

PISCO Training Program 2026

Benthic Surveys Invertebrates

**All invertebrates sampled during
benthic surveys:**

Swath (large, mobile inverts and kelps)

UPC (sessile, colonial inverts and algae)

Size frequency (select species)



PISCO Training Program

Swath Surveys

Size cut-offs

General rule:

- **Swath inverts must measure 2.5 cm (in any dimension) to be counted**

Exceptions:

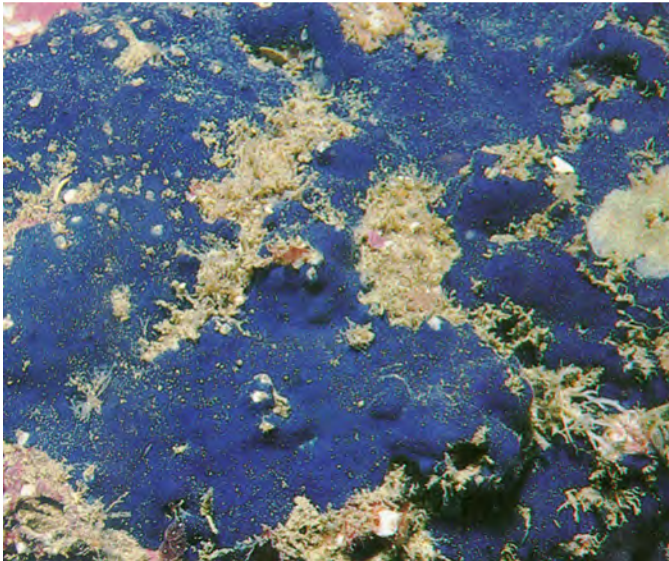
- **STRPUR and MESFRA use test size instead of total size**
- **LYTPIC count all sizes**
- **All sizes of lobsters and abalone are counted (and sized)**



Phylum Porifera



Class Demospongiae



SPONGE – general traits

- Attached to bottom
- Many shapes and colors (Encrusting or with structure)
- Large excurrent pores are sometimes visible in addition to many small incurrent pores
- Presence of spicules gives a rough feeling to the touch

Acanthancora cyanocrypta

Formerly *Hymenamphiastra cyanocrypta*

Cobalt Sponge

UPC - SPONGE

- Identification: Encrusting, flat, cobalt blue sponge.
- Size: May reach 120 cm in diameter
- Habitat: Sides or under ledges. Low intertidal to 190ft.
- Sampled: **UPC**

Acarnus erithacus

Red Volcano Sponge

UPC - SPONGE

- Identification: Red encrusting sponge with volcano shaped oscula.
- Size: Masses may reach 4 cm in height & 30 cm in diameter.
- Habitat: Grows on hard substrate. Low intertidal to depths of 2,333ft.
- Sampled: **UPC**



***Haliclona* spp.**

White Finger Sponge

UPC - SPONGE

- Identification: Whitish sponge without large oscula. Forms finger like projections.
- Size: Each finger may be 30 cm in length.
- Habitat: Grows on hard substrate. From 40 to 100ft.
- Sampled: **UPC**



Tethya californiana

Orange Puffball Sponge

UPC - SPONGE

SWATH - TETCAL

- Identification: Generally orange in color. Looks like an orange puffball with pores.
- Size: Diameter to 20 cm.
 - Habitat: Very low intertidal to depths of 1460ft. Sides of reef or under ledges.
 - Sampled: **Swath, UPC**



Craniella arb

Gray Puffball Sponge

UPC - SPONGE

- Identification: Gray white in color. Looks like a puffball with a ring of spicules on dorsal surface.
- Size: Diameter to 20 cm.
- Habitat: Intertidal to depths of at least 80ft.
- Sampled: **UPC**



Leucilla nuttingi

Urn sponge

UPC - SPONGE

- Identification: Urn shaped, cream white with a single osculum at the distal end. Usually found in groups of 5-10 individuals
- Size: to 4 cm tall, most 1-2 cm tall
- Habitat: Grows on hard substrate.
- Sampled: **UPC**



Spheciospongia confoederata

Moon Sponge

UPC - SPONGE

- Identification: Massive, smooth grey sponge, leathery in texture, with numerous crater-like oscula on outer ridges
- Size: To 1 m diameter, 30 cm thick
- Habitat: Grows on hard substrate
- Sampled: **UPC**

Class Calcarea



Leucandra losangelensis

Sponge

UPC - SPONGE

- Identification: Encrusting sponge with lobed appearance. Has many large oscula.
- Size: To about 2 cm height & 25 cm in diameter.
- Habitat: Encrusts hard substrate from intertidal to 370ft.
- Sampled: **UPC**

Phylum Cnidaria

Class Hydrozoa



HYDROID – general traits

- Attached to bottom (or epizoic)
- Colonies consist of many polyps
- Individual polyps are small and often appear like a small delicate flower or feather



Aglaophenia struthionides

Ostrich-plume hydroid

UPC - AGLSTR

- Identification: Colonies of large, featherlike, brown plumes.
- Size: Plumes at least 12 cm tall.
- Habitat: Attached to hard substrate. Rocky intertidal to about 500ft
- Sampled: **UPC**

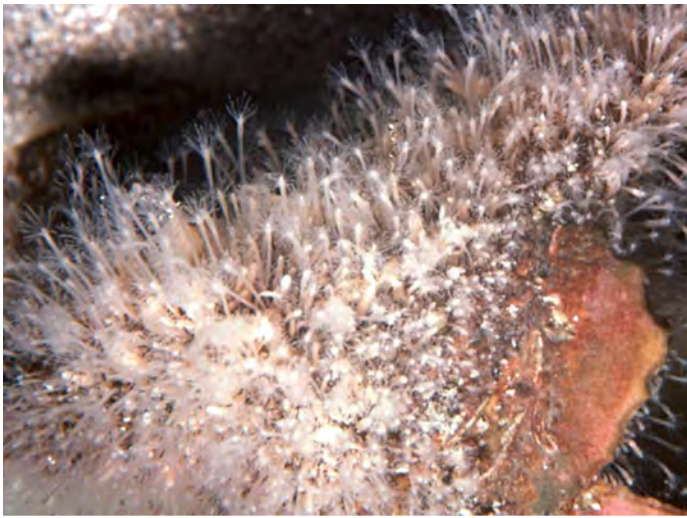


***Obelia* spp.**

Wine-glass hydroid

UPC - HYDROID

- Identification: Long, branching colonies that have polyps with clear sheaths. Often covered in silt, resulting in brownish appearance. Four known species locally. Commonly with dichotomous branching
- Size: To 10 cm tall
- Habitat: Attached to hard substrate.
- Sampled: **UPC**



***Hydractinia* spp.**

Example of a Hydroid

UPC - HYDROID

- Identification: Stalked polyps, occur in colonies.
- Size: Colony to 25mm in height and 75mm width. Individual polyps very small
- Habitat: Sides of rocks and other substrates. Intertidal to depths of at least 80ft.
- Sampled: **UPC**



***Abietinaria* spp.**

Course Sea Fir Hydroid

UPC - HYDROID

- Identification: Large, flask shaped polyp with pinnate alternate branching. More than seven known species found locally.
- Size: To 5 cm tall
- Habitat: Grows on hard substrate
- Sampled: **UPC**



***Plumularia* spp.**

Hydroid

UPC - HYDROID

- Identification: Colony of upright feather-shaped plumes. Five known species locally.
- Size: To 2 cm tall
- Habitat: Attached to hard substrate.
- Sampled: **UPC**

Class Octocorallia



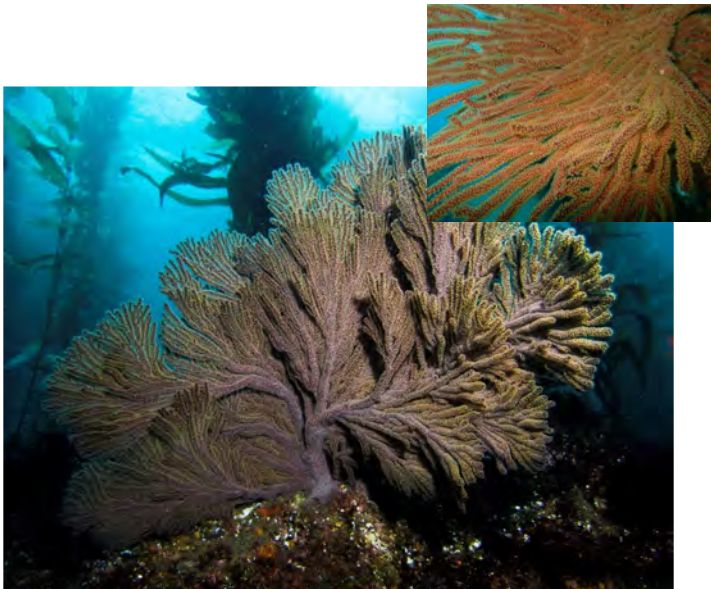
Muricea fruticosa

Brown Gorgonian

SWATH - MURFRU

UPC - GORG

- Identification: Thick brown branches with white polyps. Branches usually in one plane.
- Size: Height to about 90cm
- Habitat: Found on any hard substrate from 50 to 100ft. Most common gorgonian in Southern CA
- Sampled: **Swath, UPC**



Muricea californica

California Golden Gorgonian

SWATH - MURCAL

UPC - GORG

- Identification: Thick brown branches with yellow polyps. Colonies are on a single plane.
- Size: Height to about 90cm
- Habitat: On rocks and other hard substrate. From depths of 40 to 100ft.
- Sampled: **Swath, UPC**



Leptogorgia chilensis

AKA *Lophogorgia chilensis*

Red Gorgonian

SWATH - LEPCHI

UPC - GORG

- Identification: Red gorgonian has red branches with white polyps. Branches are not in a single plane.
- Size: Height to about 90cm.
- Habitat: Depths of 50 to 200ft.
- Sampled: **Swath, UPC**



Eugorgia rubens

Purple Gorgonian

SWATH - EUGRUB

UPC - GORG

Identification: Slender purple or violet branches with white polyps. Branches grow in an interwoven pattern in one plane.

Size: Height to 30 cm

Habitat: Attached to rocks, most commonly found at deeper depths (80 to 100 ft)

•Sampled: **Swath, UPC**



Stylaster californicus

California Hydrocoral

UPC - STYCAL

•Identification: Branching colonies with calcareous skeleton. Not true corals. Can be pink, purple, blue and all colors in between.

•Size: Colonies can be 30 cm in height and 60 cm in width.

•Habitat: Grows on hard substrate from 40ft to 175ft.

•Sampled: **UPC**



Stylantheca papillosa

Encrusting Hydrocoral

UPC - STYPAP

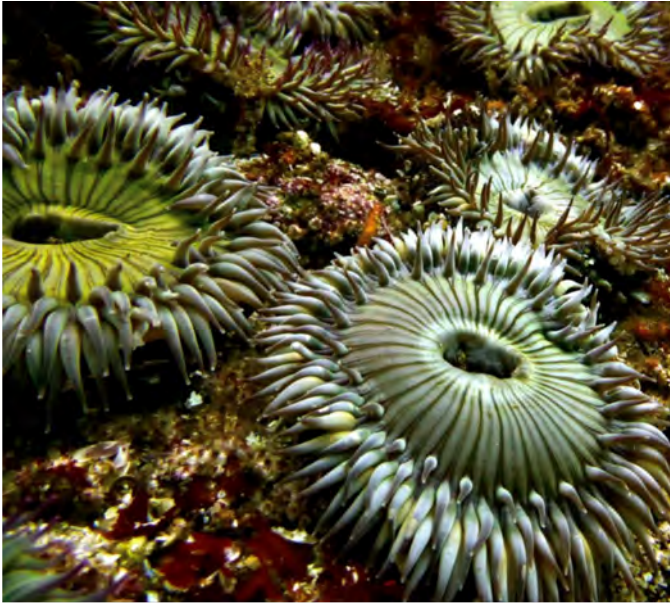
•Identification: These colonies form flattened encrusting sheets sometimes with protrusions about 1" in height or less. Color ranges from dark reddish to pink to purple.

•Size: Sheets may reach 1 m in width.

•Habitat: British Columbia to southern California, low intertidal to 100'.

•NOTE: there is an encrusting purple bryozoan that looks similar. Be sure to look closely (and touch).

•Sampled: **UPC**



Anthopleura sola

Solo Anemone

SWATH - ANTSOL

UPC - ANEM

- Identification: Solo *A. elegantissima* (once thought to be same species) generally larger than aggregating species.
- Size: Tentacular crown to 25 cm.
- Habitat: Same as *A. elegantissima*, but generally not intertidal.
- Sampled: **Swath, UPC**



Anthopleura xanthogrammica

Giant Green Anemone

SWATH - ANTXAN

UPC - ANEM

- Identification: Oral surface green with no radiating lines. Tentacles short, conical, and either pointed or blunt
- Size: Column diameter to 17 cm. Height to 30 cm
- Habitat: On rocks. Low intertidal to 100ft
- Sampled: **Swath, UPC**



Anthopleura artemisia

Moonglow Anemone

UPC - ANEM

- Identification: Solitary anemone. Long tapering tentacles are white, pale pink, red, orange, or dark blue. Tentacles can either be solid color or in patterns. Column has well developed tubricles.
- Size: Column diameter to 5 cm Tentacular crown to 7.5 cm.
- Habitat: Attached to rocks that are buried in the sand. Intertidal to about 100ft
- Sampled: **UPC**



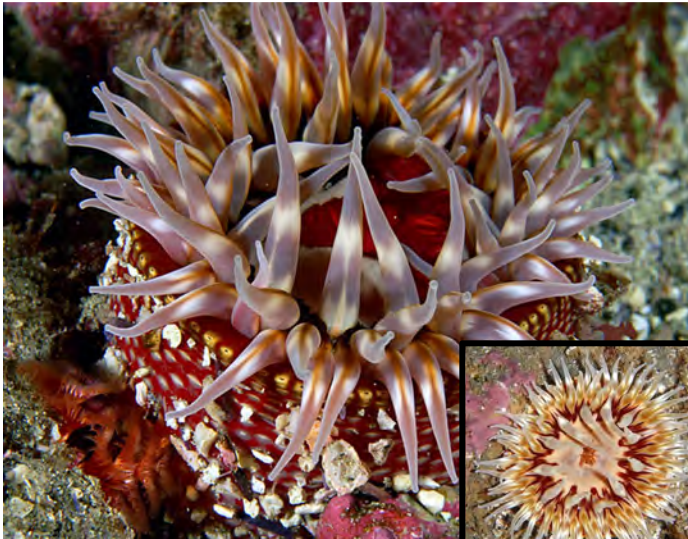
Urticina piscivora

Fish Eating Anemone

SWATH - URTPIS

UPC - ANEM

- Identification: Deep red column and normally white tentacles. Occasionally tentacles are red.
- Size: Tentacular crown to 20 cm.
- Habitat: Sides of rocks from low intertidal to about 160ft.
- Sampled: **Swath, UPC**



Urticina mcpeakii

McPeaks Anemone

SWATH - URTMCP

UPC - ANEM

- Identification: Colorful tentacles display a sunburst pattern. Column covered with tubercles that have attached sand and shell fragments. Often shades of olive, yellow, and red.
- Size: Diameter of tentacular crown to 8 cm.
- Habitat: On rocks to to about 100ft.
- Sampled: **Swath, UPC**



Urticina crassicornis

Painted Urticina

SWATH - URTCRA

UPC - ANEM

- Identification: Slender tentacles have blunt bulbous tips, and are white with a red band. Column is mottled red and olive.
- Size: Tentacular crown to about 20 cm.
- Habitat: On rocks intertidal to about 100ft.
- Sampled: **Swath, UPC**



Urticina columbiana

Sand Rose Anemone

SWATH - URTCOL

UPC - ANEM

- Identification: Large sand dwelling anemone has long white tentacles. Column covered with tubricles that have attached sand and shell fragments.
- Size: Diameter of tentacular crown to 20 cm.
- Habitat: Buried in sand and mud bottoms. Depths of 40 to 150ft.
- Sampled: **Swath, UPC**



