

Channel Islands National Marine Sanctuary, *Okeanos Explorer* Cruise, 2011, Taxonomic Guide

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Office of National Marine Sanctuaries



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**Channel Islands National Marine Sanctuary,
Okeanos Explorer Cruise, 2011
Taxonomic Guide**

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Cover

Clockwise from top left: *Heterochone calyx* goiter sponge, *Anthomastus* sp., *Apristurus brunneus*, ruffled white sponge (NOAA/CINMS 2011)

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ABSTRACT

This is the first taxonomic guide of deep sea organisms for the Channel Islands National Marine Sanctuary. From April 21 to 27, 2011, the NOAA ship *Okeanos Explorer* started their field season with a shakedown cruise primarily to field test equipment. The cruise also provided an opportunity to conduct multibeam mapping and a series of exploratory dives using the Little Hercules Remotely Operated Vehicle (ROV) in Channel Islands National Marine Sanctuary. The ROV explored areas that had not been surveyed previously. Video of these opportunistic dives was analyzed for habitat types, species, and species associations. The species observations from the dives are recorded in this taxonomic guide to provide baseline characterization for this underexplored habitat in the sanctuary. This guide will be amended as more studies are added or completed.

KEY WORDS

Channel Islands National Marine Sanctuary, *Okeanos Explorer*, deep sea, corals, sponges, fishes, invertebrates, taxonomy.

INTRODUCTION

In April 2011, the NOAA Ship *Okeanos Explorer* began its field season with a shakedown cruise through Channel Islands National Marine Sanctuary (CINMS). The mission of this cruise (number EX1101) was focused on preparing for the upcoming field season by testing equipment such as sonar, a remotely operated vehicle (ROV), and other supporting equipment.

In the process of meeting the shakedown objectives, there were opportunities to conduct multibeam sonar mapping and ROV dives in southern California, including areas within the Channel Islands National Marine Sanctuary. Onboard seafloor mapping personnel collaborated with scientists from the Office of National Marine Sanctuaries (ONMS) to map and conduct ROV dives in or near the sanctuary (Figure 1).

After the cruise, videos recorded by the ROV were analyzed for habitat types, fishes and invertebrates and species associations. Seventy-nine benthic and mid-water taxa were observed from the video and are presented in this taxonomic guide, providing the first inventory of deep water communities in CINMS.

METHODS

The exploration cruise EX1101 provided an opportunity to test systems and equipment prior to integrating the use of the Little Hercules remotely operated vehicle (ROV). The cruise also provided an opportunity to conduct bathymetric mapping and to select dive targets for ROV testing for subsequent cruises.

The *Okeanos Explorer* is the only ship in the NOAA fleet to have a dedicated ROV. The ship is also equipped with an integrated control room for operating the multibeam sonar, ROV and telepresence communication equipment. The Little Hercules is a 4000m depth rated ROV and came to the *Okeanos Explorer* through collaboration between NOAA's Office of Ocean Exploration and Research and Dr. Robert Ballard's Institute for Exploration at the University of Rhode Island (IFE). The ROV dives were exploratory rather than predetermined transects, sizing lasers were not used, specimens were not collected, and video was collected discontinuously. The video system on the Little Hercules ROV has two single chip color CCD cameras, two LED lights, two 400 watt HMI lights and a state-of-the-art high definition video camera, all of which provides high quality imagery.

This taxonomic guide follows a similar format to the Davidson Seamount Taxonomic Guide (Burton, E., L. Lundsten. 2008). Video clips from the seven ROV dives conducted in or near CINMS were annotated using Monterey Bay Aquarium Research Institute's (MBARI) Video Annotation and Reference System (VARS) (Lipski et al 2013). All images in this guide are frame grabs extracted from the video and species are identified to the lowest possible taxon. Images of taxa were provisionally identified by J. Bright and

sent to additional experts for further confirmation. Some of the images are pending taxonomic identification from the experts and will remain provisional until confirmed. Also, some species were not known and will remain provisional or the species could not be confirmed from the video. This taxonomic guide will remain a work in progress as species are added and identified.

ABOUT THE SANCTUARY

In 1980, a portion of the Santa Barbara Channel was given a special protected status with the designation of the [Channel Islands National Marine Sanctuary](#) (Figure 1). The sanctuary is an area of national significance because of its exceptional natural beauty and resources. It encompasses approximately 1,470 square miles (or 1,110 square nautical miles) of water surrounding Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara Islands, extending from mean high tide to six nautical miles offshore around each of the five islands. The sanctuary's primary goal is the protection of the natural and cultural resources contained within its boundaries.

USING THIS GUIDE

Taxonomic pages in this guide begin with the appropriate classification scheme followed by an image and identification information side by side (Table 1). The taxonomic classification is continued from the header, listing the scientific name down to the lowest taxonomic identification determined. It also lists the common name, the person making the preliminary identification, the person making the identification confirmation, and whether the image identification can be confirmed from video. The dive reports for this survey only list an approximate depth for each dive location so images reflect the depth of the particular dive where the frame grab was taken.

As previously stated, organisms were identified to the lowest taxonomic level. If an organism could not be identified beyond the genus level, the lowest genus was presented in capital letters, with the epithet "sp." Or "species," and numbered if more than one observation was made and differentiated (e.g., PORIFERA species 1, PORIFERA species 2). If more than one taxon was likely present but could not be differentiated, the epithet "spp." was used (e.g., ZOARCIDAE spp.). In this case, a representative image was provided.

Well established common names are provided where appropriate. Some descriptive common names were also provided where a common name could not be used. These descriptive names were given until a further identification is determined.

The references used to classify organisms in this guide are cited in the *References*.

The people who assisted with identification of organisms are cited (in alphabetical order) in the *Personal Communications* portion of the guide.

Ability to identify organisms from Video

Descriptions of how identifiable video images were determined are as follows:

Confirmed: This organism has been identified from video (as certain as they can be without a specimen) by a taxonomic expert.

Provisional: This organism is likely to be this taxon based on an investigation by video analyst (literature search, consultation with outside taxonomic experts, etc.).

Unconfirmed: The identification of this organism cannot be confidently determined from video.

