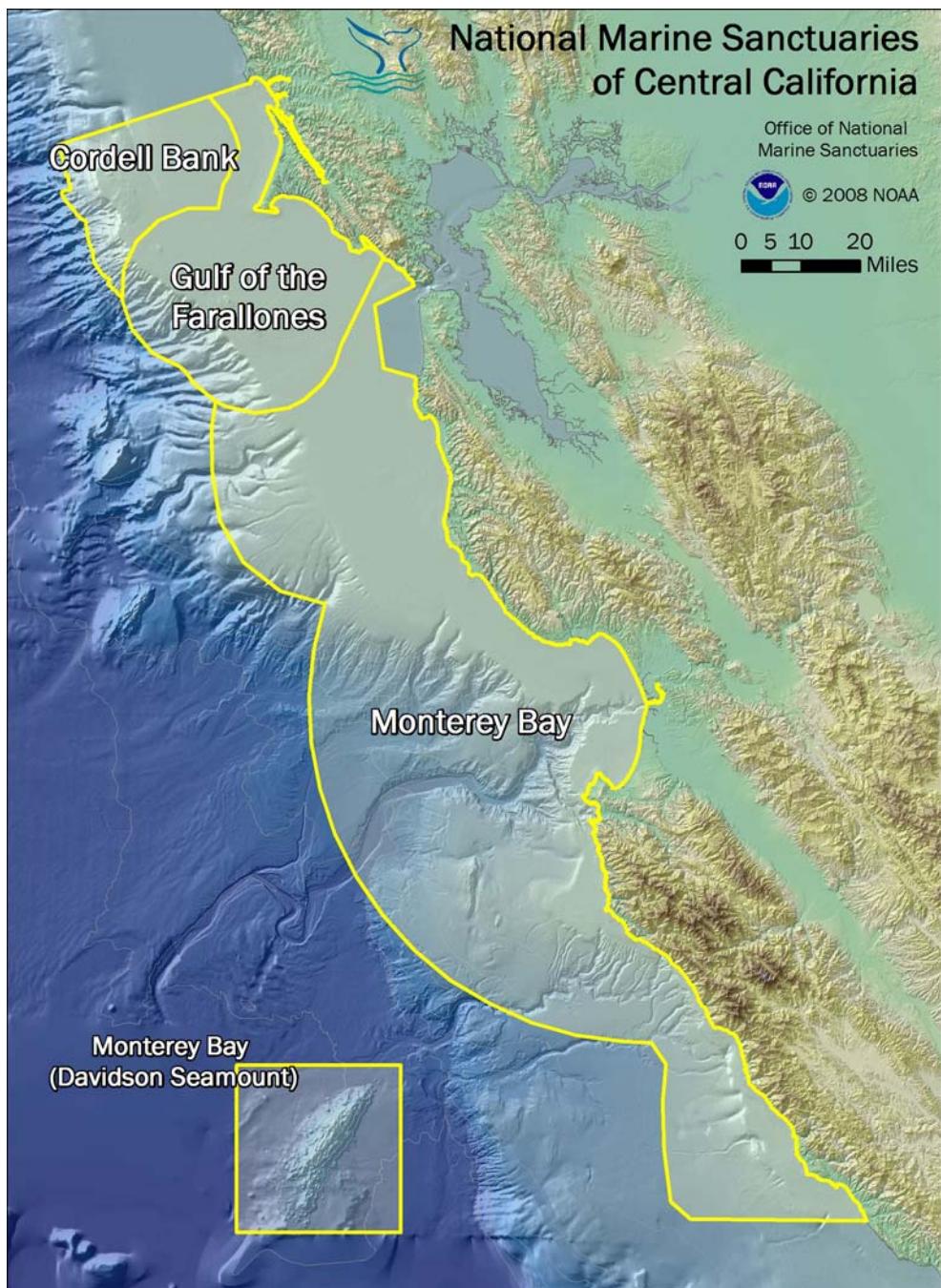


Figure 2. Davidson Seamount Management Zone as part of the Monterey Bay National Marine Sanctuary. Credit: Chad King, SIMoN/MBNMS.

## TAXONOMIC GUIDE

### 1. Phylum: FORAMINIFERA

#### 1.1. Class: Xenophyophorea

	XENOPHYOPHOREA sp. 1  Classification: Brands 1989-2007 Identified by: Kuhnz Video Identifiability: Provisional  Observed Depth: 3,055 m
Credit: NOAA/MBARI 2002	XENOPHYOPHOREA sp. 2  Classification: Brands 1989-2007 Identified by: Barry; Lundsten Video Identifiability: Provisional  Observed Depth: 2,048 – 2,847 m
Credit: NOAA/MBARI 2006	

**2. Phylum: RADIOZOA**

**2.1. Subphylum: Radiolaria**

	RADIOLARIA spp. radiolarians
	Classification: Brands 1989-2007 Identified by: Lundsten; von Thun
	Video Identifiability: Confirmed Observed Depth: 313 – 3,315 m

**3. Phylum: PHAEOPHYTA – brown algae (drift)**

**3.1. Class: Phaeophyceae**

**3.1.1. Order: Laminariales**

	<p>Family: Alariaceae <i>Alaria marginata</i> (and <i>Alaria</i> sp.) kelp (drift), ribbon</p> <p>Classification: Mondragon &amp; Mondragon 2003 Identified by: DeVogelaere; von Thun Video Identifiability: Confirmed Observed Depth: 2,803 – 2,864 m</p>
Credit: NOAA/MBARI 2002	
	<p>Family: Lessoniaceae <i>Macrocystis</i> sp. kelp (drift), giant</p> <p>Classification: Mondragon &amp; Mondragon 2003 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 1,666 – 3,035 m</p>
	<p>Family: Lessoniaceae <i>Nereocystis luetkeana</i> kelp (drift), bull</p> <p>Classification: Mondragon &amp; Mondragon 2003 Identified by: von Thun Video Identifiability: Confirmed Observed Depth: 2,788 m</p>

**4. Phylum: ANTHOPHYTA – flowering plants (drift)**

**4.1. Class: Monocotyledones**

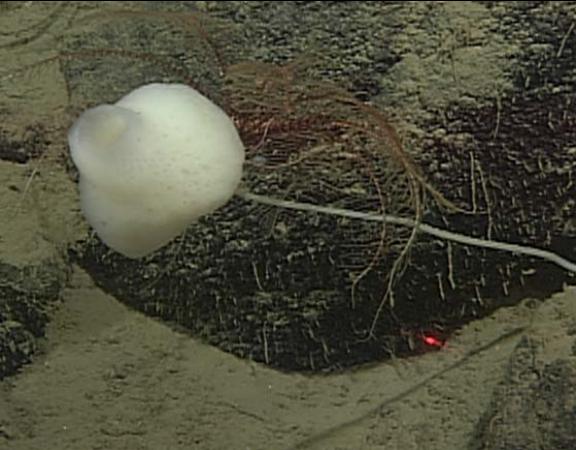
**4.1.1. Order: Najadales**

	<p>Family: Potamogetonaceae <i>Phyllospadix</i> sp. surfgrass (drift)</p> <p>Classification: Mondragon &amp; Mondragon 2003 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,207 – 3,253 m</p>
Credit: NOAA/MBARI 2006	

## 5. Phylum: PORIFERA – sponges

	<p><b>PORIFERA sp. 1</b> sponge</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional  Observed Depth: ~2,420 m</p>
Credit: NOAA/MBARI 2002	 <p><b>PORIFERA sp. 2</b> sponge</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional  Observed Depth: 2,254 m</p>
Credit: NOAA/MBARI 2002	 <p><b>PORIFERA sp. 3</b> sponge</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional  Observed Depth: 1,827 m</p>

## 5. Phylum: PORIFERA – sponges

	<p><b>PORIFERA sp. 4</b> sponge, striated</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional</p> <p>Observed Depth: 1,391 m</p>
	<p><b>PORIFERA sp. 5</b> sponge, stalked (white)</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional</p> <p>Observed Depth: 2,870 m</p>
	<p><b>PORIFERA sp. 6</b> sponge</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional</p> <p>Observed Depth: 1,257 – 1,670 m</p>
<p>Credit: NOAA/MBARI 2002</p>	

## 5. Phylum: PORIFERA – sponges

	<p><b>PORIFERA sp. 7</b> sponge, stalked ruffled (white)</p> <p>Credit: NOAA/MBARI 2002</p>
	<p><b>PORIFERA sp. 8</b> sponge, ruffled (yellow)</p> <p>Credit: NOAA/MBARI 2002</p>
	<p><b>PORIFERA sp. 9</b> sponge, encrusting gray</p> <p>Credit: NOAA/MBARI 2002</p>

**5. Phylum: PORIFERA – sponges**

**5.1. Class: Demospongiae**

**5.1.1. Order: Astrophorida**

	<p>Family: Pachastrellidae <i>Thenea muricata</i> sponge</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed Observed Depth: 1,254 m</p>
Credit: MBARI © 2004	

**5. Phylum: PORIFERA – sponges**

**5.1. Class: Demospongiae**

**5.1.2. Order: Poecilosclerida**

	<p>POECILOSCLERIDA sp. sponge, stalked flute</p>
Credit: NOAA/MBARI 2006	<p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Unconfirmed  Observed Depth: 2,665 – 3,275 m</p>
	<p>Family: Cladorhizidae <i>Asbestopluma</i> sp. nov. sponge, branched (white)</p>
Credit: NOAA/MBARI 2006	<p>Classification: van Soest et al. 2005 Identified by: Lee; Reiswig Video Identifiability: Confirmed  Observed Depth: 1,274 – 1,935 m</p>
	<p>Family: Cladorhizidae <i>Asbestopluma</i> sp. 1 sponge, single (white)</p>
Credit: NOAA/MBARI 2002	<p>Classification: van Soest et al. 2005 Identified by: Lee Video Identifiability: Confirmed  Observed Depth: 1,284 – 1,922 m</p>

**5. Phylum: PORIFERA – sponges**

**5.2. Class: Hexactinellida**

**5.2.1. Order: Hexactinosida**

	<p>Family: Aphrocallistidae <i>Heterochone calyx</i> sponge, goiter (yellow/orange)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,257 – 3,286 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Euretidae <i>Chonelasma</i> sp. nov. sponge, trumpet (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,250 – 3,255 m</p>
Credit: NOAA/MBARI 2006	 <p><i>Chonelasma</i> sp. nov. (as above)</p>
Credit: NOAA/MBARI 2002	

**5. Phylum: PORIFERA – sponges**

**5.2. Class: Hexactinellida**

**5.2.1. Order: Hexactinosida**

	<p>Family: Farreidae <i>Farrea occa</i> sponge, ruffle (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,247 – 2,494 m</p>
	<p>Credit: NOAA/MBARI 2006</p> <p>Family: Tretodictyidae <i>Sclerothamnopsis compressa</i> sponge</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,307 – 2,071 m</p>

**5. Phylum: PORIFERA – sponges**

**5.2. Class: Hexactinellida**

**5.2.2. Order: Lyssacinosida**

	<p>Family: Euplectellidae Subfamily: Bolosominae <i>Saccocalyx pedunculata</i> sponge, stalked goiter (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,295 – 3,169 m</p>
Credit: NOAA/MBARI 2006 	<p>Family: Euplectellidae Subfamily: Corbitellinae <i>Atlantisella</i> sp. nov. sponge, creeping (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,603 – 3,102 m</p>
Credit: NOAA/MBARI 2006 	<p>Family: Euplectellidae Subfamily: Corbitellinae <i>Regadrella</i> sp. nov. sponge, vase (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,329 – 2,681 m</p>

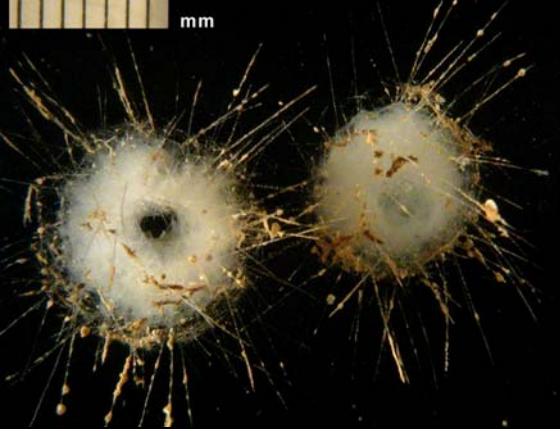
**5. Phylum: PORIFERA – sponges**  
**5.2. Class: Hexactinellida**  
**5.2.2. Order: Lyssacinosida**

	<p>Family: Rossellidae <i>Caulophacus</i> sp. nov. sponge, mushroom (white)</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,471 – 2,880 m</p>
	<p>Family: Rossellidae <i>Crateromorpha</i> sp. nov. sponge</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed</p> <p>Observed Depth: 1,348 m</p>
	<p><i>Crateromorpha</i> sp. nov. (as above)</p>

**5. Phylum: PORIFERA – sponges**

**5.2. Class: Hexactinellida**

**5.2.2. Order: Lyssacinosida**

	<p>Family: Rossellidae <i>Hyalascus</i> sp. nov. sponge</p> <p>Classification: van Soest et al. 2005 Identified by: Reiswig Video Identifiability: Confirmed Observed Depth: 1,726 m</p>
Credit: H.M. Reiswig © 2002	<p>Family: Rossellidae <i>Staurocalyptus</i> sp. nov. sponge</p> <p>Classification: ITIS Identified by: Reiswig Video Identifiability: Confirmed Observed Depth: 1,246 – 1,698 m</p>
Credit: NOAA/MBARI 2002	

## 6. Phylum: CNIDARIA

### 6.1. Class: Scyphozoa – jellyfish

#### 6.1.1. Order: Coronatae

	<p>Family: Atollidae <i>Atolla</i> sp. jellyfish, crown</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 889 m</p>
Credit: MBARI © 2000	 <p>Family: Periphyllidae <i>Periphylla periphylla</i> jellyfish, crown</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 311 m</p>
Credit: MBARI © 2005	

## 6. Phylum: CNIDARIA

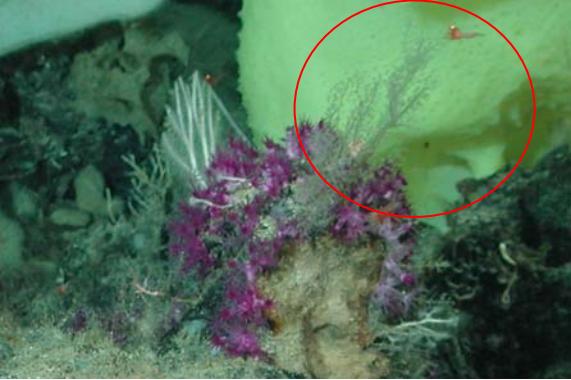
### 6.1. Class: Scyphozoa – jellyfish

#### 6.1.2. Order: Semaeostomeae

	<p>Family: Ulmaridae <i>Poralia rufescens</i></p> <p>Classification: Cairns et al. 2002 Identified by: Schlining; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 816 – 3,211 m</p>
Credit: MBARI © 2007	<p>Family: Ulmaridae Subfamily: Tiburomiinae <i>Tiburonia granrojo</i></p> <p>Classification: Matsumoto et al. 2003 Identified by: Matsumoto Video Identifiability: Confirmed</p> <p>Observed Depth: 1,363 – 1,371 m</p>
	Credit: NOAA/MBARI 2002