Urticina coriacea

Stubby Rose Anemone

SWATH - URTCOR

UPC - ANEM

- Identification: Tentacles, which occur in 4 whorls, are stubby, blunt, and may have some faint but broad lighter colored cross-bands or may be green, pink, red, or blue. This species has a red column with red tubercles which accumulate sand and gravel and are usually not in rows.
- Size: Tentacular crown to about 15 cm.
- Habitat: Low intertidal to 45m, buried in coarse sand or gravel in tidepools, or on rock walls.
- Sampled: **Swath, UPC**



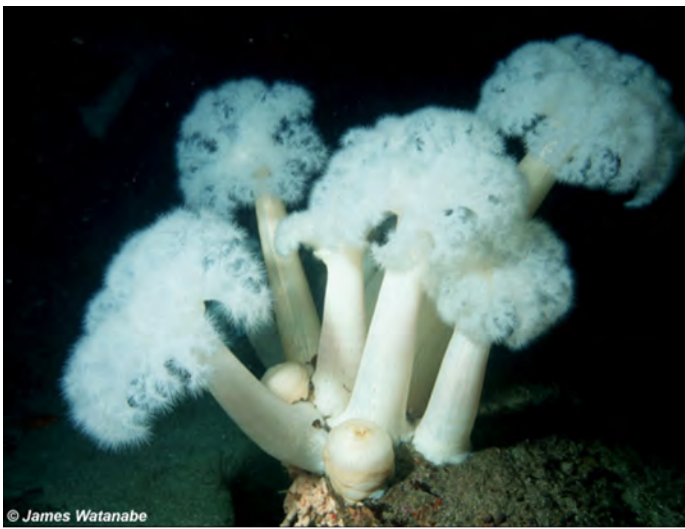
Cribrinopsis albopunctata

Spotted Rose Anemone

SWATH - CRIALB

UPC - ANEM

- Formerly URTLOF *Urticina lofotensis*
- Identification: Column is pink or red with white spots and has no tubricles. Tentacles are reddish and lack bands.
- Size: Column diameter to about 10 cm
- Habitat: Attached to rocks, pilings, and other hard substrates. Low intertidal to 75ft
- Sampled: **Swath, UPC**



Metridium farcimen

White plumed anemone

SWATH - METSPP

UPC - ANEM

- Identification: Large, white, solitary anemone with a lobed oral disc. Tentacles are small and look fluffy.
- Size: Height to 50 cm, Column diameter to 10 cm
- Habitat: On reefs & other structures. Subtidal to 670 ft.
- Sampled: **Swath, UPC**



Metridium senile

Metridium anemone

SWATH - METSPP

UPC - ANEM

- Identification: Small aggregating anemone without lobed oral disc. Tentacles are solitary, short and tapered. Color varies from white to orange to cream to brown.
- Size: Height to 10 cm, Column diameter to 5 cm
- Habitat: On reefs & other structures. Subtidal to 100 ft.
- Sampled: **Swath, UPC**



Pachycerianthus fimbriatus

Tube Dwelling Anemone

SWATH - PACFIM

UPC - ANEM

- Identification: Long slender outer tentacles and shorter inner tentacles. Tube is parchment like; soft and fragile. Color of tentacles can be white, brown, black, or orange.
- Size: Height to about 30 cm.
- Habitat: Sand and soft mud bottoms. Low intertidal to depths of at least 70ft.
- Sampled: **Swath, UPC**



***Phyllactis/Actinostella* spp.**

Sand anemone

UPC - ANEM

- Identification: Short, slender, clear tapering tentacles that have black stripes. Oral disk level with sand surface and covered with sand particles
- Size: crown diameter to 3 cm
- Habitat: sand patches
- Sampled: **UPC**

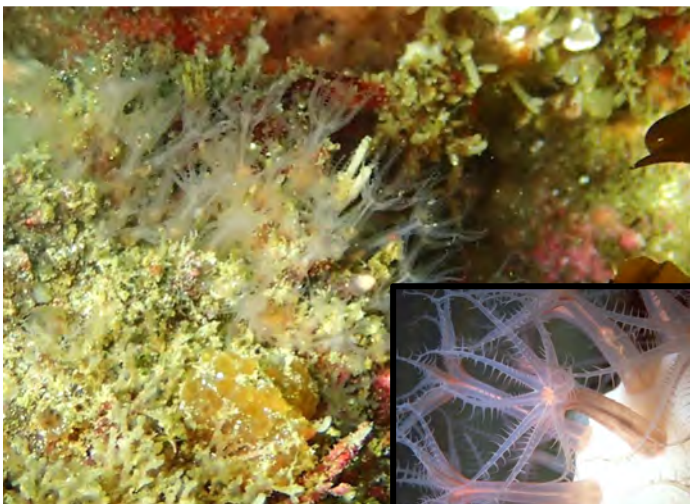


Corynactis californica

Club-Tipped Anemone

UPC - CORCAL

- Identification: Small anemones occur in colonies. Can be pink, orange, red, blue, purple, and even a greenish color. Tentacles have a bulbous tip.
- Size: Diameter of tentacular crown to 2.5 cm. Height to 7.5cm.
- Habitat: On rocks, low intertidal to 150ft.
- Sampled: **UPC**

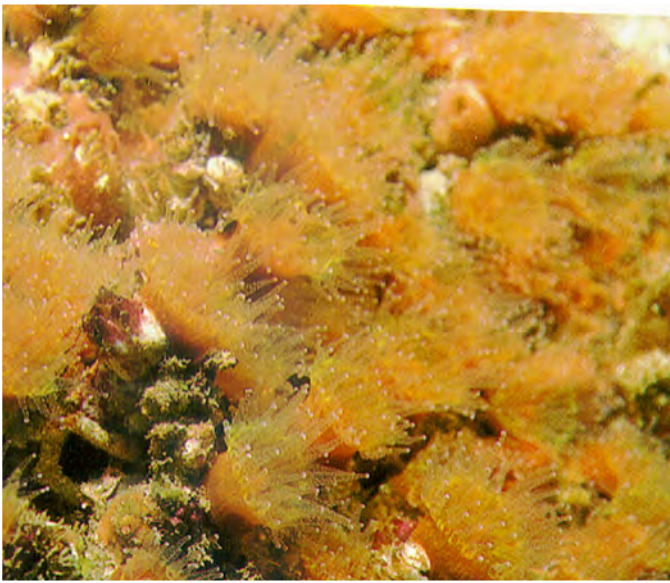


***Clavularia* spp.**

Octocoral

UPC - OCTOCORAL

- Identification: Each polyp of these cream to pink soft coral colonies has eight long, branched tentacles.
- Size: Width of colony to at least 10 cm. Polyp height about 2.5 cm.
- Habitat: On under surface of rocks, occasionally on decorator crabs. Very low intertidal and shallow subtidal.
- Sampled: **UPC**



Astrangia haimeii

Cup Coral

UPC - CUP

- Identification: Small cup corals can form large colonies. Stony cups are brownish orange and the short tentacles are yellowish orange. Cups are hard if you feel them.
- Size: Diameter of cup to 12 mm.
- Habitat: Aggregations occur on lower sides of rocks and reefs in depths of 40ft or deeper.
- Sampled: **UPC**



Paracyathus stearnsii

Brown Cup Coral

UPC - CUP

- Identification: Brown solitary cups have long, almost clear tentacles. Cups are hard if you feel them.
- Size: Cups may reach 38 mm.
- Habitat: On lower sides of rocks in depths of 30 to 200ft.
- Sampled: **UPC**



Balanophyllia elegans

Orange Cup Coral

UPC - CUP

- Identification: Cup is orange and tentacles are a clear orange. Cup is hard if you feel it.
- Size: Cup diameter 25 mm.
- Habitat: Attached to rocks. Low intertidal to 160ft
- Sampled: **UPC**

Phylum Bryozoan



Class Gymnolaemata



BRYOZOAN – general traits

- Attached to bottom or epizoic
- Many shapes and colors (encrusting or with structure)
- Made up of a matrix of colonial organisms (zooids), each encased in its own compartment
- Feels brittle to the touch and breaks easily.

Bugulina californica

Spiral Bryozoan

UPC - BRYO

- Identification: Colony looks like moss. Fronds that split in spirals and branches. Color can be pale orange and yellow.
- Size: Height to about 5 cm. Length 10 cm.
- Habitat: On rocks from shallow subtidal to about 200ft.
- Sampled: **UPC**

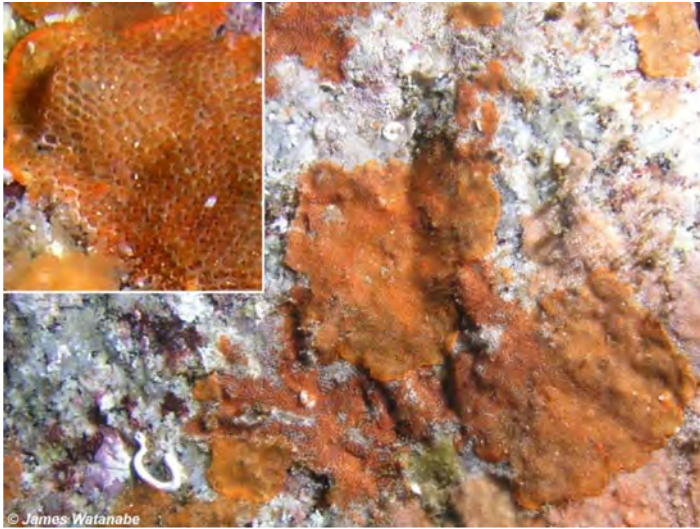


Bugula neritina

Common Bugula

UPC - BRYO

- Identification: Erect bushy colony. Branches curve inward towards central axis, lightly calcified, pale to dark purple
- Size: Height to about 8cm.
- Habitat: On rocks from low intertidal to about 665ft.
- Sampled: **UPC**



***Membranipora* spp.**

Encrusting Bryozoan

UPC - BRYO

- Identification: encrusting on rocks. orange to tan to brown. Lacks the black opercula found on *Watersipora*.
- Size: variable sized colonies
- Habitat: Common on rock undersides and crevices
- Sampled: **UPC**

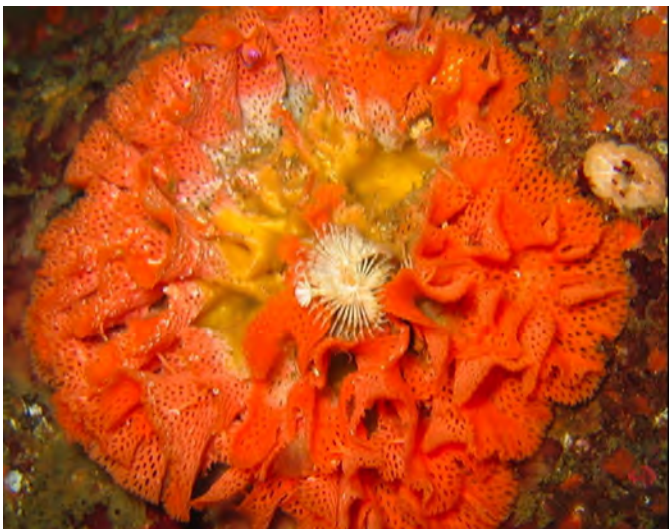


Watersipora subatra

Invasive bryozoan

UPC - WATSUB

- Identification: Usually bright to dull orange or red. Opercula are black or dark brown and usually visible. *This is the tiny black spot on each zooid characteristic of this genus.
- Size: Colonies can reach 25 cm height.
- Habitat: Grows on a variety of hard substrates including rocks, shells, man made structures, kelp holdfasts, etc.
- Sampled: **UPC and always NOTE ON NATURALIST LOGS**



Phidolopora labiata

Lacy Bryozoan

UPC - BRYO

- Identification: Looks much like *H. insculpta*, but colony has holes in it that cause it to appear lacy. Color usually orange.
- Size: Height to 20 cm. Length to 10 cm.
- Habitat: On rocks from low intertidal to about 665ft.
- Sampled: **UPC**



Primavelans insculpta

Fluted Bryozoan

UPC - BRYO

- Identification: Colonies form folds that are curled. Color can be orange, yellow or tan. Colonies are hard to touch, but can be easily broken.
- Size: Height about 10 cm. Length 12 cm.
- Habitat: On hard substrate from low intertidal to about 780ft.
- Sampled: **UPC**



Diaperoforma californica

Southern Staghorn Bryozoan

UPC - DIACAL

- Identification: Colonies form coral like masses with erect branches. Color can be light to dark yellow. Colonies are hard to touch, but can be easily broken.
- Size: Height about 10 cm. Width 15 cm.
- Habitat: On hard substrate from low intertidal to about 615ft.
- Sampled: **UPC**



Heteropora pacifica

Northern Staghorn Bryozoan

UPC - HETPAC

- Identification: Calcified colonies often mistaken for coral. Branches are round in cross section. Typically light brown to cream in color
- Size: To 10 cm tall, 15 cm diameter.
- Habitat: Hard substrate. Uncommon along mainland, but common at island sites.
- Sampled: **UPC**



Disporella separata

Purple Encrusting Bryozoan

UPC - BRYO

- Identification: Hard, patchlike encrusting colony. Clusters of calcified tubes with circular apertures.
- Size: 10 cm or larger.
- Habitat: On hard substrate
- Sampled: **UPC**
- Note: Similar in appearance to STYPOR



Crisia spp.

UPC - BRYO

- Identification: White to cream color. Finely branched and delicate
- Size: To 5 cm tall.
- Habitat: On hard substrate, common among red algae and sessile inverts
- Sampled: **UPC**



Thalamoporella californica

UPC - BRYO

- Identification: White to off-white colonies with many dichotomously branched projections and a basal crust
- Size: To 15 cm tall, colony diameter to 2 m.
- Habitat: On hard substrate, common
- Sampled: **UPC**

Phylum Mollusca

Class Polyplacophora



Class Gastropoda



Cryptochiton stelleri

Gumboot Chiton

SWATH - CRYSTE

- Identification: Largest chiton species. Leathery mantle covers the eight plates. Mantle reddish, brown color and leathery.
- Size: Length to about 32 cm.
- Habitat: On rocky and soft bottoms. Low intertidal to about 60ft.
- Sampled: **Swath**

NOT SAMPLED - *Tegula aureotincta*

Gilded Turban Snail

- Identification: Shell with broad, low spiral ridges prominent on base. Dark gray or olive top, yellow or orange bottom.
- Size: To 40mm.
- Habitat: Low intertidal and subtidal zones on rocky shores.
- Sampled: **Not Sampled**



Tegula eiseni - NOT SAMPLED

Banded Turban Snail

- Identification: Shell brownish with inflated whorls
- Size: To 25mm
- Habitat: Middle to low intertidal and subtidal zones. Kelp forests and rubble rocky areas.
- Sampled: **Not Sampled**

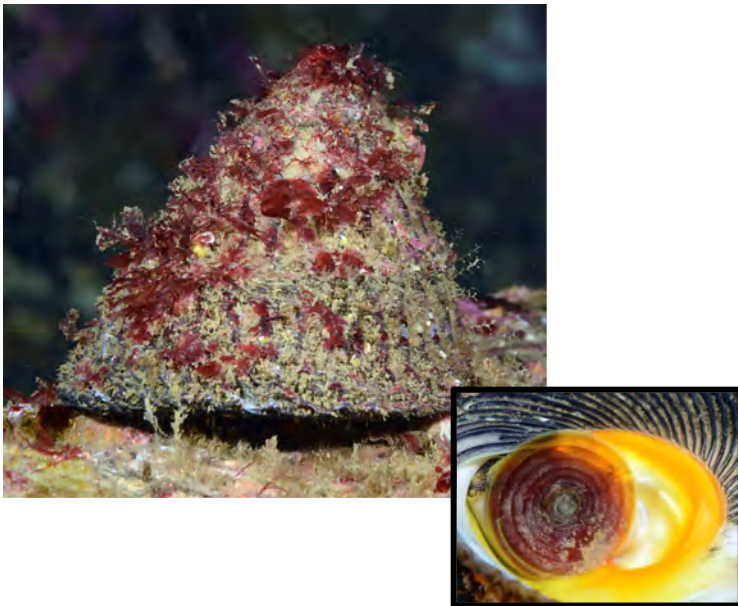


Megastraea undosa

Wavy Turban Snail

SWATH - MEGUND

- Formerly LITUND *Lithopoma undosum*
- Identification: Tan colored shell usually heavily encrusted with algae, bryozoans etc. Edge of shell sculpted like pie crust. Operculum white with three prominent ridges.
- Size: To 11 cm
- Habitat: On rocks generally in kelp beds. From 10ft to 100ft.
- Sampled: **Swath, Size frequency**



