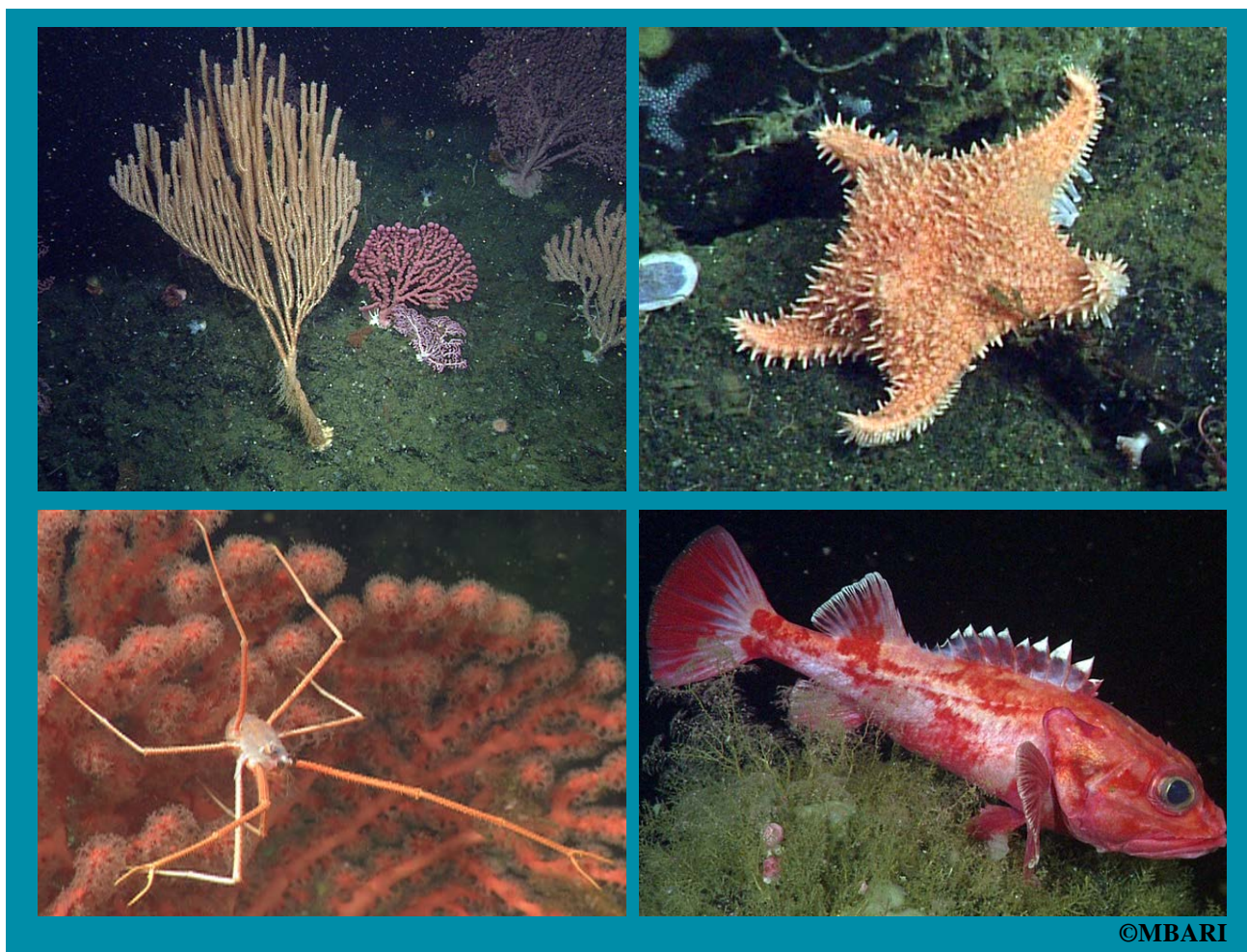


Sur Ridge Field Guide: Monterey Bay National Marine Sanctuary



U.S. Department of Commerce
Wilbur Ross, Secretary

National Oceanic and Atmospheric Administration
Benjamin Friedman, Acting Administrator

National Ocean Service
Russell Callender, Ph.D., Assistant Administrator

Office of National Marine Sanctuaries
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Cover Photo:

Clockwise from top left: bamboo coral (*Isidella tentaculum*,
foreground center), sea star (*Hippasteria californica*),
Shortspine Thornyhead (*Sebastolobus alascanus*), and crab
(*Gastroptychus perarmatus*). Credit: Monterey Bay
Aquarium Research Institute.





About the Marine Sanctuaries Conservation Series

The Office of National Marine Sanctuaries, part of the National Oceanic and Atmospheric Administration, serves as the trustee for a system of underwater parks encompassing more than 620,000 square miles of ocean and Great Lakes waters. The 13 national marine sanctuaries and two marine national monuments within the National Marine Sanctuary System represent areas of America's ocean and Great Lakes environment that are of special national significance. Within their waters, giant humpback whales breed and calve their young, coral colonies flourish, and shipwrecks tell stories of our maritime history. Habitats include beautiful coral reefs, lush kelp forests, whale migration corridors, spectacular deep-sea canyons, and underwater archaeological sites. These special places also provide homes to thousands of unique or endangered species and are important to America's cultural heritage. Sites range in size from less than one square mile to more than 582,000 square miles and serve as natural classrooms, cherished recreational spots, and are home to valuable commercial industries.

Because of considerable differences in settings, resources, and threats, each marine sanctuary has a tailored management plan. Conservation, education, research, monitoring and enforcement programs vary accordingly. The integration of these programs is fundamental to marine protected area management. The Marine Sanctuaries Conservation Series reflects and supports this integration by providing a forum for publication and discussion of the complex issues currently facing the sanctuary system. Topics of published reports vary substantially and may include descriptions of educational programs, discussions on resource management issues, and results of scientific research and monitoring projects. The series facilitates integration of natural sciences, socioeconomic and cultural sciences, education, and policy development to accomplish the diverse needs of NOAA's resource protection mandate. All publications are available on the Office of National Marine Sanctuaries website (<http://www.sanctuaries.noaa.gov>).



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Abstract

Sur Ridge is a large rocky feature located approximately 28 miles west of Point Sur, central California within Monterey Bay National Marine Sanctuary. Sur Ridge serves as a focal area for facilitating research to better understand natural and human-caused ecosystem variation. Recently, Sur Ridge has been surveyed using a remotely operated vehicle (ROV; midwater and seafloor), and with a midwater trawl. At least 261 taxa were observed and are presented in this guide. The purpose of this field guide is to create an inventory of benthic and midwater organisms, and associated imagery, observed at Sur Ridge to provide a baseline taxonomic characterization. It may also be useful for other deep-sea studies off California.

Key Words

Monterey Bay National Marine Sanctuary (MBNMS), Monterey Bay Aquarium Research Institute (MBARI), Sur Ridge, field guide, deep sea, taxonomy, corals, sponges, invertebrates, fishes, marine protected area, images, ROV, sanctuary ecologically significant area.



Acronyms

MBARI	Monterey Bay Aquarium Research Institute
MBNMS	Monterey Bay National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
PDT	Pacific Daylight Time
ROV	Remotely Operated Vehicle
SESA	Sanctuary Ecologically Significant Area
WoRMS	World Register of Marine Species

Introduction

Sur Ridge is a large rocky feature located approximately 28 miles west of Point Sur, central California within Monterey Bay National Marine Sanctuary (MBNMS; Fig. 1). As part of an ecosystem based management approach, MBNMS staff identified Sur Ridge as a Sanctuary Ecologically Significant Area (SESA; MBNMS 2016). Sur Ridge serves as a focal area for facilitating research to better understand natural and human-caused ecosystem variation.

Recently, Sur Ridge has been surveyed using a remotely operated vehicle (ROV; midwater and seafloor), and with a midwater trawl. Scientists from the Monterey Bay Aquarium Research Institute (MBARI) and MBNMS conducted ROV surveys at the Sur Ridge seafloor (29 dives; 2013-2017; Fig. 1) with several goals: 1) to explore and characterize Sur Ridge; 2) to conduct sea star feeding experiments; and 3) to develop methods to transplant deep-sea corals. ROV surveys were conducted from 0-1572 meters, with a focus on the seafloor from 785-1572 meters. Additional midwater animals included were incidental observations from ROV ascents and descents, and a few exploratory ROV missions in the water column over Sur Ridge.

During an MBNMS-led survey, scientists conducted one midwater trawl above Sur Ridge on 9 May 2015, before twilight (1920-2024 PDT; Fig. 1). The midwater Tucker trawl (2-meter wide, non-closing, single net, 500-micron mesh) was used to collect mesopelagic fishes from 0-435 meters (oblique tow).

These research cruises have contributed to the biological characterization of Sur Ridge. At least 261 taxa were observed and are presented in this guide. The purpose of this field guide is to create an inventory of benthic and midwater organisms, and associated imagery, observed at Sur Ridge to provide a baseline taxonomic characterization.

How to Use This Guide

Format

Organisms in this guide are presented in taxonomic order, starting with Phylum Porifera (sponges) and ending with Subphylum Vertebrata (fishes). Organisms are identified to the lowest possible taxon. A full taxonomic checklist is located at end of document.

Classification

Classification follows the World Register of Marine Species (WoRMS Editorial Board 2017); a comprehensive dynamic list of names of marine organisms that is curated by taxonomic experts. Classification schemes for specific groups are under revision. For example, sponges, corals, and sea stars are undergoing, or in need of, revision by the larger research community; and new species are currently awaiting description (Hourigan et al. 2007, Lee et al. 2007, Mah and Blake 2012, Blake and Mah 2014).

Information for each observed taxa is provided, including scientific name (or lowest possible taxonomic identification), common name, identification confidence, and any applicable comments. If an organism could not be identified to at least the genus level, the lowest possible taxonomic name was assigned (shown in capital letters); and numbered if it could be further differentiated (e.g., ACANTHASCINAE sp. 1). A representative image was used, when available.

Common Name

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

Confidence (Identification)

Confidence levels of organism identification from video or midwater trawl are as follows:

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

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.

Comments

Comments are included when additional information is available to help with identification. Benthic organisms are distinguished from those found primarily in the water column.

Images

Image credits are indicated on the image and include the following sources: MBARI (including Jacobsen Stout et al. 2017); NOAA/MBARI; Chad King/MBNMS; and Kim Reisenbichler/MBARI. Occasionally two horizontal red lasers are visible in images; and are positioned 29 cm apart. Organisms that could not be differentiated, due to distance from the camera or for those that are too small to see identifying characteristics (e.g., otherwise unidentified PORIFERA), are not included in the image portion of the guide. Images of midwater trawl-caught fishes may include a centimeter ruler. Some representative images may not have been taken at Sur Ridge.

Taxonomic Checklist

A full checklist of organisms observed at Sur Ridge is located at end of document. Provisional identifications are marked with an asterisk (*). Unconfirmed identifications are marked with a dagger (†).

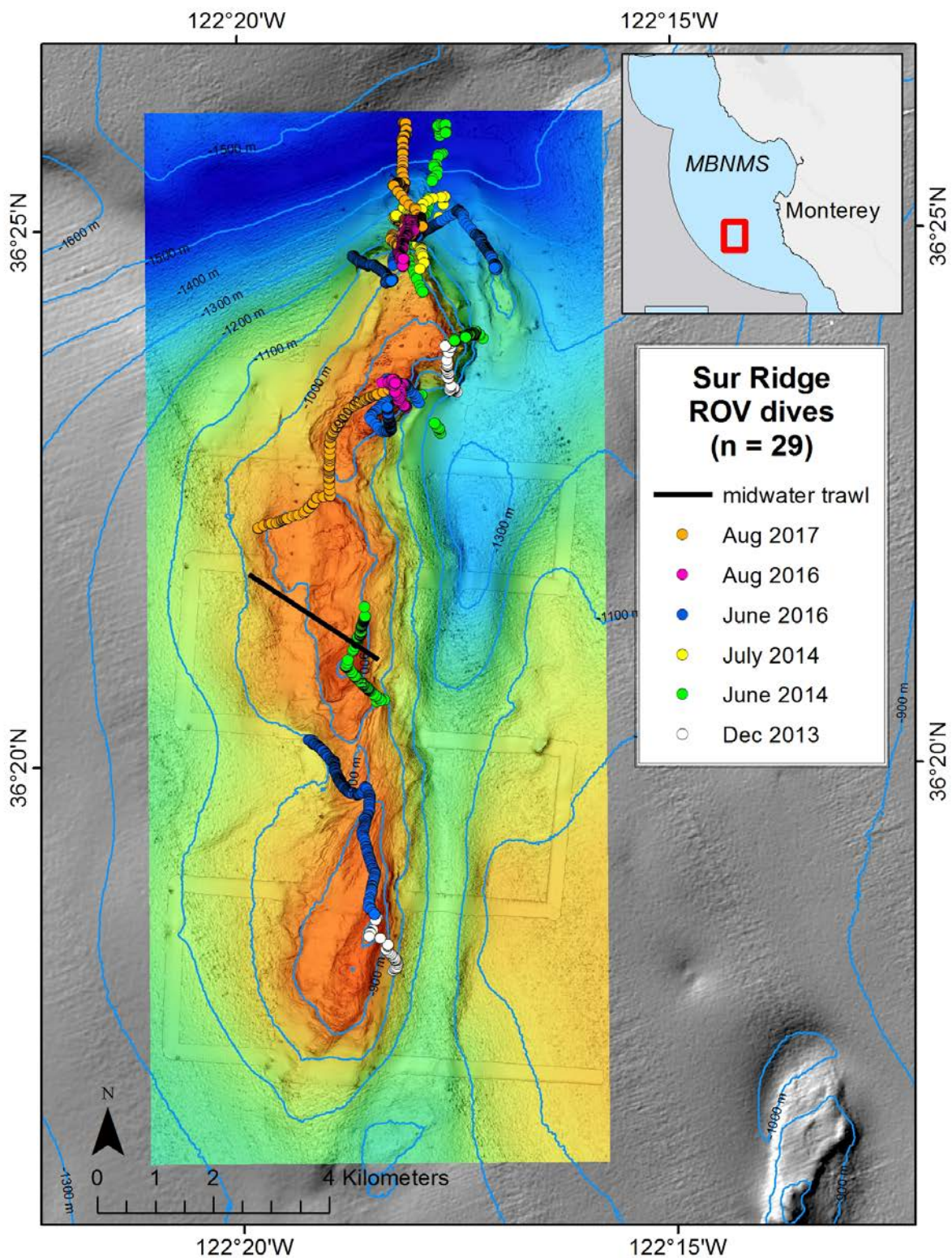


Figure 1. Benthic remotely operated vehicle (ROV) dive tracklines and midwater trawl at Sur Ridge, off central California, USA. Depth in meters. Credit: Chad King/MBNMS.