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

<i>Phylum</i> <i>Class</i> <i>Order</i>	
<i>Image</i>	<i>Further classification (e.g., Family)</i> <i>Scientific name</i> <i>Common name</i>
	<i>Preliminary Classification</i> <i>Identification Confirmation</i> <i>Video Identifiability</i> <i>Approximate depth range in meters (m)</i>
<i>Image Credit</i>	

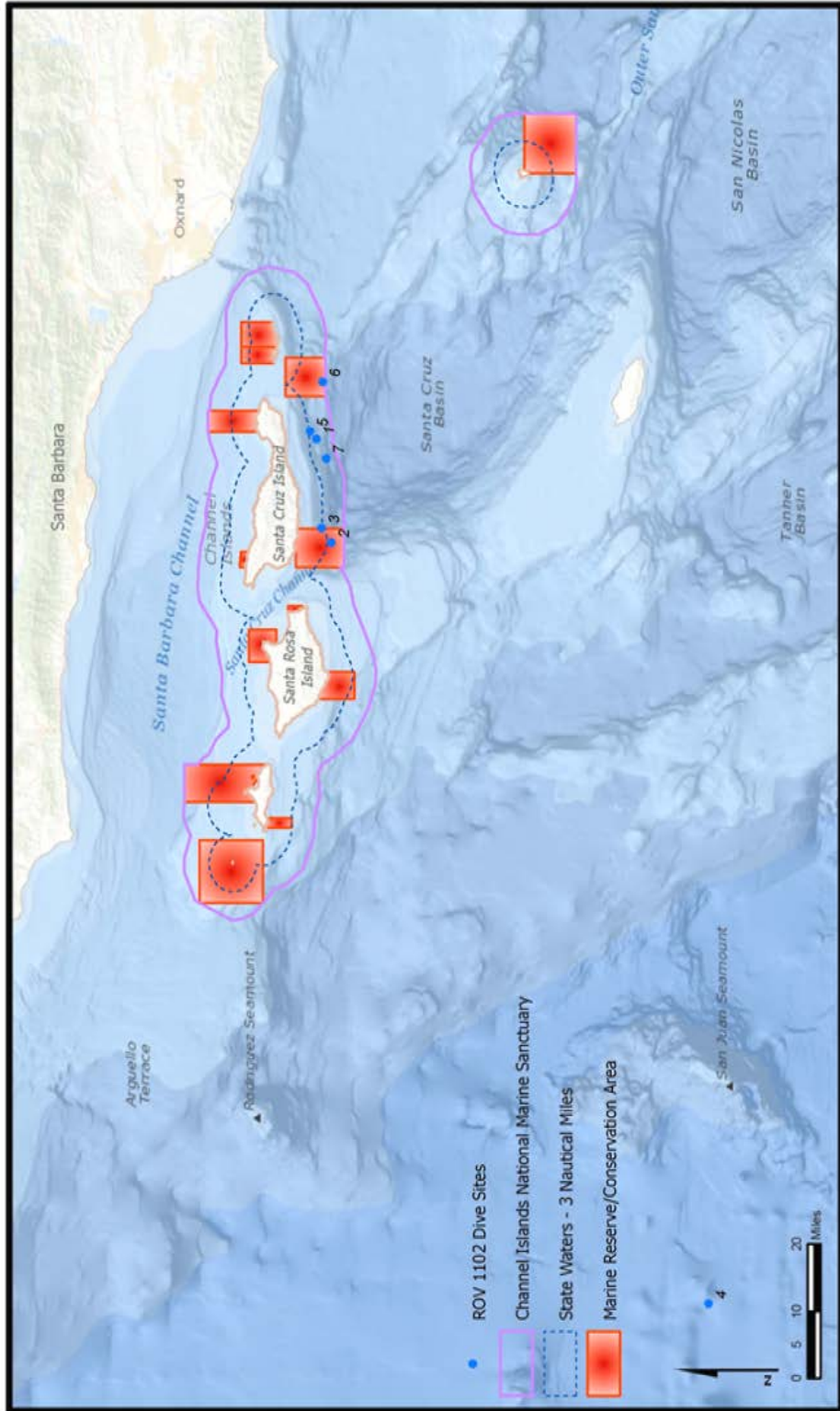





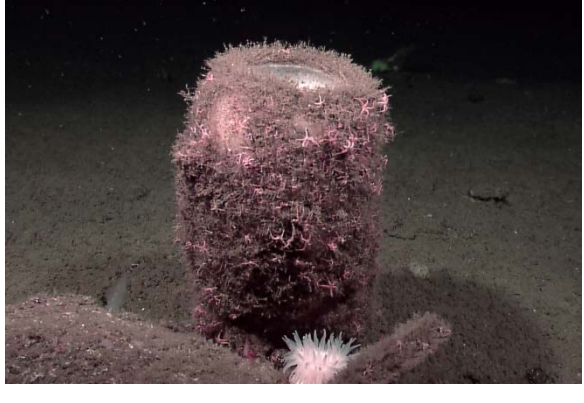


Figure 1. Location of ROV dives in the Channel Islands National Marine Sanctuary.
Credit: CINMS

TAXONOMIC GUIDE

1. Phylum: PORIFERA – sponge morphs

	<p>PORIFERA species 1 Sponge, stalked morph (pink)</p> <p>Preliminary Classification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 886m</p>
<p style="text-align: center;">Credit: NOAA/CINMS 2011</p>	
	<p>PORIFERA species 2 sponge, scalloped morph (white)</p> <p>Preliminary Classification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 786m</p>
<p style="text-align: center;">Credit: NOAA/CINMS 2011</p>	
	<p>PORIFERA species 3 sponge cylindrical morph (white)</p> <p>Preliminary Classification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 786m</p>
<p style="text-align: center;">Credit: NOAA/CINMS 2011</p>	

1. Phylum: PORIFERA – sponge morphs (cont'd)

	<p>PORIFERA species 4 sponge, cylindrical morph (hairy or boot) (possibly <i>Rhabdocalyptus dawsoni</i>)</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 886m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>PORIFERA species 5 sponge, globular morph (yellow)</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 803m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>PORIFERA species 6 sponge, ruffled morph (white) (possibly - <i>Farrea</i> sp.)</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	