Tegula regina

SWATH - TEGREG

Queen Tegula

- Identification: Whorls and spire flat-sides with many slanting axial ridges ending as small flutes. Area around shell opening is bright orange and yellow.
- Size: To 5 cm.
- Habitat: Offshore 20-80 ft.
- Sampled: **Swath**



Pomaulax gibberosus

Red Turban Snail

SWATH - POMGIB

- Identification: Shell usually red brown. Generally wider than tall. Compared to *M. undosa* smooth operculum and generally smaller.
- Size: To 5 cm.
- Habitat: On rocks usually in kelp beds; low intertidal to 70ft.
- Sampled: **Swath**



Megathura crenulata

Giant Key Hole Limpet

SWATH - MEGCRE

- Identification: Shell has opening at top. Mantle usually covers entire shell and may be black, brown, or mottled white and brown.
- Size: Shell to about 12.5 cm.
- Habitat: Usually on rocky substrate from low intertidal to about 110ft
- Sampled: **Swath, Size frequency**



Kelletia kelletii

Kellet's Whelk

SWATH - KELKEL

- Identification: Operculum smooth and brown. White shell with long spiral. Shell generally very fouled especially in Southern. CA. Foot yellow with black lines and white specs.
- Size: Shell to about 17.5 cm.
- Habitat: In kelp beds mostly on soft bottoms. May bury itself in sand and only ridges of shell can be seen.
- Sampled: **Swath, Size frequency**





Neobernaya spadicea

Chestnut Cowry

SWATH - NEOSPA

- Identification: Smooth shell with coppery, golden brown color. Mantle may be extended over shell. Shell is very rarely fouled if animal is alive. Mantle is clearish brown with dark spots.
- Size: Length of shell to about 7.5 cm.
- Habitat: On rocks generally in kelp beds. Intertidal to about 150ft
- Sampled: **Swath**



NOT SAMPLED -

Ceratostoma foliatum

Leafy Hornmouth

- Identification: Shell has three wing-like processes that protrude from the center, one on top and one on each side. There is also a tooth on the outside edge of the opening.
- Size: To 9 cm
- Habitat: Rocky substrate; low intertidal to about 150 feet.
- Sampled: **Not Sampled**



NOT SAMPLED -

Ceratostoma nuttalli

Nuttall's Hornmouth

- Identification: Shell white to darker brown. Darker shells usually have white bands. Large axial rib between flanges
- Size: To 6.5 cm
- Habitat: Middle low intertidal zones. Rocky areas and wharf pilings.
- Sampled: **Not Sampled**



NOT SAMPLED -

Pteropurpura trialata Three-Winged Murex

- Identification: Three distinctive wing-like processes. Brown bands common on shell.
- Size: To 7 cm
- Habitat: Rocky substrate
- Sampled: **Not Sampled**



NOT SAMPLED -

Maxwellia gemma Gem Murex

- Identification: Shell white with black or brown spiral cords. Short spire with raised spiral cords, six or seven varices.
- Size: To about 4.5 cm.
- Habitat: Rocky areas, breakwaters. Low intertidal to 55 m.
- Sampled: **Not Sampled**



NOT SAMPLED - *Atrimitra* *ida's*

Ida's Miter

- Identification: Dark brown or black shell that is relatively smooth. Usually covered with black periostracum. Foot is white, and most often white siphon is extending from bottom of shell.
- Size: Length of shell to about 7.5 cm.
- Habitat: On rocks. Low intertidal to about 70ft.
- Sampled: **Not Sampled**

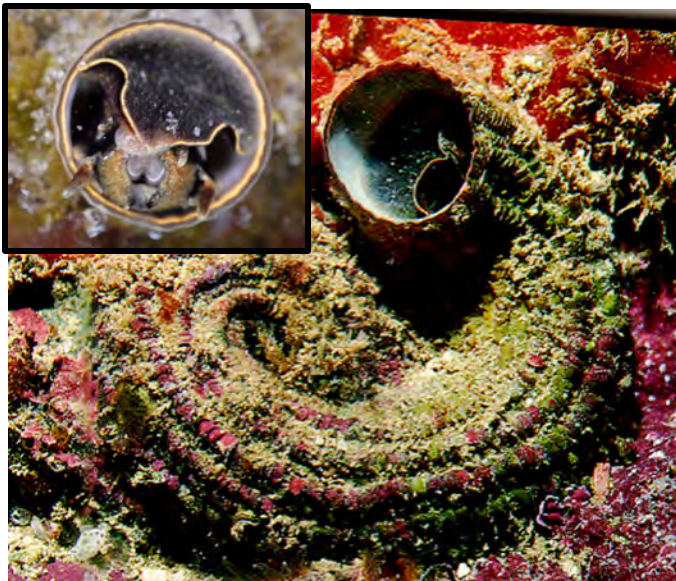


NOT SAMPLED -

Californiconus californicus

California Cone Snail

- Identification: Light brown, mostly smooth shell. Spiral blunt.
- Size: Length to 4 cm.
- Habitat: Sandy and rocky bottoms. Low intertidal to 150ft
- Sampled: **Not Sampled**



Thylacodes squamigerus

Scaled Worm Shell

UPC - THYSQU

- Identification: Appears to be a worm, but actually a mollusc. Shell is a partially coiled tube attached to substrate. Has no operculum.
- Size: Length of tube about 12.5 cm
- Habitat: Attached to rocks. Intertidal to about 100ft
- Sampled: **UPC**



Petaloconchus montereyensis

Monterey wormsnaill

UPC - PETMON

- Identification: These tiny snails, their tubes are only 1-2 mm in diameter, superficially look like tube-dwelling worms.
- Size: tube about 1-2mm diameter
- Habitat: Attached to rocks. Not commonly seen south of Santa Barbara
- Sampled: **UPC**



NOT SAMPLED -
Calliostoma annulatum

Blue Ringed Top Snail

- Identification: Gold, blue, and purple colored shell. Foot is bright orange with brown blotches.
- Size: Shell diameter to about 3 cm.
- Habitat: On rocks and kelp. Low intertidal to about 140ft.
- Sampled: **Not Sampled**



NOT SAMPLED -
Calliostoma ligatum

Blue Top Snail

- Identification: Conical shell is as high as it is wide. Light tan spiral ridges on brown shell. Brown foot is orange on the bottom.
- Size: Shell diameter to about 25mm.
- Habitat: On kelp and rocks. Low intertidal to about 60ft.
- Sampled: **Not Sampled**



NOT SAMPLED
Norrisia norrisii

Norris's Topsnail

- Identification: Flattened spiral shell shaped much like shell of *Polinices* (moon snail). Shell dark red brown. Foot bright red and very distinctive.
- Size: Shell to about 5.5 cm.
- Habitat: Most often found in *Macrocystis* canopy on stipes and blades. Sometimes buried in holdfasts. Very rarely found exposed on bottom.
- Sampled: **Not Sampled**

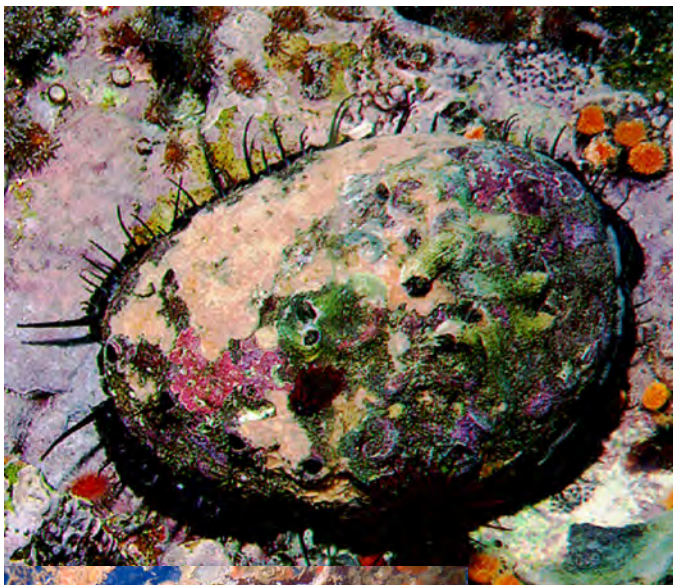
Haliotis rufescens

Red Abalone

SWATH (SIZE) - HALRUF

Identification: Shell usually red sometimes with bands of green or white. Three or four of the holes may be open. Epipodium, body and tentacles black and smooth, sometimes with light striping. Some individuals with white upper edge of epipodium.

- Size: Length to 31 cm.
- Habitat: On rocks and in crevices. From low intertidal to about 80ft.
- Range: Oregon to Baja
- Sampled: **Swath, Size Frequency**



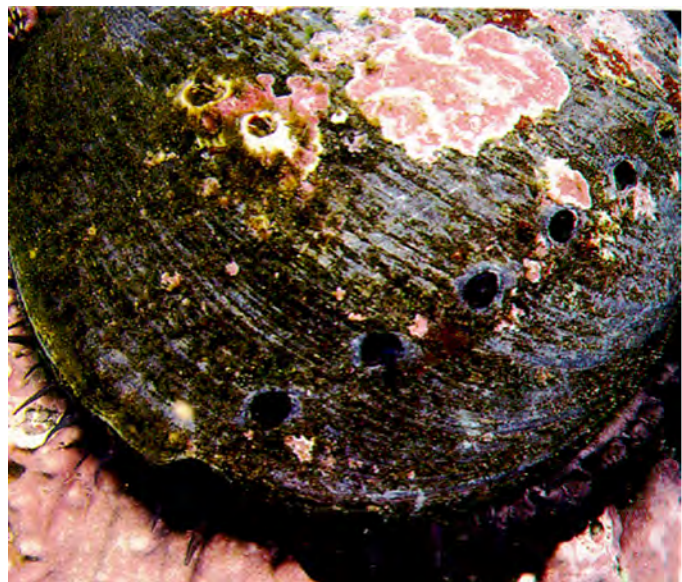
Haliotis cracherodii

Black Abalone

SWATH (SIZE) - HALCRA

Identification: Smooth outer shell can be dark blue to black with five to seven open holes flush with shell surface. Epipodium and foot are smooth black with numerous short black tentacles.

- Size: Shell to about 20 cm.
- Habitat: On rocks and in crevices. Low intertidal to about 20ft.
- Range: Mendocino to Baja
- Sampled: **Swath, Size Frequency**



Haliotis corrugata

Pink Abalone

SWATH (SIZE) - HALCOR

- Identification: Shell is thick, almost round and highly arched. Edge of shell is scalloped (corrugated). Two to four raised holes open. Epipodium is mottled black and white and lacelike. Tentacles are dark black and long. Only found South of Pt. Conception
- Size: Shell to about 25 cm.
- Habitat: On rocks and in crevices. Low intertidal to about 180ft.
- Range: Pt. Conception to Baja
- Sampled: **Swath, Size Frequency**



Haliotis fulgens

Green Abalone

SWATH (SIZE) - HALFUL

- Identification: Exterior of shell is olive green to reddish with five to seven open slightly elevated holes. Epipodium is olive-green with brown patches and has highlighted and scalloped edges. Tentacles are grey-green, short and thick
- Size: Length to about 25 cm.
- Habitat: In crevices and on rocks from low intertidal to about 60ft.
- Range: Pt. Conception to Baja
- Sampled: **Swath, Size Frequency**



Haliotis assimilis

Threaded Abalone

~~HALASS~~ - SWATH (SIZE)

- Identification: The outer shell color is greenish with dull brown, white, or red markings. Four to six shell holes are open. The shell-like openings are slightly raised. Epipodium light cream with dark banding. Tentacles light brown and short
- Size: Shell to about 15 cm. Most smaller than 10 cm
- Habitat: On rocky substrate; low intertidal.
- Range: San Luis Obispo County to Baja
- Sampled: **Swath, Size Frequency**



Haliotis kamtschatkana

Pinto Abalone

SWATH (SIZE) - HALKAM

- Identification: The outer shell color is greenish-brown with white, red and blue markings. Three to six shell holes are open. The shell-like openings are slightly raised. Epipodium green-brown, scalloped and lace-like. Tentacles green and slender
- Size: Shell to about 15 cm. Most smaller than 10 cm
- Habitat: On rocky substrate; low intertidal.
- Range: Primarily Alaska to Monterey, but present to Baja
- Sampled: **Swath, Size Frequency**



Now classified as one species (HALKAM) with 2 morphological types

Haliotis walallensis

Flat Abalone

SWATH (SIZE) - HALWAL

Identification: Shell long, narrow and flattened. Brick red in color with some green, blue or white. Four to eight open holes, not raised. Epipodium is rough, yellow-green, mottled and lace-like. Tentacles dark green and slender.

- Size: Shell to about 17.5 cm.
- Habitat: On rocks or in crevices; low intertidal down to about 70 feet.
- Range: British Columbia to La Jolla
- Sampled: **Swath, Size Frequency**



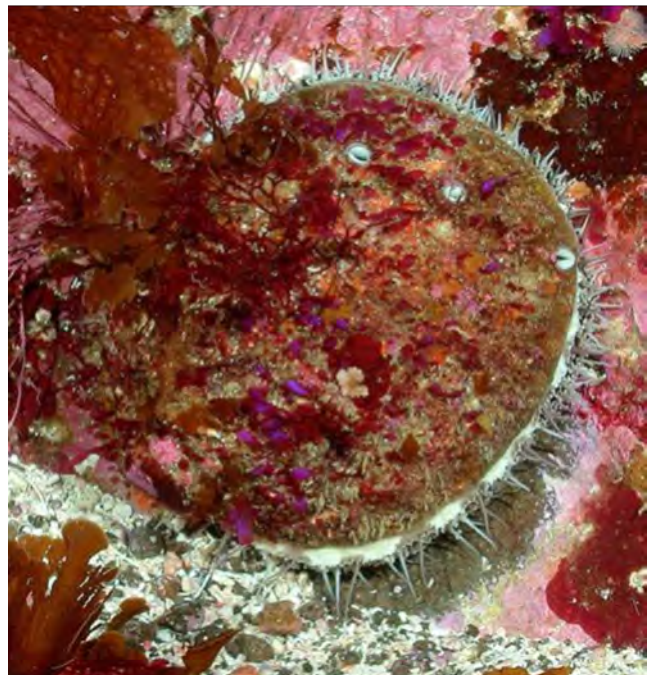
Haliotis sorenseni

White Abalone

SWATH (SIZE) - HALSOR

•Identification: Thin, high arched, reddish-brown shell. Three to five open and raised shell holes. Epipodium is a light mottled yellow-green and beige, scalloped and lace-like. Tentacles, long, thin and light green