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Acknowledgements

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SPONGES

HORNY SPONGES



Thenea muricata
sponge

Confidence: Confirmed

Comments:

- ROV
- Benthic



Asbestopluma monticola
branched predatory sponge (white)

Confidence: Confirmed

Comments:

- ROV
- Benthic



Asbestopluma sp. A
palm frond sponge

Confidence: Confirmed

Comments:

- ROV
- Benthic

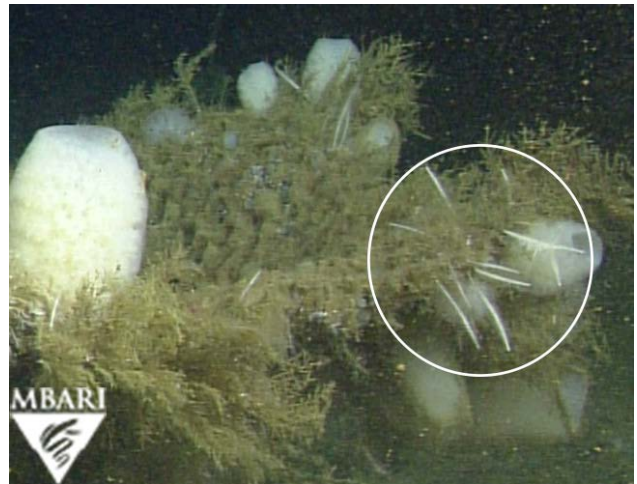
HORNY SPONGES

CLADORHIZIDAE sp. A
unbranched predatory sponge (white)

Confidence: Provisional

Comments:

- ROV
- Benthic
- Likely *Asbestopluma* sp. or *Cladorhiza* sp.



Mycale sp. 2
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic



GLASS SPONGES



HEXACTINELLIDA sp. 4
glass sponge

Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Barrel-shaped



HEXACTINELLIDA sp. 6
glass sponge

Confidence: Provisional

Comments:

- ROV
- Benthic



Heterochone calyx
fingered goblet vase sponge

Confidence: Confirmed

Comments:

- ROV
- Benthic

GLASS SPONGES

Chonelasma sp.
trumpet sponge (white)

Confidence: Provisional

Comments:

- ROV
- Benthic

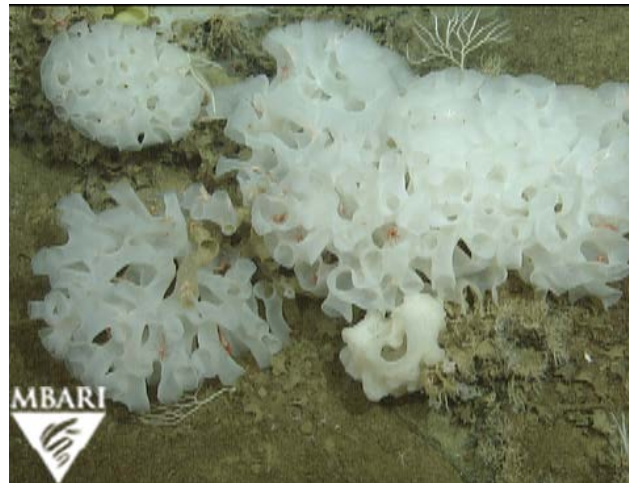


Farrea sp.
white cloud sponge

Confidence: Provisional

Comments:

- ROV
- Benthic



Farrea truncata complex
stalked ruffled sponge (white)

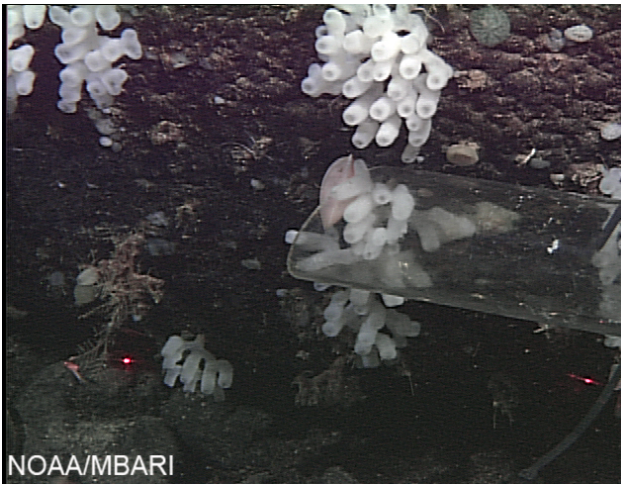
Confidence: Provisional

Comments:

- ROV
- Benthic



GLASS SPONGES

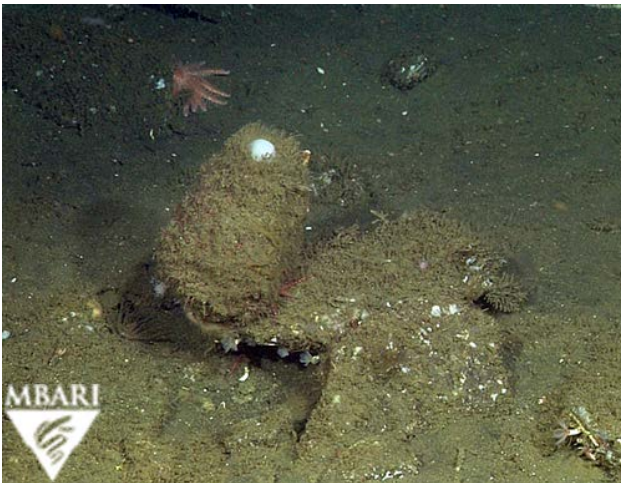


Sclerothamnopsis compressa
sponge

Confidence: Confirmed

Comments:

- ROV
- Benthic

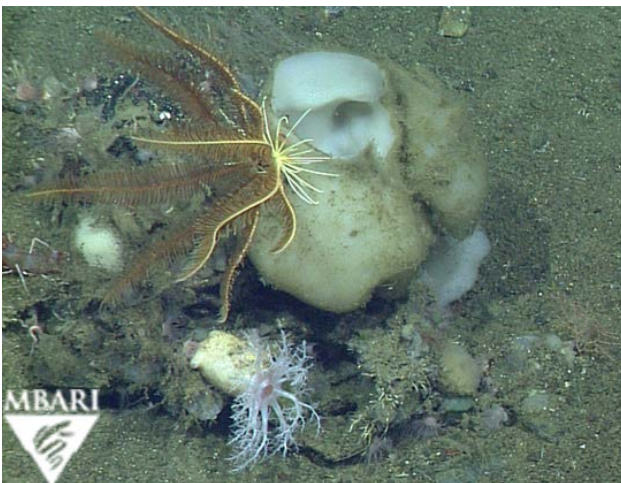


ACANTHASCINAE sp. 1
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic



ACANTHASCINAE sp. 2
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic

GLASS SPONGES

ACANTHASCINAE sp. 3
sponge

Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Potentially a morph of ACANTHASCINAE sp. 2



Staurocalyptus sp. 1
Picasso sponge (yellow)

Confidence: Provisional

Comments:

- ROV
- Benthic
- Possibly an alternate morph of *Staurocalyptus* sp. 2. Note that *S. solidus* may be present at Sur Ridge.

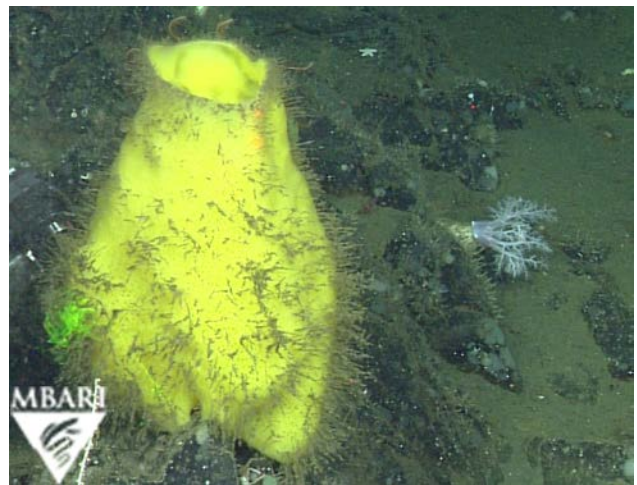


Staurocalyptus sp. 2
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic
- Possibly an alternate morph of *Staurocalyptus* sp. 1. Note that *S. solidus* may be present at Sur Ridge.



SPONGES

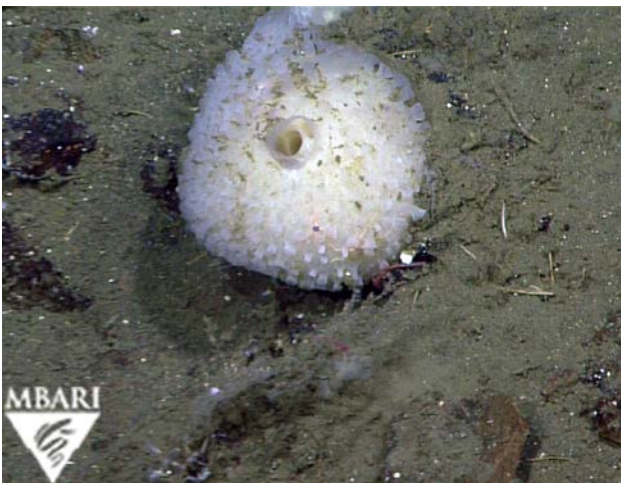


PORIFERA sp. 3
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic



PORIFERA sp. 5
sponge

Confidence: Provisional

Comments:

- ROV
- Benthic

CNIDARIANS

JELLIES



Atolla sp.
crown jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Periphylla periphylla
crown jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Poralia rufescens
jelly

Confidence: Confirmed

Comments:

- ROV
- Demersal/Pelagic

Mitrocoma cellularia
cross jellyfish

Confidence: Confirmed

Comments:

- ROV
- Pelagic



JELLIES – SIPHONOPHORES



Frillagalma vityazi
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Nanomia bijuga
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Apolemia lanosa
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic

JELLIES – SIPHONOPHORES

Erenna sp.
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Bargmannia elongata
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



RHODALIIDAE
benthic siphonophore

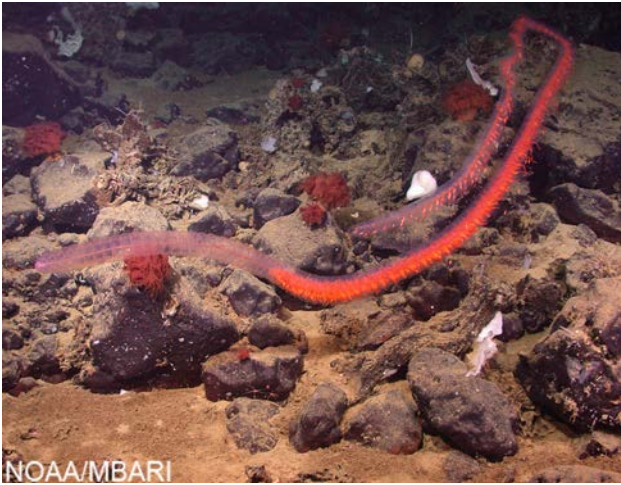
Confidence: Confirmed

Comments:

- ROV
- Benthic



JELLIES – SIPHONOPHORES



Stephanomia amphytridis
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Chuniphyes multidentata
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Kephyes ovata
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic

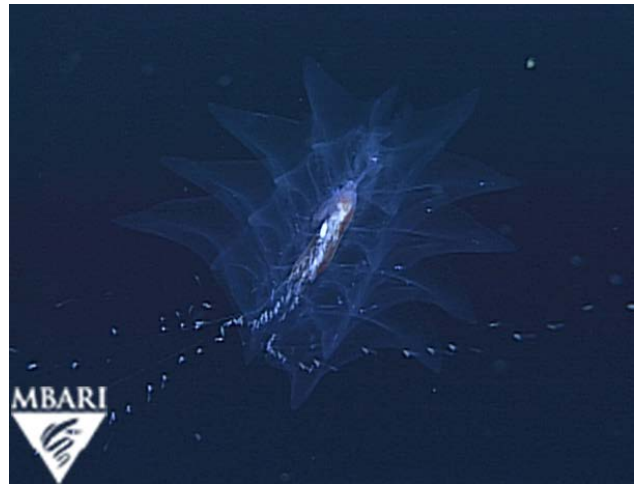
JELLIES – SIPHONOPHORES

Vogtia serrata
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Gymnobraia lapislazula
siphonophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic

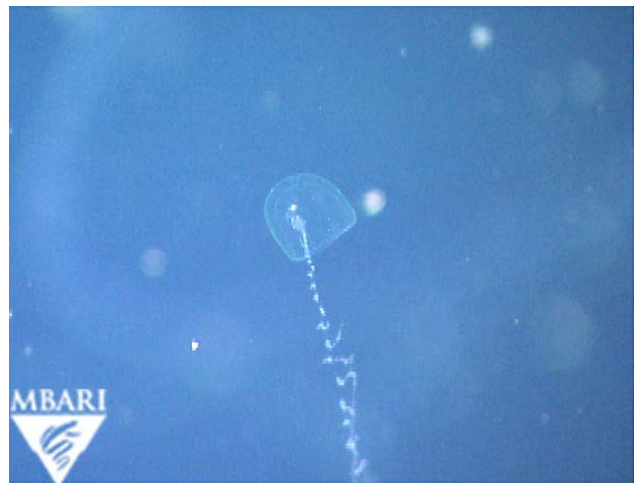


Sphaeronectes sp.
siphonophore

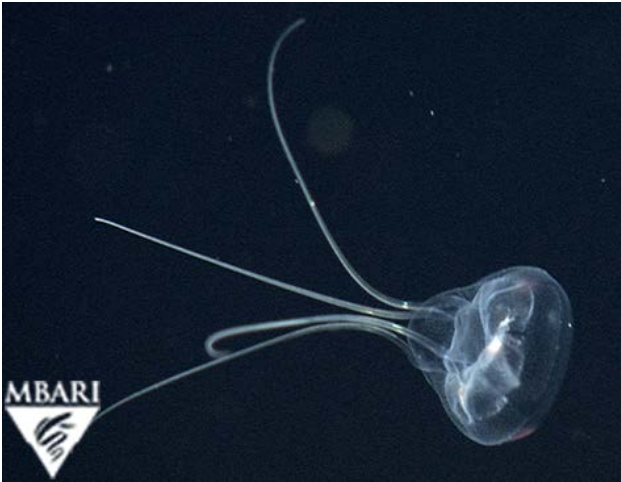
Confidence: Confirmed

Comments:

- ROV
- Pelagic



JELLIES

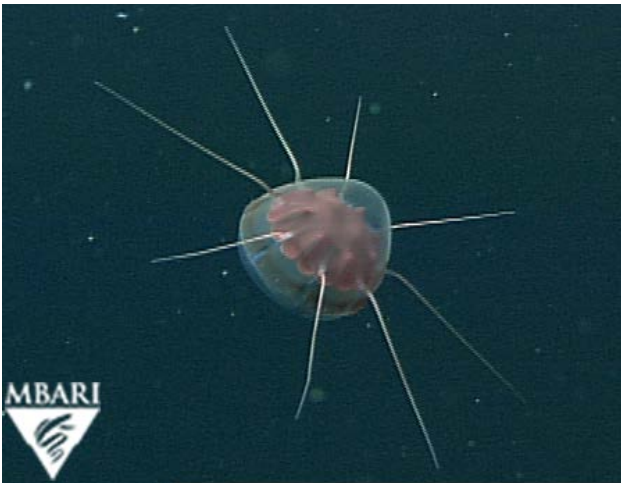


Aegina sp.
jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic

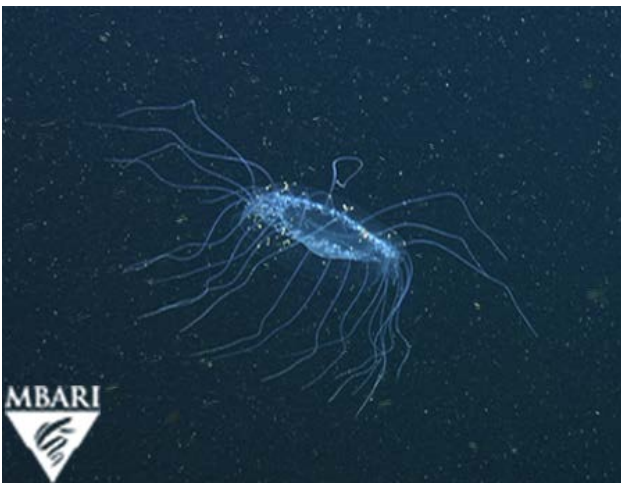


Aeginura sp.
jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Solmissus sp.
jelly