**6. Phylum: CNIDARIA**

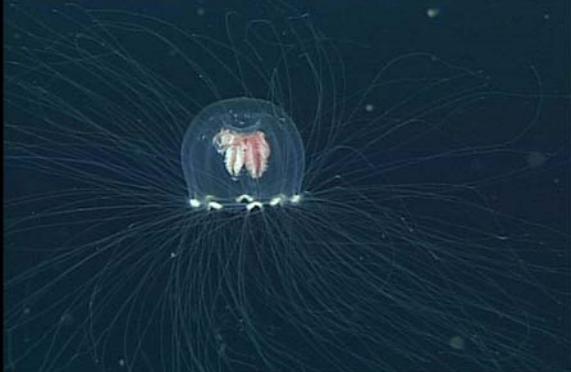
**6.2. Class: Hydrozoa – hydrozoa**

	<p>HYDROZOA sp. 1 hydroid</p> <p>Classification: ITIS; Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Unconfirmed</p> <p>Observed Depth: 1,340 m</p>
Credit: NOAA/MBARI 2002 	<p>HYDROZOA sp. 2 hydroid</p> <p>Classification: ITIS; Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Unconfirmed</p> <p>Observed Depth: 1,429 m</p>
Credit: NOAA/MBARI 2002 	<p>HYDROZOA sp. 3 hydroid</p> <p>Classification: ITIS; Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Unconfirmed</p> <p>Observed Depth: 1,483 m</p>
Credit: NOAA/MBARI 2002	

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

**6.2.1. Order: Anthoathecatae**

	<p>Suborder: Filifera Family: Hydractiniidae <i>HYDRACTINIIDAE</i> sp. nov.</p> <p>Classification: Cairns et al. 2002 Identified by: Miglietta Video Identifiability: Confirmed Observed Depth: 1,663 m</p>
Credit: NOAA/MBARI 2006	
	<p>Suborder: Filifera Family: Bougainvilliidae <i>Chiarella</i> sp.</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 1,281 – 1,289 m</p>
Credit: MBARI © 2003	
	<p>Suborder: Capitata Family: Myriothelidae (=Candelabridae) <i>MYRIOTHELIDAE</i> sp.</p> <p>Classification: Cairns et al. 2002; ITIS Identified by: Williams Video Identifiability: Provisional Observed Depth: 2,706 m</p>
Credit: NOAA/MBARI 2006	

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

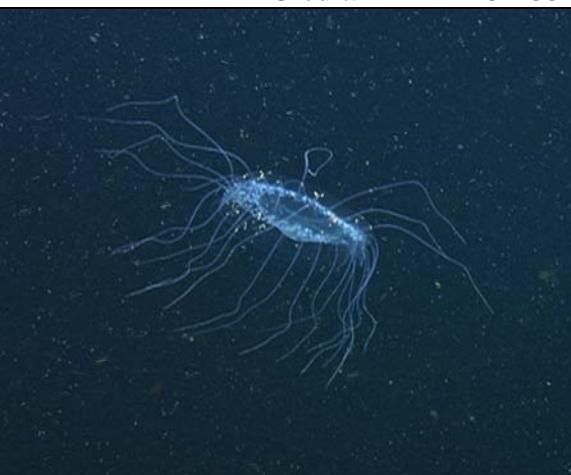
**6.2.2. Order: Narcomedusae**

 A photograph of a translucent, bell-shaped narcomedusa (Aegina citrea) against a dark background. It has two long, thin tentacles extending from the top.	<p>Family: Aeginidae <i>Aegina citrea</i> narcomedusa, golf tee</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,236 – 1,278 m</p>
Credit: MBARI © 2004	
 A photograph of a small, translucent, bell-shaped narcomedusa (Aegina sp.) against a dark background. It has a single, relatively short tentacle visible.	<p>Family: Aeginidae <i>Aegina</i> sp. narcomedusa</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 200 – 3,273 m</p>
Credit: MBARI © 2001	
 A photograph of a larger, translucent, bell-shaped narcomedusa (Aeginura sp.) against a dark background. It has multiple long, thin tentacles radiating from the base of the bell.	<p>Family: Aeginidae <i>Aeginura</i> sp. narcomedusa</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 491 m</p>
Credit: MBARI © 2003	

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

**6.2.2. Order: Narcomedusae**

	<p>Family: Cuninidae <i>Cunina</i> sp. narcomedusa, mesopelagic</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,658 – 3,314 m</p>
	<p>Credit: MBARI © 2002</p> <p>Family: Cuninidae <i>Solmissus</i> sp.</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 222 – 1,645 m</p>

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

**6.2.3. Order: Trachymedusae**

	<p>Family: Halicreatidae <i>Halicreas minimum</i> jelly</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 740 m</p>
Credit: MBARI © 2001	 <p>Family: Rhopalonematidae <i>Benthocodon</i> sp. jelly</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Provisional Observed Depth: 1,170 – 3,314 m</p>
Credit: MBARI © 2005	 <p>Family: Rhopalonematidae <i>Colobonema sericeum</i> medusa, silky</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Confirmed Observed Depth: 526 – 558 m</p>
Credit: MBARI © 2007	

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

**6.2.3. Order: Trachymedusae**

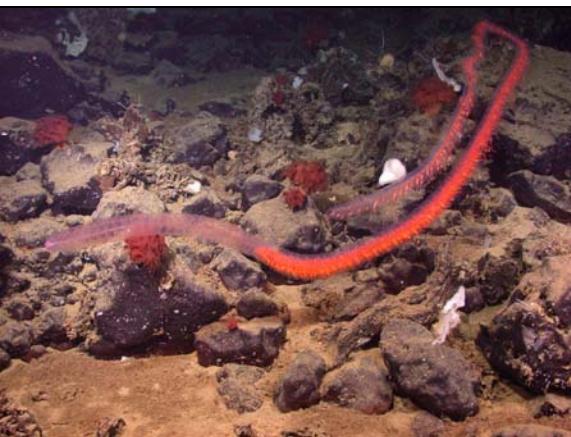
	<p>Family: Rhopalonematidae <i>Crossota millsae</i> jelly</p> <p>Classification: Cairns et al. 2002 Identified by: Matsumoto Video Identifiability: Confirmed Observed Depth: 3,314 m</p>
Credit: NOAA/MBARI 2002	

## 6. Phylum: CNIDARIA

### 6.2. Class: Hydrozoa

#### 6.2.2. Subclass: Siphonophorae – siphonophores

##### 6.2.2.1. Order: Physonectae

	<p>Family: Agalmatidae <i>Nanomia bijuga</i></p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 61 – 2,267 m</p>
Credit: MBARI © 2002	
	<p>Family: Agalmatidae <i>Stephanomia amphyridis</i> siphonophore</p> <p>Classification: Cairns et al. 2002 Identified by: Pugh Video Identifiability: Confirmed</p> <p>Observed Depth: 1,304 m</p>
Credit: NOAA/MBARI 2006	
	<p>Family: Apolemiidae <i>Apolemia</i> spp.</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 439 – 1,159 m</p>
Credit: MBARI © 2002	

## 6. Phylum: CNIDARIA

### 6.2. Class: Hydrozoa

#### 6.2.2. Subclass: Siphonophorae – siphonophores

##### 6.2.2.1. Order: Physonectae

	<p>Family: Physophoridae <i>Physophora hydrostatica</i> siphonophore</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 1,131 m</p>
Credit: MBARI © 2003	
	<p>Family: Rhodaliidae <i>Stephalia dilata</i> siphonophore, benthic</p> <p>Classification: van der Land 2006 Identified by: Pugh Video Identifiability: Confirmed Observed Depth: 1,702 – 2,805 m</p>
Credit: NOAA/MBARI 2002	
	<p>Family: Rhodaliidae <i>Thermopalia taraxaca</i> siphonophore</p> <p>Classification: van der Land 2006 Identified by: Pugh Video Identifiability: Confirmed Observed Depth: 2,741 – 2,938 m</p>
Credit: MBARI © 2006	

**6. Phylum: CNIDARIA**

**6.2. Class: Hydrozoa**

**6.2.2. Subclass: Siphonophorae – siphonophores**

**6.2.2.2. Order: Calycophorae**

	<p>Family: Prayidae <i>Gymnophraia lapislazula</i> siphonophore</p> <p>Classification: Haddock et al. 2005 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 407 m</p>
Credit: MBARI © 2005	

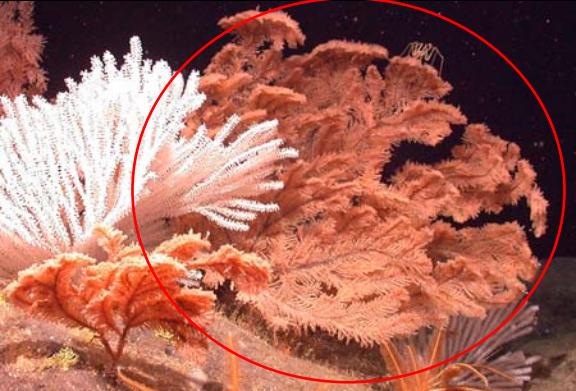
**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.1. Order: Antipatharia – black corals**

**6.3.1.1.1. Family: Cladopathidae**

	<p><i>Trissopathes pseudotristicha</i> black coral</p> <p>Classification: Opresko 2003 Identified by: Opresko Video Identifiability: Confirmed</p> <p>Observed Depth: 2,566 – 2,972 m</p>
Credit: NOAA/MBARI 2006	
	<p><i>Trissopathes</i> sp. (cf. <i>T. tetracrada</i>) black coral</p> <p>Classification: Opresko 2003 Identified by: Opresko Video Identifiability: Confirmed</p> <p>Observed Depth: 2,318 m</p>
Credit: NOAA/MBARI 2002	

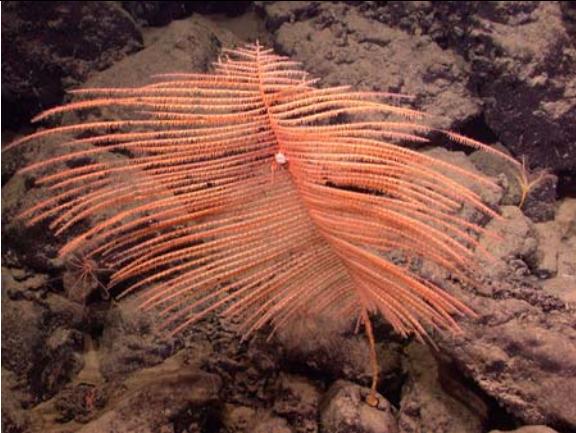
## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.1. Subclass: Hexacorallia (Zoantharia)

##### 6.3.1.1. Order: Antipatharia – black corals

##### 6.3.1.1.2. Family: Schizopathidae

	<p><i>Bathyphathes</i> sp. black coral</p> <p>Classification: Opresko 2002 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 2,268 – 3,283 m</p>
Credit: NOAA/MBARI 2006	 <p><i>Lillipathes</i> sp. black coral</p> <p>Classification: Opresko 2002 Identified by: Opresko Video Identifiability: Confirmed Observed Depth: 1,304 – 2,056 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Umbellapathes</i> sp. black coral</p> <p>Classification: Opresko 2005 Identified by: Opresko Video Identifiability: Confirmed Observed Depth: 1,505 – 3,207 m</p>
Credit: NOAA/MBARI 2006	

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.2. Order: Ceriantharia – tube-dwelling anemones**

**6.3.1.2.1. Family: Cerianthidae**

 A photograph of a tube-dwelling anemone (Cerianthidae sp. 1) showing its long, thin, reddish-brown tentacles extended from a dark, tubular structure.	CERIANTHIDAE sp. 1 tube-dwelling anemone  Classification: Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Confirmed  Observed Depth: 2,854 – 3,250 m
Credit: NOAA/MBARI 2002	 A photograph of a tube-dwelling anemone (Cerianthidae sp. 2) showing its numerous long, blue-tinted tentacles extended from a dark, tubular structure.
Credit: NOAA/MBARI 2002	CERIANTHIDAE sp. 2 tube-dwelling anemone  Classification: Cairns et al. 2002 Identified by: Kuhnz Video Identifiability: Confirmed  Observed Depth: 1,502 – 3,250 m
 A photograph of a tube-dwelling anemone (Cerianthidae sp. 3) showing its long, dark, spiny tentacles extended from a dark, tubular structure.	CERIANTHIDAE sp. 3 tube-dwelling anemone  Classification: Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Confirmed  Observed Depth: 1,254 m
Credit: NOAA/MBARI 2002	

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.3. Order: Actiniaria – anemones**

	<p>ACTINIARIA sp. 1 (possibly <i>Bathyphellia</i> sp.) anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Kuhnz Video Identifiability: Unconfirmed Observed Depth: 1,360 m</p>
Credit: NOAA/MBARI 2002	<p>ACTINIARIA sp. 2 anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Unconfirmed Observed Depth: 2,846 m</p>
Credit: NOAA/MBARI 2002	<p>ACTINIARIA sp. 3 anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Burton; Trejo Video Identifiability: Unconfirmed Observed Depth: 1,254 m</p>
Credit: NOAA/MBARI 2002	

## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.1. Subclass: Hexacorallia (Zoantharia)

##### 6.3.1.3. Order: Actiniaria – anemones

###### 6.3.1.3.1. Suborder: Nyantheae

	<p>Family: Actinostolidae ACTINOSTOLIDAE spp. anemone</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Unconfirmed Observed Depth: 1,325 – 3,237 m</p>
Credit: NOAA/MBARI 2002 	<p>Family: Actinostolidae <i>Stomphia</i> sp. (probably <i>S. didemon</i>) anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Kuhnz Video Identifiability: Provisional Observed Depth: 1,365 – 1,900 m</p>
Credit: NOAA/MBARI 2002 	<p>Family: Hormathiidae HORMATHIIDAE sp. anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten; von Thun Video Identifiability: Observed Depth: 1,265 – 3,270 m</p>
Credit: NOAA/MBARI 2002	

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.3. Order: Actiniaria – anemones**

**6.3.1.3.1. Suborder: Nyantheae**

	<p>Family: Liponematidae <i>Liponema brevicornis</i> anemone, pom-pom</p>
	<p>Classification: Cairns et al. 2002 Identified by: Kuhnz Video Identifiability: Confirmed</p>
Credit: MBARI © 2004	<p>Observed Depth: 2,726 – 3,271 m</p>