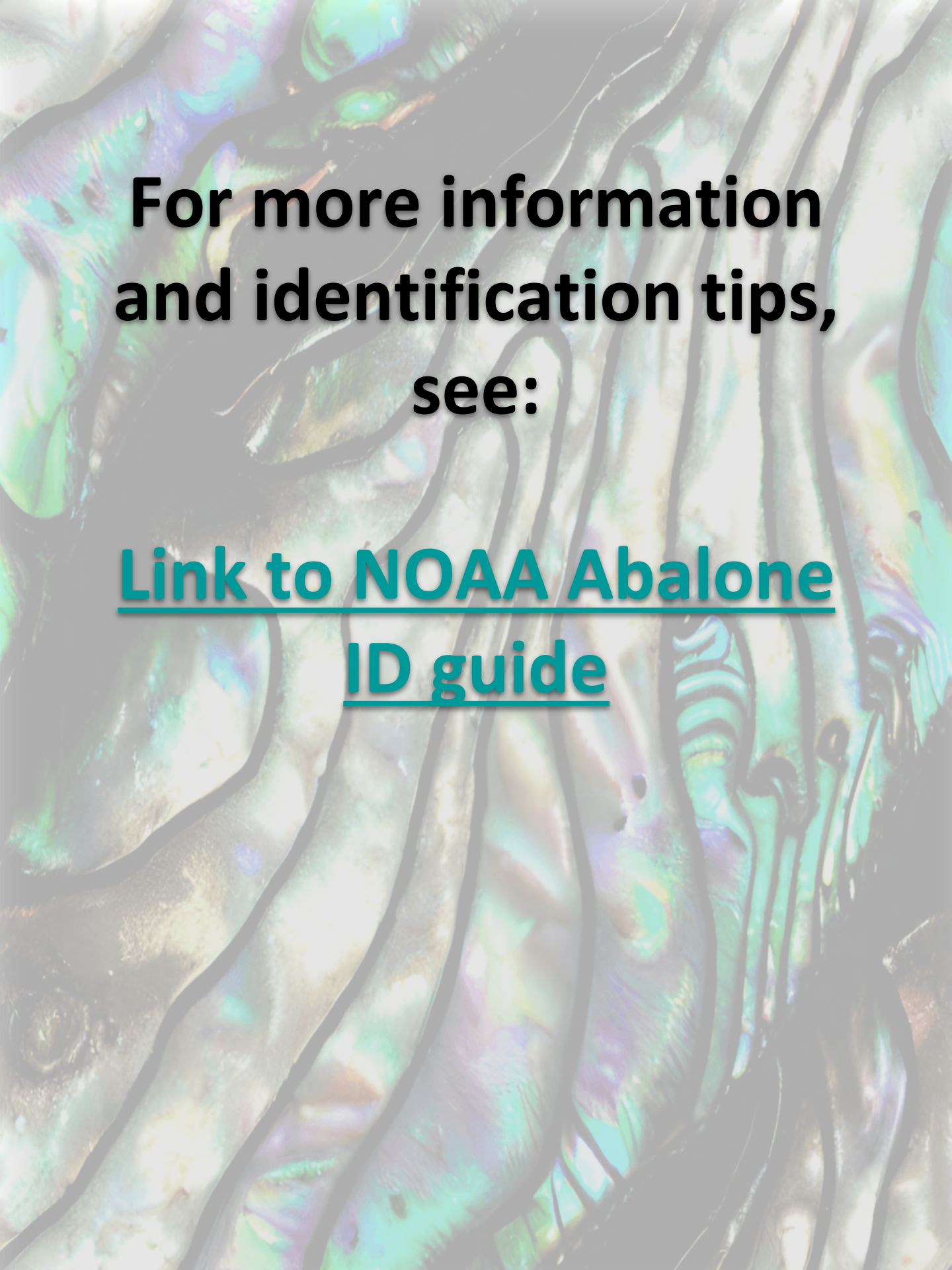
- Size: Length to 25 cm.
- Habitat: On rocks, in subtidal depths of 70 to about 200 feet.
- Range: Pt. Conception to Baja
- Sampled: **Swath, Size Frequency**



Common Abalone

Quick Guide

- More common to the West
 - Red (HALRUF)
 - black/grey foot, black tentacles
 - slightly raised holes
- More common to the East
 - Green (HALFUL)
 - green tentacles
 - mostly flat holes, many holes
 - Pink (HALCOR)
 - black tentacles- “eyelashes”
 - “fluffy” white and black epipodium
 - very raised “volcano” holes
 - “corrugated” shell



**For more information
and identification tips,
see:**

**[Link to NOAA Abalone
ID guide](#)**

Class Bivalvia



Chaceia ovoidea

Wart Neck Piddock

UPC - BORCLAM

- Identification: Siphon is the only part of clam you will see. Distinct dark brown pairs of siphons that may extend three inches.
- Size: Length of shell to about 7.5 cm.
- Habitat: Low intertidal to about 60ft. Burrows into clay and shale reefs.
- Sampled: **UPC**



Parapholas californica

Scaleside Piddock

UPC - BORCLAM

- Identification: Both siphons are joined on the same disc and usually do not protrude above the surface. The color of the siphons is whitish with reddish-brown spots and blotches
- Size: Length of shell to about 15 cm.
- Habitat: In clay and shale reefs in exposed bays and outer coast. Low intertidal to about 60 ft.
- Sampled: **UPC**



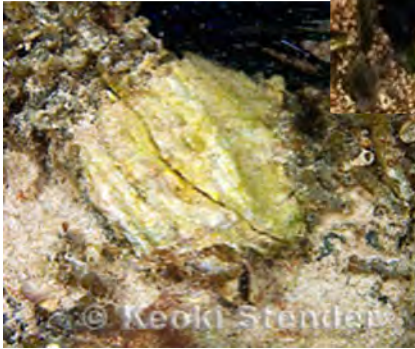
Crassadoma gigantea

Rock Scallop

SWATH - CRAGIG

UPC - SCALLOP

- Identification: Adults are attached to substrate. Valves are thick with ribs that have short spines.
- Size: Shell diameter to about 20 cm.
- Habitat: Low intertidal to about 150ft. On rocks.
- Sampled: **Swath, UPC**



***Chama arcana /
Pseudochama exogyra***

Jewel Oysters

UPC - SCALLOP

- Identification: White edged shell. Often taller than it is long, deeply concave. Affixed to rock.
- Size: To 5 cm
- Habitat: Affixed to hard rock, often times on top of one another
- Sampled: **UPC**



Pododesmus macrochisma

Abalone jingle

UPC - SCALLOP

- Identification: Upper valve rounded, very flat, lower valve smaller and attached to rocky substrate.
- Size: Shell diameter to about 9 cm.
- Habitat: Low intertidal to about 150ft. On rocks.
- Sampled: **UPC**



Pteria sterna

Pacific wing-oyster

SWATH - PTESTE

Identification: Dark black "glove-shaped" shell

- Size: Grows to around 13cm
- Habitat: Usually observed growing on gorgonians, particularly *Leptogorgia*. Recruits during El Niño events.
- Sampled: **Swath**



Mytilus californianus

California mussel

UPC - MUSSEL

- Identification: Shell coloring of black, brown, and blue. Ridging can be up and across.
- Size: To 15 cm
- Habitat: They form massive beds on surf exposed rocks and wharf pilings in the upper middle intertidal zone and offshore to 79 ft.
- Sampled: **UPC**

Class Opisthobranchia



Aplysia californica

California Sea Hare

SWATH - APLCAL

- Identification: Body soft and mottled red/brown color. Two flap-like extensions of foot come together on dorsal side
- Size: To 45 cm
 - Habitat: Found all along coast in all habitats.
 - Sampled: **Swath**



Aplysia vaccaria

SWATH - APLVAC

California Black Sea Hare

- Identification: Body soft and dark red/brown to black color w/ white speckled patches. Two flap-like extensions of foot come together on dorsal side
- Size: To 76 cm
- Habitat: Found all along coast in all habitats. Feeds on Egregia.
- Sampled: **Swath**



Octopus bimaculatus/ *rubescens*

Octopus

SWATH - OCTOPUS

- Identification: Mottled, 8 legs with suckers
- Size: few to several inches across
- Habitat: Usually inhabits cracks and crevices. Divers will often see only the eyes.
- Sampled: **SWATH**



Phylum Arthropoda

Class Crustacea



Chthamalus spp.

Barnacle

UPC - BARN

- Identification: Small barnacles that occur in aggregations. Each individual barnacle's plate overlaps with plates of other barnacles in the aggregation.
- Size: To about 8 cm
- Habitat: Common on rocks, pier pilings, and hard shelled organisms. Upper middle intertidal zones.
- Sampled: **UPC**



Megabalanus californicus

Barnacle

UPC - BARN

- Identification: Plates have longitudinal red and white stripes.
- Size: Diameter to about 6 cm. Height to about 5 cm.
- Habitat: Attached to rocks, pilings, kelp, mussels, crabs, and other hard shelled animals. Low intertidal to about 40ft.
- Sampled: **UPC**



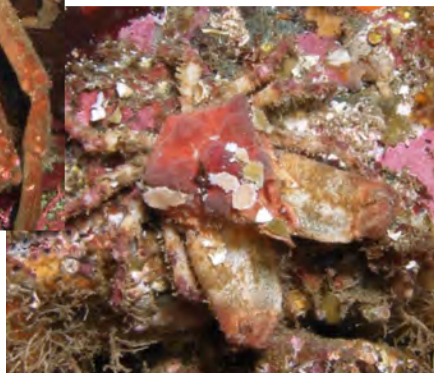
Balanus nubilus

Giant Acorn Barnacle

SWATH - BALNUB

UPC - BARN

- Identification: Large, unstalked, sessile barnacle. Easily identifiable by its size.
- Size: Diameter to about 11 cm. Height to about 7.5 cm.
- Habitat: Attached to rocks and pier pilings. Low intertidal to about 300ft.
- Sampled: **Swath, UPC**



Loxorhynchus crispatus/* *Scyra acutifrons

Decorator Crab

SWATH - LOXSCY

- Identification: Unlike *L. grandis*, this crab has a coat of short hairs on a triangular carapace. Carapace also has fewer tubercles. Decorates itself with algae, anemones, bryozoans; etc.
- Size: Carapace width to about 9 cm
- Habitat: On rocky and soft bottoms. Low intertidal to about 600ft
- Sampled: **Swath**



Loxorhynchus grandis

Sheep Crab

SWATH - LOXGRA

- Identification: Distinctive oval carapace covered with spines and tubercles. Will decorate themselves if smaller than 8cm. Generally, but not always, a bluish color. Grows larger than LOXSCY and has a downward facing rostrum.
- Size: Carapace width to about 17 cm for females, 24cm for males.
- Habitat: On rocky and soft bottoms from depths of 20 to about 500ft.
- Sampled: **Swath**



Cancer/Romaleon/* *Metacarcinus spp.

Cancer Crab

SWATH - CANSPP

- Identification: Reddish brown shell. Dark spots on underside of body. Shell shaped like general cancer crab shell.
- Size: Carapace width to about 15 cm
- Habitat: On rocky and soft bottoms. Very low intertidal to about 100ft.
- Sampled: **Swath**



Pugettia producta

Kelp Crab

SWATH - PUGPRO

- Identification: relatively smooth carapace is usually brown to reddish. Tends to blend well with kelp plants.
- Size: Carapace width to about 9 cm
- Habitat: On kelp and soft bottoms. Intertidal to about 250ft.
- Sampled: **Swath**



Pugettia richii

Kelp Crab

SWATH - PUGRIC

- Identification: Carapace has four lateral spiny projections. Legs are relatively large and slender. Tends to be smaller and redder than *P. producta*.
- Size: Carapace width to about 3 cm.
- Habitat: On rocky substrate and kelp. Low intertidal to about 325 ft.
- Sampled: **Swath**



Pugettia foliata

Mimicking crab

SWATH - PUGFOL

- Identification: Lateral carapace is flattened forming leaf- like sides. Color varies from white or yellow to brown or red.
- Size: Carapace width to about 4 cm.
- Habitat: On and around kelp holdfasts and crevices.
- Sampled: **Swath**



Taliepus nuttallii

Southern kelp crab

SWATH - TALNUT

- Identification: Carapace slightly bulbous and tear-drop shaped. Lacks large spiny projections at the front of the carapace that PUGPRO has. Color varies from purple to red.
- Size: Carapace width to >10 cm.
- Habitat: In the intertidal under rocks and on kelp in the subtidal.
- Sampled: **Swath**



Cryptolithodes sitchensis

Umbrella crab

SWATH - CRYBIT

- Identification: Half-moon shaped carapace that extends over all of its eight walking legs and two cheliped. This carapace ranges from neutral sandy colors to bright oranges, reds, and purples.
- Size: The carapace can be 5–10 centimetres (2.0–3.9 in).
- Habitat: Rocky shores, usually on outer coast. Nestles under rocks or in crevices in algae-covered bedrock, low intertidal and subtidal.
- Sampled: **Swath**



Panulirus interruptus

CA Spiny Lobster

SWATH (SIZE)-PANINT

- Identification: Large antennae covered with small spines
- Size: length to 60 cm.
 - Habitat: in crevices during day. Intertidal to about 200 ft.
 - Sampled: **Swath, Size Frequency**

Phylum Echinodermata

Class Holothuroidea



Cucumaria piperata

UPC - CUCSPP

Salt and Pepper Cucumber

- Identification: Small cucumber with 10 fine, branched tentacles. Color usually white with black or brown speckles giving it a salt and pepper look.
- Size: Length to about 6 cm.
- Habitat: In rocky areas, buried in crevices or silt. Intertidal to about 275ft.
- Sampled: **UPC**



Cucumaria salma

UPC - CUCSPP

Salmon Cucumber

- Identification: Body salmon colored with five rows of tube feet. Tentacles black and orange.
- Size: Length to 1.5 cm.
- Habitat: In holes and crevices in rocks.
- Sampled: **UPC**



Eupentacta quinquesemita

UPC - CUCSPP

White Sea Cucumber

- Identification: Ten yellow or white branched tentacles; eight long two short. Light pink, yellow or white colored body.
- Size: Length to about 10 cm.
- Habitat: Out on rocky reefs. Intertidal to about 50ft.
- Sampled: **UPC**



Cucumaria miniata

UPC - CUCSPP

Orange Sea Cucumber

- Identification: Bright solid orange cucumber has 10 branched tentacles and 5 discrete rows of tube feet.
- Size: Length to about 2.5 cm.
- Habitat: Hidden on rocky reefs in crevices. Intertidal to about 80ft.
- Sampled: **UPC**



Pachythyone rubra

Sea Cucumber

UPC SUPERLAYER -

UNDPAC Identification: Tube feet not arranged in any pattern, but scattered over entire body. Color orange to mottled brown to white.

- Size: Length to about 2.5 cm.
- Habitat: Out on rocky and sandy bottoms from low intertidal to about 60ft.
- Sampled: **UPC SUPERLAYER**



Apostichopus parvimensis

Warty Sea Cucumber

SWATH - APOPAR

Identification: Orange to brown in color and covered with warty small black tipped papillae. May also have spines that cause it to be confused with *P. californicus*, but *P. californicus* does not have warts.

- Size: To about 25 cm.
- Habitat: On rocky and soft bottoms. Low intertidal to about 100ft
- Sampled: **Swath**



Apostichopus californicus

California Sea Cucumber

SWATH - APOCAL

Identification: Large conical papillae that look like spines. Tube feet on ventral side. Color dark red, brown, yellow, or orange.

- Size: to about 40cm
- Habitat: On rocks and soft bottoms from low intertidal to about 300ft.
- Sampled: **Swath**

ClassAsteroidea



Leptasterias hexactis

Six Armed Star

SWATH - LEPHEX

Identification: Color generally black, brown, greenish or white. Six arms. Arms short and flattened in cross section. Aboral surface covered with small spines and pedicellariae.

- Size: To 7.5 cm.
- Habitat: On rocks from intertidal to shallow subtidal
- Sampled: **Swath**



Linckia columbiae

Fragile Star

SWATH - LINCOL

•Identification: Long tapering arms are round in cross section. Arms number from 1 to 9 (usually 5) and are rarely the same length. Surface coarsely granular and rough. Color varies greatly but commonly grayish mottled w/ dull red and yellow spotting.

- Size: Diameter 8 to 18 cm.
- Habitat: On rocks from low intertidal to 240ft.
- Sampled: **Swath**



Henricia leviuscula

Blood Star

SWATH - HENLEV

•Identification: Long tapering arms are round in cross section. Usually five arms, but sometimes four or six. Lack pedicellariae and are smooth to the touch. Color can be orange or red, may be banded.