Confidence: Confirmed

Comments:

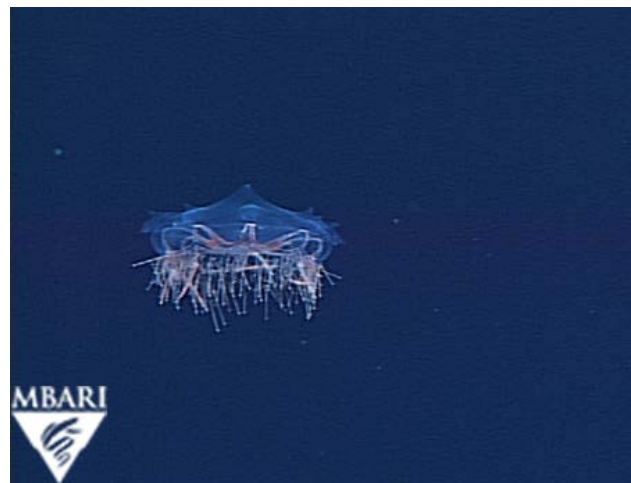
- ROV
- Pelagic

Halicreas minimum
jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Halityphes sp.
jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Colobonema sericeum
silky jelly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



ANEMONES



ACTINIIDAE sp. 1
anemone

Confidence: Provisional

Comments:

- ROV
- Benthic

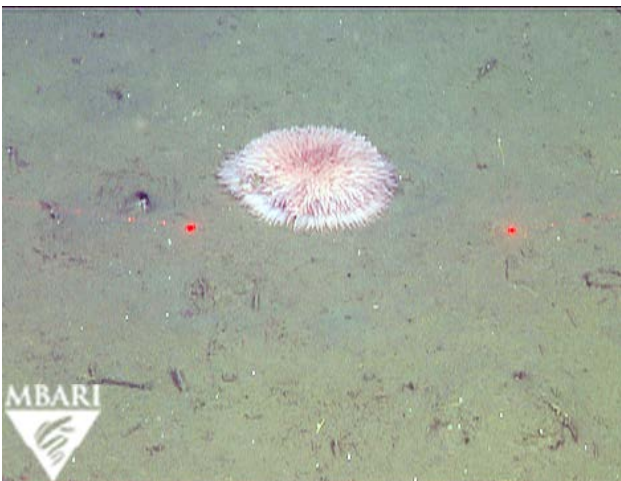


Bolocera sp.
anemone

Confidence: Confirmed

Comments:

- ROV
- Benthic



Liponema brevicorne
pom-pom (aka tumbleweed) anemone

Confidence: Confirmed

Comments:

- ROV
- Benthic

ANEMONES

Exocoelactis sp.
anemone

Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Possibly more than one species, and of varying colors



Actinoscyphia sp.
flytrap anemone

Confidence: Confirmed

Comments:

- ROV
- Benthic



HORMATHIIDAE sp. 1
warty anemone

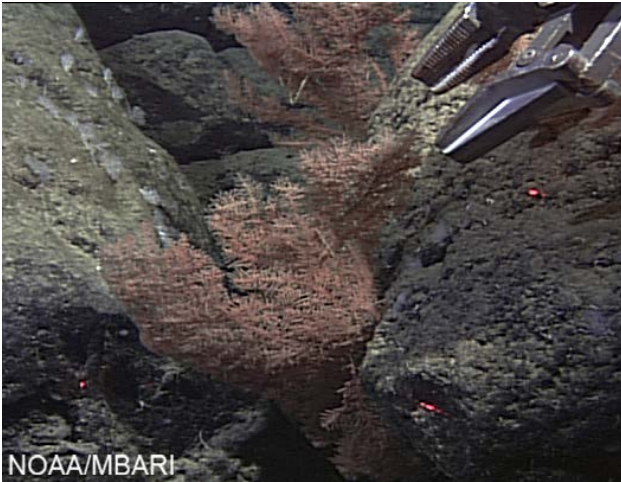
Confidence: Confirmed

Comments:

- ROV
- Benthic



HEXACORALS



Trissopathes sp.
black coral

Confidence: Confirmed

Comments:

- ROV
- Benthic

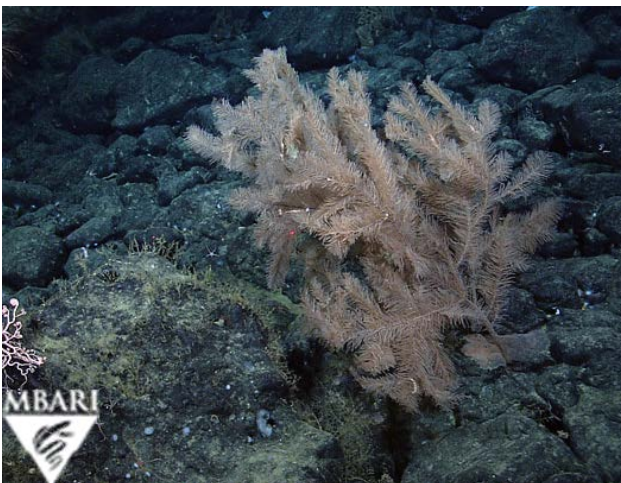


Bathypathes sp.
black coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Lillipathes sp.
black coral

Confidence: Confirmed

Comments:

- ROV
- Benthic

HEXACORALS

CERIANTHARIA sp. 2
tube-dwelling anemone

Confidence: Confirmed

Comments:

- ROV
- Benthic



Desmophyllum dianthus
cockscomb cup coral

Confidence: Provisional

Comments:

- ROV
- Benthic

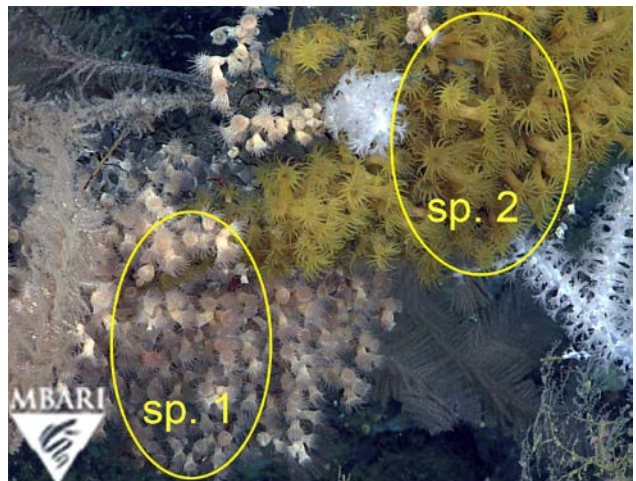


ZOANTHARIA sp. 1 and sp. 2
zoanthid

Confidence: Provisional

Comments:

- ROV
- Benthic



OCTOCORALS



Heteropolypus ritteri
mushroom soft coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Gersemia juliepackardae
Julie Packard's treasure coral

Confidence: Confirmed

Comments:

- ROV
- Benthic

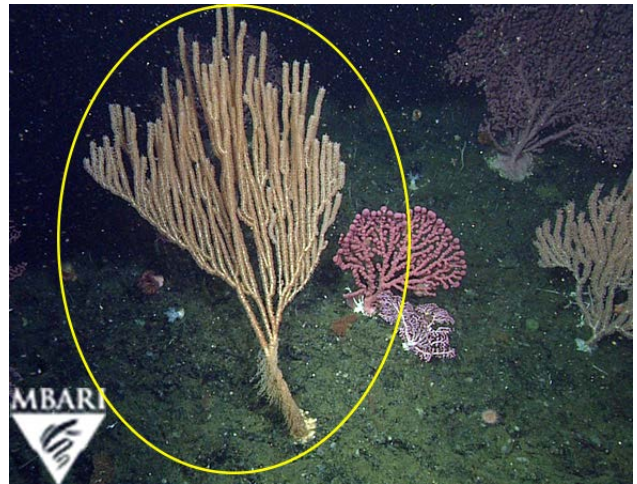
OCTOCORALS

Isidella tentaculum
bamboo coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Keratoisis sp.
bamboo coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Lepidisis sp.
bamboo coral

Confidence: Unconfirmed

Comments:

- ROV
- Benthic



OCTOCORALS

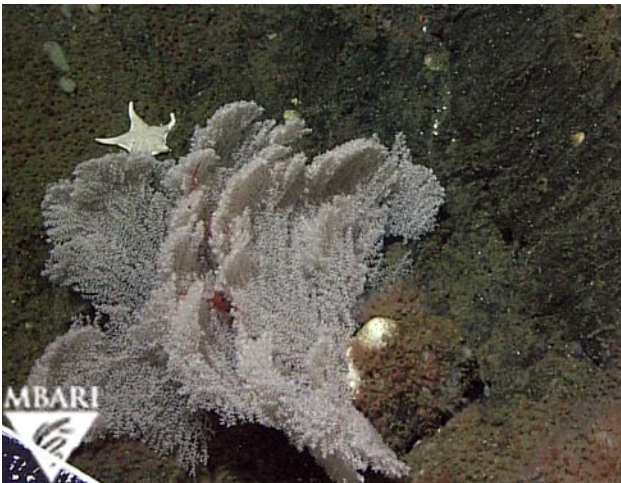


Parastenella gymnogaster
coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Parastenella sp.
coral

Confidence: Confirmed

Comments:

- ROV
- Benthic

OCTOCORALS

Acanthogorgia sp.
coral

Confidence: Confirmed

Comments:

- ROV
- Benthic



Swiftia kofoidi
red sea fan coral

Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Genus is in need of taxonomic revision

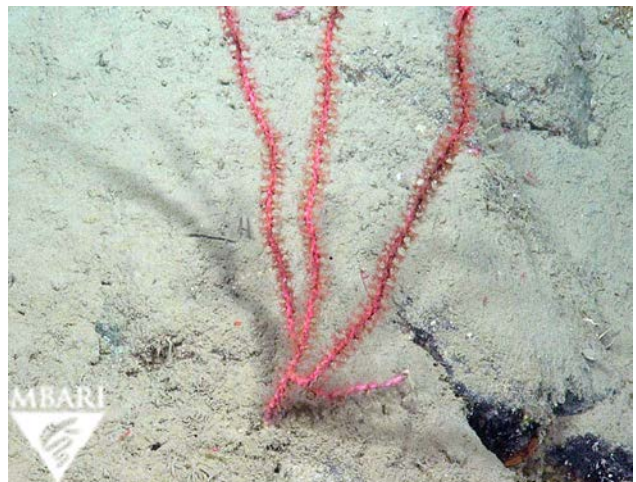


Swiftia simplex
coral

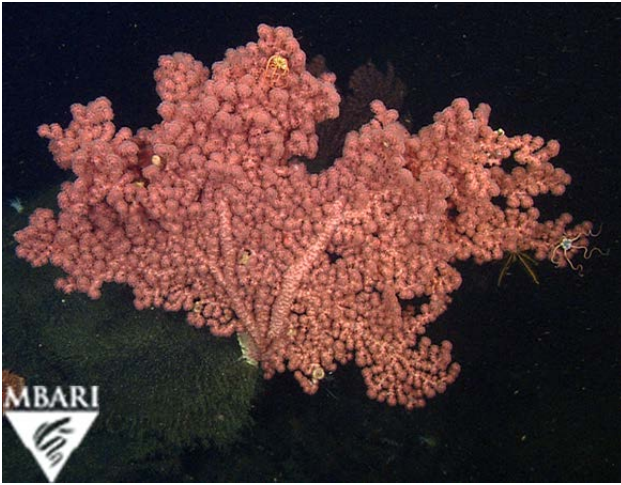
Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Genus is in need of taxonomic revision



OCTOCORALS

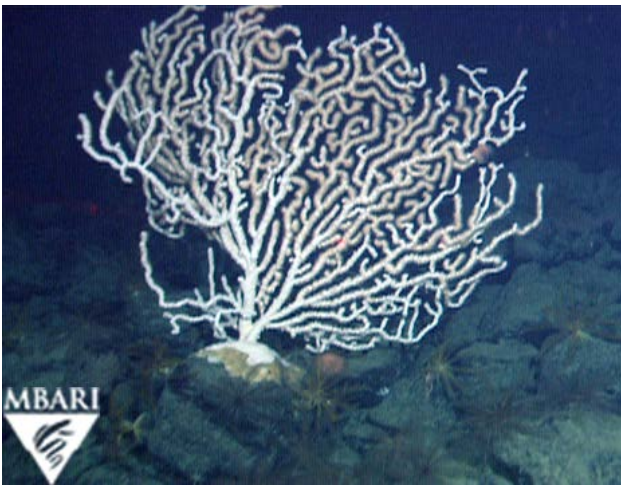


Paragorgia arborea
bubble gum coral (dark pink)

Confidence: Confirmed

Comments:

- ROV
- Benthic



Sibogorgia cauliflora
bubble gum coral (light pink)

Confidence: Confirmed

Comments:

- ROV
- Benthic



Corallium sp.
precious coral

Confidence: Confirmed

Comments:

- ROV
- Benthic

OCTOCORALS

Clavularia sp.
coral

Confidence: Unconfirmed

Comments:

- ROV
- Benthic
- Small colonies
- White and purple forms present



OCTOCORALS

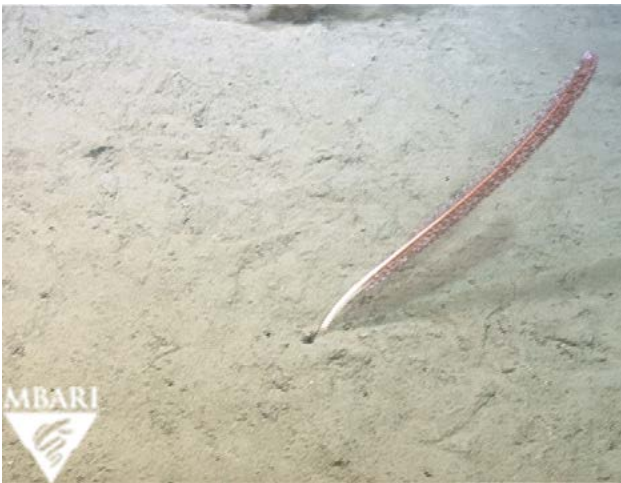


Anthoptilum grandiflorum
feather boa sea pen

Confidence: Confirmed

Comments:

- ROV
- Benthic

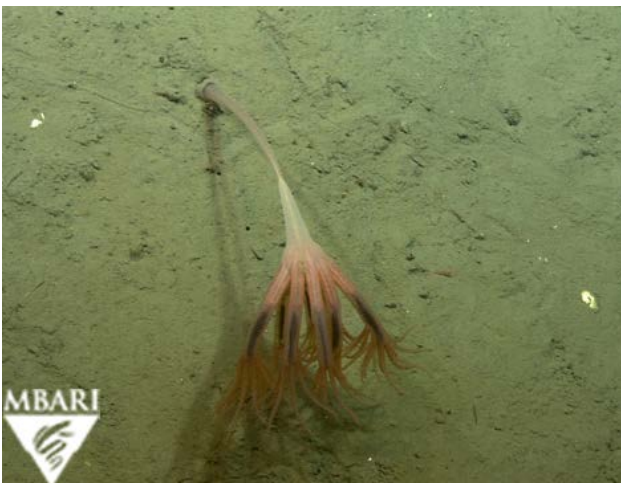


Funiculina sp.
bottle brush sea pen

Confidence: Confirmed

Comments:

- ROV
- Benthic



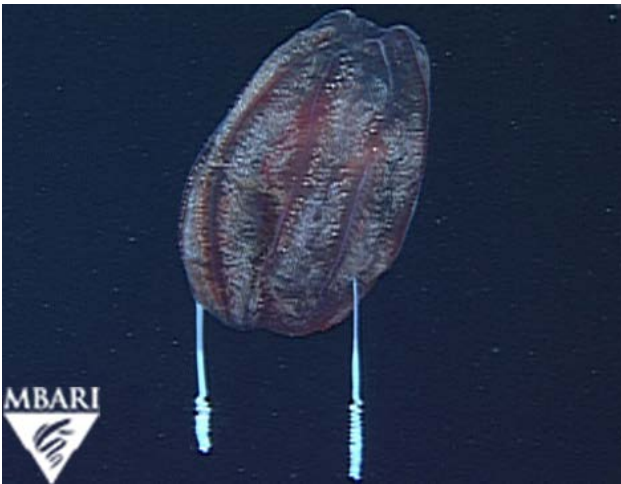
Umbellula lindahli
droopy sea pen

Confidence: Confirmed

Comments:

- ROV
- Benthic

CTENOPHORES

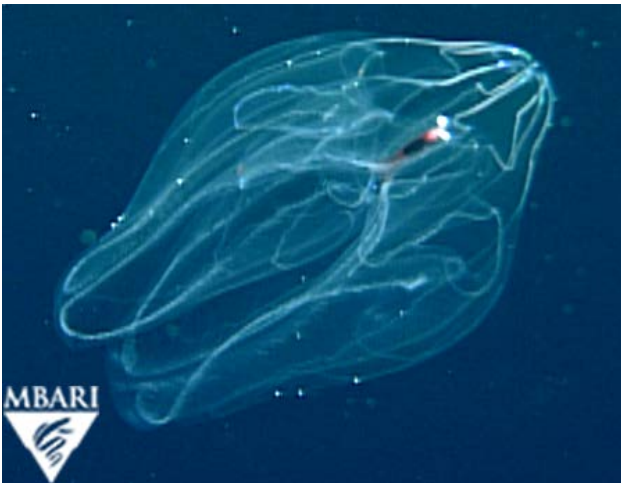
CTENOPHORES

Aulacoctena sp.
ctenophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Bathocyroe sp.
lobate ctenophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Bolinopsis infundibulum
lobate ctenophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic

CTENOPHORES

Kiyohimea usagi
lobate ctenophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic

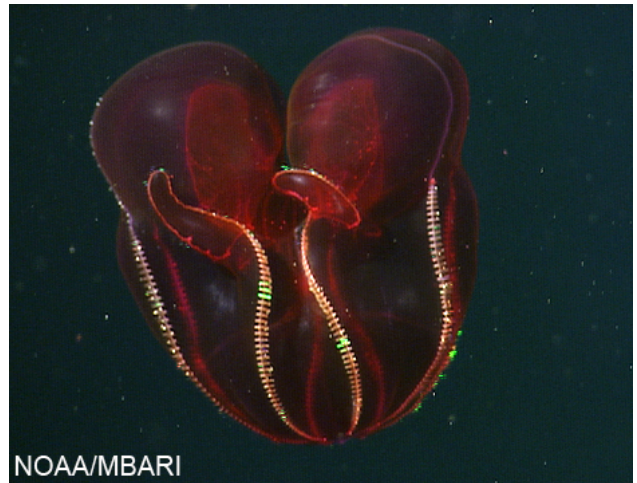


Lampocteis cruentiventer
lobate ctenophore

Confidence: Confirmed

Comments:

- ROV
- Pelagic



MOLLUSCS

SEA SLUGS



GASTROPODA sp. 2
gastropod

Confidence: Provisional

Comments:

- ROV
- Benthic



Calliostoma platinum
silvery topsnail

Confidence: Provisional

Comments:

- ROV
- Benthic



BUCCINIDAE sp. 1
snail

Confidence: Provisional

Comments:

- ROV
- Benthic
- Snails with egg cases

SEA SLUGS

Neptunea-Buccinum complex
snail

Confidence: Provisional

Comments:

- ROV
- Benthic
- Gastropods in these genera may not be distinguished from one another on imagery



Tritonia tetraquetra
nudibranch

Confidence: Confirmed

Comments:

- ROV
- Benthic



Corolla spectabilis
sea butterfly

Confidence: Confirmed

Comments:

- ROV
- Pelagic



CHITONS



NEOLORICATA
chiton

Confidence: Confirmed

Comments:

- ROV
- Benthic

BIVALVES

Acesta mori
clam

Confidence: Confirmed

Comments:

- ROV
- Benthic



Delectopecten sp.
scallop

Confidence: Provisional

Comments:

- ROV
- Benthic



Phreagena kilmeri
vesicomyid clam

Confidence: Confirmed

Comments:

- ROV
- Benthic



CEPHALOPODS



Chiroteuthis calyx
squid

Confidence: Confirmed

Comments:

- ROV
- Pelagic

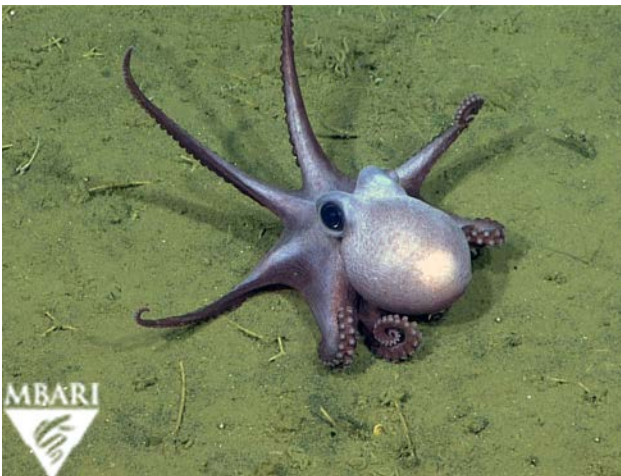


Gonatus sp.
squid

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Benthoctopus sp.
octopus

Confidence: Confirmed

Comments:

- ROV
- Benthic

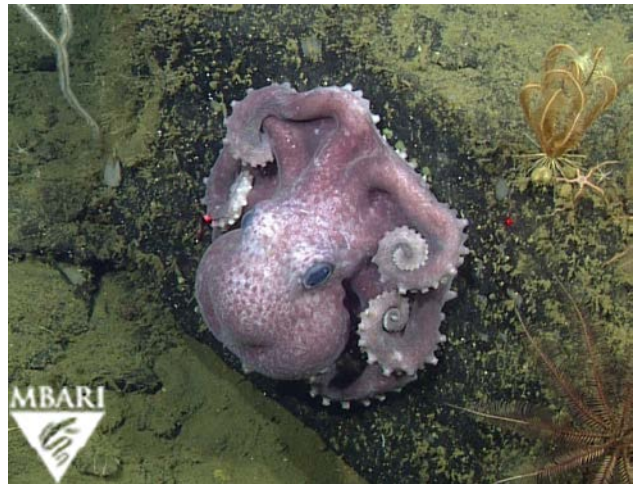
CEPHALOPODS

Graneledone boreopacifica
octopus

Confidence: Confirmed

Comments:

- ROV
- Benthic

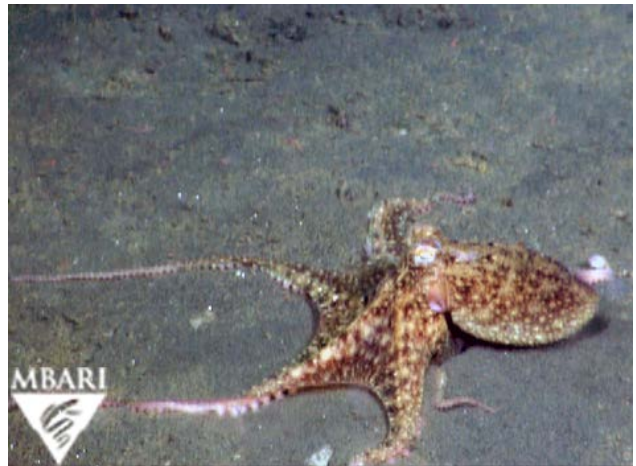


Octopus rubescens
red octopus

Confidence: Confirmed

Comments:

- ROV
- Benthic

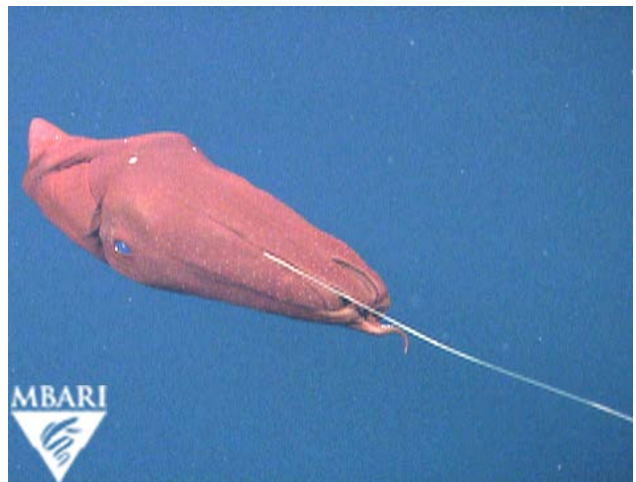


Vampyroteuthis infernalis
vampire squid

Confidence: Confirmed

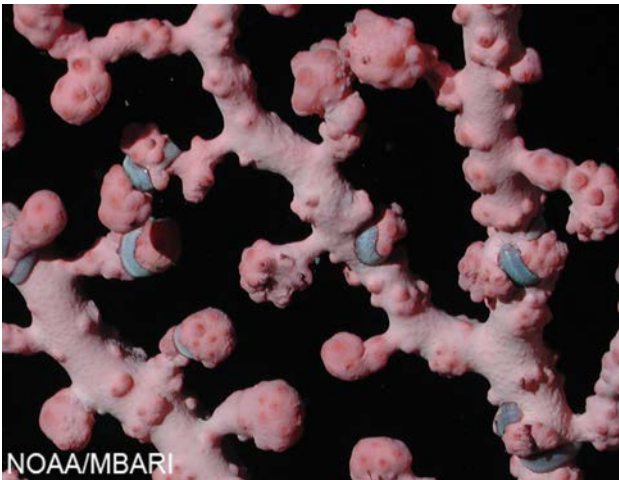
Comments:

- ROV
- Pelagic



ANNELIDS

POLYCHAETES



POLYNOIDAE
scale worm

Confidence: Confirmed

Comments:

- ROV
- Benthic
- Gray; found on *Paragorgia arborea*

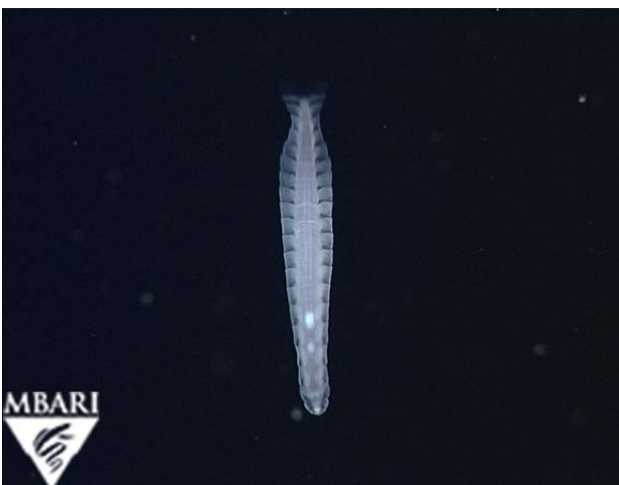


Tomopteris sp.
tomopterid worm

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Travisiopsis sp.
polychaete worm

Confidence: Confirmed

Comments:

- ROV
- Pelagic

POLYCHAETES

SABELLIDAE
sabellid worm

Confidence: Provisional

Comments:

- ROV
- Benthic

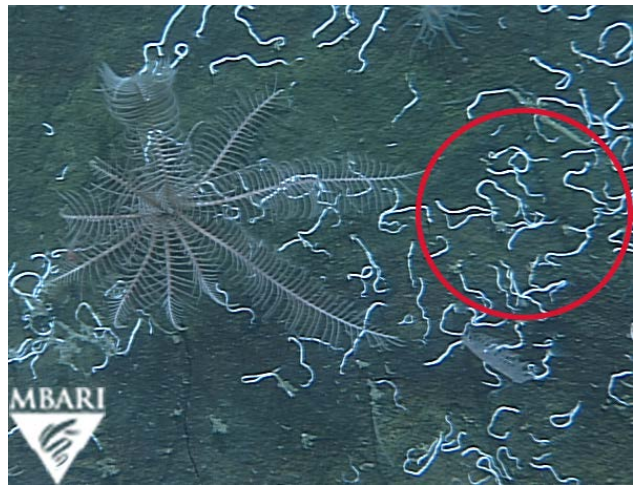


SERPULIDAE
serpulid worm

Confidence: Confirmed

Comments:

- ROV
- Benthic



Poebius meseres
holopelagic worm

Confidence: Confirmed

Comments:

- ROV
- Pelagic



ARTHROPODS

SEA SPIDERS



PYCNOGONIDA
sea spider

Confidence: Confirmed

Comments:

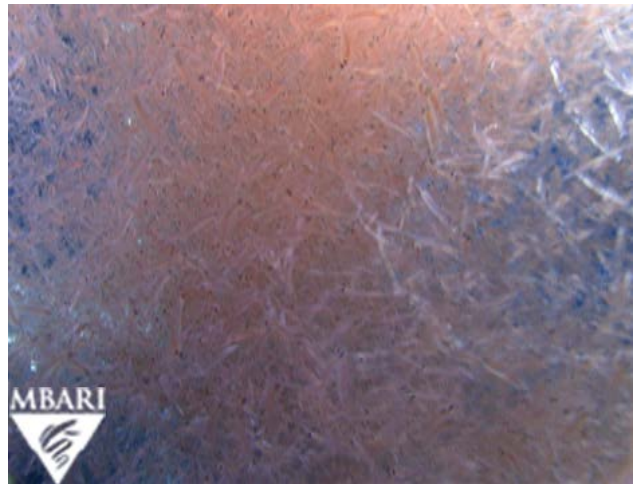
- ROV
- Benthic

EUPHAUSIACEA
krill

Confidence: Confirmed

Comments:

- ROV
- Pelagic



SHRIMPS



Eusergestes similis
midwater shrimp

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Petalidium suspiciosum
shrimp

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Pandalopsis ampla
deepwater bigeye shrimp

Confidence: Confirmed

Comments:

- ROV
- Benthic

SPINY LOBSTERS

Polycheles sp.
no common name

Confidence: Confirmed

Comments:

- ROV
- Pelagic
- Larvae
- Observed the larval pelagic form; adults are benthic.