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.4. Order: Zoanthidea**

	<p>ZOANTHIDEA sp. 1 zoanthid (upon <i>Calyptrophora</i> sp.)</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,710 – 1,764 m</p>
<p>Credit: NOAA/MBARI 2006</p> 	<p>ZOANTHIDEA sp. 2 zoanthid (upon dead coral)</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,728 – 2,199 m</p>

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.5. Order: Corallimorpharia**

	<p>CORALLIMORPHARIA spp. anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,868 – 3,261 m</p>
<p>Credit: NOAA/MBARI 2002</p> 	<p>Family: Corallimorphidae <i>Corallimorphus</i> sp. anemone</p> <p>Classification: Cairns et al. 2002 Identified by: Kuhnz; Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 1,858 – 3,251 m</p>

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.1. Subclass: Hexacorallia (Zoantharia)**

**6.3.1.6. Order: Scleractinia – stony corals**

**6.3.1.6.1. Suborder: Caryophylliina**

	CARYOPHYLLIINA sp. stony coral (cup coral)  Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Provisional  Observed Depth 1,480 – 3,254 m
Credit: NOAA/MBARI 2002	 Family: Flabellidae <i>Javania cailleti</i> stony coral  Classification: Cairns et al. 2002 Identified by: Cairns; Lundsten Video Identifiability: Confirmed  Observed Depth: 1,914 – 2,689 m

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.1. Order: Alcyonacea – soft corals**

**6.3.2.1.1. Suborder: Alcyoniina**

	<p>Family: Alcyoniidae <i>Anthomastus ritteri</i> coral, mushroom soft</p> <p>Classification: Williams and Cairns 2004 Identified by: Lundsten; von Thun Video Identifiability: Confirmed Observed Depth: 1,246 – 3,277 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Anthomastus ritteri</i> (closed polyps) (as above)</p>
Credit: NOAA/MBARI 2002	 <p>Family: Alcyoniidae <i>Anthomastus robustus</i></p> <p>Classification: Williams and Cairns 2004 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed Observed Depth: 3,214 m</p>
Credit: NOAA/MBARI 2002	

**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.1. Order: Alcyonacea – soft corals**

**6.3.2.1.1. Suborder: Alcyoniina**



Family: Alcyoniidae

*Anthomastus* sp. 1

coral, soft

Classification: Williams and Cairns 2004

Identified by: Lundsten

Video Identifiability: Unconfirmed

Observed Depth: 2,077 – 2,314 m

Credit: MBARI © 2004

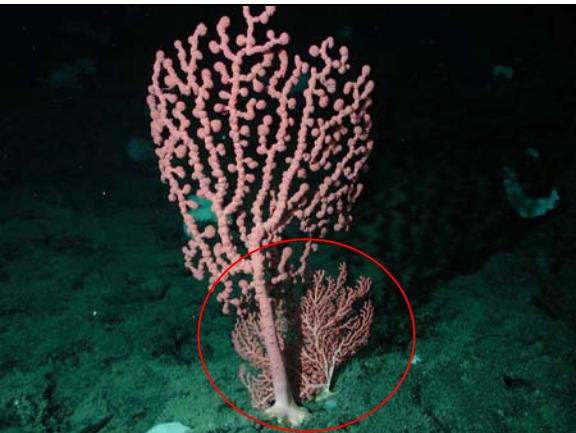
## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.2. Subclass: Octocorallia (Alcyonaria)

##### 6.3.2.2. Order: Gorgonacea – sea fans and sea whips

###### 6.3.2.2.1. Suborder: Scleraxonia

	<p>Family: Paragorgiidae <i>Paragorgia arborea</i> coral, bubble gum</p> <p>Classification: Cairns et al. 2002 Identified by: Sanchez; Williams; Wing Video Identifiability: Confirmed Observed Depth: 1,245 – 1,779 m</p>
Credit: NOAA/MBARI 2006 	<p>Family: Paragorgiidae <i>Paragorgia</i> sp. 1 coral, bubble gum</p> <p>Classification: Cairns et al. 2002 Identified by: Burton; Lundsten Video Identifiability: Confirmed Observed Depth: 1,250 – 3,043 m</p>
Credit: NOAA/MBARI 2002 	<p><i>Paragorgia</i> sp. 1 (as above)</p>

## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.2. Subclass: Octocorallia (Alcyonaria)

##### 6.3.2.2. Order: Gorgonacea – sea fans and sea whips

###### 6.3.2.2.1. Suborder: Scleraxonia

	<p>Family: Paragorgiidae <i>Paragorgia</i> sp. 2 (white morph) coral, bubble gum (white morph)</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 2,493 – 3,005 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Coralliidae <i>Corallium</i> sp. coral, precious</p> <p>Classification: Williams and Cairns 2004 Identified by: Cairns Video Identifiability: Confirmed Observed Depth: 1,252 – 2,447 m</p>
Credit: NOAA/MBARI 2006	<p><i>Corallium</i> sp. (as above)</p>

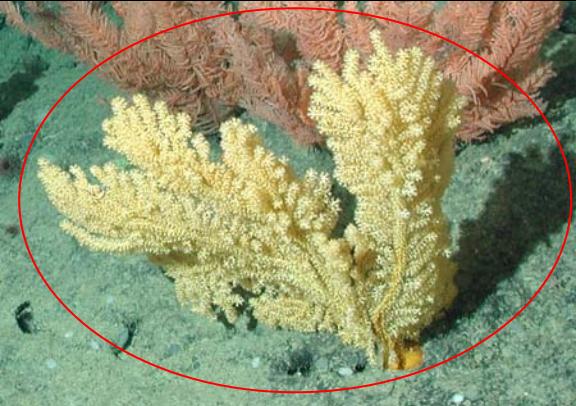
**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.2. Order: Gorgonacea – sea fans and sea whips**

**6.3.2.2.2. Suborder: Holaxonia**

	<p>Family: Acanthogorgiidae <i>Acanthogorgia</i> sp. coral</p> <p>Classification: Williams and Cairns 2004 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,266 – 1,958 m</p>
Credit: NOAA/MBARI 2002	
	<p>Family: Plexauridae <i>Swiftia kofoidi</i> coral, red sea fan</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten; Williams Video Identifiability: Confirmed</p> <p>Observed Depth: 1,294 – 1,352 m</p>
Credit: MBARI © 2004	

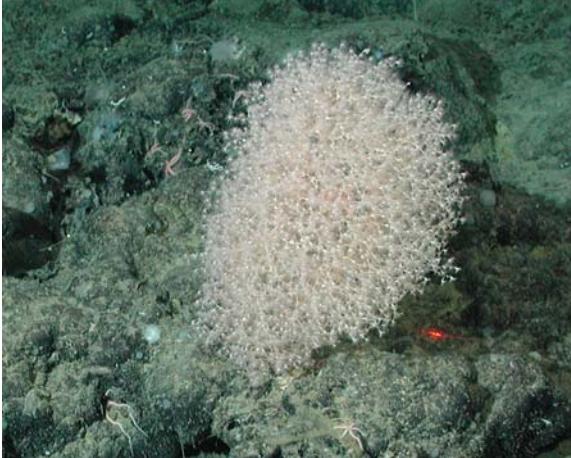
**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.2. Order: Gorgonacea – sea fans and sea whips**

**6.3.2.2.3. Suborder: Calcaxonnia**

	<p>Family: Chrysogorgiidae <i>Chrysogorgia monticola</i> coral, golden gorgonian</p> <p>Classification: Cairns 2007 Identified by: Cairns (HOLOTYPE) Video Identifiability: Confirmed Observed Depth: 2,283 – 3,015 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Chrysogorgiidae <i>Chrysogorgia pinnata</i> coral, golden gorgonian</p> <p>Classification: Cairns 2007 Identified by: Cairns (HOLOTYPE) Video Identifiability: Confirmed Observed Depth: 2,466 – 3,246 m</p>

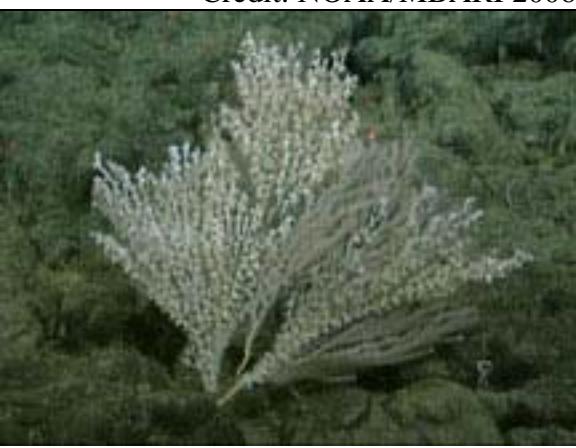
## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.2. Subclass: Octocorallia (Alcyonaria)

##### 6.3.2.2. Order: Gorgonacea – sea fans and sea whips

###### 6.3.2.2.3. Suborder: Calcaxonnia

	<p>Family: Primnidae <i>Calyptrophora bayeri</i> coral</p> <p>Classification: Cairns 2007 Identified by: Cairns (HOLOTYPE) Video Identifiability: Confirmed</p> <p>Observed Depth: 1,683 m</p>
	<p>Credit: NOAA/MBARI 2006</p> <p>Family: Primnidae <i>Calyptrophora</i> sp. (cf. <i>C. antilla</i>) coral</p> <p>Classification: Cairns 2007 Identified by: Cairns Video Identifiability: Confirmed Note: Partially covered with zooanthids</p> <p>Observed Depth: 1,763 m</p>
	<p>Credit: NOAA/MBARI 2006</p> <p><i>Calyptrophora</i> sp. (cf. <i>C. antilla</i>) (as above)</p> <p>Note:</p> <ul style="list-style-type: none"><li>• red circle: <i>Calyptrophora</i> sp.</li><li>• blue circle: Zooanthids covering <i>Calyptrophora</i> sp.</li></ul>

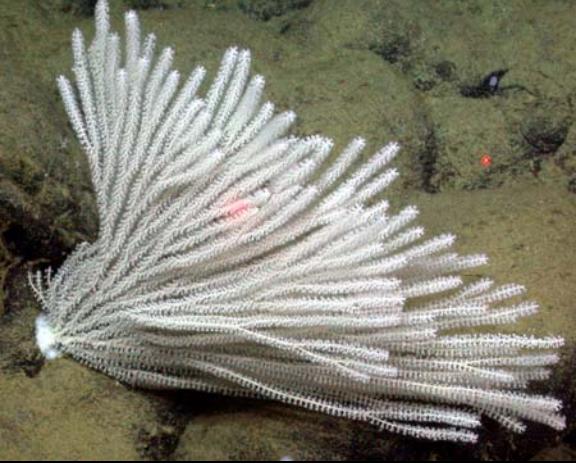
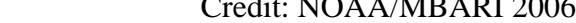
**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.2. Order: Gorgonacea – sea fans and sea whips**

**6.3.2.2.3. Suborder: Calcaxonnia**

	<p>Family: Primnoidae <i>Calyptrophora</i> sp. coral</p> <p>Classification: Cairns 2007 Identified by: Cairns Video Identifiability: Confirmed Observed Depth: 1,573 m</p>
	<p><i>Calyptrophora</i> sp. (as above)</p>
	<p>Family: Primnoidae <i>Narella</i> sp. coral</p> <p>Classification: Cairns et al. 2002 Identified by: Cairns; Lunsten Video Identifiability: Provisional Observed Depth: 1,610 – 3,079 m</p>
	<p>Credit: NOAA/MBARI 2006</p>

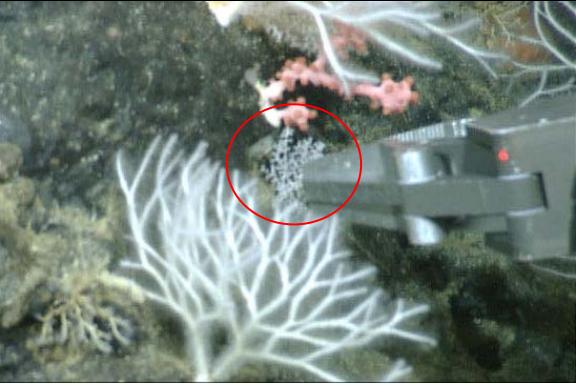
**6. Phylum: CNIDARIA**

**6.3. Class: Anthozoa**

**6.3.2. Subclass: Octocorallia (Alcyonaria)**

**6.3.2.2. Order: Gorgonacea – sea fans and sea whips**

**6.3.2.2.3. Suborder: Calcaxonnia**

	<p>Family: Primnoidae <i>Parastenella ramosa</i> coral</p> <p>Classification: Cairns 2007 Identified by: Cairns Video Identifiability: Confirmed</p> <p>Observed Depth: 1,310 m</p>
<p>Credit: NOAA/MBARI 2006</p> 	<p>Family: Primnoidae <i>Parastenella</i> sp. coral</p> <p>Classification: Williams and Cairns 2004 Identified by: Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 1,771 – 3,051 m</p>

## 6. Phylum: CNIDARIA

### 6.3. Class: Anthozoa

#### 6.3.2. Subclass: Octocorallia (Alcyonaria)

##### 6.3.2.2. Order: Gorgonacea – sea fans and sea whips

###### 6.3.2.2.3. Suborder: Calcaxonnia

	<p>Family: Isididae <i>Acanella</i> sp. coral, bamboo</p> <p>Classification: Williams and Cairns 2004 Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 1,675 – 1,682 m</p>
Credit: NOAA/MBARI 2006	 <p>Family: Isididae <i>Keratoisis</i> sp. coral, bamboo</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten; Williams; Wing Video Identifiability: Confirmed Observed Depth: 1,451 – 2,846 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Isididae <i>Lepidisis</i> sp. coral, bamboo</p> <p>Classification: Cairns et al. 2002 Identified by: Williams; Wing Video Identifiability: Confirmed Observed Depth: 1,286 – 3,288 m</p>

**7. Phylum: CTENOPHORA – comb jellies or sea walnuts**

**7.1. Class: Tentaculata**

**7.1.1. Order: Cydippida**

 A photograph of a ctenophore, specifically Aulacocetna sp., showing its translucent, bell-shaped body and long, thin tentacles. The body has a distinct radial pattern of cilia.	<p>Family: Haeckeliidae <i>Aulacocetna</i> sp. ctenophore</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,284 m</p>
 A photograph of a ctenophore, specifically Hormiphora sp., showing its translucent, bell-shaped body and long, thin tentacles. The body has a distinct radial pattern of cilia.	<p>Family: Pleurobrachiidae <i>Hormiphora</i> sp. ctenophore</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 39 m</p>

**7. Phylum: CTENOPHORA – comb jellies or sea walnuts**

**7.1. Class: Tentaculata**

**7.1.2. Order: Platyctenida**

	<p>Family: Tjalfiellidae <i>Tjalfiella tristoma</i> ctenophore</p> <p>Classification: Cairns et al. 2002 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,221 m</p>
Credit: MBARI © 2002	