- Size: Diameter to 20 cm.
- Habitat: On rocks from low intertidal to 1330ft.
- Sampled: **Swath**



Mediaster aequalis

Red Sea Star

SWATH - MEDAEQ

- Identification: Bright red in color with five tapering arms and broad central disc. Large marginal plates.
- Size: Diameter to about 20 cm
- Habitat: On rocks and soft bottoms. Subtidal depths from 50ft to 1650ft.
- Sampled: **Swath**



Astrometis sertulifera

Fragile Rainbow Star

SWATH - ASTSER

- Identification: The five long arms have separated spines encircled by pedicellariae. Color brown or green with orange spines.
- Size: Diameter 25 cm.
 - Habitat: On rocks from very low intertidal to 130ft.
 - Sampled: **Swath**



Orthasterias koehleri

Rainbow Star

SWATH - ORTKOE

- Identification: Can be many different colors, generally more than one color. Large, sharp spines on arms.
- Size: Diameter to about 38 cm.
- Habitat: On rocks and soft bottoms. From very low intertidal to about 800 ft.
- Sampled: **Swath**



Pycnopodia helianthoides

Sunflower star

SWATH - PYCHEL

- Identification: Large with 20-24 flexible arms. Color variable
- Size: Diameter to about 90cm.
- Habitat: On rocky and soft bottoms from low intertidal to about 1450ft.
- Sampled: **Swath, Size frequency (longest arm radius)**



Ophiothrix spiculata

Spiny brittle star

UPC SUPERLAYER - UNDBRIT

Identification: long flat spines, brown with banded arms

- Size: Diameter to 17.5 cm
- Habitat: Rocks & kelp hold-fasts, from low intertidal to 460 ft.
- Sampled: **UPC SUPERLAYER**



NOT SAMPLED -

Ophioplocus esmarki

Smooth brittle star

- Identification: Large disc, short spines, brown to gray- brown
- Size: Diameter to 15 cm.
- Habitat: Soft bottoms, from low intertidal to 230ft.
- Sampled: **Not Sampled**



Dermasterias imbricata

Leather Star

SWATH - DERIMB

- Identification: Very smooth and leathery feeling. Color can range from orange, yellow, blue, or green.
- Size: Diameter to about 25 cm.
- Habitat: On rocks rarely on sand, from very low intertidal to about 300 ft.
- Sampled: **Swath**



Patiria miniata

Bat Star

SWATH - PATMIN

- Formerly ASTMIN *Asterina miniata*
- Identification: Can be many different colors. Lacks spines and pedicellariae. Usually five arms, but can have four to nine. Arms appear a bit webbed.
- Size: Diameter to about 20 cm.
- Habitat: On rocks and sandy bottoms. Low intertidal to about 950 ft.
- Sampled: **Swath**



Astropecten armatus

Armored Sand Star

SWATH - ASTARM

- Identification: Usually tan to white to pink. Has scaly edge with spines all around margins.
- Habitat: Sandy bottoms. Low intertidal to about 950 ft.
- Size: Diameter to 17cm.
- Sampled: **Swath**



Pisaster ochraceus

Ochre Star

SWATH - PISOCH

Identification: Usually has five thick arms, but can be four to seven. Numerous small white spines arranged in a reticular pattern. Color can vary: red, orange, yellow, purple, etc.

- Size: Diameter to about 35 cm.
- Habitat: Rocky bottoms or other hard substrate. Intertidal to about 300 ft.
- Sampled: **Swath, Size frequency (longest arm radius)**



Pisaster brevispinus

Short Spined Star

SWATH - PISBRE

•Identification: Aboral spines are very short. Color is always pink with white, and they appear to be soft.

- Size: Diameter to about 60 cm.
- Habitat: On rocky and soft bottoms from low intertidal to about 300 ft. More common in bays than on open coast.
- Sampled: **Swath, Size frequency (longest arm radius)**



Pisaster giganteus

Giant Spined Star

SWATH - PISGIG

•Identification: Long spines are uniformly spaced and have swollen tips. Each spine is surrounded by a blue circle. Can be many different colors.

- Size: Diameter to about 56 cm.
- Habitat: On rocky and sandy bottoms from very low intertidal to about 300 ft.
- Sampled: **Swath, Size frequency (longest arm radius)**



Luidia foliolata

Sand Star

SWATH - LUIFOL

- Identification: 5 long, tapering, strap-like arms with relatively small disc. Surface smooth, granular. Pink, purplish, grey-green or brown, often with white speckling.
- Size: To 60 cm (24 in) across.
- Habitat: Sand or muddy bottoms.
- Sampled: **Swath**



Stylasterias forreri

Velcro Star

SWATH - STYFOR

- Identification: 5 long tapering arms with small disc. Rarely 6 rays. Many large spines surrounded by wreaths of tiny pincers. Grey, black, grey or more rarely, straw. Common name refers to the "sticky" surface.
- Size: To 101 cm (40 in) across, usually to 40cm.
- Habitat: On rocks and occasionally sand.
- Sampled: **Swath**



Class Echinoidea



Mesocentrotus franciscanus

Red Sea Urchin

SWATH - MESFRA

- Identification: Large, red, sharp spines are about half as long as diameter of test. Color can be dark purple.
- Size: Diameter of test and spines to about 25 cm.
- Habitat: On rocks from very low intertidal to about 300 ft.
- Sampled: **Swath (test diameter > 2.5cm)**

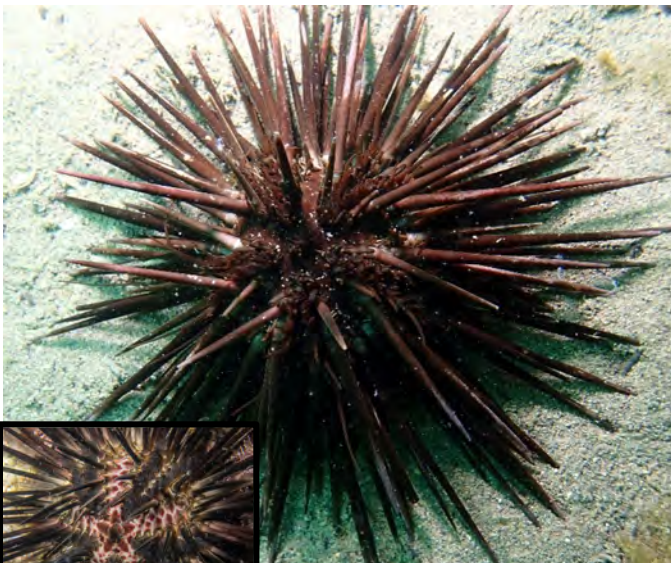


Strongylocentrotus purpuratus

Purple Urchin

SWATH - STRPUR

- Identification: Short purple spines. Juveniles less than one inch have spines that are greenish.
- Size: Diameter to about 8.5 cm.
- Habitat: On rocks. Low intertidal to about 30ft.
- Sampled: **Swath (test diameter > 2.5cm)**



Arbacia stellata

Black Sea Urchin

SWATH - ARBSTE

- Identification: Can be similar in color to red urchins. When closely examined, a star-like pattern is evident on the aboral surface, sometimes with red dots. Will flatten out spines toward the oral surface. Smaller individuals may be black and white.
- Habitat: Intertidal to depths of 90m
- Sampled: **Swath (longest diameter >2.5cm)**
- Record notes if find recruits because a warmer water species



Centrostephanus coronatus

Crowned Sea Urchin

SWATH - CENCOR

- Identification: Spines usually three times as long as diameter of test, feel rough, and are a deep purple color.
- Size: Diameter of test and spines to about 17.5 cm.
- Habitat: On rocks. Forage at night on soft bottoms.
- Sampled: **Swath (longest diameter >2.5cm)**



Lytechinus pictus

White Sea Urchin

SWATH - LYTPIC

- Identification: Sharp white spines usually shorter than diameter of test. Color of test is white with dark blotches.
- Size: Diameter of test and spines to about 7.5 cm.
- Habitat: Soft and rocky bottoms. From shallow subtidal to about 1000 ft
- Sampled: **Swath (any size)**

Phylum Annelida

Class Polychaeta



Dodecaceria pacifica

Colonial Tube Worms

UPC - DODPAC

Former name: *Dodecaceria fewkesi*

Former code: DODFEW

- Identification: Colonies are made of calcareous tubes and are hard to touch. Tentacles are dark brown.
- Size: Diameter of tube about 5 mm.
- Habitat: On rocks and dock pilings. Intertidal to shallow subtidal.
- Sampled: UPC



Salmacina tribranchiata

Fragile Tube Worm

UPC - SALTRI

- Identification: Small whitish tubs that form tangled complex masses. Tentacles of worm are a pinkish salmon color. They have no operculum.
- Size: Colonies can be 20 cm across.
- Habitat: Tubes attached to sides and undersides of rocks from lower intertidal to depths of about 50ft.
- Sampled: UPC



Phragmatopoma californica

Colonial Sand Tube Worm

UPC - PHRCAL

- Identification: Tubes are made of sand and very fragile. Tentacles are purple in color and very sensitive to movement. If you wave your hand over a colony all tentacles will retract.
- Size: Colonies can be as large as 2m across.
- Habitat: Colonies form on rocks, kelp holdfasts and other areas. Intertidal to depths of 240ft.
- Sampled: UPC



Chaetopterus spp.

Parchment Tube Worm

UPC - DIOCHA

- Identification: Whitish tube is flexible, thin and papery. Worm will never be visible. Often forming large mats.
- Size: Worm to 25 cm.
- Habitat: In sand and stone or shell gravel. On rock in deeper water.
- Sampled: **UPC**



Diopatra ornata

Ornate Tube Worm

UPC - DIOCHA

- Identification: Tubes are flexible and can be easily torn. Usually completely covered with algae, shell pieces, and other debris. Often occur in colonies.
- Size: Diameter of tube about 18 mm.
- Habitat: In sand and rubble subtidal bottoms usually around rocks to 300 ft.
- Sampled: **UPC**



Spirobranchus spinosus

Christmas Tree Worm

UPC - TUBEWORM

- Identification: Branchial plume has three circular whorls that cause the worm to look like a christmas tree. Tubes are hard and generally white unless encrusted. Tube comes to a point at opening.
- Size: Width of plume to about 2 cm.
- Habitat: Attached to rocks, intertidal to about 40 ft.
- Sampled: **UPC**



Eudistylia polymorpha

Feather Duster Worm

UPC - TUBEWORM

- Identification: Worm extending from tube has a large plume of branched gills that resemble a feather duster. Color can be light tan to orange.
- Size: Plume to about 7.5cm.
- Habitat: Rocks and dock pilings. Low intertidal to about 130ft.
- Sampled: **UPC**



Serpula vermicularis

Serpulid Worm

UPC - TUBEWORM

- Identification: White calcareous tubes that are often coiled. Crown of gills is made of two whorls, and operculum is funnel shaped and looks like a trumpet. Color varies from white to pinkish
- Size: Width of branchial crown to about 2.5 cm.
- Habitat: Tubes are attached to sides and tops of rocks. Low intertidal to depths of 300 ft.
- Sampled: **UPC**

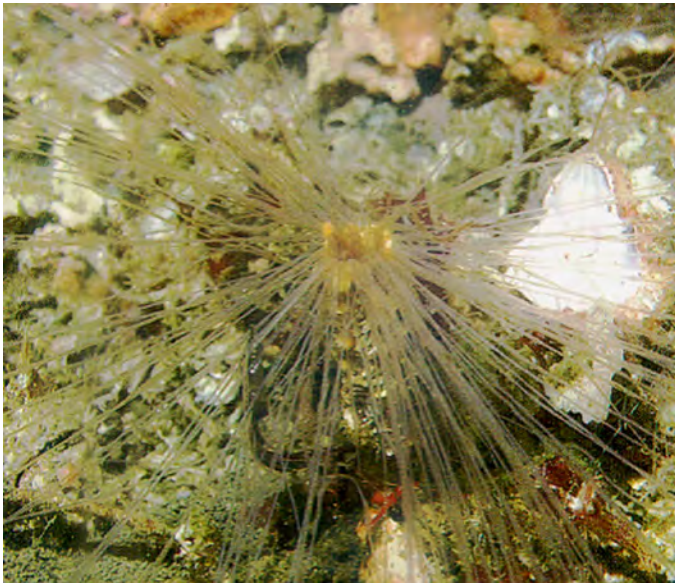


Myxicola infundibulum

Sabellis Worm

UPC - TUBEWORM

- Identification: Whorl of gill plumes are connected by a membrane. Color is yellow to green purple or brown. Tend to be iridescent. Tube is gelatinous.
- Size: Width of plume to about 9 cm.
- Habitat: Wedged in fouling organisms or in crevices. Subtidal to 600 ft.
- Sampled: **UPC**

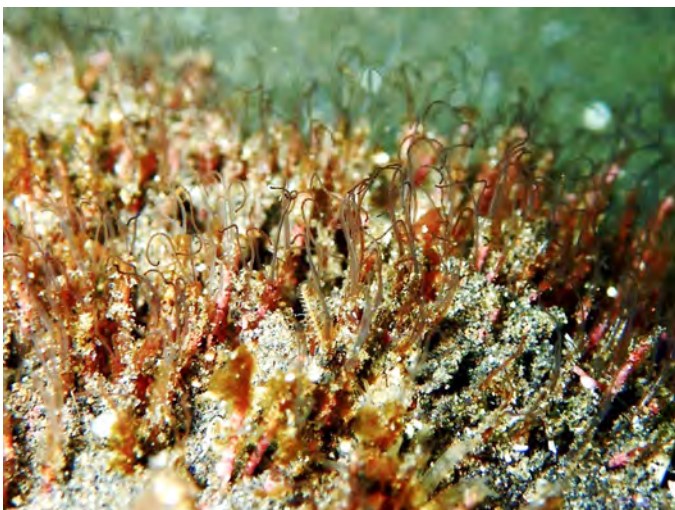


Thelepus crispus

Terebellid Worm

UPC - TUBEWORM

- Identification: Tube is thin and covered with sand. Tentacles are very long and transparent. If touched worm will retract long tentacles.
- Size: Tentacles to at least 30 cm. Worm to 27 cm.
- Habitat: In stable sand and mud areas from middle intertidal to depths of about 50 ft.
- Sampled: **UPC**



UPC - TUBEMAT

- Identification: unidentified mass of tubeworms that don't fit into another one of the classifications specified
- Sampled: **UPC**

Phylum Chordata

Subphylum



TUNICATE – general traits

- Attached to bottom
- Many shapes and colors
- Can be solitary or colonial/social
- Usually both the incurrent and excurrent siphons are large and obvious (incurrent usually slightly larger)
- No hard parts, they feel fleshy to the touch



Chelyosoma productum

Solitary Tunicate, flattop sea squirt

UPC - SOLTUN

- Identification: Smooth translucent to opaque tunic. Two siphons are short and on flat disk. Individuals often found in clumps and covered in diatom film/ scum.
- Size: Height to 6 cm, Diameter to about 2.5 cm
- Habitat: On rocks especially shale from low intertidal to 150ft
- Sampled: **UPC**



Styela montereyensis

Stalked Tunicate

SWATH - STYMON

UPC - SOLTUN

- Identification: Tunicate on distinctive long stalk. Elongated tunic has longitudinal ridges. Color usually yellow to dark red-brown.
- Size: Height to about 25 cm.
- Habitat: Attached to rocks from low intertidal about 100ft.
- Sampled: **Swath, UPC**

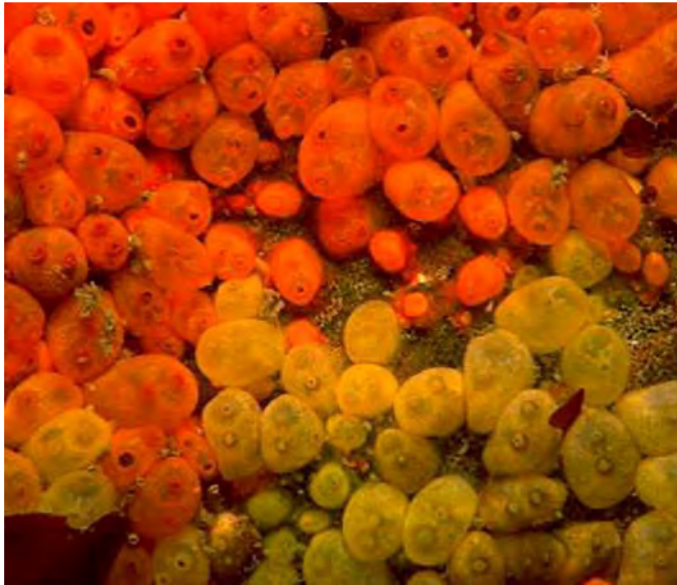


Cnemidocarpa finmarkiensis

Solitary Tunicate

UPC - SOLTUN

- Identification: Smooth opaque tunic. Two siphons on upper surface are of equal size. Color red or pinkish
- Size: Diameter to about 5 cm
- Habitat: On rocks from very low intertidal to 160ft
- Sampled: **UPC**