1. Phylum: PORIFERA – sponge morphs (cont'd)

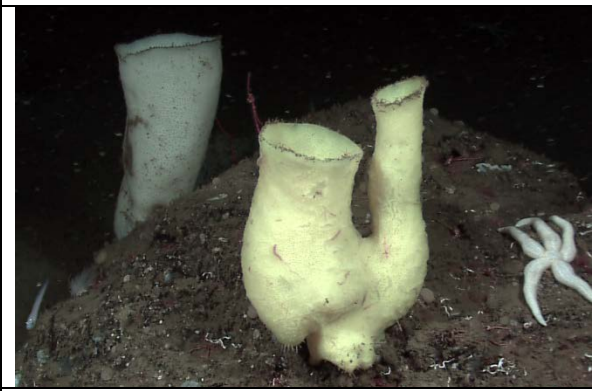


PORIFERA species 7
sponge, vase (white)

Preliminary Identification: J. Bright
Identification Confirmation:
Video Identifiability: Provisional

Approximate Depth: 786m

Credit: NOAA/CINMS 2011



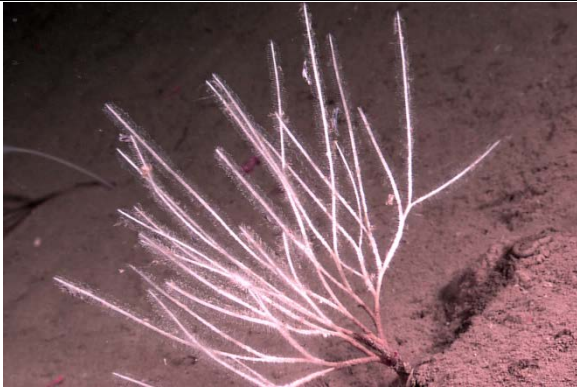
PORIFERA species 8
sponge, columnar (yellow)

Preliminary Identification: J. Bright
Identification Confirmation:
Video Identifiability: Provisional

Approximate Depth: 745m

Credit: NOAA/CINMS 2011

- 1. Phylum: PORIFERA – sponges**
- 1.1. Class: Demospongiae**
- 1.1.1. Order: Poecilosclerida**
- 1.1.1.1. Family: Cladorhizidae**



Asbestopluma sp.
sponge, branched (white)

Preliminary Identification: Tom Laidig
Identification Confirmation: Tom Laidig
Video Identifiability: Unconfirmed by video

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

- 1. Phylum: PORIFERA**
- 1.2. Class: Hexactinellida**
- 1.2.1. Order: Hexactinosida**
- 1.2.1.1. Family: Aphrocallistidae**



Heterochone calyx
sponge, goiter (pink)

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

2. Phylum: CNIDARIA

2.1. Class: Scyphozoa – jellyfish

2.1.1. Subclass: Scyphomedusea

2.1.1.1. Order: Semaestomeae

2.1.1.1.1. Family: Ulmaridae

2.1.1.1.1 Subfamily: Poralunae



Poralia rufescens (probably)
jellyfish

Preliminary Identification: J. Bright

Identification Confirmation: Lonny
Lundsten

Video Identifiability: Unable from video

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

2. Phylum: CNIDARIA

2.2. Class: Hydrozoa

2.1.1. Order: Trachymedusae

2.1.1.1. Family: Rhopalonematidae



Benthocodon sp.
jelly

Preliminary Classification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

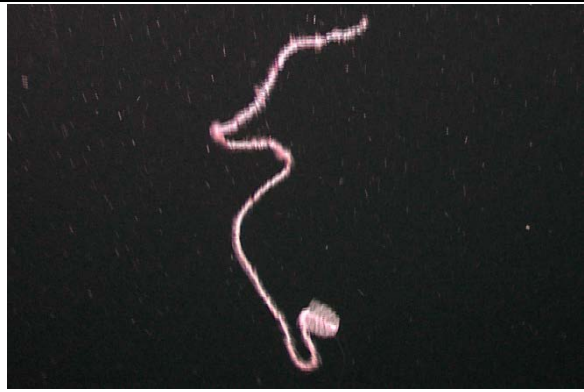
2. Phylum: CNIDARIA

2.3. Class: Hydrozoa

2.3.1. Subclass: Siphonophorae – siphonophores

2.3.1.1. Order: Physonectae

2.3.1.1.1. Family: Apolemiidae



Apolemia sp.
(possibly)

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

2. Phylum: CNIDARIA

2.3. Class: Hydrozoa

2.3.2. Subclass: Siphonophorae - siphonophores

2.3.2.1. Order: Physonectae

2.3.2.1.1. Family: Rhodaliidae



Dromalia alexandri

siphonophore

Preliminary Classification: J. Bright

Identification Confirmation: Lonny
Lundsten

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.1. Subclass: Hexacorallia (Zoantharia)

2.4.1.1. Order: Actiniaria - anemones



ACTINIARIA species 1
burrowing sea anemone

Preliminary Identification: J. Bright
Identification Confirmation: D. Fautin, PhD.
Video Identifiability: Unable from video

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.1. Subclass: Hexacorallia (Zoantharia)

2.4.1.1. Order: Actiniaria – anemones

2.4.1.1.1. Suborder: Nyantheae



Credit: NOAA/CINMS 2011

ACTINIARIA species 2
anemone

Preliminary Identification: J. Bright
Identification Confirmation: D. Fautin,
PhD.

Video Identifiability: Unable from video

Approximate Depth: 886m



Credit: NOAA/CINMS 2011

ACTINIARIA species 3
anemone

Preliminary Identification: J. Bright
Identification Confirmation: D. Fautin,
PhD.

Video Identifiability: Unable from video

Approximate Depth: 786m


2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.2. Subclass: Hexacorallia (Zoantharia)

2.4.2.1. Order: Corallimorpharia

2.4.2.1.1. Family: Corallimorphidae

	<p><i>Corallimorphus pilatus</i> (Provisional by D. Fautin)</p> <p>Preliminary Identification: J. Bright Identification Confirmation: D. Fautin, PhD. Video Identifiability: Unable from video Approximate Depth: 745m</p>
<p>NOAA/CINMS 2011</p>	