**7. Phylum: CTENOPHORA – comb jellies or sea walnuts**

**7.1. Class: Tentaculata**

**7.1.3. Order: Lobata**

	<p>LOBATA sp. nov. ctenophore, lobate</p> <p>Classification: Matsumoto (pers comm) Identified by: Matsumoto Video Identifiability: Confirmed</p> <p>Observed Depth: 1,377 – 3,315 m</p>
Credit: MBARI © 2005	<p>Family: Bathocyroididae <i>Bathocyroe</i> spp. ctenophore, lobate</p> <p>Classification: Cairns et al. 2002 Identified by: von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,242 – 2,987 m</p>
Credit: MBARI © 2005	<p>Family: Lampocentridae <i>Lampocteis cruentiventer</i> ctenophore, lobate</p> <p>Classification: Harbison et al. 2001 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,233 – 3,238 m</p>

**7. Phylum: CTENOPHORA – comb jellies or sea walnuts**

**7.1. Class: Tentaculata**

**7.1.3. Order: Lobata**

	<p>Family: Lampoctenidae <i>Lampocteis</i> sp. ctenophore, lobate</p> <p>Classification: Harbison et al. 2001 Identified by: Matsumoto Video Identifiability: Provisional</p> <p>Observed Depth: 2,102 m</p>
Credit: NOAA/MBARI 2002	

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.1. Class: Gastropoda – sea slugs**

	<p>Order: Vetigastropoda Superfamily: Patelloidea PATELLOIDEA sp. limpet</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 1,288 – 1,748 m</p>
	<p>Order: Caenogastropoda Suborder: Neogastropod Family: Turridae TURRIDAE sp. turrid</p> <p>Classification: Brands 1989-2007 Identified by: Geiger; Lonhart; McLean Video Identifiability: Confirmed Observed Depth: 2,080 m</p>
Credit: NOAA/MBARI 2006	

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.1. Class: Gastropoda – sea slugs**

**8.1.1. Subclass: Opisthobranchia**

**8.1.1.1. Order: Nudibranchia**

	<p>NUDIBRANCHIA sp. nov. mystery mollusk (midwater)</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed Observed Depth: 1,497 – 2,342 m</p>
Credit: NOAA/MBARI 2002 	<p>Family: Tritoniidae <i>Tritonia</i> sp. (cf. <i>T. diomedea</i> or sp. nov.) nudibranch</p> <p>Classification: ITIS Identified by: Kuhnz; Lundsten; McClain Video Identifiability: Provisional Observed Depth: 1,247 m</p>
Credit: NOAA/MBARI 2002 	<p>Family: Bathydorididae BATHYDORIDIDAE sp. nudibranch</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten Video Identifiability: Unconfirmed Observed Depth: 3,254 m</p>
Credit: NOAA/MBARI 2006	

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.2. Class: Polyplacophora – chitons**

**8.2.1. Order: Neolericata**

	<p>NEOLERICATA sp. chiton</p>
Credit: NOAA/MBARI 2002	<p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed  Observed Depth: 1,559 – 2,926 m</p>

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.3. Class: Bivalvia – bivalves**

**8.3.1. Subclass: Pteriomorphia**

	<p>Order: Limoida Family: Limidae <i>Acesta mori</i> clam</p> <p>Classification: ITIS Identified by: Barry Video Identifiability: Confirmed</p> <p>Observed Depth: 1,266 – 1,996 m</p>
Credit: NOAA/MBARI 2002	
	<p>Order: Ostreoida Family: Pectinidae ?PECTINIDAE sp. scallop</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Unconfirmed</p> <p>Observed Depth: 1,772 m</p>

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

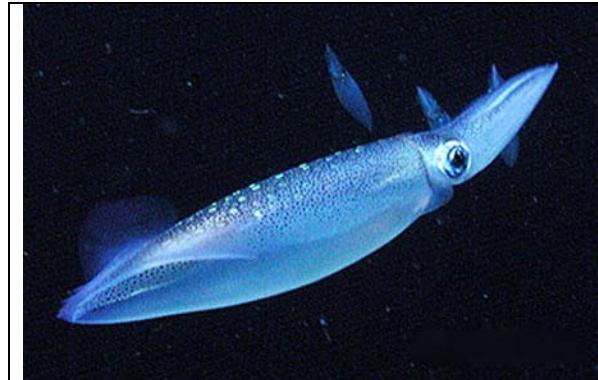
**8.4. Class: Cephalopoda – cephalopods**

**8.4.1. Subclass: Coleoidea**

**8.4.1.1. Superorder: Decabrachia**

**8.4.1.1.1. Order: Teuthida**

**8.4.1.1.1.1. Suborder: Myopsina**



Family: Loliginidae  
*Loligo (=Doryteuthis) opalescens*  
squid, California market

Classification: Anderson 2000; Vecchione et al. 2005

Identified by: von Thun

Video Identifiability: Confirmed

Observed Depth: 427 m

Credit: MBARI © 2001

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

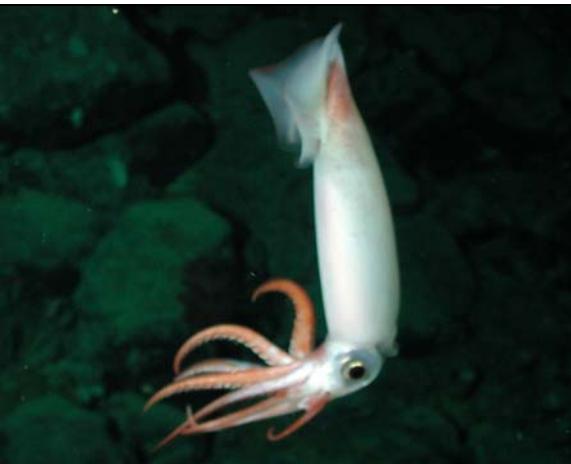
**8.4. Class: Cephalopoda – cephalopods**

**8.4.1. Subclass: Coleoidea**

**8.4.1.1. Superorder: Decabrachia**

**8.4.1.1.1. Order: Teuthida**

**8.4.1.1.1.2. Suborder: Oegopsina**

	<p>Family: Cranchiidae <i>Galiteuthis</i> sp. squid, glass</p> <p>Classification: ITIS Identified by: von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 959 m</p>
Credit: MBARI © 2002	 <p>Family: Gonatidae <i>Gonatus onyx</i> squid, clawed armhook</p> <p>Classification: ITIS Identified by: von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,337 – 1,345 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Ommastrephidae <i>Dosidicus gigas</i> squid, Humboldt</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 283 – 614 m</p>

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.4. Class: Cephalopoda – cephalopods**

**8.4.1. Subclass: Coleoidea**

**8.4.1.2. Superorder: Octobrachia**

**8.4.1.2.1. Order: Octopoda**

**8.4.1.2.1.1. Suborder: Cirrina**

	<p>Family: Opisthoteuthidae <i>Opisthoteuthis</i> sp. devilfish, flapjack</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional Observed Depth: 3,220 m</p>
Credit: NOAA/MBARI 2002	

**8. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses**

**8.4. Class: Cephalopoda – cephalopods**

**8.4.1. Subclass: Coleoidea**

**8.4.1.2. Superorder: Octobrachia**

**8.4.1.2.1. Order: Octopoda**

**8.4.1.2.1.2. Suborder: Incirrina**

	<p>Family: Bolitaenidae <i>Japetella</i> sp. octopus, pelagic</p> <p>Classification: ITIS Identified by: Lundsten; Matsumoto Video Identifiability: Confirmed</p> <p>Observed Depth: 945 m</p>
Credit: NOAA/MBARI 2006	 <p>Family: Octopodidae <i>Benthoctopus</i> sp. octopus, benthic</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,461 – 2,770 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Octopodidae <i>Graeledone boreopacifica (pacific)</i> octopus</p> <p>Classification: ITIS/Sweeney et al. 1998 Identified by: Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 1,458 – 1,974 m</p>

**9. Phylum: ANNELIDA – segmented worms**

**9.1. Class: Polychaeta – polychaete worms**

**9.1.1. Subclass: Palpata**

**9.1.1.1 Order: Aciculata**

**9.1.1.1.1 Suborder: Phyllodocida**

	<p>Family: Tomopteridae <i>Tomopteris</i> sp. polychaete, tomopterid</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 297 – 494 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Aphroditidae <i>Laetmonice</i> sp. polychaete, sea mouse</p> <p>Classification: ITIS; Lundsten (pers comm) Identified by: Harris; Lundsten; Schlining Video Identifiability: Confirmed Observed Depth: 1,969 – 2,644 m</p>
Credit: NOAA/MBARI 2006	<p>Family: Polynoidae POLYNOIDAE sp. scale worm, blue (upon <i>Paragorgia arborea</i>)</p> <p>Classification: ITIS Identified by: Baco-Taylor; Kuhnz Video Identifiability: Provisional Observed Depth: 1,257 – 3,044 m</p>
Credit: NOAA/MBARI 2002	

**9. Phylum: ANNELIDA – segmented worms**

**9.1. Class: Polychaeta - polychaete worms**

**9.1.1. Subclass: Palpata**

**9.1.1.2 Order: Canalipalpata**

**9.1.1.2.1 Suborder: Sabellida**

	<p>Family: Sabellidae <i>Euchone</i> sp. nov. polychaete, sabellid</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten; Rouse Video Identifiability: Confirmed</p> <p>Observed Depth: 1,722 – 3,252 m</p>
Credit: NOAA/MBARI 2006	<p>Family: Serpulidae SERPULIDAE spp. polychaete, serpulid</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 1,495 – 3,287 m</p>

**9. Phylum: ANNELIDA – segmented worms**

**9.1. Class: Polychaeta - polychaete worms**

**9.1.1. Subclass: Palpata**

**9.1.1.2. Order: Canalipalpata**

**9.1.1.2.2 Suborder: Terebellida**

	<p>Family: Poeobiidae <i>Poeobius meseres</i> polychaete, holopelagic</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 781 – 1,723 m</p>
Credit: NOAA/MBARI 2002 	<p>Family: Fauveliopsidae <i>Flota</i> sp. polychaete</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 2,564 – 2,678 m</p>
Credit: MBARI © 2002	

**10. Phylum: ARTHROPODA – sea spiders, barnacles, shrimps, crabs**

**10.1. Subphylum: Chelicerata**

**10.1.1. Class: Pycnogonida – sea spiders**



PYCNOGONIDA sp.  
sea spider

Classification: ITIS

Identified by: Lundsten; von Thun

Video Identifiability: Confirmed

Observed Depth: 1,440 – 3,288 m

Credit: NOAA/MBARI 2002

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.1. Class: Maxillopoda**

**10.2.1.1. Subclass: Thecostraca**

**10.2.1.1.1. Infraclass: Cirripedia – barnacles**

**10.2.1.1.1.1. Superorder: Thoracica**

	<p>Order: Pedunculata Suborder: Scalpellomorpha SCALPELLOMORPHA sp. barnacle, stalked</p> <p>Classification: ITIS Identified by: Lundsten; Van Syoc Video Identifiability: Confirmed Observed Depth: 1,547 – 3,082 m</p>
	<p>Order: Sessilia Suborder: Verrucosomorpha VERRUCOSOMORPHA sp. barnacle</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 1,654 – 2,907 m</p>

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.1. Suborder: Dendrobrachiata**

**10.2.2.1.1.1.1.1. Family: Sergestidae - shrimps**

	<p><i>Sergestes similis</i> shrimp, midwater</p>
	<p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p>
Credit: MBARI © 2002	<p>Observed Depth: 301 – 3,256 m</p>

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.1. Infraorder: Caridea**

	<p>CARIDEA spp. shrimp</p> <p>Classification: ITIS Identified by: von Thun Video Identifiability: Provisional Observed Depth: 1,347 – 3,101 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Pandalidae <i>Pandalopsis ampla</i> shrimp, deepwater bigeye</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 1,280 – 1,747 m</p>
	<p>Credit: NOAA/MBARI 2006</p>

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.2. Infraorder: Anomura**

**10.2.2.1.1.1.2.2.1. Family: Lithodidae – king crabs**



LITHODIDAE sp.  
crab (probably juvenile)

Classification: ITIS

Identified by: Kuhnz

Video Identifiability: Provisional

Observed Depth: 1,284 – 2,535 m

Credit: NOAA/MBARI 2002

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1 Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.2. Infraorder: Anomura**

**10.2.2.1.1.1.2.2.1. Family: Lithodidae – king crabs**



*Neolithodes diomedaeae*

crab

Classification: ITIS

Identified by: Lundsten

Video Identifiability: Provisional

Observed Depth: 1,431 – 1,560 m

Credit: MBARI © 2004



*Neolithodes* sp.

crab, spiny

Classification: ITIS

Identified by: Kuhnz; Lundsten

Video Identifiability: Unconfirmed

Observed Depth: 1,247 – 1,526 m

Credit: NOAA/MBARI 2002

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.2. Infraorder: Anomura**

**10.2.2.1.1.1.2.2.1. Family: Lithodidae – king crabs**



*Paralomis multispina*

crab

Classification: ITIS

Identified by: Kuhnz; Lundsten

Video Identifiability: Provisional

Observed Depth: 1,661 – 2,306 m

Credit: NOAA/MBARI 2002



*Paralomis verrilli*

crab, vermillion

Classification: ITIS

Identified by: Kuhnz

Video Identifiability: Provisional

Observed Depth: 2,349 m

Credit: NOAA/MBARI 2002

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1 Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.2. Infraorder: Anomura**

**10.2.2.1.1.1.2.2.2. Family: Galatheidae – squat lobsters**

	<p><i>Munida</i> sp. lobster, squat</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Provisional Observed Depth: 1,306 m</p>
Credit: NOAA/MBARI 2002	
	<p><i>Munidopsis</i> spp. lobster, squat</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed Observed Depth: 1,512 – 3,290 m</p>
Credit: NOAA/MBARI 2002	

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.1. Superorder: Eucarida**

**10.2.2.1.1.1. Order: Decapoda – shrimp, lobsters, crabs**

**10.2.2.1.1.1.2. Suborder: Pleocyemata**

**10.2.2.1.1.1.2.3. Infraorder: Brachyura**

	<p><b>BRACHYURA sp.</b> crab</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Provisional  Observed Depth: 1,319 m</p>
Credit: NOAA/MBARI 2002	
	<p><b>Family: Pisidae</b> <i>Chorilia longipes</i> crab, longhorn decorator</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional  Observed Depth: 1,585 m</p>
Credit: MBARI © 2002	

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.2. Superorder: Peracarida**

**10.2.2.1.2.1. Order: Mysida - mysids**



MYSIDA spp.  
shrimp, opossum

Classification: ITIS

Identified by: Lundsten; von Thun

Video Identifiability: Provisional

Observed Depth: 413 – 3,307 m

Credit: NOAA/MBARI 2002

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.2. Superorder: Peracarida**