Metandrocarpa taylori

Colonial Tunicate

UPC - COMTUN

- Identification: Each individual zooid has two siphons. Zooids are joined at bases. Color usually red or orange sometimes green or yellow.
- Size: Colonies can be 20 cm
- Habitat: On rocks from low intertidal to about 65ft
- Sampled: **UPC**



Cystodytes lobatus

Lobed Tunicate

UPC - COMTUN

- Identification: Young colonies form flat, encrusting sheets. Older colonies form lobes like in picture. Color varies from gray, white, orange, pink, or lavender.
- Size: Diameter to colony to about 25 cm and height to about 10 cm.
- Habitat: On rocks from very low intertidal to about 666ft.
- Sampled: **UPC**



Didemnum carnulentum

Lacy Tunicate

UPC - COMTUN

- Identification: Colonies appear in patches and my look like lace. Smooth with many small openings and a large aperture. Color can be white or gray.
- Size: Diameter of colony to about 12.5 cm.
- Habitat: On rocks from intertidal to about 100ft.
- Sampled: **UPC**



Clavelina huntsmani

Light-bulb Tunicate

UPC - COMTUN

- Identification: Grows in clusters. Pharynx contains two luminescent pink lines that resemble the glowing filaments of a light bulb.
- Size: to 5 cm tall.
- Habitat: On rocks low intertidal to about 90 ft.
- Sampled: **UPC**



Pycnoclavella stanleyi

Yellow Social Tunicate

UPC - COMTUN

- Identification: Branchial baskets of expanded zoids in upright orange or gold striped projections
- Size: to 2 cm tall. Clumps to 30 cm diameter
- Habitat: On rocks low intertidal to about 30 ft.
- Sampled: **UPC**

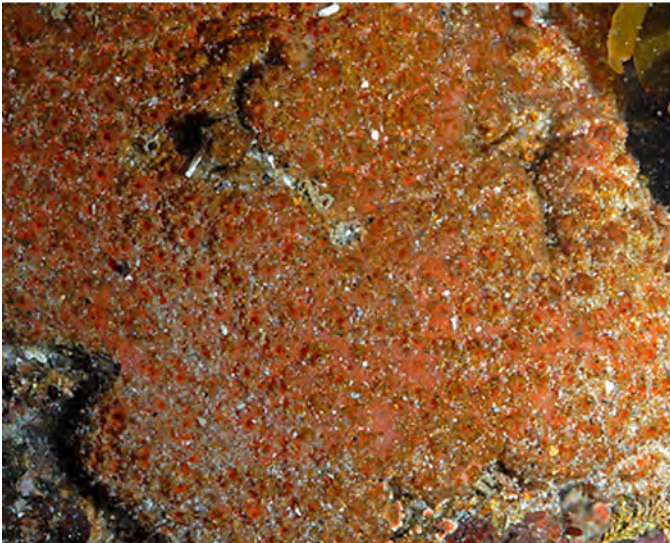


Euherdmania claviformis

Tunic-Band Compound Tunicate

UPC - COMTUN

- Identification: Clumps of elongate, almost transparent lobes. Often covered in film of sand or silt.
- Size: To 4 cm tall, clumps to 10 cm.
- Habitat: On rocks from low intertidal to about 36 ft.
- Sampled: **UPC**



Eudistoma psammion

Sand Tunicate

UPC - COMTUN

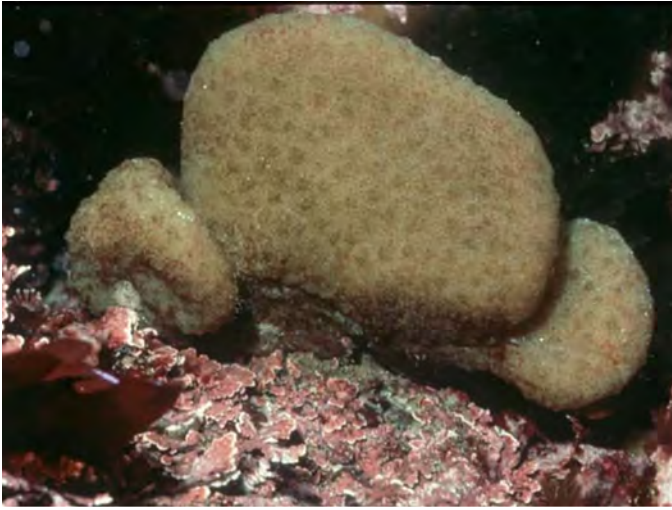
- Identification: Colonies form flat slabs or oval lobes. Zooids arranged in circular systems. Firm and leathery texture. Color varies from dark brown, orange, purple, maroon, to gray.
- Size: Typically 1-2 cm thick, to 20 cm diameter
- Habitat: On rocks, low intertidal to about 60 ft.
- Sampled: **UPC**



Aplidium solidum

UPC - COMTUN

- Identification: Small colonies rounded, large colonies form slabs. Zooids arranged in clusters, thoracic portions red to bright orange.
- Size: To 5 cm thick, 20 cm or more across
- Habitat: On rocks, low intertidal to about 45 ft.
- Sampled: **UPC**



Polyclinum planum

Elephant Ear Tunicate

UPC - COMTUN

- Identification: Ear-like, lobed colony of zooids attached to substrate by slender stalk. Brown to yellow in color
- Size: Lobe diameter to 30 cm
- Habitat: On rocks from low intertidal to about 90 ft
- Sampled: **UPC**

Shark Egg Cases



Cephaloscyllium ventriosum egg

Swell shark egg case

SWATH - CVENEGG

- Identification: Brown to light brown rubbery pouch with wiry tendrils on the corners
- Size: 9-13cm long and 3-6cm wide
- Habitat: On rocks or wound around macroalgae to 120ft
- Sampled: **Swath**



Heterodontus francisci egg

Horn shark egg case

SWATH - HFRAEGG

- Identification: Brown, rubbery auger-shaped. Two flanges spiral around the outside of the egg.
- Size: 10-12cm long and 3-4cm wide.
- Habitat: On bottom often wedged into crevices to about 100ft.
- Sampled: **Swath**

PISCO Training Program

Benthic Surveys

Algae

- 1. All algae sampled during benthic surveys**
- 2. Swath, UPC, and Size Frequency surveys**



PISCO Training Program

The Brown Algae



Macrocystis pyrifera

Giant kelp

SWATH and SIZE - MACPYR (> 1 m)

UPC - MACHOLD



Macrocystis pyrifera

Size: Sporangial thalli to 45 m.

Blades: Up to 80 cm long and 40 cm wide. Mature blades lanceolate and strongly bullate with large pneumatocyst at blade origin.

Holdfasts: Holdfast of old plants are conical and up to 1m tall. New holdfasts produced at regular whorls at base of stipes.

Stipe: Most often dichotomously divided 4 or 5 times at the base.

Abundance: Common

Zone: Subtidal to 20 m.

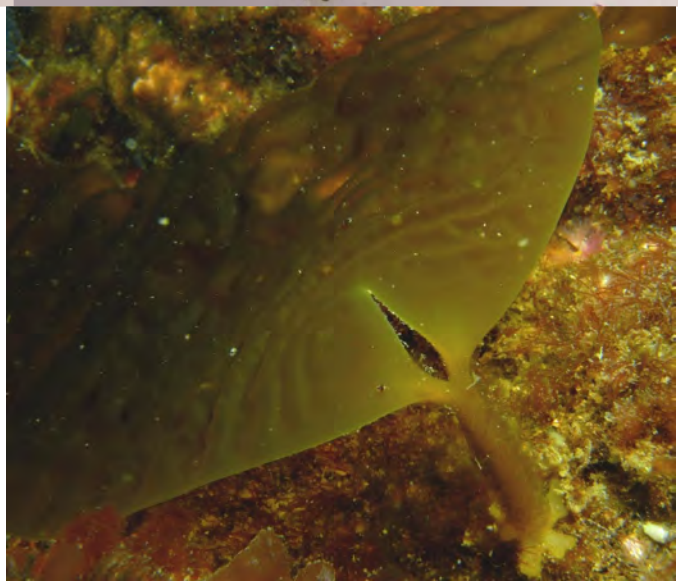
Habitat: On rocky substrata or sometimes anchored in coarse sand or cobble fields.

Distribution: Alaska to Baja California



MACPYR juvenile

- Ruffles at base of blade where blade meets holdfast
- Split develops at base of blade
- No midrib

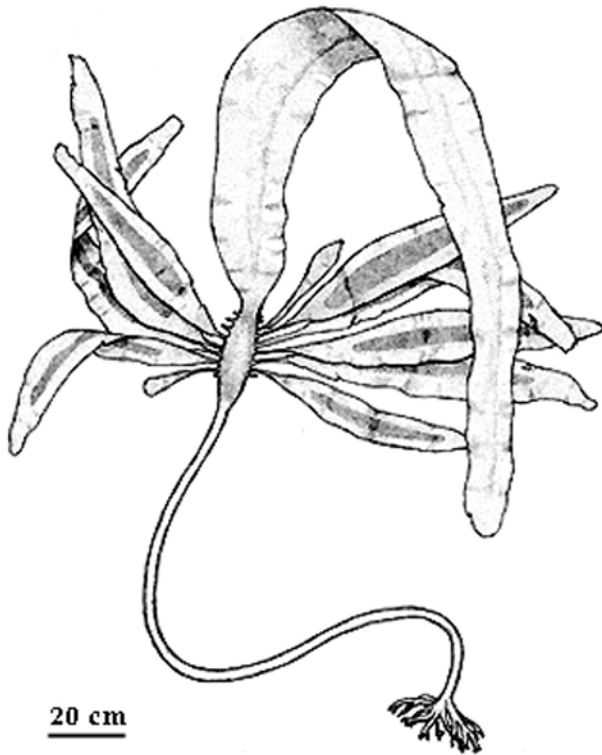


Pterygophora californica

SWATH - PTECAL (total height > 30cm)

SWATH - PTECAL>30 (stipe > 30cm)

UPC - LAMHOLD (holdfast)



Pterygophora californica

Size: Sporangial thalli to 2.3 m long; stipes to 2m long; blade to 4 cm wide

Blades: Single terminal blade (to 80cm long, 10cm broad) has broad, thickened stripe down middle, stipe bears several pinnately arranged sporophylls in the upper portion

Holdfasts: Holdfast of stout, branched haptera

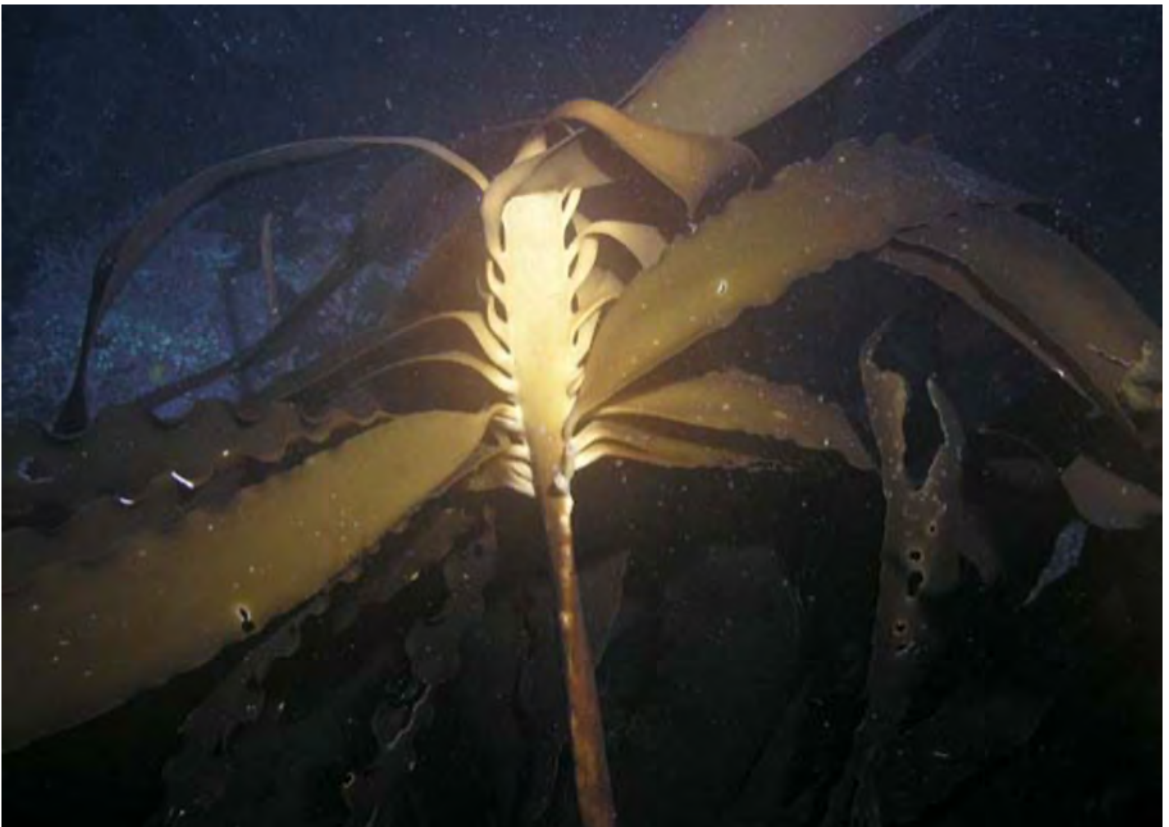
Abundance: Common

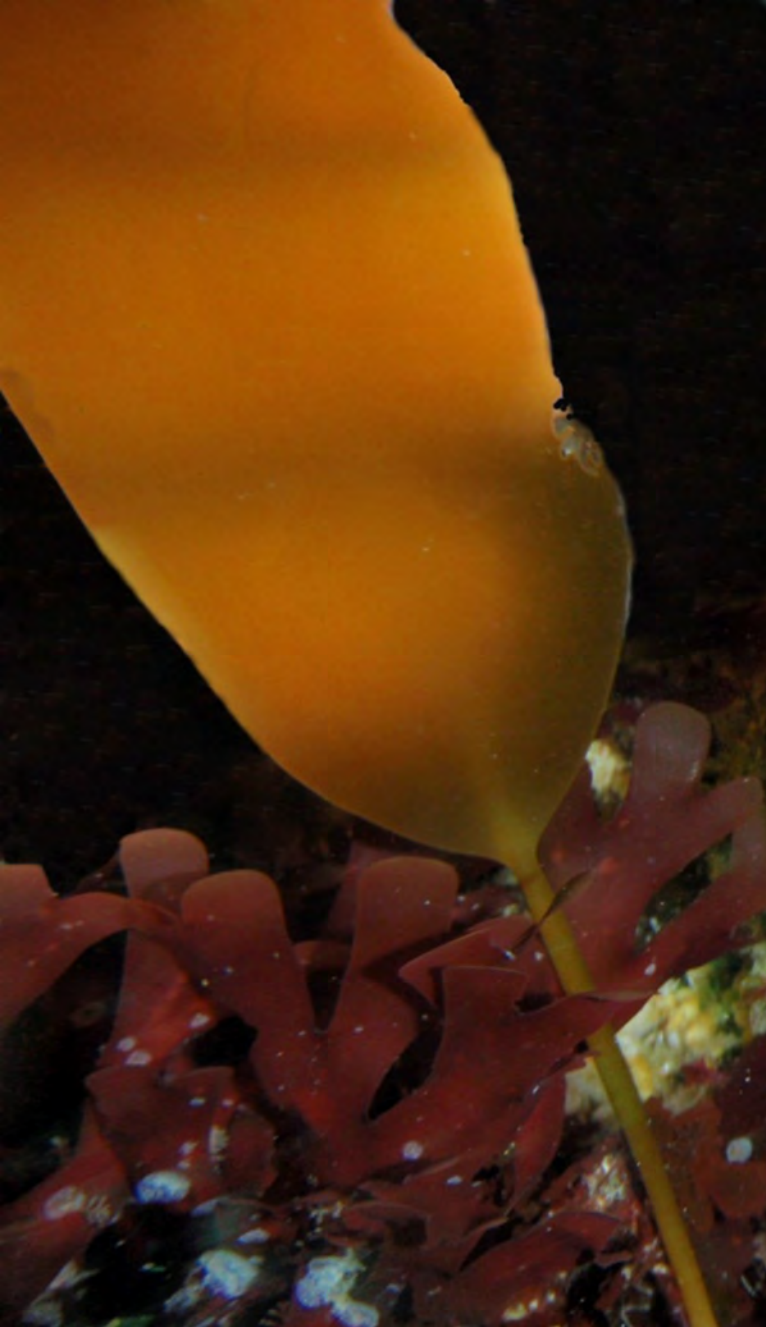
Zone: Lower intertidal to subtidal (24m)

Habitat: Saxicolous; forms beds at 7-20m depth

Eastern Pacific Distribution: Vancouver Is. to Baja CA

SWATH - PTECAL





PTECAL juvenile

- Blade is elongate, narrow, and completely smooth.
- Even when small, a faint, non-elevated midrib is apparent (may need to hold up to the light to see).