2. Phylum: CNIDARIA

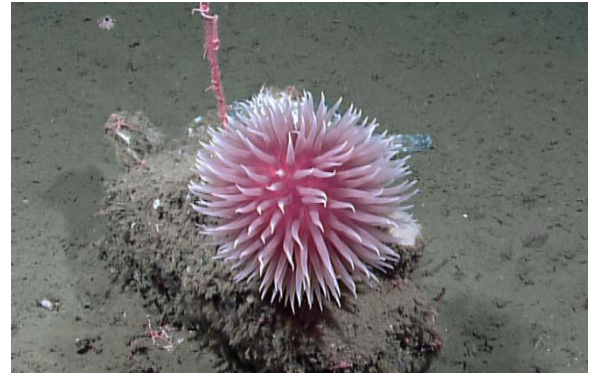
2.4. Class: Anthozoa

2.4.2. Subclass: Hexacorallia (Zoantharia)

2.4.3. Order: Actiniaria – anemones

2.4.3.1. Suborder: Nyantheae

2.4.3.1.1. Family: Liponematidae

	<p><i>Liponema brevicornis</i> pom pom anemone</p> <p>Preliminary Identification: J. Bright Identification Confirmation: D. Fautin, PhD. Video Identifiability: Confirmed</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	

2. Phylum: CNIDARIA


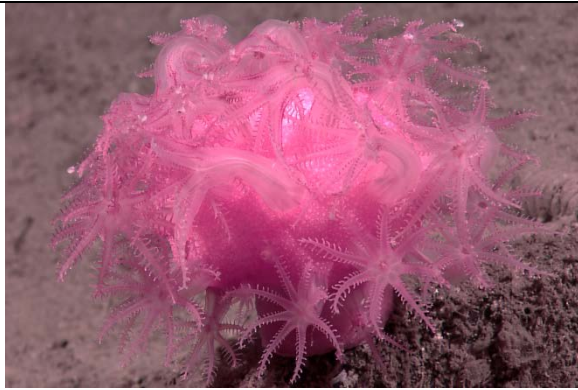
2.4. Class: Anthozoa

2.4.3. Subclass: Octocorallia (Alcyonaria)

2.4.3.1. Order: Alcyonacea – soft corals

2.4.3.1.1. Suborder: Alcyoniina

2.4.3.1.1.1. Family: Alcyoniidae


	<p><i>Anthomastus</i> sp. mushroom coral</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Tom Laidig Video Identifiability: Confirmed</p> <p>Approximate Depth: 786m</p>
<p>NOAA/CINMS 2011</p>	
	<p><i>Anthomastus ritteri</i> mushroom coral</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Tom Laidig Video Identifiability: Confirmed</p> <p>Approximate Depth: 1,014m</p>
<p>NOAA/CINMS 2011</p>	

2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.3. Subclass: Octocorallia

2.4.3.1. Order: Alcyonacea

	<p>PENNATULACEA sea pen</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	

2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.3.1. Subclass: Octocorallia

2.5.1.1. Order: Pennatulacea – sea pens

2.5.1.1.1. Suborder: Subsessiliflorae



Suborder: Scleraxonia

Family: Paragorgiidae

Paragorgia sp.

paragorgia (white)

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Unconfirmed by video

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011



Suborder: Holaxonia

Family: Plexauridae

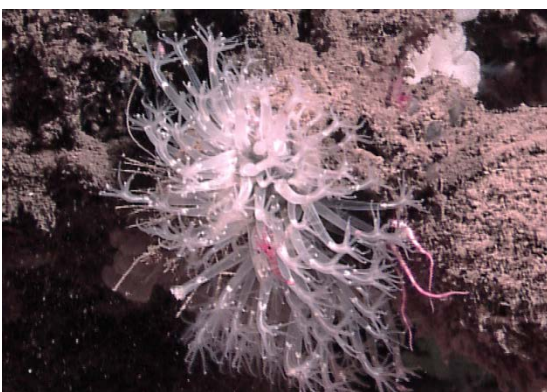
Swiftia type (no specimens collected)

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Unconfirmed by video

Credit: NOAA/CINMS 2011



Suborder: Stolonifera

Family: Clavulariidae

Clavularia sp.

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Unconfirmed by video

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011


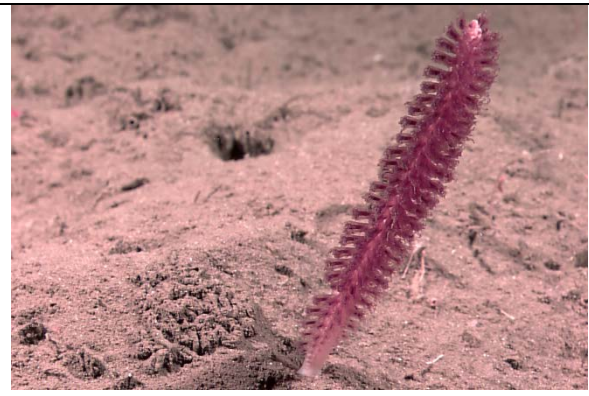
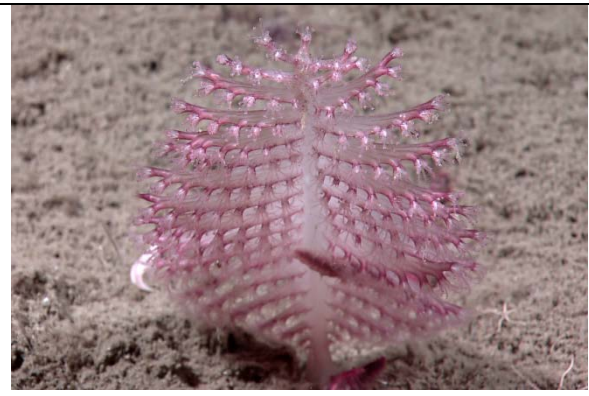
2. Phylum: CNIDARIA

2.4. Class: Anthozoa

2.4.3. Subclass: Octocorallia

2.5.1.1. Order: Pennatulacea – sea pens

2.5.1.1.1. Suborder: Subsessiliflorae

	<p>Family: Umbellulidae <i>Umbellula lindahli</i> droopy sea pen</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>Family: Halipteridae <i>Halipteris californica</i> sea pen</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 886m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>Family: Pennatulidae <i>Pennatula phosphorea</i> phosphorescent sea pen</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 886m</p>
<p>Credit: NOAA/CINMS 2011</p>	

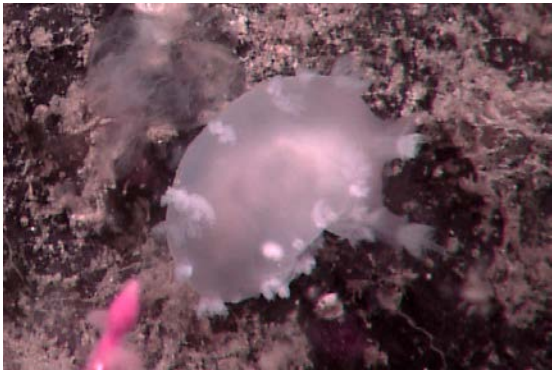
3. Phylum: MOLLUSCA – slugs, chitons, clams, squids, octopuses

3.1. Class: Gastropoda

3.1.1. Subclass: Opisthobranchia - nudibranchs

3.1.1.1. Order: Nudibranchia

3.1.1.1.1. Family: Tritoniidae



Tritonia sp.
nudibranch

Preliminary Classification: J. Bright

Identification Confirmation: Lonny
Lundsten

Video Identifiability: Confirmed

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

3. Phylum: MOLLUSCA

3.1. Class: Gastropoda

3.1.2. Order: Vetigastropoda

3.1.2.1. Superfamily: Seguenzioidea

3.1.2.1.1. Family: Calliotropidae



Bathybembix sp.