**10.2.2.1.2.2. Order: Amphipoda - amphipods**

	<p>AMPHIPODA spp. amphipod</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,289 – 1,616 m</p>
	<p>Suborder: Caprellidea Infraorder: Caprellida Family: Caprellidae CAPRELLIDAE spp. caprellid</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,257 – 1,728 m</p>
Credit: NOAA/MBARI 2006	

**10. Phylum: ARTHROPODA**

**10.2. Subphylum: Crustacea – crustaceans**

**10.2.2. Class: Malacostraca**

**10.2.2.1. Subclass: Eumalacostraca**

**10.2.2.1.2. Superorder: Peracarida**

**10.2.2.1.2.3. Order: Isopoda - isopods**

	<p>ISOPODA spp. isopod</p> <p>Classification: ITIS Identified by: von Thun Video Identifiability: Confirmed Observed Depth: 1,319 – 2,789 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Munnopsidae MUNNOPSIDAE spp. isopod</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Provisional Observed Depth: 217 – 3,312 m</p>

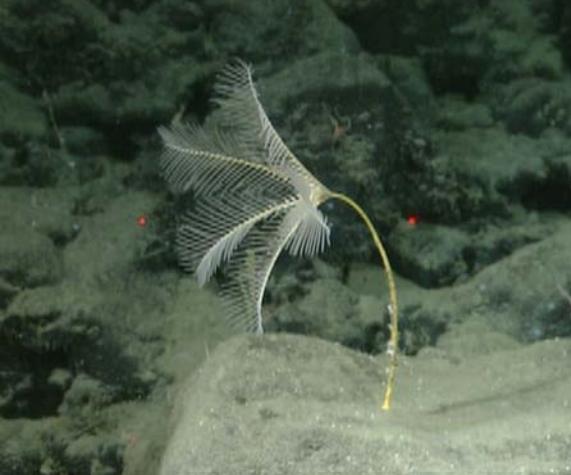
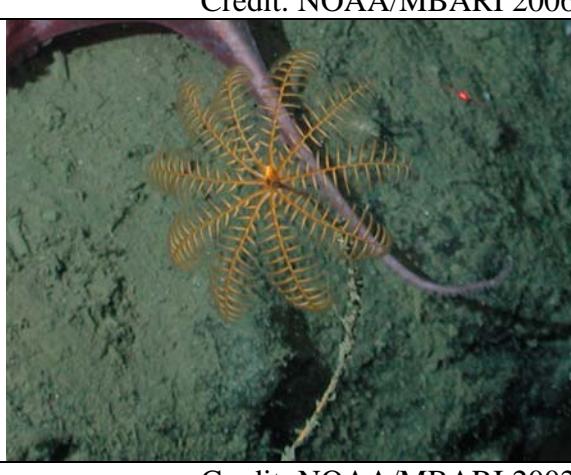
## 11. Phylum: ECTOPROCTA – bryozoans

	<p>ECTOPROCTA sp. 1 bryozoan</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 3,004 – 3,114 m</p>
Credit: NOAA/MBARI 2006	
	<p>ECTOPROCTA sp. 2 bryozoan</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 3,005 m</p>
Credit: NOAA/MBARI 2006	

## 12. Phylum: ECHINODERMATA

### 12.1. Class: Crinoidea - crinoids, feather stars

#### 12.1.1. Subclass: Articulata

	<p>Order: Millericrinida Family: Hyocrinidae <i>Hyocrinus</i> sp. crinoid, 5-arm</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten; von Thun Video Identifiability: Confirmed Observed Depth: 2,476 – 3,273 m</p>
Credit: NOAA/MBARI 2006	 <p>Order: Bourgueticrinida Family: Bathycrinidae BATHYCRINIDAE sp. crinoid, 10-arm</p> <p>Classification: Brands 1989-2007 Identified by: Kuhnz; Lundsten; Messing Video Identifiability: Confirmed Observed Depth: 1,950 – 3,274 m</p>
Credit: NOAA/MBARI 2006	 <p>BATHYCRINIDAE sp. (as above)</p>

## 12. Phylum: ECHINODERMATA

### 12.1. Class: Crinoidea - crinoids, feather stars

#### 12.1.1. Subclass: Articulata

	<p>Order: Comatulida Family: Antedonidae <i>Florometra serratissima</i> crinoid (feather star)</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed Observed Depth: 1,261 – 3,210 m</p>
Credit: NOAA/MBARI 2006	 <p><i>Florometra serratissima</i> (as above)</p>
Credit: NOAA/MBARI 2006	

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.1. Order: Notomyotida**

**12.2.1.1. Family: Benthopectinidae**



*Benthopecten* sp. (possibly *B. claviger*)  
sea star, prickly

Classification: Cal Acad 2004

Identified by: Kuhnz; Mah

Video Identifiability: Provisional

Observed Depth: 2,460 m

Credit: NOAA/MBARI 2002

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.2. Order: Valvatida**

**12.2.2.1. Family: Goniasteridae**

	<p><i>Ceramaster patagonicus</i> sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,663 – 2,605 m</p>
Credit: MBARI © 2004	
	<p><i>Ceramaster</i> sp. sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 1,279 – 3,209 m</p>
Credit: NOAA/MBARI 2006	
	<p><i>Evoplosoma</i> sp. nov. sea star</p> <p>Classification: Cal Acad 2004 Identified by: Mah Video Identifiability: Confirmed</p> <p>Observed Depth: 3,034 m</p>

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.2. Order: Valvatida**

**12.2.2.1. Family: Goniasteridae**

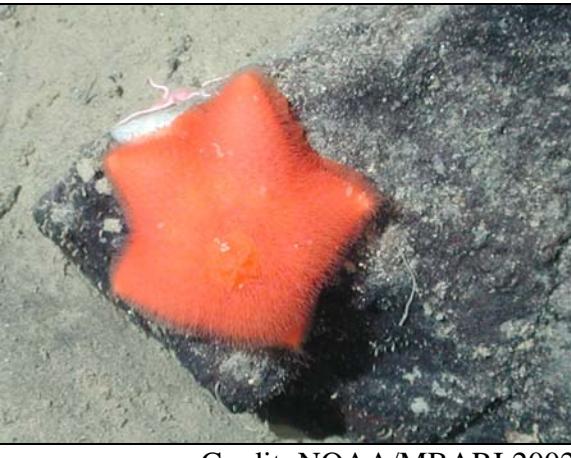
	<p><i>Hippasteria californica</i> sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten; Mah Video Identifiability: Confirmed</p> <p>Observed Depth: 1,277 – 2,664 m</p>
Credit: NOAA/MBARI 2002	
	<p><i>Hippasteria spinosa</i> sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,495 – 1,682 m</p>
Credit: MBARI © 2005	
	<p><i>Mediaster</i> spp. sea star</p> <p>Classification: Cal Acad 2004; ITIS Identified by: Mah Video Identifiability: Confirmed</p> <p>Observed Depth: 2,500 – 2,932 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.3. Order: Velatida**

**12.2.3.1. Family: Pterasteridae**

	<p><i>Hymenaster koehleri</i> sea star</p> <p>Classification: Cal Acad 2004; ITIS Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,917 – 3,257 m</p>
Credit: NOAA/MBARI 2002	 <p>?<i>Pteraster</i> sp. 1 sea star</p> <p>Classification: Cal Acad 2004 Identified by: Mah Video Identifiability: Provisional</p> <p>Observed Depth: 2,850 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Pteraster</i> sp. 2 (possibly <i>Hymenaster</i> sp.) sea star</p> <p>Classification: Cal Acad 2004 Identified by: Mah Video Identifiability: Provisional</p> <p>Observed Depth: 2,887 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.3. Order: Velatida**

**12.2.3.1. Family: Pterasteridae**

	<p><i>Pteraster</i> sp. 3 (possibly <i>Hymenaster</i> sp.) sea star</p> <p>Classification: Cal Acad 2004 Identified by: Mah Video Identifiability: Provisional Observed Depth: 3,100 – 3,180 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Pteraster</i> sp. 4 sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten; Mah Video Identifiability: Provisional Observed Depth: 3,100 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Pteraster</i> sp. 5 sea star</p> <p>Classification: Cal Acad 2004 Identified by: Lundsten; Mah Video Identifiability: Provisional Observed Depth: 1,302 – 1,317 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.3. Order: Velatida**

**12.2.3.2. Family: Solasteridae**



*Lophaster furcilliger*  
sea star

Classification: Cal Acad 2004

Identified by: Lundsten; Mah

Video Identifiability: Confirmed

Observed Depth: 1,662 – 1,718 m

Credit: MBARI © 2004



*Solaster* spp.  
sun star (upon *Pannychia moseleyi*)

Classification: Cal Acad 2004

Identified by: Lundsten; von Thun

Video Identifiability: Provisional

Observed Depth: 1,318 – 2,937 m

Credit: NOAA/MBARI 2006

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.4. Order: Spinulosida**

**12.2.4.1. Family: Echinasteridae**

	<p><i>Henricia</i> sp. sea star</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Provisional Observed Depth: 1,278 – 3,288 m</p>
Credit: NOAA/MBARI 2006	

## 12. Phylum: ECHINODERMATA

### 12.2. Class: Asteroidea – sea stars

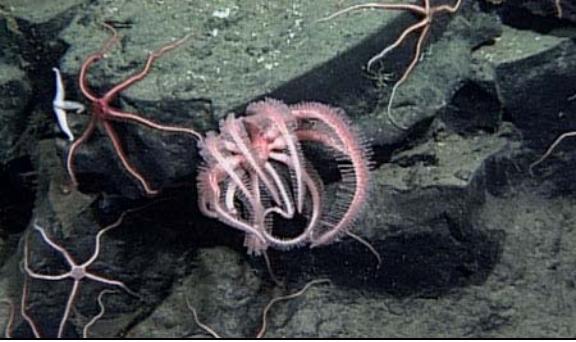
#### 12.2.5. Order: Forcipulatida

	<p>Family: Asteriidae ?Anteliaster sp. sea star</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 2,498 m</p>
Credit: NOAA/MBARI 2006	
	<p>Family: Zoroasteridae <i>Myxoderma sacculatum</i> sea star</p> <p>Classification: ITIS Identified by: Kuhnz; Lundsten; Mah Video Identifiability: Confirmed Observed Depth: 2,668 – 2,728 m</p>
Credit: MBARI © 2003	
	<p>Family: Zoroasteridae ZOROASTERIDAE sp. sea star, pink</p> <p>Classification: Cal Acad 2004 Identified by: Kuhnz; Mah Video Identifiability: Provisional Observed Depth: 1,574 – 2,921 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.2. Class: Asteroidea – sea stars**

**12.2.6. Order: Brisingida**

	<p>BRISINGIDA spp. sea star, brisingid</p> <p>Classification: Cal Acad 2004 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed Observed Depth: 1,304 – 3,287 m</p>
Credit: MBARI © 2004	

**12. Phylum: ECHINODERMATA**

**12.3. Class: Ophiuroidea – brittle stars, basket stars**

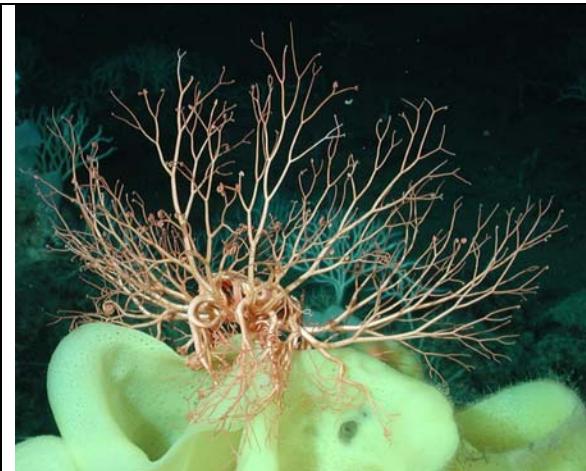
	<p>OPHIUROIDEA spp. brittle star</p> <p>Classification: Cal Acad 2004 Identified by: Kuhnz Video Identifiability: Confirmed Observed Depth: 2,801 – 3,007 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.3. Class: Ophiuroidea – brittle stars, basket stars**

**12.3.1. Order: Phrymophiurida**

**12.3.1.1. Family: Gorgonocephalidae**



*Gorgonocephalus* sp.  
basket star

Classification: Cal Acad 2004

Identified by: Lundsten; Mah; von Thun

Video Identifiability: Provisional

Observed Depth: 1,254 – 1,780 m

Credit: NOAA/MBARI 2002

**12. Phylum: ECHINODERMATA**

**12.3. Class: Ophiuroidea – brittle stars, basket stars**

**12.3.2. Order: Ophiurida**

**12.3.2.1. Family: Ophiacanthidae**



**OPHIACANTHIDAE sp.**  
brittle star

Classification: Cal Acad 2004

Identified by: Lundsten

Video Identifiability: Provisional

Observed Depth: 1,571 – 3,287 m

Credit: NOAA/MBARI 2006

**12. Phylum: ECHINODERMATA**

**12.4. Class Echinoidea – urchins**

	<p>ECHINOIDEA sp. urchin</p>
	<p>Classification: Smith 2005 Identified by: Lundsten Video Identifiability: Confirmed</p>
	<p>Observed Depth: 1,850 m</p>

Credit: NOAA/MBARI 2002

**12. Phylum: ECHINODERMATA**

**12.4. Class: Echinoidea – urchins**

**12.4.1. Order: Cidaroida**

	<p>Family: Cidaridae <i>Aporocidaris milleri</i> urchin, pencil</p>
	<p>Classification: Smith 2005 Identified by: Kuhnz Video Identifiability: Provisional</p>
	<p>Observed Depth: 3,270 – 3,288 m</p>

Credit: MBARI © 2006

**12. Phylum: ECHINODERMATA**

**12.4. Class: Echinoidea – urchins**

**12.4.2. Order: Echinothuroidea**

	<p>Family: Echinothuriidae <i>Tromikosoma panamense</i> urchin</p> <p>Classification: Smith 2005 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,666 – 3,250 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Echinothuriidae <i>Tromikosoma</i> sp. urchin</p> <p>Classification: Smith 2005 Identified by: Kuhnz; Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 2,024 – 2,932 m</p>

**12. Phylum: ECHINODERMATA**

**12.4. Class Echinoidea – urchins**

**12.4.3. Order: Holasteroida**

	<p>Family: Pourtalesiidae <i>Cystocrepis setigera</i> urchin</p> <p>Classification: Smith 2005 Identified by: Kuhnz Video Identifiability: Provisional</p> <p>Observed Depth: 1,950 – 2,064 m</p>
Credit: NOAA/MBARI 2006	

**12. Phylum: ECHINODERMATA**

**12.5. Class: Holothuroidea - sea cucumbers**

	<p>HOLOTHUROIDEA sp. 1 sea cucumber</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,912 – 2,926 m</p>
Credit: NOAA/MBARI 2006	<p>HOLOTHUROIDEA sp. 2 sea cucumber</p> <p>Classification: ITIS Identified by: Burton; Trejo Video Identifiability: Confirmed</p> <p>Observed Depth: 2,788 – 2,854 m</p>
Credit: NOAA/MBARI 2002	