Eisenia arborea

Southern Sea Palm

SWATH - EISARB (total height > 30cm)

SWATH - EISARB>30 (stipe > 30cm)

UPC - LAMHOLD (holdfast)



Eisenia arborea

Size: Stipe 1-2 m high; blades to 60 cm long, 5 cm wide

Thalli Colors: Dark brown to blackish, older plants olive

Branching: Stipe branches dichotomously at apex

Blades: Blades leaf-like, linear, tapered at apex, stipitate, deep irregular furrows, toothed along margins with age.

Stipes: Stipe conspicuous, woody, terete at base, upper region flattened and bifurcate, contains mucilage ducts

Holdfasts: Stout, highly branched holdfast

Zone: Low intertidal to subtidal (to 10 m)

Habitat: Saxicolous, forms subtidal groves

Eastern Pacific Distribution: Queen Charlotte Island and west coast of Vancouver Is., British Columbia; California; Baja California, Mexico

SWATH - EISARB

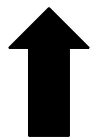




EISARB juvenile

- Blade, or parts of blade are ruffled
- Margins of blade are lined with spikes
- Before the split on the adult plant develops, the single blade develops lateral offshoot blades.

SWATH - EISARB



young
Eisenia

Stephanocystis osmundacea (AKA *Cystoseira osmondacea*)

SWATH - STEOSM (diameter > 6cm)

UPC - STEOSM



Stephanocystis osmundacea

Size: thalli to 8 m tall.

Color: thalli blackish-brown below, light tan

Stipe: Erect, woody, triangular in cross section

Branching: branches radially arranged. Lower branches flattened with slight midrib, 1-1.5 cm broad; upper branches taper and sometimes flat but are mostly cylindrical. Lower thallus persisting and renewing upper thallus, this of distinctly different morphology. Pneumatocysts on upper portion occur on stout alternate branches, singly or catenate (in peapod-like) groups.

Abundance and Zone: occasional on rocks in intertidal, common in subtidal to 10 m

Habitat: often in *Macrocystis* beds

Eastern Pacific Distribution: Seaside, Oregon to Ensenada, Baja California.

Stephanocystis

osmundacea

SWATH - STEOSM (<6cm

UPC - STEOSM





STEOSM juvenile

- Blades just resemble miniature versions of the adult blades, without branching.
- Even at small sizes the blades are thick and robust.

Laminaria spp. – general traits

- single unbranched stipe with single blade that may be torn or split but is not branched
- no ribs or veins
- can be large (over 5m in length)

L. setchellii

- stiff tall stipe (70cm tall), single stipe from each holdfast.
- broad smooth blade that develops numerous longitudinal splits
- low intertidal and shallow subtidal
- entire coast



L. farlowii

- short stipe with broad long ruffled blade
- blades can have a reddish color
- subtidal to 50m
- entire coast



***L. sinclairii* (not common in Channel Islands, mostly intertidal)**

- smaller species (to 1 m tall) with branched, prostrate, distinctive rhizome bearing many erect stipes
- blades 30 cm wide, smooth, linear, and rich dark brown
- common in areas covered by sand, low intertidal

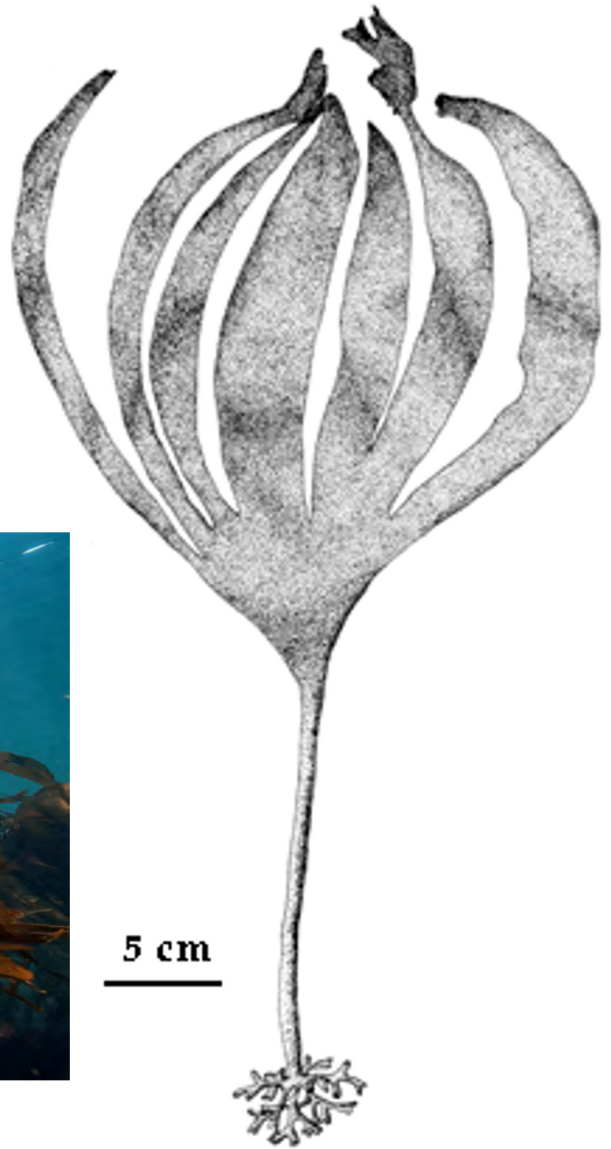


Laminaria setchellii

SWATH - LAMSET (total height > 30cm)

SWATH - LAMSET>30 (stipe > 30cm)

UPC - LAMHOLD (holdfast)



Laminaria setchellii

Size: Thalli to 1.5m long; holdfast 6-8 cm tall; stipe to 3 cm diameter; blade 14-24 cm wide

Blades: Blade ovate, entire, smooth, appearing palmate as a result of equally wide and linear divisions

Holdfasts: Holdfast of branched haptera;

Abundance: Common

Zone: Lower intertidal to upper subtidal

Habitat: Saxicolous; often in groups; prefers moderate exposure

Eastern Pacific Distribution: Eastern Pacific Distribution: Bering Strait to Ensenada, Baja California

LAMSET - SWATH



Laminaria farlowii

Oarweed

SWATH - LAMFAR (width > 10cm)

UPC SUPERLAYER - UNDLAMFAR



Laminaria farlowii

Size: Thalli to 5 m long; stipe 4-6 cm diameter;

Blades: Blade thick, abundantly bullate, relatively deep depressions in longitudinal rows over both sides of blade

Holdfasts: Holdfast of strong, compact, branched haptera;

Stipe: single stipe short, terete, flattening suddenly to single blade

Abundance: Common

Zone: Lower intertidal to subtidal (50m)

Habitat: Saxicolous; often in groups

Eastern Pacific Distribution: B. Columbia to Bahia del Rosario, Baja California

Neoagarum fimbriatum

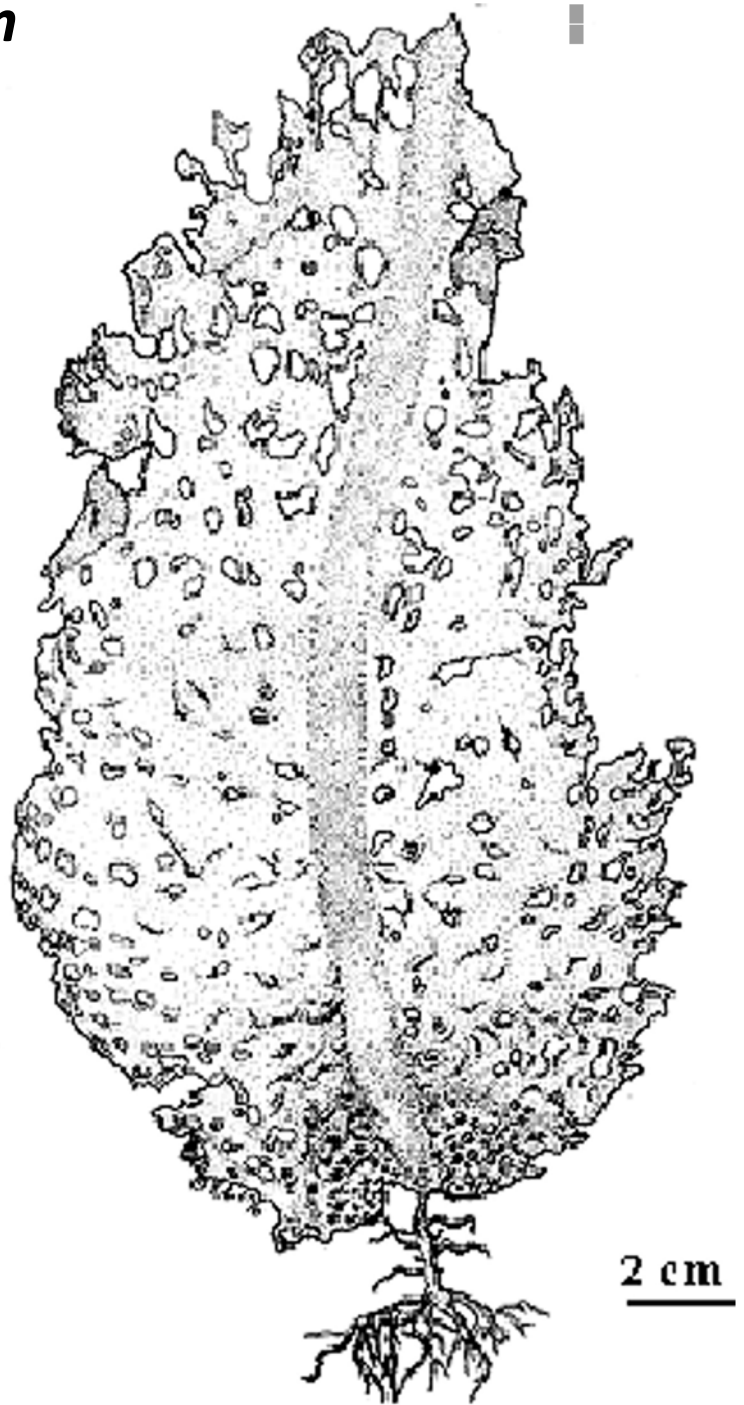
Sea Colander

SWATH - NEOFIM

(width > 10cm)

Former name: *Agarum fimbriatum*

Former code: AGAFIM



Afarum Fimbriatum

Size: Blades of *Agarum* can reach 90 cm (3 feet) in length and 50 cm (20 inches) in width.

Blades: Single, bullate blade. A midrib (1-3cm. wide) arises as a continuation of the stipe.

Holdfasts: Holdfast is composed of numerous haptera.

Stipe: Somewhat flattened with numerous branched fimbriae along margins.

Abundance: Common within range.

Zone: Subtidal

Habitat: On rocks, wood or other algae.

Eastern Pacific Distribution: Duke Island, Alaska, to Puget Sound, Washington; Santa Cruz Island and San Diego, California; Islas Todos Santos, Baja California.

Neoagarum fimbriatum

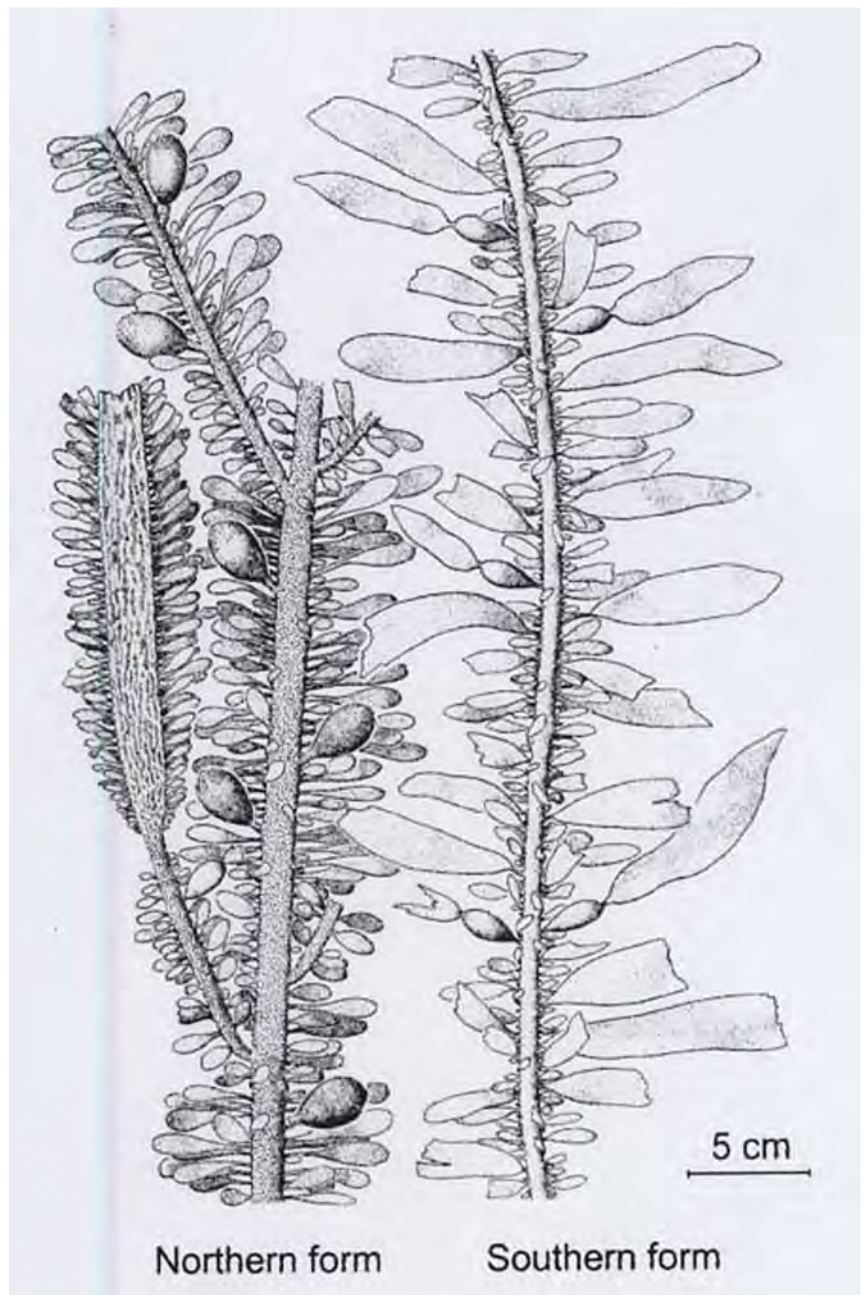
Sea Colander

SWATH - NEOFIM (width > 10cm)



Young NEOFIM

Egregia menziesii
Feather Boa Kelp
UPC - EGRMEN



Egregia menziesii

Size: Thallus 5-15 m long; stipe 1-3.5 cm broad; holdfast 25 cm in diameter; blades to 8 cm long