CRABS

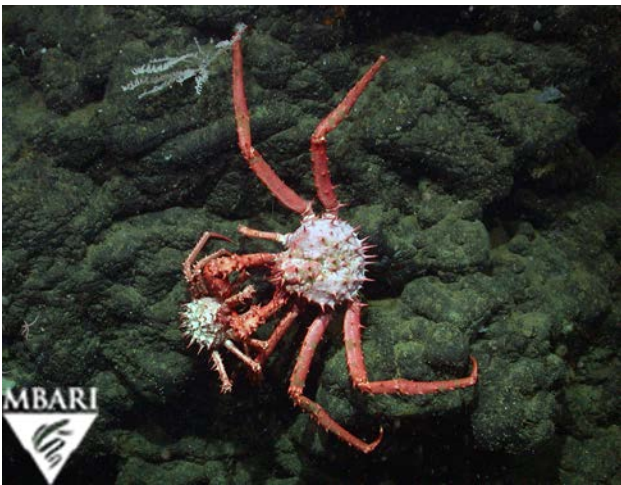


Lithodes couesi
scarlet king crab

Confidence: Confirmed

Comments:

- ROV
- Benthic



Neolithodes diomedeeae
crab

Confidence: Confirmed

Comments:

- ROV
- Benthic



Paralithodes rathbuni
spiny king crab

Confidence: Confirmed

Comments:

- ROV
- Benthic

Paralomis multispina
spiny paralomis

Confidence: Provisional

Comments:

- ROV
- Benthic

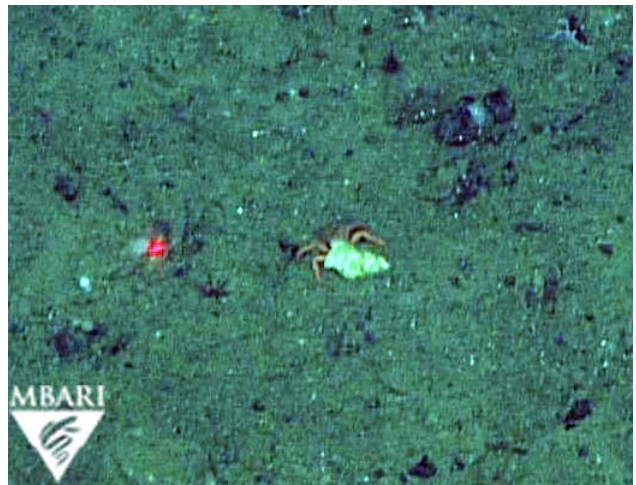


PAGUROIDEA
hermit crab

Confidence: Provisional

Comments:

- ROV
- Benthic

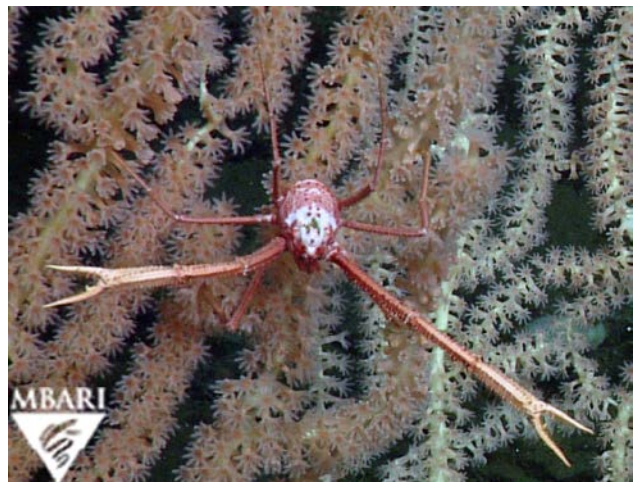


Gastroptychus iaspis
no common name

Confidence: Confirmed

Comments:

- ROV
- Benthic



CRABS



Gastroptychus perarmatus
no common name

Confidence: Confirmed

Comments:

- ROV
- Benthic



Munida quadrispina
squat lobster

Confidence: Confirmed

Comments:

- ROV
- Benthic



Munida sp. A
no common name

Confidence: Provisional

Comments:

- ROV
- Benthic

Pleuroncodes planipes
pelagic red crab

Confidence: Confirmed

Comments:

- ROV
- Pelagic/Benthic



Munidopsis sp.
squat lobster

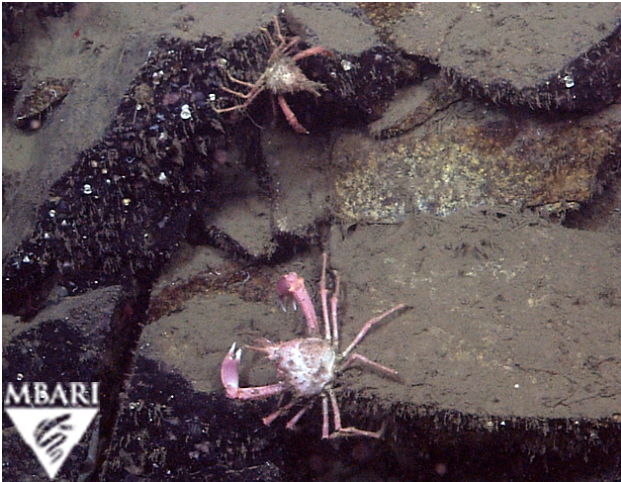
Confidence: Confirmed

Comments:

- ROV
- Benthic
- Numerous species in this genus look similar on video



CRABS



Chorilia longipes
longhorn decorator crab

Confidence: Confirmed

Comments:

- ROV
- Benthic



Chionoecetes tanneri
grooved tanner crab

Confidence: Confirmed

Comments:

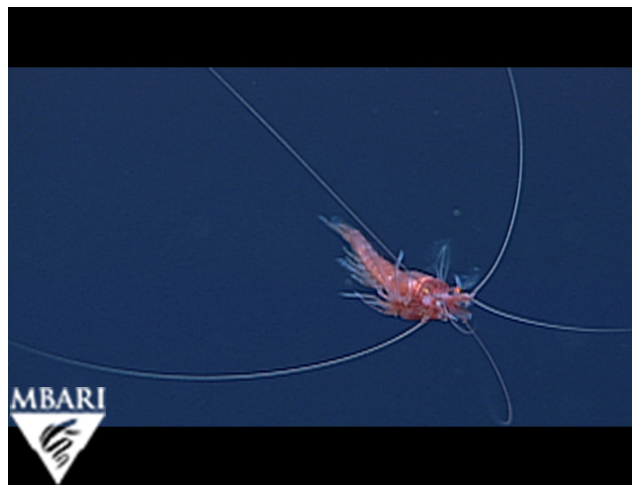
- ROV
- Benthic

MYSIDAE
mysid

Confidence: Confirmed

Comments:

- ROV
- Pelagic/Demersal



AMPHIPODS



AMPHIPODA tube mat
amphipod tube mat

Confidence: Confirmed

Comments:

- ROV
- Benthic



SCINIDAE
amphipod

Confidence: Confirmed

Comments:

- ROV
- Pelagic



CAPRELLIDAE
caprellid amphipod

Confidence: Confirmed

Comments:

- ROV
- Benthic

BRACHIOPODS

LAMP SHELLS



Laqueus californianus
lamp shell

Confidence: Confirmed

Comments:

- ROV
- Benthic

ECHINODERMS

CRINOIDS



ANTEDONOIDEA sp. 1
crinoid

Confidence: Provisional

Comments:

- ROV
- Benthic



Psathyrometra fragilis
crinoid

Confidence: Provisional

Comments:

- ROV
- Benthic

SEA STARS

ZOROASTERIDAE
zoroasterid sea star

Confidence: Provisional

Comments:

- ROV
- Benthic

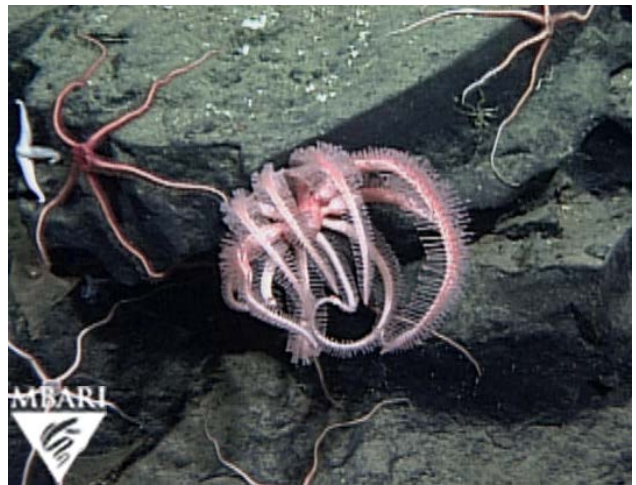


BRISINGIDA
brisingid sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Henricia sp.
sea star

Confidence: Unconfirmed

Comments:

- ROV
- Benthic



SEA STARS



Poraniopsis inflata
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



GONIASTERIDAE
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Mediaster aequalis
vermilion sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic

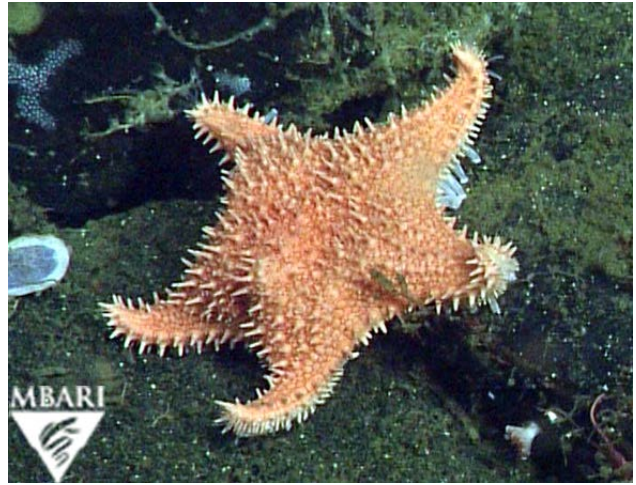
SEA STARS

Hippasteria californica
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Hippasteria lepidonotus
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Crossaster borealis
no common name

Confidence: Provisional

Comments:

- ROV
- Benthic



SEA STARS

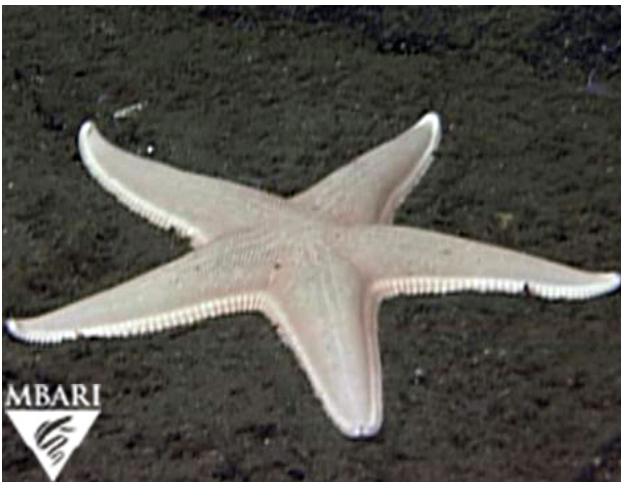


Solaster hypothrissus
no common name

Confidence: Provisional

Comments:

- ROV
- Benthic

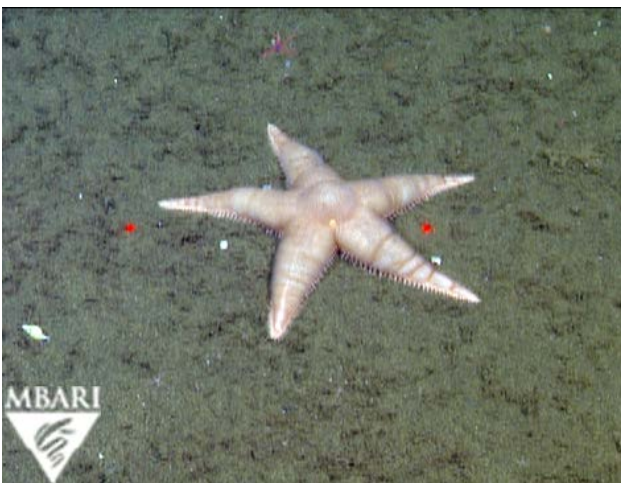


Dipsacaster sp.
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Thrissacanthias penicillatus
sea star

Confidence: Provisional

Comments:

- ROV
- Benthic

SEA STARS

BENTHOPECTINIDAE
benthopectinid sea star

Confidence: Provisional

Comments:

- ROV
- Benthic



Asthenactis fisheri
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Hymenaster sp.
sea star

Confidence: Confirmed

Comments:

- ROV
- Benthic



BRITTLE STARS



OPHIUROIDEA
brittle star

Confidence: Confirmed

Comments:

- ROV
- Benthic
- Multiple species

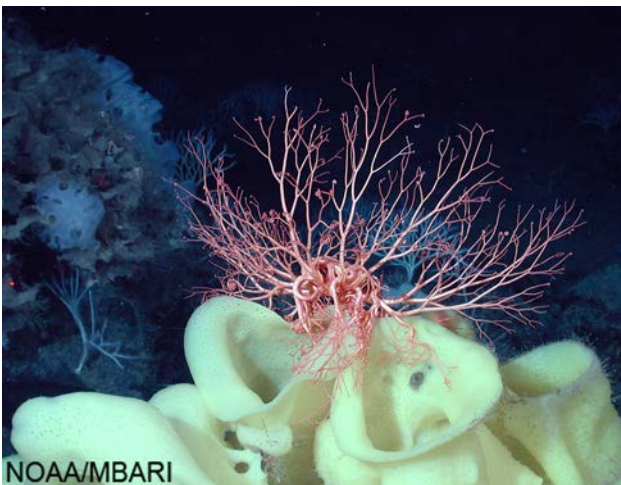


Asteronyx sp.
brittle star

Confidence: Confirmed

Comments:

- ROV
- Benthic



Gorgonocephalus sp.
basket star

Confidence: Confirmed

Comments:

- ROV
- Benthic

BRITTLE STARS

OPHIACANTHIDAE
brittle star

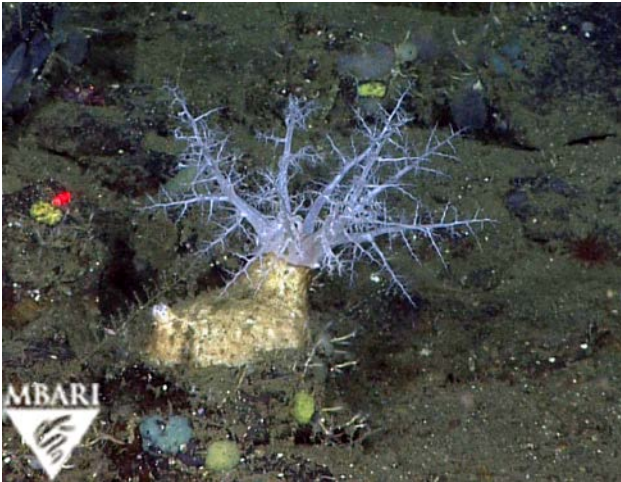
Confidence: Provisional

Comments:

- ROV
- Benthic



SEA CUCUMBERS



Psolus squamatus
sea cucumber

Confidence: Confirmed

Comments:

- ROV
- Benthic



Pseudostichopus mollis
sea cucumber

Confidence: Confirmed

Comments:

- ROV
- Benthic



SYNALLACTIDAE
sea cucumber

Confidence: Confirmed

Comments:

- ROV
- Benthic

SEA CUCUMBERS

Scotoplanes sp. A
sea cucumber (aka sea pig)

Confidence: Confirmed

Comments:

- ROV
- Benthic



Laetmogone sp.
sea cucumber

Confidence: Confirmed

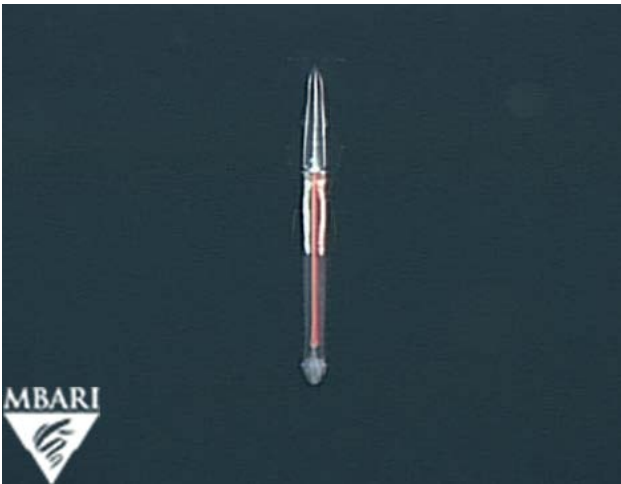
Comments:

- ROV
- Benthic



CHAETOGNATHS

CHAETOGNATHS

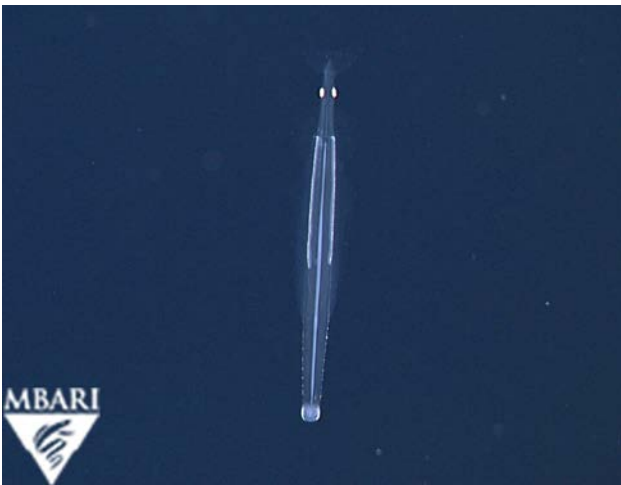


Caecosagitta macrocephala
orange gut chaetognath

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Pseudosagitta maxima
chaetognath

Confidence: Confirmed

Comments:

- ROV
- Pelagic

HEMICHORDATES

ACORN WORMS



Saxipendium implicatum
acorn worm

Confidence: Confirmed

Comments:

- ROV
- Benthic



Allaparus sp. 3
acorn worm

Confidence: Provisional

Comments:

- ROV
- Benthic

CHORDATES

TUNICATES

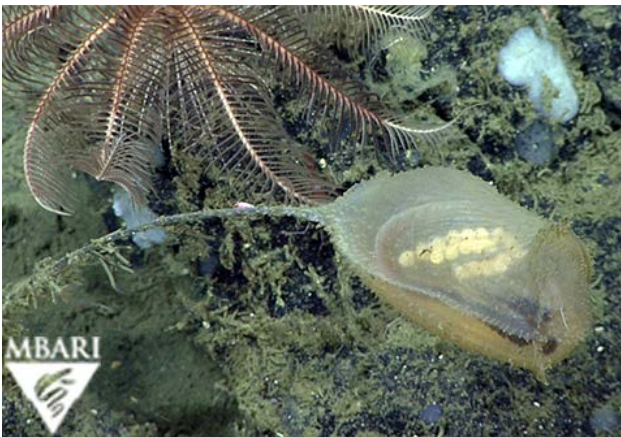


Megalodicopia hians
predatory tunicate

Confidence: Confirmed

Comments:

- ROV
- Benthic



Culeolus sp. A
stalked tunicate

Confidence: Confirmed

Comments:

- ROV
- Benthic



Cnemidocarpa sp.
tunicate

Confidence: Unconfirmed

Comments:

- ROV
- Benthic

Pyrosoma sp.
pyrosome

Confidence: Confirmed

Comments:

- ROV
- Pelagic

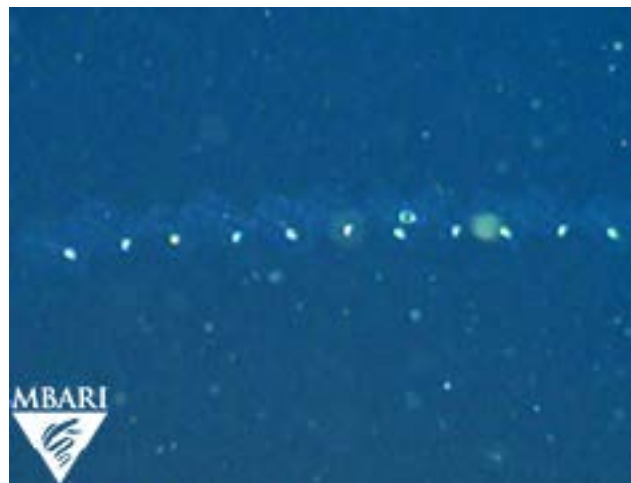


SALPIDA
salp

Confidence: Confirmed

Comments:

- ROV
- Pelagic

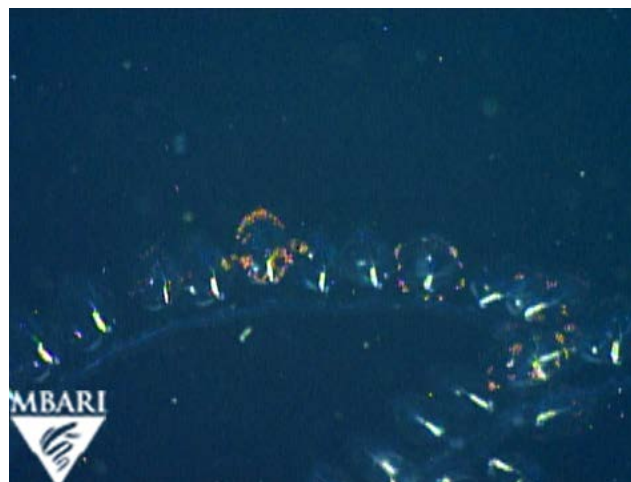


DOLIOLIDA
salp

Confidence: Confirmed

Comments:

- ROV
- Pelagic



LARVACEANS



Bathochordaeus stygius
giant larvacean

Confidence: Confirmed

Comments:

- ROV
- Pelagic

HAGFISHES

Eptatretus sp.
hagfish

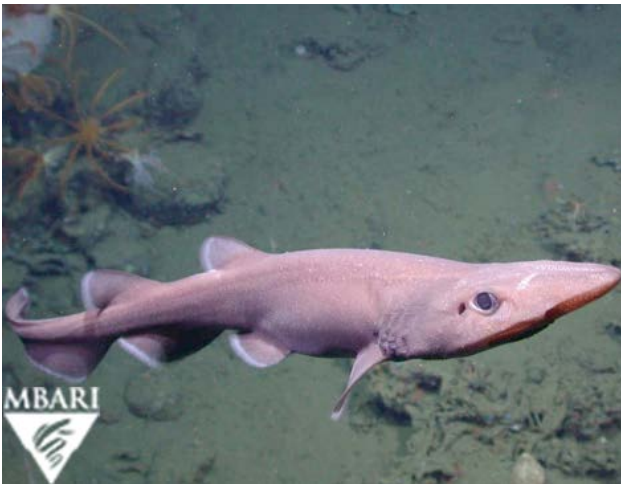
Confidence: Confirmed

Comments:

- ROV
- Benthic
- Likely *E. stoutii* (Pacific Hagfish)



SHARKS and SKATES

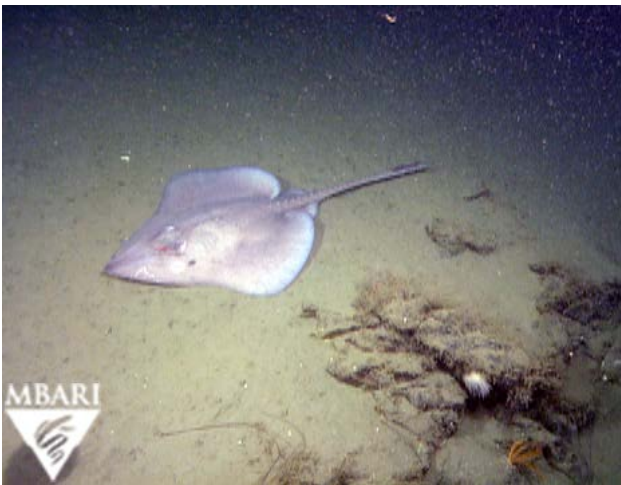


Aristurus kampaе
Longnose Cat Shark

Confidence: Confirmed

Comments:

- ROV
- Bathydemersal



Bathyrāja abyssicola
Deepsea Skate

Confidence: Confirmed

Comments:

- ROV
- Benthic



Bathyrāja trachura
Roughtail Skate

Confidence: Confirmed

Comments:

- ROV
- Benthic

DEEPSEA SMELTS

Bathylagoides wesethi
Snubnose Blacksmelt

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae (not pictured here)

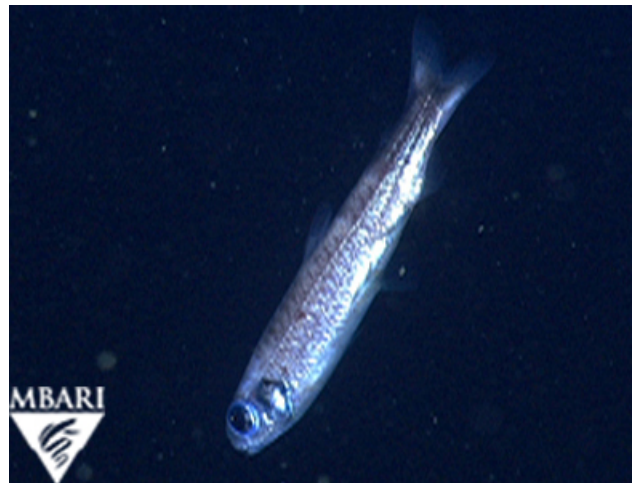


Leuroglossus stilbius
California Smoothtongue

Confidence: Confirmed

Comments:

- ROV
- Pelagic



Pseudobathylagus milleri
Robust Blacksmelt

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae (not pictured here)



SLICKHEADS



Alepocephalus tenebrosus
California Slickhead

Confidence: Confirmed

Comments:

- ROV
- Pelagic

BRISTLEMOUTHS

Cyclothone pseudopallida
Phantom Bristlemouth

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae



Cyclothone signata
Showy Bristlemouth

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Cyclothone sp.
bristlemouth

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



MARINE HATCHETFISHES



Argyropelecus sladeni
Lowcrest Hatchetfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae (not pictured here)

DRAGONFISHES

Aristostomias scintillans
Shining Loosejaw

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Chad King/MBNMS

Chauliodus macouni
Pacific Viperfish

Confidence: Confirmed

Comments:

- Midwater trawl
- ROV
- Pelagic



Chad King/MBNMS

Idiacanthus antrostomus
Pacific Blackdragon

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Chad King/MBNMS

PEARLEYES



Benthabella dentata
Northern Pearleye

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae

BARRACUDINAS

Magnisudis atlantica
Duckbill Barracudina

Confidence: Confirmed

Comments:

- ROV bycatch
- Pelagic



LANTERNFISHES



Diaphus theta
California Headlightfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Nannobranchium ritteri
Broadfin Lampfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Protomyctophum crockeri
California Flashlightfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae (not pictured here)

LANTERNFISHES

Stenobrachius leucopsarus
Northern Lampfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic



Triphoturus mexicanus
Mexican Lampfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic
- Larvae (not pictured here)



GRENADIERS

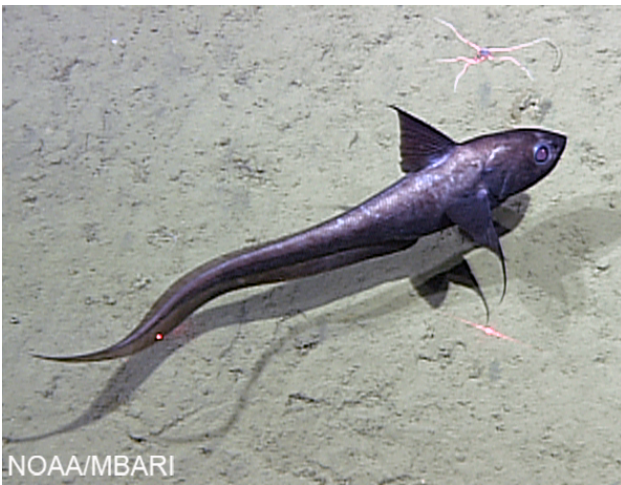


Coryphaenoides acrolepis
Pacific Grenadier

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic

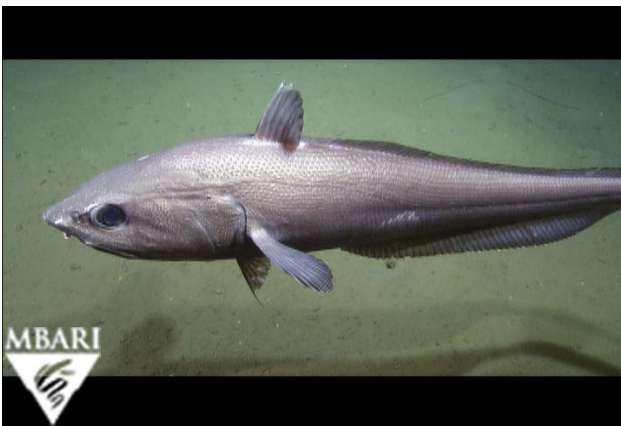


Coryphaenoides acrolepis-filifer
complex
Pacific/Threadfin Grenadier

Confidence: Provisional

Comments:

- ROV
- Benthopelagic
- *C. acrolepis* and *C. filifer* are sometimes difficult to distinguish on imagery