## 12. Phylum: ECHINODERMATA

### 12.5. Class: Holothuroidea - sea cucumbers

#### 12.5.1. Order: Dendrochirotida

	<p>Family: Cucumariidae <i>Abyssocucumis abyssorum</i> sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 3,250 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Psolidae <i>Psolus squamatus</i> sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Provisional</p> <p>Observed Depth: 1,280 – 1,679 m</p>
	Credit: MBARI © 2002

**12. Phylum: ECHINODERMATA**

**12.5. Class: Holothuroidea - sea cucumbers**

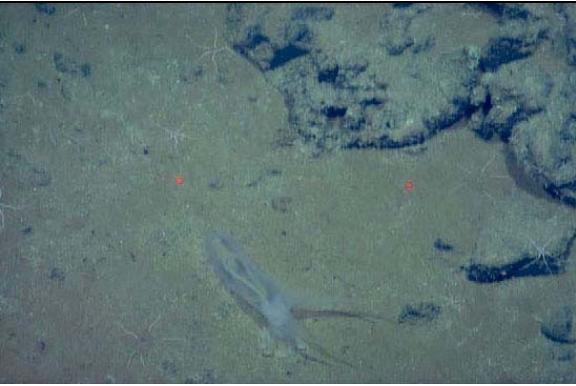
**12.5.2. Order: Aspidochirotida**

	<p>Family: Synallactidae <i>Paelopatides confundus</i> sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 2,286 – 3,166 m</p>
Credit: NOAA/MBARI 2002	 <p>Family: Synallactidae SYNALLACTIDAE sp. sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Provisional</p> <p>Observed Depth: 1,676 – 3,260 m</p>

**12. Phylum: ECHINODERMATA**

**12.5. Class: Holothuroidea - sea cucumbers**

**12.5.3. Order: Elasipodida**

	<p>Family: Deimatidae <i>Oneirophanta mutabilis</i> sea cucumber</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 2,621 – 3,254 m</p>
Credit: NOAA/MBARI 2006	
	<p>Family: Elpidiidae <i>Peniagone</i> sp. sea cucumber</p> <p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 1,352 – 3,253 m</p>
Credit: NOAA/MBARI 2006	
	<p>Family: Elpidiidae <i>Scotoplanes globosa</i> sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 3,264 m</p>
Credit: MBARI © 2005	

**12. Phylum: ECHINODERMATA**

**12.5. Class: Holothuroidea - sea cucumbers**

**12.5.3. Order: Elasipodida**

	<p>Family: Laetmogonidae <i>Pannychia moseleyi</i> sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,718 – 3,008 m</p>
Credit: NOAA/MBARI 2002	

**12. Phylum: ECHINODERMATA**

**12.5. Class: Holothuroidea - sea cucumbers**

**12.5.3. Order: Elasipodida**

	<p>Family: Psychropotidae <i>Benthodytes</i> sp. 1 sea cucumber</p> <p>Classification: ITIS Identified by: Video Identifiability: Provisional</p> <p>Observed Depth: 2,516 – 2,789 m</p>
Credit: NOAA/MBARI 2002	<p><i>Benthodytes</i> sp. 1 (as above)</p>
	
Credit: NOAA/MBARI 2002	<p>Family: Psychropotidae <i>Benthodytes</i> sp. 2 sea cucumber</p> <p>Classification: ITIS Identified by: Kuhnz; Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 2,860 – 3,276 m</p>
Credit: NOAA/MBARI 2002	

**13. Phylum: CHAETOGNATHA - chaetognaths**

	<p>CHAETOGNATHA spp. chaetognath</p>
	<p>Classification: ITIS Identified by: Lundsten; vonThun Video Identifiability: Confirmed</p>
	<p>Observed Depth: 206 – 2,100 m</p>

**14. Phylum: HEMICHORDATA**

**14.1. Class: Enteropneusta - acorn worms**

	<p>ENTEROPNEUSTA sp. acorn worm</p>
	<p>Classification: ITIS Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p>
	<p>Observed Depth: 2,566 – 3,301 m</p>

Credit: NOAA/MBARI 2006

**15. Phylum: CHORDATA**

**15.1. Subphylum: Tunicata**

**15.1.1. Class: Ascidiacea – sea squirts**

	<p>Order: Pleurogona Family: Pyuridae <i>Culeolus</i> sp. tunicate, stalked</p> <p>Classification: ITIS Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 1,654 – 2,733 m</p>
Credit: NOAA/MBARI 2006	

**15. Phylum: CHORDATA**

**15.1. Subphylum: Tunicata**

**15.1.2. Class: Thaliacea - salps**

	<p>Order: Salpida SALPIDA spp. salp</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 268 – 555 m</p>
Credit: MBARI © 2005	<p>Order: Doliolida <i>Doliolenetta</i> sp. nov. (and other DOLIOLIDIDA spp.) salp</p> <p>Classification: Taxonomicon Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 435 – 1,211 m</p>

**15. Phylum: CHORDATA**

**15.1. Subphylum: Tunicata**

**15.1.3. Class: Appendicularia - larvaceans**

	<p>Order: Copelata Family: Oikopleuridae <i>Bathochordaeus</i> sp. (and other APPENDICULARIA spp.) larvacean, giant</p> <p>Classification: Brands 1989-2007 Identified by: Lundsten; von Thun Video Identifiability: Confirmed</p> <p>Observed Depth: 256 – 3,280 m</p>
Credit: MBARI © 2002	

## 15. Phylum: CHORDATA

### 15.2. Subphylum: Vertebrata

#### 15.2.1. Class: Chondrichthyes - cartilaginous fishes

##### 15.2.1.1. Subclass: Elasmobranchii

###### 15.2.1.1.1. Order: Rajiformes – rays, skate

###### 15.2.1.1.1.1. Suborder: Rajoidei

	<p>RAJOIDEI spp. egg cases</p> <p>Classification: Ebert and Davis 2007 Identified by: Davis; Ebert Video Identifiability: Confirmed</p> <p>Observed Depth: 1,310 – 1,319 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Arhynchobatidae <i>Bathyraja abyssicola</i> skate, deepsea</p> <p>Classification: ITIS Identified by: Ebert; Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 2,018 – 2,371 m</p>
Credit: NOAA/MBARI 2002	<p>Family: Rajidae <i>Amblyraja badia</i> skate, broad</p> <p>Classification: ITIS Identified by: Ebert; Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 1,642 m (female)</p>
Credit: NOAA/MBARI 2006	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.1. Order: Notacanthiformes**

**15.2.2.1.1.1. Family: Halosauridae – halosaurs**

	<p><i>Aldrovandia</i> sp. lizardfish, salty (or halosaur)</p> <p>Classification: Eschmeyer et al. 2005; Froese and Pauly 2005 Identified by: Cailliet; Rosenblatt Video Identifiability: Confirmed</p> <p>Observed Depth: 1,736 – 1,918 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Aldrovandia</i> sp. (as above)</p>
Credit: NOAA/MBARI 2002	 <p><i>Aldrovandia</i> sp. (as above)</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.2. Order: Anguilliformes – true eels**

**15.2.2.1.2.1. Family: Synaphobranchidae – cutthroat eels**



**SYNAPHOBRANCHIDAE sp.**  
eel, cutthroat

Classification: Froese and Pauly 2005  
Identified by: Burton; Lea; Lundsten  
Video Identifiability: Provisional

Observed Depth: 2,498 – 2,500 m

Credit: NOAA/MBARI 2006

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.2. Order: Anguilliformes – true eels**

**15.2.2.1.2.2. Family: Nettastomatidae – duckbill eels**

	<p><i>Venefica tentaculata</i> eel, witch</p>
	<p>Classification: Eschmeyer et al. 2005; Froese and Pauly 2005 Identified by: Cailliet; Lea; Rosenblatt Video Identifiability: Provisional  Observed Depth: 1,856 m</p>
Credit: NOAA/MBARI 2002	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.2. Order: Anguilliformes – true eels**

**15.2.2.1.2.3. Family: Serrivomeridae – sawtooth eels**

	<p><i>Serrivomer</i> sp. (possibly <i>S. sector</i>) eel, sawtooth</p>
	<p>Classification: Eschmeyer et al. 2005; Froese and Pauly 2005 Identified by: Lundsten Video Identifiability: Confirmed  Observed Depth: 631 m</p>
Credit: NOAA/MBARI 2006	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.3. Order: Saccopharyngiformes**

**15.2.2.1.3.1. Family: Cyematidae – bobtail eels**

	<p><i>Cyema atrum</i> eel, bobtail</p>
	<p>Classification: Eschmeyer et al. 2005 Identified by: Burton; Trejo Video Identifiability: Confirmed</p>
Credit: MBARI © 2002	<p>Observed Depth: 1,320 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.4. Order: Osmeriformes (Argentiniformes)**

**15.2.2.1.4.1. Family: Bathylagidae – deep-sea smelts**



BATHYLAGIDAE spp.  
smelt, deep-sea

Classification: Nelson et al. 2004

Identified by: von Thun

Video Identifiability: Confirmed

Observed Depth: 305 – 787 m

Credit: MBARI © 2000

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.4. Order: Osmeriformes (Argentiniformes)**

**15.2.2.1.4.2. Family: Alepocephalidae – slickheads**

	ALEPOCEPHALIDAE sp. (possibly <i>Conocara salmonicum</i> ) slickhead
	Classification: ITIS; Eschmeyer et al. 2005 Identified by: Burton; Lea; Lundsten Video Identifiability: Provisional  Observed Depth: 1,276 – 2,920 m
Credit: NOAA/MBARI 2002	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.5. Order: Stomiiformes**

**15.2.2.1.5.1. Family: Gonostomatidae – bristlemouths**

	<p><i>Cyclothona</i> sp. bristlemouth</p>
	<p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Lundsten Video Identifiability: Confirmed  Observed Depth: 389 – 502 m</p>
Credit: MBARI © 2003	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.6. Order: Aulopiformes**

**15.2.2.1.6.1. Family: Synodontidae – lizardfishes**

	<p><i>Bathysaurus mollis</i> lizardfish, highfin</p>
Credit: NOAA/MBARI 2002	<p>Classification: Nelson 1994, Nelson et al. 2004, Eschmeyer et al. 2005 Identified by: Cailliet Video Identifiability: Confirmed  Observed Depth: 2,012 – 2,401 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.7. Order: Myctophiformes**

**15.2.2.1.7.1. Family: Myctophidae – lanternfishes**

	<p>MYCTOPHIDAE spp. lanternfish</p> <p>Classification: Nelson et al. 2004 Identified by: Lundsten Video Identifiability: Confirmed Observed Depth: 676 m</p>
Credit: MBARI © 2003	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.8. Order: Ophidiiformes**

**15.2.2.1.8.1. Family: Ophidiidae – cusk-eels and brotulas**

	<p><i>Luciobrotula</i> sp. brotulid</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Kuhnz; Lundsten Video Identifiability: Provisional Observed Depth: 1,306 – 1,929 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Luciobrotula</i> sp. (as above)</p>
Credit: NOAA/MBARI 2002	 <p><i>Spectrunculus grandis</i> cusk-eel, giant</p> <p>Classification: ITIS; Nelson et al. 2004 Identified by: Burton; Cailliet; Lundsten Video Identifiability: Confirmed Observed Depth: 1,254 – 3,287 m</p>
Credit: NOAA/MBARI 2002	

## 15. Phylum: CHORDATA

### 15.2. Subphylum: Vertebrata

#### 15.2.2. Superclass: Osteichthyes - bony fishes

##### 15.2.2.1. Class: Actinopterygii – ray-finned fishes

###### 15.2.2.1.9. Order: Gadiformes

###### 15.2.2.1.9.1. Family: Macrouridae – grenadiers, rattails

	<p><i>Albatrossia pectoralis</i> grenadier, giant</p> <p>Classification: ITIS; Froese and Pauly 2005; Eschmeyer et al. 2005 Identified by: Burton; Iwamoto Video Identifiability: Provisional</p> <p>Observed Depth: 1,764 m</p>
Credit: NOAA/MBARI 2006	 <p><i>Coryphaenoides acrolepis</i> grenadier, Pacific</p> <p>Classification: ITIS; Froese and Pauly 2005; Eschmeyer et al. 2005 Identified by: Burton; Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,311 m</p>
Credit: NOAA/MBARI 2006	 <p><i>Coryphaenoides armatus/yaquinae</i> grenadier, abyssal/rough abyssal</p> <p>Classification: ITIS; Froese and Pauly 2005; Eschmeyer et al. 2005 Identified by: Burton; Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 3,125 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.9. Order: Gadiformes**

**15.2.2.1.9.1. Family: Macrouridae – grenadiers, rattails**

	<p><i>Coryphaenoides filifer</i> grenadier, filamented</p> <p>Classification: ITIS; Froese and Pauly 2005; Eschmeyer et al. 2005 Identified by: Burton; von Thun Video Identifiability: Provisional  Observed Depth: 3,000 m</p>
Credit: NOAA/MBARI 2002	 <p><i>Coryphaenoides leptolepis</i> grenadier, ghostly</p> <p>Classification: ITIS; Froese and Pauly 2005; Eschmeyer et al. 2005 Identified by: Burton; Kuhnz; Lundsten Video Identifiability: Confirmed  Observed Depth: 2,666 – 2,942 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.9. Order: Gadiformes**

**15.2.2.1.9.2. Family: Moridae – codlings**

	<p><i>Antimora microlepis</i> codling, finescale (or Pacific flatnose)</p> <p>Classification: ITIS Identified by: Kuhnz Video Identifiability: Confirmed</p> <p>Observed Depth: 1,259 – 2,800 m</p>
Credit: NOAA/MBARI 2002	<p>MORIDAE sp. (<i>Lepidion</i> sp. or possibly <i>Laemonema</i> sp.) codling</p> <p>Classification: ITIS Identified by: Burton; Kuhnz; Lea; Lundsten Video Identifiability: Provisional</p> <p>Observed Depth: 1,771 m</p>
Credit: NOAA/MBARI 2002	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.10. Order: Lophiiformes**

**15.2.2.1.10.1. Family: Chaunacidae – sea toads**

	<p><i>Bathychaunax (Chaunax) coloratus</i> sea toad, deep</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Cailliet; Lea; Rosenblatt Video Identifiability: Confirmed  Observed Depth: 2,461 m</p>
Credit: NOAA/MBARI 2002	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.1. Order: Scorpaeniformes**

**15.2.2.1.1.1. Family: Scorpaenidae – rockfishes**

	<p><i>Sebastolobus alascanus</i> thornyhead, shortspine</p>
Credit: NOAA/MBARI 2002	<p>Classification: ITIS; Nelson et al. 2004 Identified by: Burton; Cailliet; Trejo Video Identifiability: Confirmed  Observed Depth: 1,255 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.11. Order: Scorpaeniformes**