Preliminary Classification: J. Bright

Identification Confirmation: Lonny Lundsten

Video Identifiability: Unconfirmed from video

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

3. Phylum: MOLLUSCA

3.1. Class: Gastropoda

3.2.1. Order: Caenogastropoda

3.2.1.1. Suborder: Neogastropoda

3.2.1.1.1. Family: Buccinidae – sea snails



Neptunea sp.

Preliminary Classification: J. Bright

Identification Confirmation: Lonny
Lundsten

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

3. Phylum: MOLLUSCA

3.2. Class: Bivalvia - bivalves

3.2.1. Subclass: Pteriomorphia

3.2.1.1. Order: Ostreoida

3.2.1.1.1. Family: Pectinidae - scallops



Pectinidae sp.
scallop

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 745m

Credit: NOAA/CINMS 2011

3. Phylum: MOLLUSCA

3.3. Class: Cephalopoda

3.3.1. Subclass: Coleoidea

3.3.1.1. Superorder: Octobrachia

3.3.1.1.1. Order: Octopoda - octopus

3.3.1.1.1.1. Suborder: Incirrina

3.3.1.1.1.1.1. Family: Octopodidae

3.3.1.1.1.1.1.1. Subfamily: Octopodinae



Enteroctopus dofleini

giant Pacific octopus

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

4. Phylum: ANNELIDA – segmented worms

4.1. Class: Polychaeta – polychaete worms

4.1.1. Subclass: Palpata

4.1.1.1. Order: Aciculata

4.1.1.1.1. Suborder: Phyllodocida

4.1.1.1.1.1. Family: Polynoidae



POLYNOIDAE

scale worm, red

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Unconfirmed from video

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA – sea spiders, barnacles, shrimps, crabs

5.1. Subphylum: Chelicerata

5.1.1. Class: Pycnogonida – sea spiders



PYCNOGONIDA

sea spider

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea – crustaceans

5.2.1. Class: Malacostraca

5.2.1.1. Subclass: Eumalacostraca

5.2.1.1.1. Superorder: Eucarida

5.2.1.1.1.1. Order: Decapoda – shrimp, lobsters, crabs

5.2.1.1.1.1.1. Suborder: Pleocyemata

5.2.1.1.1.1.1.1. Infraorder: Caridea



CARIDEA
shrimp

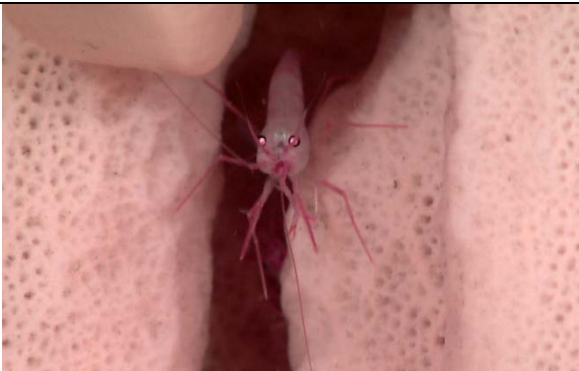
Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011



Family: Pandalidae
Pandalopsis ampla
shrimp, deep water

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea –crustaceans

5.2.2. Class: Malacostraca

5.2.2.2. Subclass: Eumalacostraca

5.3.1.1.1. Superorder: Peracarida

5.3.1.1.1.1. Order: Mysida - mysids



MYSIDA
shrimp, opossum

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Unconfirmed by
video

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea – crustaceans

5.2.3. Class: Malacostraca

5.2.3.3. Subclass: Eumalacostraca

5.2.3.1.1. Superorder: Eucarida

5.2.3.1.1.1. Order: Decapoda – shrimp, lobsters, crabs

5.2.3.1.1.1. Suborder: Pleocyemata

5.2.3.1.1.1.1. Infraorder: Anomura

5.2.3.1.1.1.1.1. Family: Lithodidae – king crabs



Lithodes cousei
scarlet king crab

Preliminary Identification: J. Bright
Identification Confirmation: Greg Jensen, PhD.

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011



Lithodes cousei
scarlet king crab

Preliminary Identification: J. Bright
Identification Confirmation: Lonny Lundsten

Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea - crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.2. Superorder: Eucarida

5.2.3.4.2.2. Order: Decapoda – shrimps, lobsters, crabs

5.2.3.4.2.2.1. Suborder: Pleocyemata

5.2.3.4.2.2.1.1. Infraorder: Anomura

5.2.3.4.2.2.1.1.1. Family: Galatheididae



Munida sp.
squat lobster

Preliminary Identification: J. Bright
Identification Confirmation: Linda Kuhnz
Video Identifiability: Confirmed

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2 Subphylum: Crustacea - crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.2. Superorder: Eucarida

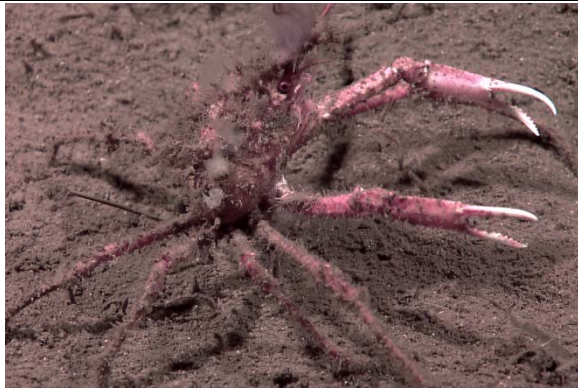
5.2.3.4.2.2. Order: Decapoda – shrimps, lobsters, crabs