Coryphaenoides pectoralis
Giant Grenadier

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic

CODLINGS and MERLUCCIID HAKES

Antimora microlepis
Pacific Flatnose

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic

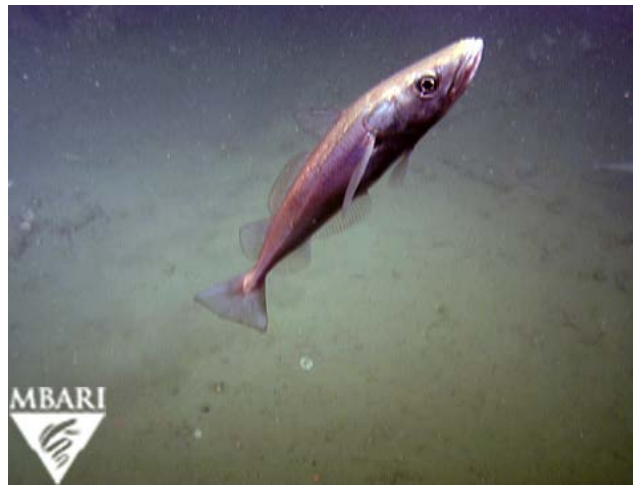


Merluccius productus
Pacific Hake

Confidence: Confirmed

Comments:

- ROV
- Pelagic/Benthopelagic



CUSK-EELS



Lucibrotula sp. A
no common name

Confidence: Provisional

Comments:

- ROV
- Benthic

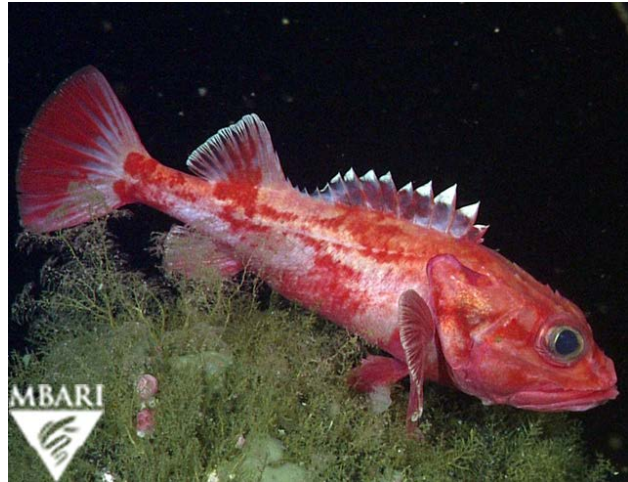
SCORPIONFISHES

Sebastolobus alascanus
Shortspine Thornyhead

Confidence: Confirmed

Comments:

- ROV
- Benthic



Sebastolobus altivelis
Longspine Thornyhead

Confidence: Confirmed

Comments:

- ROV
- Benthic



SABLEFISHES and FATHEAD SCULPINS



Anoplopoma fimbria
Sablefish

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic



Psychrolutes phrictus
Blob Sculpin

Confidence: Confirmed

Comments:

- ROV
- Benthic

SNAILFISHES

Careproctus filamentosus
snailfish

Confidence: Provisional

Comments:

- ROV
- Benthopelagic



Careproctus kamikawai
Arbiter Snailfish

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic



Careproctus melanurus
Blacktail Snailfish

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic



SNAILFISHES



LIPARIDAE sp. 1
snailfish

Confidence: Unconfirmed

Comments:

- ROV
- Benthopelagic



LIPARIDAE sp. 3
snailfish

Confidence: Provisional

Comments:

- ROV
- Benthopelagic



Nectoliparis pelagicus
Tadpole Snailfish

Confidence: Confirmed

Comments:

- Midwater trawl
- Pelagic

EELPOUTS

Bothrocara brunneum
Twoline Eelpout

Confidence: Confirmed

Comments:

- ROV
- Benthopelagic



Lycenchelys sp.
eelpout

Confidence: Confirmed

Comments:

- ROV
- Benthic



Lycodapus sp.
eelpout

Confidence: Confirmed

Comments:

- ROV
- Pelagic



RIGHTEYE FLOUNDERS



Embassichthys bathybius
Deepsea Sole

Confidence: Confirmed

Comments:

- ROV
- Benthic



Microstomus pacificus
Dover Sole

Confidence: Confirmed

Comments:

- ROV
- Benthic

OTHER



BACTERIA
bacterial mat

Confidence: Confirmed

Comments:

- ROV
- Benthic



LAMINARIALES
kelp (drift)

Confidence: Confirmed

Comments:

- ROV
- Benthic
- Several species



Phyllospadix sp.
surfgrass (drift)

Confidence: Confirmed

Comments:

- ROV
- Benthic

SCIENTIFIC NAME

COMMON NAME

PHYLUM BACTERIA

BACTERIA bacterial mat

PHYLUM OCHROPHYTA – BROWN ALGAE (drift)

Class Phaeophyceae
ORDER LAMINARIALES

LAMINARIALES kelp (drift)

PHYLUM TRACHEOPHYTA – VASCULAR PLANTS (drift)

Class Monocots
ORDER ALISMATALES

Family Cymodoceaceae

Phyllospadix sp. surfgrass (drift)

PHYLUM PORIFERA – SPONGES

*PORIFERA sp. 3 sponge

*PORIFERA sp. 5 sponge

PORIFERA sponge (otherwise unidentified)

Class Demospongiae – horny sponges

SUBCLASS HETEROSCLEROMORPHA
ORDER TETRACTINELLIDA
SUBORDER ASTROPHORINA

Family Theneidae

Thenea muricata sponge

Family Cladorhizidae

Asbestopluma monticola branched predatory sponge (white)

Asbestopluma sp. A palm frond sponge

*CLADORHIZIDAE sp. A unbranched predatory sponge (white)

Family Mycalidae

**Mycale* sp. 2 sponge

Class Hexactinellida – glass sponges

†HEXACTINELLIDA sp. 4 glass sponge

*HEXACTINELLIDA sp. 6 glass sponge

HEXACTINELLIDA glass sponge (otherwise unidentified)

SUBCLASS HEXASTEROPHORA
ORDER HEXACTINOSIDA
SUBORDER SCEPTRULOPHORA

Family Aphrocallistidae

Heterochone calyx fingered goblet vase sponge

SCIENTIFIC NAME**COMMON NAME**

Family Euretidae
 **Chonelasma* sp. trumpet sponge (white)

Family Ferreidae
 **Farrea* sp. white cloud sponge
 **Farrea truncata* complex stalked ruffled sponge (white)

Family Tretodictyidae
Sclerothamnopsis compressa sponge

ORDER LYSSACINOSIDA

Family Rossellidae
 Subfamily Acanthascinae
 *ACANTHASCINAE sp. 1 sponge
 *ACANTHASCINAE sp. 2 sponge
 †ACANTHASCINAE sp. 3 sponge
 **Staurocalyptus* sp. 1 Picasso sponge (yellow)
 **Staurocalyptus* sp. 2 sponge

PHYLUM CNIDARIA**Class Scyphozoa – jellyfish**

SUBCLASS CORONAMEDUSAE

ORDER CORONATAE

Family Atollidae
Atolla sp. crown jelly

Family Periphyllidae
Periphylla periphylla crown jelly

SUBCLASS DISCOMEDUSAE
 ORDER SEMAEOSTOMEAE

Family Ulmaridae
 Subfamily Poraliinae
Poralia rufescens jelly

Class Hydrozoa – hydrozoans

SUBCLASS HYDROIDOLINA

HYDROIDOLINA hydroid (otherwise unidentified)

ORDER LEPTOTHECATA

Family Mitrocomidae
Mitrocoma cellularia cross jellyfish

SCIENTIFIC NAME

COMMON NAME

ORDER SIPHONOPHORAE - SIPHONOPHORES
SUBORDER PHYSONECTAE

Family Agalmatidae

Frillagalma vityazi..... siphonophore
Nanomia bijuga siphonophore

Family Apolemiidae

Apolemia lanosa..... siphonophore

Family Erennidae

Erenna sp. siphonophore

Family Pyrostephidae

Bargmannia elongata siphonophore

Family Rhodaliidae

RHODALIIDAE benthic siphonophore (otherwise unidentified)

Family Stephanomiidae

Stephanomia amphytridis..... siphonophore

SUBORDER CALYCOPHORAE

CALYCOPHORAE rocketship siphonophore (otherwise unidentified)

Family Clausophyidae

Chuniphyes multidentata..... siphonophore
Kephyes ovata siphonophore

Family Hippopodiidae

Vogtia serrata..... siphonophore

Family Prayidae

Gymnopraia lapolislazula..... siphonophore

Family Sphaeronectidae

Sphaeronectes sp. siphonophore

SUBCLASS TRACHYLINAE
ORDER NARCOMEDUSAE

Family Aeginidae

Aegina sp. jelly
Aeginura sp. jelly

Family Cuninidae

Solmissus sp. jelly

SCIENTIFIC NAME**COMMON NAME**

ORDER TRACHYMEDUSAE

Family Halicreatidae

Halicreas minimum..... jelly
Halitrephes sp. jelly

Family Rhopalonematidae

Colobonema sericeum..... silky jelly
 LRJ complex “litte red jelly” complex

Class Anthozoa

ANTHOZOA anemone (otherwise unidentified)

 SUBCLASS HEXACORALLIA
 ORDER ACTINIARIA – ANEMONES

ACTINIARIA anemone (otherwise unidentified)

 SUBORDER ENTHEMONAE
 SUPERFAMILY ACTINIOIDEA

Family Actiniidae

*ACTINIIDAE sp. 1 anemone
Bolocera sp. anemone

Family Liponematidae

Liponema brevicorne..... pompom (aka tumbleweed) anemone

SUPERFAMILY ACTINOSTOLIDEA

Family Actinostolidae

ACTINOSTOLIDAE..... anemone (otherwise unidentified)

Family Exocoelactinidae

†*Exocoelactis* sp. anemone

SUPERFAMILY METRIDIOIDEA

Family Actinoscyphiidae

Actinoscyphia sp. flytrap anemone

Family Hormathiidae

HORMATHIIDAE sp. 1 warty anemone

ORDER ANTIPATHARIA – BLACK CORALS

ANTIPATHARIA black coral (otherwise unidentified)

Family Cladopathidae

Trissopathes sp. black coral

SCIENTIFIC NAME

COMMON NAME

Family Schizopathidae

Bathypathes sp. black coral
Lillipathes sp. black coral

ORDER CERIANTHARIA – TUBE-DWELLING ANEMONES

CERIANTHARIA sp. 2..... tube-dwelling anemone
 CERIANTHARIA tube-dwelling anemone (otherwise unidentified)

ORDER SCLERACTINIA – STONY CORALS

SCLERACTINIA stony coral (otherwise unidentified)

Family Caryophylliidae

CARYOPHYLLIIDAE..... cup coral (otherwise unidentified)
 **Desmophyllum dianthus* cockscomb cup coral

ORDER ZOANTHARIA - ZOANTHIDS

*ZOANTHARIA sp. 1 zoanthid
 *ZOANTHARIA sp. 2 zoanthid
 ZOANTHARIA zoanthid (otherwise unidentified)

SUBCLASS OCTOCORALLIA

OCTOCORALLIA octocoral (otherwise unidentified)

ORDER ALCYONACEA – SOFT CORALS
 (SUBORDER) ALCYONIINA

Family Alcyoniidae

Heteropolypus ritteri..... mushroom soft coral

Family Nephtheidae

Gersemia juliepackardae Julie Packard's Treasure coral

SUBORDER CALCAXONIA

Family Isididae

Isidella tentaculum bamboo coral
 ISIDIDAE bamboo coral (otherwise unidentified)
Keratoisis sp..... bamboo coral
 †*Lepidisis* sp. bamboo coral

Family Primnoidae

Parastenella gymnogaster coral
Parastenella sp. coral
 PRIMNOIDAE primnoid coral (otherwise unidentified)

SUBORDER HOLAXONIA

Family Acanthogorgiidae

Acanthogorgia sp. coral

SCIENTIFIC NAME**COMMON NAME**

Family Plexauridae

†*Swiftia kofoidi* red sea fan coral†*Swiftia simplex* coral

(SUBORDER) SCLERAXONIA

Family Paragorgiidae

Paragorgia arborea bubble gum coral (dark pink)*Sibogorgia cauliflora* bubble gum coral (light pink)

Family Coralliidae

Corallium sp. precious coral

(SUBORDER) STOLONIFERA

Family Clavulariidae

†*Clavularia* sp. coral

ORDER PENNATULACEA – SEA PENS

PENNATULACEA sea pen (otherwise unidentified)

SUBORDER SESSILIFLORAE

Family Anthoptilidae

Anthoptilum grandiflorum feather boa sea pen

Family Funiculinidae

Funiculina sp. bottle brush sea pen

Family Umbellulidae

Umbellula lindahli droopy sea pen**PHYLUM CTENOPHORA – COMB JELLIES OR SEA WALNUTS****Class Tentaculata**

ORDER CYDIPPIDA

CYDIPPIDA ctenophore (otherwise unidentified)

Family Aulacoctenidae

Aulacoctena sp. ctenophore

ORDER LOBATA

Family Bathocyroidae

Bathocyroe sp. lobate ctenophore

Family Bolinopsidae

Bolinopsis infundibulum lobate ctenophore

Family Kiyohimeidae

Kiyohimea usagi lobate ctenophore

SCIENTIFIC NAME

COMMON NAME

Family Lampoctenidae

Lampocteis cruentiventer lobate ctenophore

Class Nuda
ORDER BEROIDA

Beroe sp. ctenophore

PHYLUM MOLLUSCA - MOLLUSCS
Class Gastropoda – sea slugs

*GASTROPODA sp. 2 gastropod
GASTROPODA gastropod (otherwise unidentified)

SUBCLASS VETIGASTROPODA
SUPERFAMILY TROCHOIDEA

Family Calliostomatidae

**Calliostoma platinum* silvery topsnail

SUBCLASS CAENOGASTROPODA
ORDER LITTORINIMORPHA
SUBORDER PTEROTRACHEOIDEA

PTEROTRACHEOIDEA heteropod (otherwise unidentified)

ORDER NEOGASTROPODA
SUPERFAMILY BUCCINOIDEA

Family Buccinidae

*BUCCINIDAE sp. 1 snail

**Neptunea-Buccinum* complex snail

SUBCLASS HETEROBRANCHIA
INFRACLASS OPISTHOBRANCHIA
ORDER NUDIBRANCHIA
SUBORDER DEXIARCHIA

Family Aeolidiidae

AEOLIDIIDAE nudibranch (otherwise unidentified)

Family Tritoniidae

Tritonia tetraquetra nudibranch

ORDER THECOSOMATA
SUBORDER PSEUDOTHECOSOMATA

PSEUDOTHECOSOMATA (otherwise unidentified)

SCIENTIFIC NAME**COMMON NAME**

SUPERFAMILY CYMBULIOIDEA

Family Cymbuliidae
Subfamily Glebinae*Corolla spectabilis* sea butterfly**Class Polyplacophora**
ORDER NEOLORICATA

NEOLORICATA chiton (otherwise unidentified)

Class Bivalvia – bivalves
SUBCLASS PTERIOMORPHIA
ORDER LIMOIDA

Family Limidae

Acesta mori clam (smooth shell)ORDER PECTINIDA
SUPERFAMILY PECTINOIDEA

Family Pectinidae

**Delectopecten* sp. scallopSUBCLASS PROTOBRANCHIA
ORDER SOLEMYIDA
SUPERFAMILY SOLEMYOIDEA

Family Solemyidae

Solemya sp.SUBCLASS HETERODONTA
ORDER VENERIDA

Family Vesicomysidae

Phreagena kilmeri vesicomysid clam

VESICOMYSIDAE vesicomysid clam (otherwise unidentified)