**15.2.2.1.11.2. Family: Psychrolutidae – fathead sculpins**



*Psychrolutes phrictus*  
sculpin, blob (or no-name sculpin)

Classification: ITIS; Eschmeyer et al. 2005  
Identified by: Burton; Cailliet; Lunsten  
Video Identifiability: Confirmed

Observed Depth: 1,279 – 1,537 m

Credit: NOAA/MBARI 2002

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.11. Order: Scorpaeniformes**

**15.2.2.1.11.3. Family: Liparidae – snailfishes**

	<p><i>Careproctus ovigerus</i> (juvenile) snailfish, abyssal</p> <p>Classification: Nelson 1994; Nelson et al. 2004 Identified by: Stein et al. 2006 Video Identifiability: Confirmed Observed Depth: 1,324 – 1,356 m</p>
Credit: NOAA/MBARI 2002	LIPARIDAE sp. snailfish, unidentified (blackhead)
	<p>Classification: Nelson 1994; Nelson et al. 2004 Identified by: Lundsten Video Identifiability: Provisional Observed Depth: 1,556 – 2,739 m</p>

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.12. Order: Perciformes**

**15.2.2.1.12.1. Family: Zoarcidae – eelpouts**

	<p><i>Bothrocara brunneum</i> eelpout, twoline</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Burton; Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,453 – 3,229 m</p>
Credit: NOAA/MBARI 2002	<p><i>Lycenchelys</i> spp. (and other ZOARCIDAE spp.)</p> <p>eelpout</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Kuhnz; Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 448 – 3,244 m</p>
Credit: MBARI © 2006	

**15. Phylum: CHORDATA**

**15.2. Subphylum: Vertebrata**

**15.2.2. Superclass: Osteichthyes - bony fishes**

**15.2.2.1. Class: Actinopterygii – ray-finned fishes**

**15.2.2.1.12. Order: Perciformes**

**15.2.2.1.12.1. Family: Zoarcidae – eelpouts**

	<p><i>Lycodapus fierasfer</i> eelpout, blackmouth</p> <p>Credit: NOAA/MBARI 2002</p>
	<p><i>Lycodapus mandibularis</i> eelpout, pallid</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 1,576 – 2,665 m</p>
	<p><i>Pachycara bulbiceps</i> eelpout, snubnose</p> <p>Credit: MBARI © 2002</p> <p>Classification: ITIS; Eschmeyer et al. 2005 Identified by: Lundsten Video Identifiability: Confirmed</p> <p>Observed Depth: 2,607 – 2,926 m</p>
	<p>Credit: NOAA/MBARI 2002</p>

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## **ACKNOWLEDGEMENTS**

We thank Susan von Thun, Linda Kuhnz, Kyra Schlining, Kris Walz, Nancy Jacobsen Stout, and Judith Connor for MBARI video lab support; the collaborative and cooperative taxonomic experts listed in the *Personal Communications* section; the 2002 and 2006 Expedition Science Teams; the ROV *Tiburon* pilots; the R/V *Western Flyer* crew; Chad King for maps; and Gregor Cailliet, Stephen Cairns, Andrew DeVogelaere, Robert Lea, David Pawson, Henry Reiswig, Kyra Schlining, Tonatiuh Trejo, and Susan von Thun for constructive comments on various versions of this guide. We especially thank Linda Kuhnz for her valuable suggestions that improved the guide. The 2002 and 2006 expeditions were funded by NOAA's Office of Ocean Exploration, MBARI, and the BBC.

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## **SPECIMENS**

A subset of specimens from Davidson Seamount are archived at the Monterey Bay Aquarium Research Institute, and may be available for further study. Contact the authors for further information on availability ([lonny@mbari.org](mailto:lonny@mbari.org) or [erica.burton@noaa.gov](mailto:erica.burton@noaa.gov)).

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## TAXONOMIC CHECKLIST

Classification of the Organisms Observed at Davidson Seamount off Central California, U.S.A.

**Phylum: Foraminifera**

**Class: Xenophyophorea**

XENOPHYOPHOREA sp. 1

XENOPHYOPHOREA sp. 2

**Order: Poecilosclerida**

POECILOSCLERIDA sp.

**Family: Cladorhizidae**

*Asbestopluma* sp. nov.

*Asbestopluma* sp. 1

**Phylum: Radiozoa**

**Subphylum: Radiolaria**

RADIOLARIA spp.

**Class: Hexactinellida**

**Subclass: Hexasterophora**

**Order: Hexactinosida**

**Family: Aphrocallistidae**

*Heterochone calyx*

**Family: Euretidae**

*Chonelasma* sp. nov.

**Family: Farreidae**

*Farrea occa*

**Family: Tretodictyidae**

*Sclerothamnopsis compressa*

**Phylum: Phaeophyta (drift)**

**Class: Phaeophyceae**

**Order: Laminariales**

**Family: Alariaceae**

*Alaria marginata*

*Alaria* sp.

**Family: Lessoniaceae**

*Macrocystis* sp.

*Nereocystis luetkeana*

**Order: Lyssacinosida**

**Family: Euplectellidae**

**Subfamily: Bolosominae**

*Saccocalyx pedunculata*

**Subfamily: Corbitellinae**

*Atlantisella* sp. nov.

*Regadrella* sp. nov.

**Phylum: Anthophyta (drift)**

**Class: Monocotyledones**

**Order: Najadales**

**Family: Potamogetonaceae**

*Phyllospadix* sp.

**Phylum: Porifera**

PORIFERA sp. 1

PORIFERA sp. 2

PORIFERA sp. 3

PORIFERA sp. 4

PORIFERA sp. 5

PORIFERA sp. 6

PORIFERA sp. 7

PORIFERA sp. 8

PORIFERA sp. 9

**Class: Demospongiae**

**Order: Astrophorida**

**Family: Pachastrellidae**

*Thenea muricata*

**Family: Rossellidae**

*Caulophacus* sp. nov.

*Crateromorpha* sp. nov.

*Hyalascus* sp. nov.

*Staurocalyptus* sp. nov.

**Phylum: Cnidaria**

**Class: Scyphozoa**

**Order: Coronatae**

**Family: Atollidae**

*Atolla* sp.

**Family: Periphyllidae**

*Periphylla periphylla*

**Order: Semaeostomeae****Family: Ulmaridae***Poralia rufescens**Tiburonia granrojo***Class: Hydrozoa***HYDROZOA* sp. 1*HYDROZOA* sp. 2*HYDROZOA* sp. 3**Order: Anthoathecatae****Family: Hydractiniidae***HYDRACTINIIDAE* sp.**Family: Bougainvilliidae***Chiarella* sp.**Family: Myriothelidae (=Candelabridae)***MYRIOTHELIDAE* sp.**Order: Narcomedusae****Family: Aeginidae***Aegina citrea**Aegina* sp.*Aeginura* sp.**Family: Cuminidae***Cunina* sp.*Solmissus* sp.**Order: Trachymedusae****Family: Halicreatidae***Halicreas minimum***Family: Rhopalonematidae***Benthocodon* sp.*Colobonema sericeum**Crossota millsae***Subclass: Siphonophorae****Order: Physonectae****Family: Agalmatidae***Nanomia bijuga**Stephanomia amphytridis***Family: Apolemiidae***Apolemia* spp.**Family: Physophoridae***Physophora hydrostatica***Family: Rhodaliidae***Stephalia dilata**Thermopalria taraxaca***Order: Calycocephorae****Family: Prayidae***Gymnopraia lapislazula***Class: Anthozoa****Subclass: Hexacorallia (=Zoantharia)****Order: Antipatharia****Family: Cladopathidae****Subfamily: Cladopathinae***Trissopathes pseudotristicha**Trissopathes* sp. (cf. *T. tetracrada*)**Family: Schizopathidae***Bathypathes* sp.*Lillipathes* sp.*Umbellapathes* sp.**Order: Ceriantharia****Family: Cerianthidae***CERIANTHIDAE* sp. 1*CERIANTHIDAE* sp. 2*CERIANTHIDAE* sp. 3**Order: Actiniaria***ACTINIARIA* sp. 1 (possibly *Bathyphellia* sp.)*ACTINIARIA* sp. 2*ACTINIARIA* sp. 3**Suborder: Nyantheae****Infraorder: Thenaria****Family: Actinostolidae***ACTINOSTOLIDAE* spp.*Stomphia* sp. (probably *S. didemona*)**Family: Hormathiidae***HORMATHIIDAE* sp.**Family: Liponematidae***Liponema brevicornis*

**Order: Zoanthidea**

ZOANTHIDEA sp. 1  
ZOANTHIDEA sp. 2

**Order: Corallimorpharia**

CORALLIMORPHARIA spp.  
**Family: Corallimorphidae**  
*Corallimorphus* sp.

**Order: Scleractinia**

**Suborder: Caryophylliina**  
CARYOPHYLLIINA sp.  
**Family: Flabellidae**  
*Javania cailleti*  
  
**Subclass: Octocorallia (=Alcyonaria)**  
**Order: Alcyonacea**  
**Suborder: Alcyoniina**  
*Anthomastus ritteri*  
*Anthomastus robustus*  
*Anthomastus* sp. 1

**Order: Gorgonacea**

**Suborder: Scleraxonia**  
**Family: Paragorgiidae**  
*Paragorgia arborea*  
*Paragorgia* sp. 1  
*Paragorgia* sp. 2  
**Family: Coralliidae**  
*Corallium* sp.

**Suborder: Holaxonia**

**Family: Acanthogorgiidae**  
*Acanthogorgia* sp.  
**Family: Plexauridae**  
*Swiftia kofoidi*

**Suborder: Calcaxonia**

**Family: Chrysogorgiidae**  
*Chrysogorgia monticola* (HOLOTYPE)  
*Chrysogorgia pinnata* (HOLOTYPE)

**Family: Primnoidae**

*Calyptrophora bayeri* (HOLOTYPE)  
*Calyptrophora* sp. (cf. *C. antilla*)  
*Calyptrophora* sp.

*Narella* sp.  
*Parastenella ramosa*  
*Parastenella* sp.  
**Family: Isididae**  
*Acanella* sp.  
*Keratoisis* sp.  
*Lepidisis* sp.

**Phylum: Ctenophora**

**Class: Tentaculata**  
**Order: Cydippida**  
**Family: Haeckeliidae**  
*Aulacoctena* sp.  
**Family: Pleurobrachiidae**  
*Hormiphora* sp.

**Order: Platyctenida**

**Family: Tjalfiellidae**  
*Tjalfiella tristoma*

**Order: Lobata**

LOBATA sp. nov.  
**Family: Bathocyroidae**  
*Bathocyroe* spp.  
**Family: Lampoctenidae**  
*Lampocteis cruentiventer*  
*Lampocteis* sp.

**Phylum: Mollusca**

**Class: Gastropoda**  
**Order: Vetifastropoda**  
**Superfamily: Patelloidea**  
*PATELLOIDEA* sp.

**Order: Caenogastropoda**  
**Suborder: Neogastropoda**  
**Superfamily: Conoidea**  
**Family: Turridae**  
*TURRIDAE* sp.

**Subclass: Opisthobranchia**

**Order: Nudibranchia**

NUDIBRANCHIA sp. nov.

**Family: Tritoniidae**

*Tritonia diomedea* (cf. *T. diomedea* or sp. nov.)

**Family: Bathydotidae**

BATHYDORIDIDAE sp.

**Class: Polyplacophora**

**Order: Neolericata**

NEOLORICATA sp.

**Class: Bivalvia**

**Subclass: Pteriomorphia**

**Order: Limoida**

**Family: Limidae**

*Acesta mori*

**Order: Ostreoida**

**Superfamily: Pectinoidea**

**Family: Pectinidae**

?PECTINIDAE sp.

**Class: Cephalopoda**

**Subclass: Coleoidea**

**Superorder: Decabrachia**

**Order: Teuthida**

**Suborder: Myopsina**

**Family: Loliginidae**

*Loligo* (=*Doryteuthis*) *opalescens*

**Suborder: Oegopsina**

**Family: Cranchiidae**

**Subfamily: Taoniinae**

*Galiteuthis* sp.

**Family: Gonatidae**

*Gonatus onyx*

**Family: Ommastrephidae**

**Subfamily: Ommastrephinae**

*Dosidicus gigas*

**Superorder: Octobrachia**

**Order: Octopoda**

**Suborder: Cirrina**

**Family: Opisthoteuthidae**

*Opisthoteuthis* sp.

**Suborder: Incirrina**

**Family: Bolitaenidae**

*Japetella* sp.

**Family: Octopodidae**

**Subfamily: Bathypolypodinae**

*Benthoctopus* spp.

**Subfamily: Graneledoninae**

*Graneledone boreopacifica* (*pacifica*)

**Phylum: Annelida**

**Class: Polychaeta**

**Subclass: Palpata**

**Order: Aciculata**

**Suborder: Phyllodocida**

**Family: Tomopteridae**

*Tomopteris* sp.

**Family: Aphroditidae**

*Laetmonice* sp.

**Family: Polynoidae**

POLYNOIDAE sp.

**Order: Canalipalpata**

**Suborder: Sabellida**

**Family: Sabellidae**

*Euchone* sp. nov.

**Family: Serpulidae**

SERPULIDAE spp.

**Suborder: Terebellida**

**Family: Poeobiidae**

*Poeobius meseres*

**Family: Fauveliopsidae**

*Flota* sp.

<b>Phylum: Arthropoda</b>	<b>Superfamily: Galatheoidea</b>
<b>Subphylum: Chelicerata</b>	<b>Family: Galatheidae</b>
<b>Class: Pycnogonida</b>	<i>Munida</i> sp.
PYCNOGONIDA sp.	<i>Munidopsis</i> spp.
<b>Subphylum: Crustacea</b>	<b>Infraorder: Brachyura</b>
<b>Class: Maxillopoda</b>	BRACHYURA sp.
<b>Subclass: Thecostraca</b>	<b>Family: Pisidae</b>
<b>Infraclass: Cirripedia</b>	<i>Chorilia longipes</i>
<b>Superorder: Thoracica</b>	<b>Superorder: Peracarida</b>
<b>Order: Pedunculata</b>	<b>Order: Mysida</b>
<b>Suborder: Scalpellomorpha</b>	mysida spp.
SCALPELLOMORPHA sp.	 
<b>Order: Sessilia</b>	<b>Order: Amphipoda</b>
<b>Suborder: Verrucomorpha</b>	AMPHIPODA spp.
VERRUCOMORPHA sp.	<b>Suborder: Caprellidea</b>
 	<b>Infraorder: Caprellida</b>
<b>Class: Malacostraca</b>	<b>Superfamily: Caprelloidea</b>
<b>Subclass: Eumalacostraca</b>	<b>Family: Caprellidae</b>
<b>Superorder: Eucarida</b>	CAPRELLIDAE spp.
<b>Order: Decapoda</b>	 
<b>Suborder: Dendrobrachiata</b>	<b>Order: Isopoda</b>
<b>Superfamily: Sergestoidea</b>	ISOPODA spp.
<b>Family: Sergestidae</b>	<b>Suborder: Asellota</b>
<i>Sergestes similis</i>	<b>Superfamily: Janiroidea</b>
 	<b>Family: Munnopsidae</b>
<b>Suborder: Pleocyemata</b>	MUNNOPSIDAE spp.
<b>Infraorder: Caridea</b>	 
CARIDEA spp.	<b>Phylum: Ectoprocta</b>
<b>Superfamily: Pandaloidea</b>	ECTOPROCTA sp. 1
<b>Family: Pandalidae</b>	ECTOPROCTA sp. 2
<i>Pandalopsis ampla</i>	 
 	<b>Phylum: Echinodermata</b>
<b>Infraorder: Anomura</b>	<b>Class: Crinoidea</b>
<b>Superfamily: Paguroidea</b>	<b>Subclass: Articulata</b>
<b>Family: Lithodidae</b>	<b>Order: Millericrinida</b>
LITHODIDAE sp.	<b>Family: Hyocrinidae</b>
<i>Neolithodes diomedaeae</i>	<i>Hyocrinus</i> sp.
<i>Neolithodes</i> sp.	 
<i>Paralomis multispinosa</i>	<b>Order: Bourgueticrinida</b>
<i>Paralomis verrilli</i>	<b>Family: Bathycrinidae</b>
	BATHYCRINIDAE sp.