5.2.3.4.2.2.2. Suborder: Pleocyemata

5.2.3.4.2.2.2.1. Infraorder: Brachyura

5.2.3.4.2.2.2.1.1. Superfamily: Majoidea

5.2.3.4.2.2.2.1.1.1. Family: Majidae



Chorilia longipes

long horned decorator crab

Preliminary Identification: J. Bright

Identification Confirmation: Lonny

Lundsten

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea - crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.2. Superorder: Eucarida

5.2.3.4.2.2. Order: Decapoda – shrimps, lobsters, crabs

5.2.3.4.2.2.2. Suborder: Pleocyemata

5.2.3.4.2.2.2.1. Infraorder: Brachyura

5.2.3.4.2.2.2.1.1. Superfamily: Majoidea

5.2.3.4.2.2.2.1.1.2. Family: Oregoniidae



Chionoecetes tanneri

grooved tanner crab

Preliminary Identification: Lonny Lundsten

Identification Confirmation: Lonny Lundsten

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea – crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.3. Superorder: Peracarida

5.2.3.4.3.1. Order: Isopoda - isopods



ISOPODA

isopod

(possibly Suborder: Valvifera)

Preliminary Identification: J. Bright

Identification Confirmation: M. Wicksten,
PhD.

Video Identifiability: Unable from video

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea – crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.3. Superorder: Peracarida

5.2.3.4.3.1. Order: Amphipoda

5.2.3.4.3.1.1. Suborder: Gammaridea



GAMMARID

amphipod

Preliminary Identification: J. Bright

Identification Confirmation: M. Wicksten, PhD.

Video Identifiability: Unconfirmed from Video

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

5. Phylum: ARTHROPODA

5.2. Subphylum: Crustacea – crustaceans

5.2.3. Class: Malacostraca

5.2.3.4. Subclass: Eumalacostraca

5.2.3.4.4. Superorder: Caprellidea - caprellid

5.2.3.4.4.1. Infraorder: Caprellida

5.2.3.4.4.1.1. Family: Caprellidae



Caprellidae sp.
skeleton shrimp

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

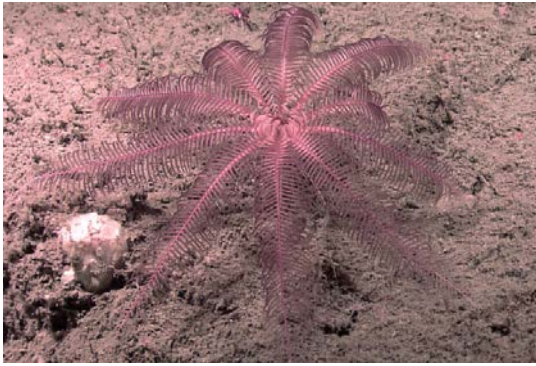
6. Phylum: ECHINODERMATA

6.1. Class: Crinoidea – crinoids, feather stars

6.1.1. Subclass: Articulata

6.1.1.1. Order: Comatulida

6.1.1.1.1. Family: Antedonidae



Florometra serratissima

Crinoid (feather star)

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 886m

NOAA/CINMS 2011


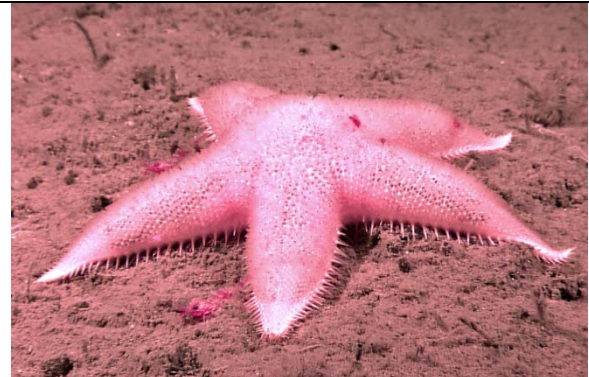

6. Phylum: ECHINODERMATA

6.2. Subphylum: Asterozoa

6.2.1. Class: Asteroidea – sea stars

6.2.1.1. Superorder: Valvatacea

6.2.1.1.1. Order: Valvatida

	<p>Family: Goniasteridae <i>Ceramaster leptoceramus</i> California cookie star</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>Family: Goniasteridae <i>Gephyreaster swifti</i> sea star</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>Family: Poraniidae <i>Poraniopsis</i> sp. thorny star</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	

6. Phylum: ECHINODERMATA

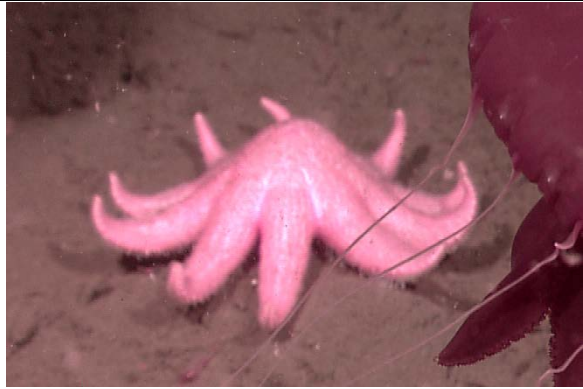
6.2. Subphylum: Asterozoa

6.2.1. Class: Asteroidea – sea stars

6.2.1.1. Superorder: Valvatacea

6.2.2.1.1. Order: Velatida

6.2.2.1.1.1. Family: Solasteridae



Solaster sp.

sea star

Preliminary Identification: J. Bright

Identification Confirmation: Phil Lambert

Video Identifiability: Provisional

Approximate Depth: 745m

Credit: NOAA/CINMS 2011

6. Phylum: ECHINODERMATA

6.2. Subphylum: Asterozoa

6.2.1. Class: Asteroidea – sea stars

6.3.1.1. Superorder: Spinulosacea

6.3.1.1.1. Order: Spinulosida

6.3.1.1.1.1. Family: Echinasteridae



Henricia sanguinolenta

sea star

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 745m

Credit: NOAA/CINMS 2011

6. Phylum: ECHINODERMATA

6.2. Subphylum: Asterozoa

6.2.1. Class: Asteroidea – sea stars

6.4.1. Order: Forcipulatida

6.4.1.1. Family: Zoroasteridae



Credit: NOAA/CINMS 2011

Zoroaster sp.