Class Cephalopoda
SUBCLASS COLEOIDEA
SUPERORDER DECAPODIFORMES
ORDER OEGOPSIDA

Family Chiroteuthidae

Chiroteuthis calyx squidFamily Cranchiidae
Subfamily Taoniinae

TAONIINAE squid (otherwise unidentified)

Family Gonatidae

Gonatus sp. squid

SCIENTIFIC NAME

COMMON NAME

SUPERORDER OCTOPODIFORMES
ORDER OCTOPODA
SUBORDER INCIRRATA

Family Enteroctopodidae
Benthoctopus sp. octopus

Family Megaleledonidae
Graneledone boreopacifica octopus

Family Octopodidae
Octopus rubescens red octopus

ORDER VAMPYROMORPHA

Family Vampyroteuthidae
Vampyroteuthis infernalis vampire squid

PHYLUM ANNELIDA – SEGMENTED WORMS
Class Polychaeta – polychaete worms

POLYCHAETA polychaete worm (otherwise unidentified)
POLYCHAETA tube sediment or parchment tube

SUBCLASS ERRANTIA
ORDER PHYLLODOCIDA

Family Polynoidae
POLYNOIDAE scale worm (otherwise unidentified)

Family Tomopteridae
Tomopteris sp. tomopterid worm

Family Typhloscolecidae
Travisiopsis sp. polychaete worm

SUBCLASS SEDENTARIA
INFRACLASS CANALIPALPATA
ORDER SABELLIDA

Family Sabellidae
*SABELLIDAE sabellid worm (otherwise unidentified)

Family Serpulidae
SERPULIDAE serpulid worm (otherwise unidentified)

ORDER TERESELLIDA

Family Flabelligeridae
Poeobius meseres holopelagic worm

Family Terebellidae
†TEREBELLIDAE terebellid worm (otherwise unidentified)

SCIENTIFIC NAME**COMMON NAME**

PHYLUM ARTHROPODA
 SUBPHYLUM CHELICERATA
Class Pycnogonida – sea spiders

PYCNOGONIDA sea spider (otherwise unidentified)

SUBPHYLUM CRUSTACEA
 SUPERCLASS MULTICRUSTACEA
Class Malacostraca
 SUBCLASS EUMALACOSTRACA
 SUPERORDER EUCARIDA
 ORDER EUPHAUSIACEA

EUPHAUSIACEA krill (otherwise unidentified)

ORDER DECAPODA
 SUBORDER DENDROBRANCHIATA
 SUPERFAMILY SERGESTOIDEA

Family Sergestidae

Eusergestes similis midwater shrimp
Petalidium suspriosum shrimp

SUBORDER PLEOCYEMATA
 INFRAORDER AXIIDEA

Family Callianassidae

CALLIANASSIDAE ghost shrimp (otherwise unidentified)

INFRAORDER CARIDEA

CARIDEA shrimp (otherwise unidentified)

SUPERFAMILY PANDALOIDEA

Family Pandalidae

PANDALIDAE shrimp (otherwise unidentified)
Pandalopsis ampla deepwater bigeye shrimp

INFRAORDER PALINURA
 SUPERFAMILY ERYONOIDEA

Family Polychelidae

Polycheles sp. (larvae)

SCIENTIFIC NAME

COMMON NAME

INFRAORDER ANOMURA
SUPERFAMILY LITHODOIDEA

Family Lithodidae – king crabs

Lithodes cousei scarlet king crab
LITHODIDAE king crab (otherwise unidentified)
Neolithodes diomedea crab
Paralithodes rathbuni spiny king crab
**Paralomis multispina* spiny paralomis

SUPERFAMILY PAGUROIDEA

*PAGUROIDEA hermit crab (otherwise unidentified)

SUPERFAMILY CHIROSTYLOIDEA

Family Chirostylidae

Gastroptychus iaspis
Gastroptychus perarmatus

SUPERFAMILY GALATHEOIDEA

Family Munididae

Munida quadrispina squat lobster
Munida sp. A
Pleuroncodes planipes pelagic red crab

Family Munidopsidae

Munidopsis sp. squat lobster

INFRAORDER BRACHYURA
SUPERFAMILY MAJOIDEA

Family Epialtidae

Chorilia longipes longhorn decorator crab

Family Oregoniidae

Chionoecetes tanneri grooved tanner crab

SUPERORDER PERACARIDA
ORDER MYSIDA

Family Mysidae

MYSIDAE mysid (otherwise unidentified)

ORDER AMPHIPODA

AMPHIPODA amphipod (otherwise unidentified)
AMPHIPODA tube mat amphipod tube mat

SCIENTIFIC NAME**COMMON NAME**

SUBORDER HYPERIIDEA
INFRAORDER PHYSOSOMATA
SUPERFAMILY SCINOIDEA

Family Scinidae

SCINIDAE amphipod (otherwise unidentified)

SUBORDER SENTICAUDATA
INFRAORDER COROPHIIDA
SUPERFAMILY CAPRELLOIDEA

Family Caprellidae

CAPRELLIDAE caprellid amphipod (otherwise unidentified)

ORDER ISOPODA
SUBORDER ASELOTA
SUPERFAMILY JANIROIDEA

Family Munnopsidae

MUNNOPSIDAE spider (otherwise unidentified)

INFRAPHYLUM BRACHIOPODA
ORDER RHYNCHONELLIDA

Family Laqueidae

Laqueus californianus lamp shell

PHYLUM ECHINODERMATA

SUBPHYLUM CRINOZOA

Class Crinoidea – crinoids, feather stars

SUBCLASS ARTICULATA

ORDER COMATULIDA

COMATULIDA crinoid (otherwise unidentified)

SUPERFAMILY ANTEDONOIDEA

*ANTEDONOIDEA sp. 1 crinoid

Family Zenometridae

**Psathyrometra fragilis* crinoid

Class Asteroidea – sea stars

ASTEROIDEA sea stars (otherwise unidentified; numerous unidentified species present)

SUPERORDER FORCIPULATACEA
ORDER FORCIPULATIDA

Family Zoroasteridae

*ZOROASTERIDAE zoroasterid sea star (otherwise unidentified)

SCIENTIFIC NAME

COMMON NAME

ORDER BRISINGIDA

BRISINGIDA brisingid sea star (otherwise unidentified)

SUPERORDER SPINULOSACEA
ORDER SPINULOSIDA

Family Echinasteridae

†*Henricia* sp. sea star

SUPERORDER VALVATACEA

Family Poraniidae

Poraniopsis inflata sea star

ORDER VALVATIDA

Family Goniasteridae

GONIASTERIDAE goniasterid sea star (otherwise unidentified)

Mediaster aequalis sea star

Subfamily Hippasterinae

Hippasteria californica sea star

Hippasteria lepidonotus sea star

Family Solasteridae

**Crossaster borealis*

**Heterozonias alternatus*

**Solaster hypothrissus*

SOLASTERIDAE sun star (otherwise unidentified)

ORDER PAXILLOSIDA (or "NOTOMYOTIDA")

Family Astropectinidae

Dipsacaster sp. sea star

Thrissacanthias penicillatus sea star

Family Benthopectinidae

BENTHOPECTINIDAE benthopectinid sea star (otherwise unidentified)

ORDER VELATIDA

Family Myxasteridae

Asthenactis fisheri sea star

Family Pterasteridae

Hymenaster sp. sea star

PTERASTERIDAE pterasterid sea star (otherwise unidentified)

Class Ophiuroidea – brittle stars, basket stars

OPHIUROIDEA brittle star (otherwise unidentified)

SCIENTIFIC NAME**COMMON NAME**

ORDER EURYALIDA

Family Asteronychidae

Asteronyx loveni..... brittle star
Asteronyx sp. brittle star

Family Gorgonocephalidae

Gorgonocephalus sp. basket star

ORDER OPHIURIDA

Family Ophiacanthidae

*OPHIACANTHIDAE brittle star (otherwise unidentified)

Class Holothuroidea – sea cucumbers

ORDER DENDROCHIROTIDA

Family Psolidae

Psolus squamatus..... sea cucumber

ORDER ASPIDOCHIROTIDA

Family Synallactidae

Pseudostichopus mollis..... sea cucumber
 SYNALLACTIDAE sea cucumber (otherwise unidentified)

ORDER ELASIPODIDA

Family Elpidiidae

Scotoplanes sp. A sea cucumber (aka sea pig)

Family Laetmogonidae

Laetmogone sp. sea cucumber

PHYLUM CHAETOGNATHA – CHAETOGNATHS

CHAETOGNATHA chaetognath (otherwise unidentified)

Class Sagittoidea

ORDER APHRAGMOPHORA

Family Sagittidae

Caecosagitta macrocephala..... orange gut chaetognath
Pseudosagitta maxima..... chaetognath

PHYLUM HEMICHORDATA**Class Enteropneusta – acorn worms**

Family Harrimaniidae

Saxipendium implicatum acorn worm

Family Torquaratoridae

**Allapasus* sp. 3 acorn worm

SCIENTIFIC NAME

COMMON NAME

PHYLUM CHORDATA
SUBPHYLUM TUNICATA

TUNICATA tunicate (otherwise unidentified)

Class Ascidiacea – sea squirts
ORDER PHLEBOBRANCHIA

Family Octacnemidae

Megalodicopia hians predatory tunicate

ORDER STOLIDOBRANCHIA

Family Pyuridae

Culeolus sp. A stalked tunicate
PYURIDAE tunicate (otherwise unidentified)

Family Styelidae

†*Cnemidocarpa* sp. tunicate

Class Thaliacea – salps
ORDER PYROSOMATIDA

Family Pyrosomatidae

Pyrosoma sp. pyrosome

ORDER SALPIDA

SALPIDA salp (otherwise unidentified)

ORDER DOLIOLIDA

DOLIOLIDA salp (otherwise unidentified)

Class Appendicularia – larvaceans
?ORDER COPELATA

Family Oikopleuridae
Subfamily Bathochordaeinae

Bathochordaeus stygius giant larvacean

SUBPHYLUM VERTEBRATA
SUPERCLASS AGNATA

Class Myxini
ORDER MYXINIFORMES

Family Myxinidae – hagfishes

Eptatretus sp. hagfish

SCIENTIFIC NAME**COMMON NAME**

SUPERCLASS GNATHOSTOMATA

CLASS ELASMOBRANCHII

ORDER CARCHARHINIFORMES

Family Scyliorhinidae – cat sharks

Apristurus kampae Longnose Cat Shark

ORDER RAJIFORMES

SUBORDER RAJOIDEI

Family Arhynchobatidae – softnose skates

Bathyraja abyssicola Deepsea Skate

Bathyraja trachura Roughtail Skate

Class Actinopteri

ORDER ANGUILLIFORMES

ANGUILLIFORMES true eel (otherwise unidentified)

ORDER OSMERIFORMES

Family Bathylagidae – deepsea smelts

Bathylagoides wesethi (midwater trawl, larvae) Snubnose Blacksmelt

Leuroglossus stilbius California Smoothtongue

Lipolagus ochotensis (midwater trawl, larvae) Popeye Blacksmelt

Pseudobathylagus milleri (midwater trawl, larvae; ROV) Robust Blacksmelt

Family Alepocephalidae – slickheads

Alepocephalus tenebrosus California Slickhead

ORDER STOMIIFORMES

Family Gonostomatidae – bristlemouths

Cyclothone pseudopallida (midwater trawl, larvae) Phantom Bristlemouth

Cyclothone signata (midwater trawl) Showy Bristlemouth

Cyclothone sp. bristlemouth (otherwise unidentified)

Family Sternoptychidae – marine hatchetfishes

Argyropelecus lychnus (midwater trawl, larvae) Tropical Hatchetfish

Argyropelecus sladeni (midwater trawl, larvae) Lowcrest Hatchetfish

Family Stomiidae – dragonfishes

Aristostomias scintillans (midwater trawl) Shining Loosejaw

Chauliodus macouni (midwater trawl; ROV) Pacific Viperfish

Idiacanthus antrostomus (midwater trawl) Pacific Blackdragon

ORDER AULOPIIFORMES

Family Scopelarchidae – pearleyes

Benthalbella dentata (midwater trawl, larvae) Northern Pearleye

SCIENTIFIC NAME**COMMON NAME**

Family Paralepididae – barracudinas
Magnisudis atlantica..... Duckbill Barracudina

ORDER MYCTOPHIFORMES

Family Myctophidae – lanternfishes
Diaphus theta (midwater trawl) California Headlightfish
Nannobranchium regale (midwater trawl, larvae) Pinpoint Lampfish
Nannobranchium ritteri (midwater trawl) Broadfin Lampfish
Protomyctophum crockeri (midwater trawl, larvae) California Flashlightfish
Stenobranchius leucopsarus (midwater trawl) Northern Lampfish
Triphoturus mexicanus (midwater trawl, larvae) Mexican Lampfish

ORDER GADIFORMES

Family Macrouridae – grenadiers
Coryphaenoides acrolepis..... Pacific Grenadier
 **Coryphaenoides acrolepis-filifer* complex Pacific/Threadfin Grenadier
Coryphaenoides pectoralis..... Giant Grenadier

Family Moridae – codlings
Antimora microlepis..... Pacific Flatnose

Family Merlucciidae – merlucciid hakes
Merluccius productus Pacific Hake

ORDER OPHIDIIFORMES

Family Ophidiidae – cusk-eels
 **Luciobrotula* sp. A
 OPHIDIIDAE cusk eel (otherwise unidentified)

ORDER SCORPAENIFORMES

Family Scorpaenidae – scorpionfishes
Sebastes diploproa (midwater trawl, larvae) Splitnose Rockfish
Sebastes levis (midwater trawl, larvae) Cowcod
Sebastes cf. melanostomus (midwater trawl, larvae) Blackgill Rockfish
Sebastes spp. (midwater trawl, larvae) rockfishes (otherwise unidentified)
Sebastolobus alascanus Shortspine Thornyhead
Sebastolobus altivelis Longspine Thornyhead

Family Anoplopomatidae – sablefishes
Anoplopoma fimbria Sablefish

Family Psychrolutidae – fathead sculpins
Psychrolutes phrictus Blob Sculpin

SCIENTIFIC NAME**COMMON NAME**

Family Liparidae – snailfishes

* <i>Careproctus filamentosus</i>	snailfish
<i>Careproctus kamikawai</i>	Arbiter Snailfish
<i>Careproctus melanurus</i>	Blacktail Snailfish
†LIPARIDAE sp. 1	snailfish
*LIPARIDAE sp. 3	snailfish
LIPARIDAE	snailfish (otherwise unidentified)
<i>Nectoliparis pelagicus</i> (midwater trawl)	Tadpole Snailfish

ORDER PERCIFORMES

Family Zoarcidae – eelpouts

<i>Bothrocara brunneum</i>	Twoline Eelpout
<i>Lycenchelys</i> sp.	eelpout
<i>Lycodapus</i> sp.	eelpout
ZOARCIDAE	eelpout (otherwise unidentified)

ORDER PLEURONECTIFORMES

Family Pleuronectidae – righteye flounders

<i>Embassichthys bathybius</i>	Deepsea Sole
<i>Microstomus pacificus</i>	Dover Sole
PLEURONECTIFORMES	flatfish (otherwise unidentified)

* Confidence level of identification is provisional.

† Confidence level of identification is unconfirmed.



NATIONAL MARINE
SANCTUARIES

AMERICA'S UNDERWATER TREASURES