<b>Order: Comatulida</b>	<b>Family: Zoroasteridae</b>
<b>Suborder: Macrophreata</b>	<i>Myxoderma sacculatum</i>
<b>Family: Antedonidae</b>	ZOROASTERIDAE sp.
<i>Florometra serratissima</i>	
<b>Class: Asteroidea</b>	<b>Order: Brisingida</b>
<b>Order: Paxillosida</b>	BRISINGIDA spp.
<b>Suborder: Notomyotina</b>	 
<b>Family: Benthopectinidae</b>	<b>Class: Ophiuroidea</b>
<i>Benthopecten</i> sp. (possibly <i>B. claviger</i> )	OPHIUROIDEA spp.
 	<b>Order: Phrynomphurida</b>
<b>Order: Valvatida</b>	<b>Suborder: Euralina</b>
<b>Suborder: Granulosina</b>	<b>Family: Gorgonocephalidae</b>
<b>Family: Goniasteridae</b>	<i>Gorgonocephalus</i> sp.
<i>Ceramaster patagonicus</i>	 
<i>Ceramaster</i> sp.	<b>Order: Ophiurida</b>
<i>Evoplosoma</i> sp.	<b>Suborder: Laemophiurina</b>
<i>Hippasteria californica</i>	<b>Family: Ophiacanthidae</b>
<i>Hippasteria spinosa</i>	OPHIACANTHIDAE sp.
<i>Mediaster</i> spp.	 
 	<b>Class: Echinoidea - urchins</b>
<b>Order: Velatida</b>	ECHINOIDEA sp.
<b>Suborder: Eugnathina</b>	<b>Subclass: Perischoechinoidea</b>
<b>Family: Pterasteridae</b>	<b>Order: Cidaroida</b>
<i>Hymenaster koehleri</i>	<b>Family: Cidaridae</b>
? <i>Pteraster</i> sp. 1	<i>Aporocidaris milleri</i>
<i>Pteraster</i> sp. 2 (possibly <i>Hymenaster</i> sp.)	 
<i>Pteraster</i> sp. 3 (possibly <i>Hymenaster</i> sp.)	<b>Subclass: Euechinoidea</b>
<i>Pteraster</i> sp. 4	<b>Superorder: Diadematacea</b>
<i>Pteraster</i> sp. 5	<b>Order: Echinothurioida</b>
<b>Family: Solasteridae</b>	<b>Family: Echinothuriidae</b>
<i>Lophaster furcilliger</i>	<b>Subfamily: Sperosomatinae</b>
<i>Solaster</i> spp.	<i>Tromikosoma panamense</i>
<i>Tromikosoma</i> sp.	
<b>Order: Spinulosida</b>	<b>Superorder: Atelostomata</b>
<b>Suborder: Leptognathina</b>	<b>Order: Holasteroida</b>
<b>Family: Echinasteridae</b>	<b>Suborder: Meridosternata</b>
<i>Henricia</i> sp.	<b>Infraorder: Urechinina</b>
 	<b>Family: Pourtalesiidae</b>
<b>Order: Forcipulatida</b>	<i>Cystocrepis setigera</i>
<b>Family: Asteriidae</b>	 
? <i>Anteliaster</i> sp.	<b>Class: Holothuroidea</b>
	HOLOTHUROIDEA sp. 1

HOLOTHUROIDEA sp. 2	<b>Order: Doliolida</b> <i>Doliolenetta</i> sp. nov. DOLIOLIDAE spp.
<b>Order: Dendrochirotida</b>	
<b>Family: Cucumariidae</b>	
<i>Abyssocucumis abyssorum</i>	
<b>Family: Psolidae</b>	<b>Class: Appendicularia</b> APPENDICULARIA spp.
<i>Psolus</i> sp.	<b>Order: Copepata</b>
<b>Order: Aspidochirotida</b>	<b>Family: Oikopleuridae</b>
<b>Family: Synallactidae</b>	<b>Subfamily: Bathochordaeinae</b>
<i>Paelopatides confundus</i>	<i>Bathochordaeus</i> sp.
SYNALLACTIDAE sp.	
<b>Order: Elasipodida</b>	<b>Subphylum: Vertebrata</b>
<b>Family: Deimatidae</b>	<b>Class: Chondrichthyes</b>
<i>Oneirophanta mutabilis</i>	<b>Subclass: Elasmobranchii</b>
<b>Family: Elpidiidae</b>	<b>Superorder: Euselachii</b>
<i>Peniagone</i> sp.	<b>Order: Rajiformes</b>
<i>Scotoplanes globosa</i>	<b>Suborder: Rajoidei</b>
<b>Family: Laetmogonidae</b>	<i>RAJOIDEI</i> spp. (egg cases)
<i>Pannychia moseleyi</i>	<b>Superfamily: Rajoidea</b>
<b>Family: Psychropotidae</b>	<b>Family: Arhynchobatidae</b>
<i>Benthodytes</i> sp. 1	<b>Subfamily: Arhynchobatinae</b>
<i>Benthodytes</i> sp. 2	<i>Bathyraja abyssicola</i>
<b>Phylum: Chaetognatha</b>	<b>Family: Rajidae</b>
CHAETOGNATHA spp.	<i>Amblyraja badia</i>
<b>Phylum: Hemichordata</b>	<b>Superclass: Osteichthyes</b>
<b>Class: Enteropneusta</b>	<b>Class: Actinopterygii</b>
ENTEROPNEUSTA sp.	<b>Subclass: Neopterygii</b>
<b>Phylum: Chordata</b>	<b>Infraclass: Teleostei</b>
<b>Subphylum: Tunicata</b>	<b>Superorder: Elopomorpha</b>
<b>Class: Ascidiacea</b>	<b>Order: Notacanthiformes</b>
<b>Order: Pleurogona</b>	<b>Suborder: Notacanthoidei</b>
<b>Suborder: Stolidobranchia</b>	<b>Family: Halosauridae</b>
<b>Family: Pyuridae</b>	<i>Aldrovandia</i> sp.
<i>Culeolus</i> sp.	
<b>Class: Thaliacea</b>	<b>Order: Anguilliformes</b>
<b>Order: Salpida</b>	<b>Suborder: Congroidei</b>
SALPIDA spp.	<b>Family: Synaphobranchidae</b>
	SYNAPHOBRANCHIDAE sp.
	<b>Family: Nettastomatidae</b>
	<i>Venefica tentaculata</i>

**Family: Serrivomeridae**  
*Serrivomer* sp. (possibly *S. sector*)

**Order: Saccopharyngiformes**  
**Suborder: Cyematoidei**  
**Family: Cyematidae**  
*Cyema atrum*

**Superorder: Protacanthopterygii**  
**Order: Osmeriformes (Argentiniformes)**  
**Family: Bathylagidae**  
BATHYLAGIDAE spp.

**Order: Osmeriformes**  
**Suborder: Argentinoidei**  
**Superfamily: Alepocephaloidea**  
**Family: Alepocephalidae**  
ALEPOCEPHALIDAE sp.  
(possibly *Conocara salmonicum*)

**Superorder: Stenopterygii**  
**Order: Stomiiformes**  
**Suborder: Gonostomatoidei**  
**Family: Gonostomatidae**  
*Cyclothona* sp.

**Superorder: Scopelomorpha**  
**Order: Aulopiformes**  
**Family: Synodontidae**  
**Subfamily: Synodontinae**  
*Bathysaurus mollis*

**Order: Myctophiformes**  
**Family: Myctophidae**  
MYCTOPHIDAE spp.

**Superorder: Paracanthopterygii**  
**Order: Ophidiiformes**  
**Suborder: Ophidioidei**  
**Family: Ophidiidae**  
**Subfamily: Neobythittinae**  
*Luciobrotula* sp.  
*Spectrunculus grandis*

**Order: Gadiformes**  
**Family: Macrouridae**  
**Subfamily: Macrourinae**  
*Albatrossia pectoralis*  
*Coryphaenoides acrolepis*  
*Coryphaenoides armatus/yaquinae*  
*Coryphaenoides filifer*  
*Coryphaenoides leptolepis*

**Family: Moridae**  
*Antimora microlepis*  
MORIDAE sp. (*Lepidion* sp. or possibly *Laemonema* sp.)

**Order: Lophiiformes**  
**Suborder: Ogocephaloidei**  
**Superfamily: Chaunacioidea**  
**Family: Chaunacidae**  
*Bathychaunax (Chaunax) coloratus*

**Superorder: Acanthopterygii**  
**Order: Scorpaeniformes**  
**Suborder: Scorpaenoidei**  
**Family: Scorpaenidae**  
*Sebastolobus alascanus*

**Suborder: Cottoidei**  
**Family: Psychrolutidae**  
*Psychrolutes phictus*  
**Family: Liparidae**  
*Careproctus ovigerus* (juvenile)  
LIPARIDAE sp.

**Order: Perciformes**  
**Suborder: Zoarcoidei**  
**Family: Zoarcidae**  
*Bothrocara brunneum*  
*Lycenchelys* spp.  
*Lycodapus fierasfer*  
*Lycodapus mandibularis*  
*Pachycara bulbiceps*  
ZOARCIDAE spp.

## **ONMS CONSERVATION SERIES PUBLICATIONS**

To date, the following reports have been published in the Marine Sanctuaries Conservation Series. All publications are available on the Office of National Marine Sanctuaries website (<http://www.sanctuaries.noaa.gov/>).

Caribbean Connectivity: Implications for Marine Protected Area Management (ONMS-08-07)

Knowledge, Attitudes and Perceptions of Management Strategies and Regulations of FKNMS by Commercial Fishers, Dive Operators, and Environmental Group Members: A Baseline Characterization and 10-year Comparison (ONMS-08-06)

First Biennial Ocean Climate Summit: Finding Solutions for San Francisco Bay Area's Coast and Ocean (ONMS-08-05)

A Scientific Forum on the Gulf of Mexico: The Islands in the Stream Concept (NMSP-08-04)

M/V *ELPIS* Coral Reef Restoration Monitoring Report Monitoring Events 2004-2007 Florida Keys National Marine Sanctuary Monroe County, Florida (NMSP-08-03)

CONNECTIVITY Science, People and Policy in the Florida Keys National Marine Sanctuary (NMSP-08-02)

M/V *ALEC OWEN MAITLAND* Coral Reef Restoration Monitoring Report Monitoring Events 2004-2007 Florida Keys National Marine Sanctuary Monroe County, Florida (NMSP-08-01)

Automated, objective texture segmentation of multibeam echosounder data - Seafloor survey and substrate maps from James Island to Ozette Lake, Washington Outer Coast. (NMSP-07-05)

Observations of Deep Coral and Sponge Assemblages in Olympic Coast National Marine Sanctuary, Washington (NMSP-07-04)

A Bioregional Classification of the Continental Shelf of Northeastern North America for Conservation Analysis and Planning Based on Representation (NMSP-07-03)

M/V *WELLWOOD* Coral Reef Restoration Monitoring Report Monitoring Events 2004-2006 Florida Keys National Marine Sanctuary Monroe County, Florida (NMSP-07-02)

Survey report of NOAA Ship McArthur II cruises AR-04-04, AR-05-05 and AR-06-03: Habitat classification of side scan sonar imagery in support of deep-sea coral/sponge explorations at the Olympic Coast National Marine Sanctuary (NMSP-07-01)

2002 - 03 Florida Keys National Marine Sanctuary Science Report: An Ecosystem Report Card After Five Years of Marine Zoning (NMSP-06-12)

Habitat Mapping Effort at the Olympic Coast National Marine Sanctuary - Current Status and Future Needs (NMSP-06-11)

M/V *CONNECTED* Coral Reef Restoration Monitoring Report Monitoring Events 2004-2005  
Florida Keys National Marine Sanctuary Monroe County, Florida (NMSP-06-010)

M/V *JACQUELYN L* Coral Reef Restoration Monitoring Report Monitoring Events 2004-2005  
Florida Keys National Marine Sanctuary Monroe County, Florida (NMSP-06-09)

M/V *WAVE WALKER* Coral Reef Restoration Baseline Monitoring Report - 2004 Florida Keys  
National Marine Sanctuary Monroe County, Florida (NMSP-06-08)

Olympic Coast National Marine Sanctuary Habitat Mapping: Survey report and classification of  
side scan sonar data from surveys HMPR-114-2004-02 and HMPR-116-2005-01 (NMSP-06-07)

A Pilot Study of Hogfish (*Lachnolaimus maximus* Walbaum 1792) Movement in the Conch Reef  
Research Only Area (Northern Florida Keys) (NMSP-06-06)

Comments on Hydrographic and Topographic LIDAR Acquisition and Merging with Multibeam  
Sounding Data Acquired in the Olympic Coast National Marine Sanctuary (ONMS-06-05)

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Accomplishments (ONMS-06-04)

Normalization and characterization of multibeam backscatter: Koitlah Point to Point of the Arches,  
Olympic Coast National Marine Sanctuary - Survey HMPR-115-2004-03 (ONMS-06-03)

Developing Alternatives for Optimal Representation of Seafloor Habitats and Associated  
Communities in Stellwagen Bank National Marine Sanctuary (ONMS-06-02)

Benthic Habitat Mapping in the Olympic Coast National Marine Sanctuary (ONMS-06-01)

Channel Islands Deep Water Monitoring Plan Development Workshop Report (ONMS-05-05)

Movement of yellowtail snapper (*Ocyurus chrysurus* Block 1790) and black grouper (*Mycteroperca*  
*bonaci* Poey 1860) in the northern Florida Keys National Marine Sanctuary as determined by  
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