sea star, pink

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 1,014m

6. Phylum: ECHINODERMATA

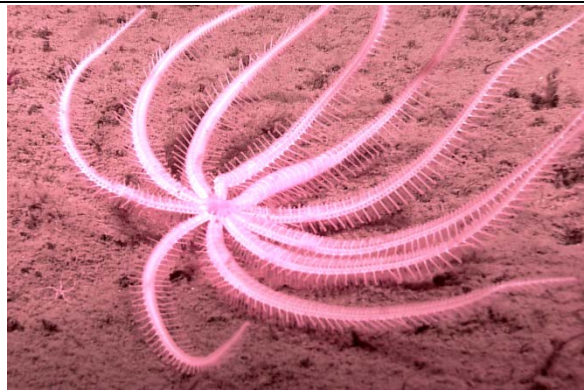
6.2. Subphylum: Asterozoa

6.2.1. Class: Asteroidea – sea stars

6.5.1. Superorder: Forcipulatacea

6.5.1.1. Order: Brisingida

6.5.1.1.1. Family: Brisingidae



Credit: NOAA/CINMS 2011

BRISINGIDAE

sea star, brisingid

Preliminary Classification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 745m



6. Phylum: ECHINODERMATA

6.2. Subphylum: Asterozoa

6.3.1. Class: Ophiuroidea – brittle stars, basket stars

6.3.1.1. Order: Ophiurida

6.3.1.1.1. Suborder: Ophiurina

	<p>Family: Ophiacanthidae <i>Ophiacantha</i> sp. brittle star</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p>Family: Ophiolepididae <i>Ophiomusium jolliensis</i> red brittle star</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Video Identifiability: Provisional</p> <p>Approximate Depth: 745m</p>
<p>Credit: NOAA/CINMS 2011</p>	

6. Phylum: ECHINODERMATA

6.4. Subphylum: Echinozoa

6.4.1. Class: Echinoidea

6.4.1.1. Subclass: Euechinoidea

6.4.1.1.1. Infraclass: Carinacea

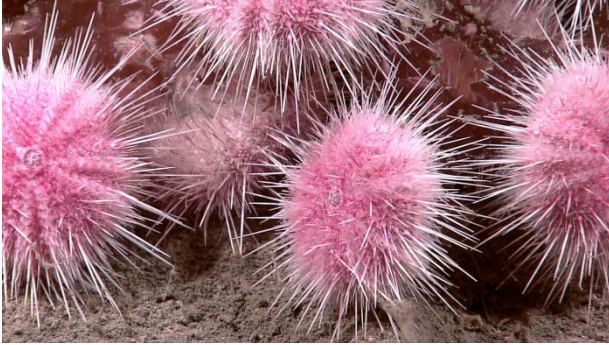
6.4.1.1.1. 1. Superorder: Echinacea

6.4.1.1.1. 1.1. Order: Camarodonta

6.4.1.1.1. 1.1.1. Infraorder: Echinidea

6.4.1.1.1. 1.1.1.1. Superfamily: Odontophora

6.4.1.1.1. 1.1.1.1.1. Family: Strongylocentrotidae



Strongylocentrotus fragilis

pink sea urchin

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 786m

NOAA/CINMS 2011

6. Phylum: ECHINODERMATA

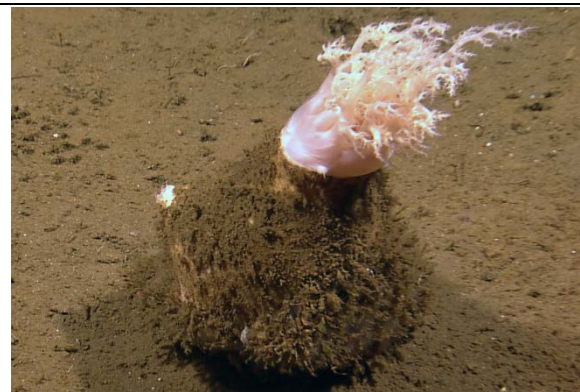
6.4. Subphylum: Echinozoa

6.4.1. Class: Holothuroidea – sea cucumbers

6.4.1.1. Subclass: Dendrochirotacea

6.4.1.1.1. Order: Dendrochirotida

6.4.1.1.1.1. Family: Psolidae



Psolus squamatus

sea cucumber

Preliminary Identification: J. Bright

Identification Confirmation: Lonny
Lundsten

Video Identifiability: Confirmed

Approximate Depth: 803m

NOAA/CINMS 2011

6. Phylum: ECHINODERMATA

6.4. Subphylum: Echinozoa

6.4.2. Class: Holothuroidea – sea cucumbers

6.4.2.1. Order: Elasipodida

6.4.2.1.1. Family: Laetmogonidae



Pannychia moseleyi

Sea cucumber

Preliminary Identification: J. Bright

Identification Confirmation: Phil Lambert

Video Identifiability: Confirmed

Approximate Depth: 803m

NOAA/CINMS 2011

7. Phylum: CHORDATA

7.1 Subphylum: Tunicata

7.1.1. Class: Ascidiacea

7.1.1.1. Order: Phlebobranchia



Family: Pyuridae

Halocynthia aurantium

sea squirt or sea peach

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 745m

Credit: NOAA/CINMS 2011



Family: Corellidae

Corella inflata

brooding transparent tunicate

Preliminary Identification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

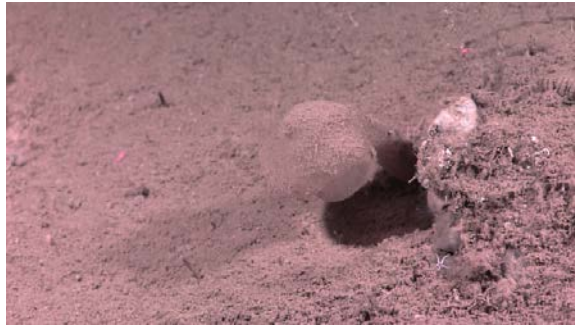
7. Phylum: CHORDATA

7.1 Subphylum: Tunicata

7.1.1. Class: Ascidiacea

7.1.1.1. Order: Phlebobranchia

7.1.1.1.2. Family: Octacnemidae



Megalodicopia hians

predatory tunicate

Preliminary Identification:

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

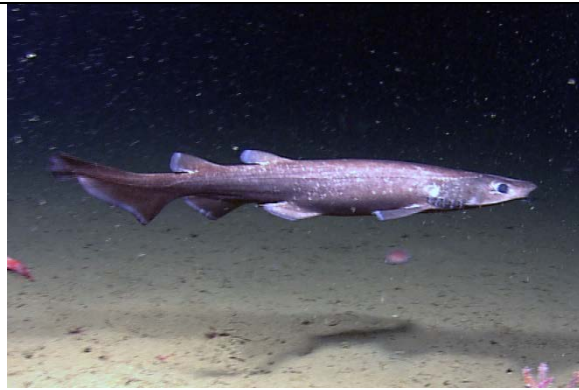
7.2. Subphylum: Vertebrata

7.2.1. Class: Chondrichthyes – cartilaginous fishes

7.2.1.1. Subclass: Elasmobranchii

7.2.1.1.1. Order: Carcharhiniformes

7.2.1.1.1.1. Family: Scyliorhinidae



Apristurus brunneus

brown cat shark

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 803m

Credit: NOAA/CINMS 2011



Apristurus brunneus (juvenile)

brown cat shark

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 786m

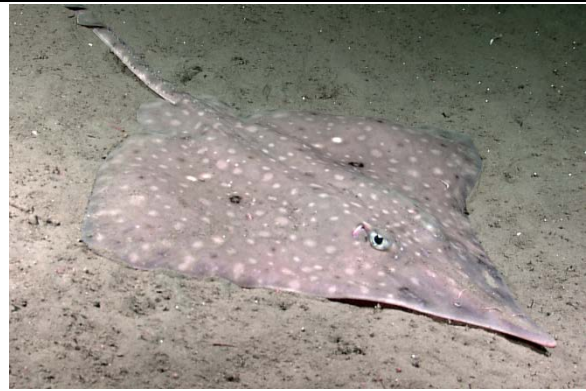
Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.2. Class: Chondrichthyes– cartilaginous fishes

7.2.2. Order: Rajiformes

7.2.2.1. Family: Rajidae



Raja rhina
longnose skate

Preliminary Classification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.1. Superclass: Agnatha

7.4.1.1. Class: Myxini

7.4.1.1.1. Order: Myxiniformes

7.4.1.1.1.1. Family: Myxinidae

7.4.1.1.1.1.1. Subfamily: Eptatretinae



Eptatretus stoutii

Pacific hagfish

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 886m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes – bony fishes

7.4.2.1. Class: Actinopterygii – ray-finned fishes

7.4.2.1.1. Order: Gadiformes

7.4.2.1.1.1. Family: Moridae – codlings



Antimora microlepis

codling, finescale (or Pacific flatnose)

Preliminary Classification: J. Bright

Identification Confirmation:

Video Identifiability: Provisional

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes

7.4.2.2. Class: Actinopterygii

7.4.2.2.2. Subclass: Neopterygii

7.4.2.2.2.2. Order: Scorpaeniformes

7.4.2.2.2.2.2. Family: Scorpaenidae – scorpionfishes and rockfishes



Sebastolobus alascanus
shortspine thornyhead

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes

7.4.2.2. Class: Actinopterygii

7.4.2.2.2. Subclass: Neopterygii

7.4.2.2.2.2. Order: Scorpaeniformes

7.4.2.2.2.2.2. Family: Scorpaenidae – scorpionfishes and rockfishes



Sebastolobus altivelis
longspine thornyhead

Preliminary Identification:
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed
Approximate Depth: 745m

Credit: NOAA/CINMS 2011



Sebastolobus altivelis
longspine thornyhead (juvenile)

Preliminary Identification:
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed
Approximate Depth: 886m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes

7.4.2.2. Class: Actinopterygii

7.4.2.2.2. Subclass: Neopterygii

7.4.2.2.2.2. Order: Scorpaeniformes

7.4.2.2.2.2.3 Family: Agonidae



Xeneretmus leiops
smootheye poacher

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Verbrata

7.4.2. Superclass: Osteichthyes

7.4.2.2. Class: Actinopterygii

7.4.2.2.3. Order: Pleuronectiformes

7.4.2.2.3.1. Family: Paralichthyidae – left eye flounder



Citharichthys sordidus

Preliminary Identification: J. Bright

Identification Confirmation: Tom Laidig

Video Identifiability: Unable from video

Approximate Depth: 786m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Verbrata

7.4.2. Superclass: Osteichthyes

7.4.2.2. Class: Actinopterygii

7.4.2.2.3. Order: Pleuronectiformes

7.4.2.2.3.2. Suborder: Pleuronectoidei

7.4.2.2.3.2.1. Family: Pleuronectidae – right eye flounders



Microstomus pacificus
dover sole

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 786m

Credit: NOAA/CINMS 2011



Embassichthys bathybius
deepsea sole

Preliminary Identification: J. Bright
Identification Confirmation: Tom Laidig
Video Identifiability: Confirmed

Approximate Depth: 1,014m

Credit: NOAA/CINMS 2011

7. Phylum: CHORDATA

7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes – bony fishes

7.4.2.2. Class: Actinopterygii - ray-finned fishes

7.4.2.2.4. Order: Perciformes

7.4.2.2.4.1. Family: Zoarcidae - eelpouts



ZOARCIDAE spp.
eelpout

Preliminary Classification:

Identification Confirmation: Tom Laidig

Video Identifiability: Confirmed

Approximate Depth: 745m

NOAA/CINMS 2011

7. Phylum: CHORDATA



7.4. Subphylum: Vertebrata

7.4.2. Superclass: Osteichthyes – bony fishes

7.4.2.2. Class: Actinopterygii - ray-finned fishes

7.4.2.2.4. Order: Perciformes

7.4.2.2.4.1. Family: Zoarcidae - eelpouts

	<p><i>Lycenchelys crotalinus</i> eelpout, snakehead</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Tom Laidig Video Identifiability: Confirmed</p> <p>Approximate Depth: 886m</p>
<p>Credit: NOAA/CINMS 2011</p>	
	<p><i>Lycodapus mandibularis</i> eelpout, pallid</p> <p>Preliminary Identification: J. Bright Identification Confirmation: Tom Laidig Video Identifiability: Unconfirmed from video</p> <p>Approximate Depth: 886m</p>
<p>Credit: NOAA/CINMS 2011</p>	

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