Thalli Colors: Brown to olive green

Blades: Blade often with tubercles, filiform, stipitate at base

Stipes: Stipe surface smooth or sparsely to densely covered with tubercles

Holdfasts: Conspicuous, branched haptera

Pneumatocysts: Subspherical to ellipsoid; papillae present or absent

Abundance: Common

Zone: Middle intertidal to subtidal (to 20 m)

Habitat: Saxicolous; protected to moderately exposed regions; commonly forms beds

Eastern Pacific Distribution: Queen Charlotte Island, British Columbia to Baja California, Mexico

UPC - EGRMEN





EGRMEN juvenile

- Small individuals have a flat midrib with ruffling blades along it.
- At larger sizes small lateral blades develop with very narrow attachment points along the flat midrib

Desmarestia
ligulata
UPC - DESSPP



Desmarestia ligulata

Size: Thalli to 8 m tall; holdfast 2-4 cm diameter; axes (0.5)1-2.5 cm wide

Branching: branches compressed, second, third, and sometimes fourth-order branches appearing stipitate from veins

Stipes: Stipe flattened

Holdfasts: Holdfast stout, lobed or smooth, conical or flattened, giving rise to a single axis

Abundance: Locally abundant to infrequent

Zone: Low intertidal to subtidal

Habitat: Saxicolous; *D. ligulata* var. *ligulata* often found growing on wood

Eastern Pacific Distribution: Unalaska Island, Alaska to Baja California

Notes: Juvenile plants resemble *D. herbacea* and *D. munda*

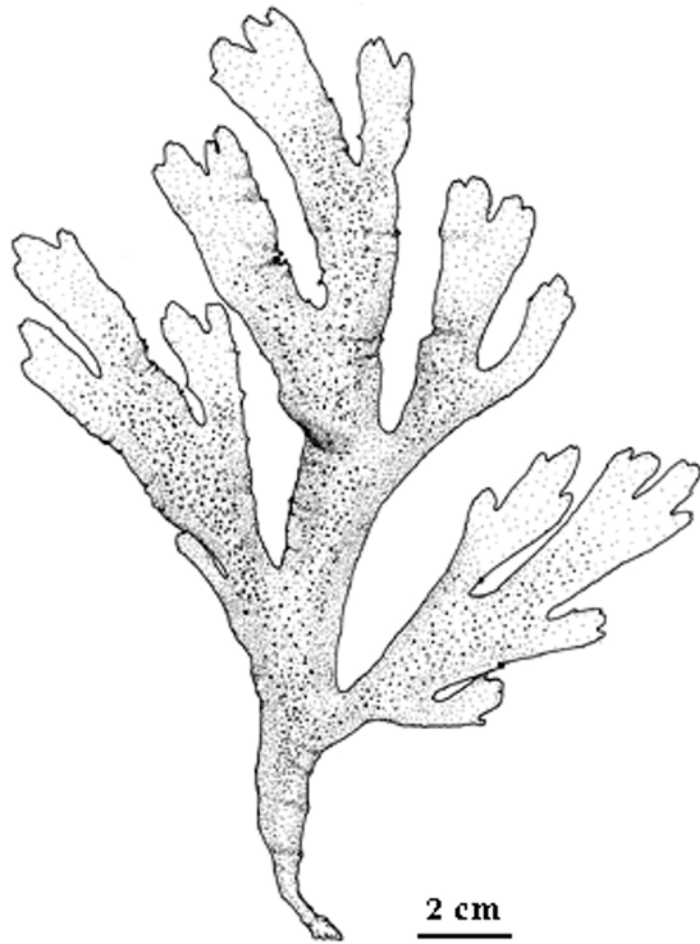
UPC - DESSPP



Dictyota binghamiae

Dictyotales

UPC - DICTALES



Dictyota binghamiae

Size: Thalli 15-25(35) cm tall; branches 1-1.5(2) cm wide

Thalli Colors: Thalli brown, darker below

Branching: Dichotomous branching. Slight to pronounced pinnate branching; branches with single apical cell and unequal growth

Holdfasts: Thalli arise from branching stolans

Abundance: Occasional to locally common

Zone: Usually subtidal (6-9(30) m)

Habitat: Epilithic

Eastern Pacific Distribution: Queen Charlotte Island, British Columbia to Central Baja California

Notes: Especially common in Monterey region

UPC - DICTALES



Zonaria spp.

UPC - ZONSPP

- Exhibit a characteristic semi-circular growth pattern which produces distinct alternating patterns of darker and lighter tissue akin to tree rings



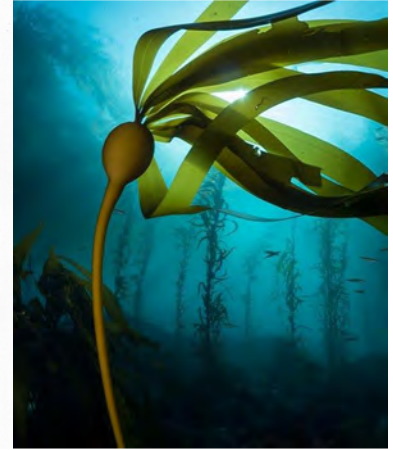
Other kelps we do not commonly observe in our region but will count if encountered:

Nereocystis leutkeana

Bull kelp

SWATH - NERLUE

(>1m stipe)

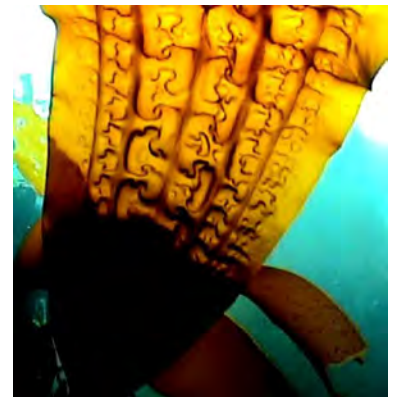


Costaria costata

Five-Ribbed Kelp

SWATH - COSCOS

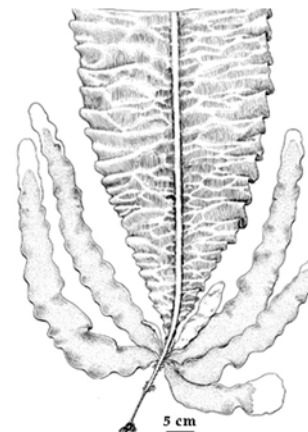
(width > 10cm)

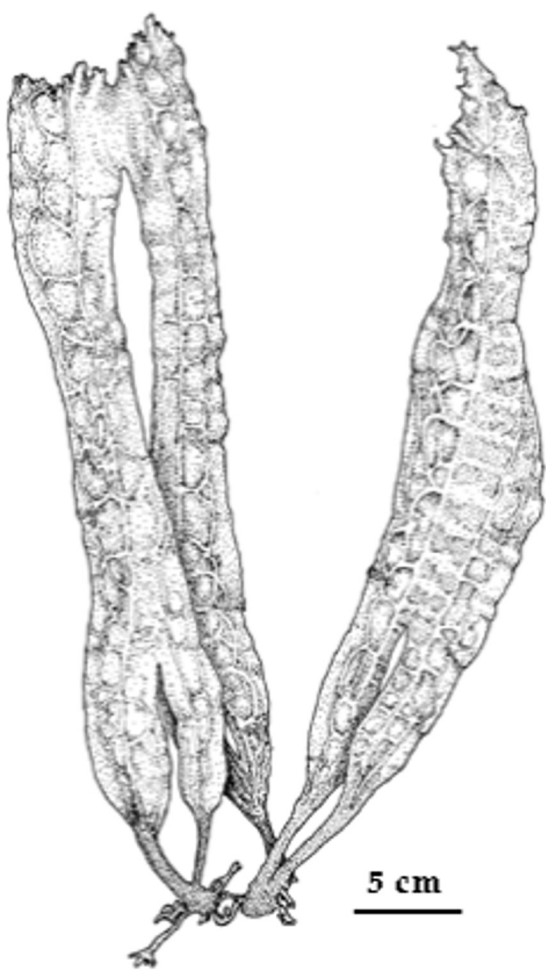


Alaria marginata

Winged kelp

SWATH - ALAMAR (all sizes)





Dictyoneurum californicum

DICSPP - UPC

Dictyoneurum californicum

Size: Thalli 0.5-2 (4) m tall; blades 4-8 cm wide

Thalli Colors: Light to dark yellowish-brown

Branching: Dichotomous branching of stipe

Blades: Blades linear, tapering at both ends; may or may not have marginal denticulations; surface reticulations rectangular, longitudinal; upward splitting of blade into two blades common

Stipe: Flattened, prostrate, 2-3 dichotomies

Holdfasts: Forked haptera

Abundance: Locally frequent

Zone: Low intertidal to subtidal (to 10 m)

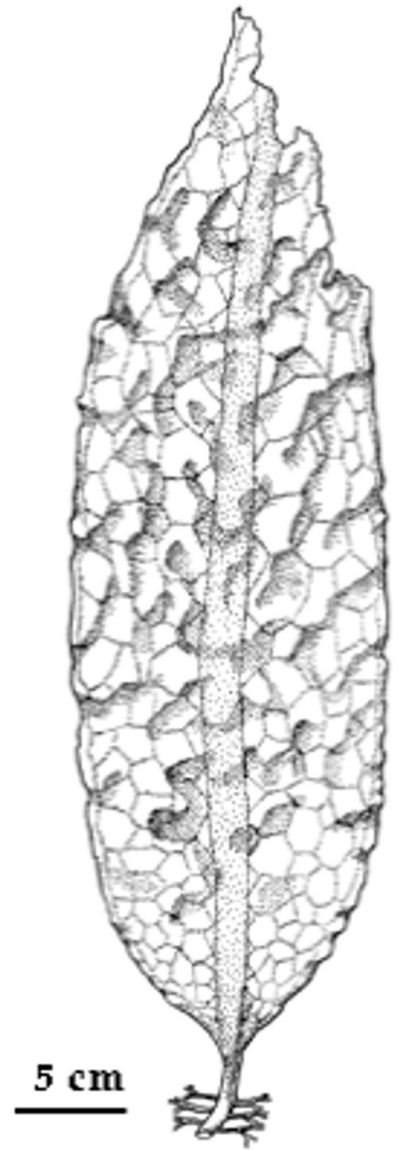
Habitat: Saxicolous, mostly exposed to surf

Eastern Pacific Distribution: Southern British Columbia to Channel Islands, California



Dictyoneurum reticulatum

DICSPP - UPC



Dictyoneuropsis reticulata

Size: Thallus to 95 cm tall; blade to 15-25 cm wide

Thalli Colors: Yellowish-brown

Branching: Stipe with up to three dichotomies

Blades: Blade linear, bullate, slightly narrower at apex, broadly rounded at base; midrib

Stipes: Stipitate; decumbent portion flattened with branched haptera along lateral margins.

Holdfasts: Fibrous haptera

Abundance: Infrequent

Zone: Low intertidal to subtidal (to 20 m)

Habitat: Saxicolous, in sheltered areas

Eastern Pacific Distribution: Southern British Columbia; Oregon; central California to Channel Islands, California



Undaria pinnatifida

Asian kelp

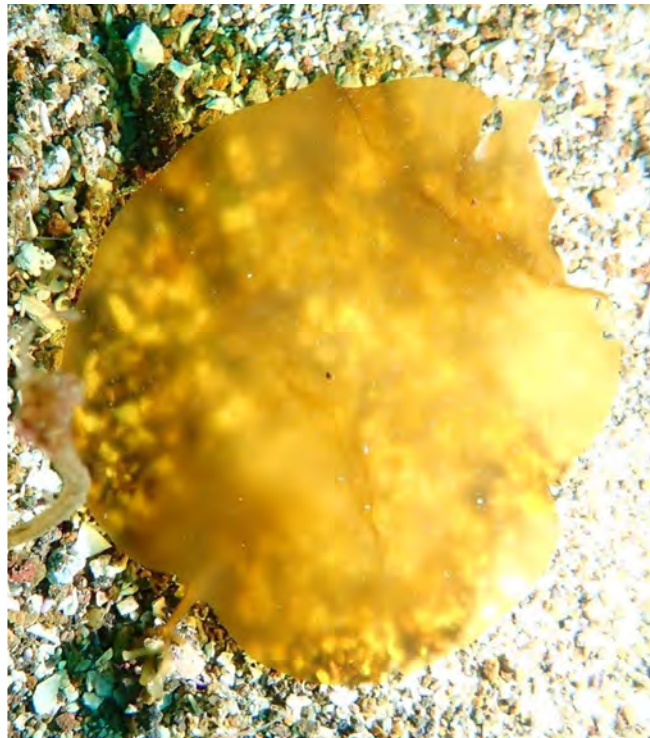
SWATH - UNDPIN

UPC - UNDPIN



UND PIN juvenile

- Blades are thin and delicate with darker speckling.
- At larger sizes the midrib becomes apparent.
- At larger size some lateral projections develop at the base of the blade



Sargassum muticum

UPC - SARMUT



Sargassum muticum

Size: Thalli to 2m tall

Branching: Main branches arise from basal 5cm of plant. Intricate, bushy thallus. Leaves linear-lanceolate in basal portion of stipe, leaves of upper stipe narrow. Pneumatocysts in clusters or single (look like beads) in leaf axils.

Holdfasts: Felty, fibrous holdfast

Abundance: Locally abundant

Zone: Low intertidal to subtidal (to 5 m),

Habitat: in quiet water

Eastern Pacific Distribution: Nanaimo, British Columbia to San Diego, California

Sargassum muticum
UPC - SARMUT



Sargassum horneri

UPC - SARHOR



Sargassum filicinum / *horneri*

Size: 1m+

Branching: The young plants have flat, symmetrical (fern-like) fronds with a notched tip. Older specimens are loosely branched, with small oval bladders and long, finger-like receptacles. Look for the zigzag shape of the frond—it is unique to the species

Abundance: Locally rare but invasive and may be increasing in abundance in the Channel Islands.

Eastern Pacific Distribution: NON-NATIVE, native to Asia. First seen in California in 2003.

Sargassum horneri

UPC - SARHOR



NOTE THE SPINES ALONG THE STEMS



SARHOR juvenile

-Each stipe has alternating blades that stick out in a single plane



SARMUT juvenile

-Blades are elongate and narrow and stick out in all directions.

UPC - BROWN

Any small brown algae that we do not identify to another grouping

Examples: *Colpomenia*, *Leathesia*



Leathesia

Colpomenia



Hydroclathrus clathratus



LAMHOLD = living holdfast of a Laminariales
other than MACPYR

MACHOLD = living holdfast of MACPYR

DEADHOLD = dead holdfast of any Laminariales
including MACPYR

UNDLAMFAR = superlayer of **LAMFAR** blade

UNDDRIFT = superlayer of drift algae (algae not
attached to bottom)

If you land on a blade of Laminariales (EISARB,
PTECAL, etc.) ignore it and go under it

THE REDS



UPC RED CATEGORIES...

- **BRANCH:** branching flat blade.
 - Any alga that has branching, compressed blades that are flat in cross section and roughly 1 cm or greater across. Branching should show a repeating pattern to be distinguished from tearing.
 - **Examples:** *Cryptopleura*, *Hymenena*, *Botryoglossum*, *Faucheia*, *Rhodoglossum*, *Prionitis lyallii*.
- **BUSHY:** cylindrical branches.
 - Any alga that has cylindrical to subcylindrical branching thalli. Thalli are not flat in cross section but if so are less than 1 cm across.
 - **Examples:** *Gelidium*, *Pterocladia*, *Gastroclonium*, *Gracilaria*, *Chondracanthus canaliculatus*, *Laurencia* (now *Osmundia*).
- **LEAFY:** leafy blade.
 - Any alga that consists of single or multiple blades that have entire margins and do not branch past the basal portions. Can be torn but will not be in a repeating pattern.
 - **Examples:** *Gigartina*, *Mazaella*, *Halymenia*, *Schizymenia*.
- **LACY:** filamentous/dense.
 - Any alga that is filamentous or finely, densely branched. Branches are too small to isolate by hand.
 - **Examples:** *Plocamium*, *Microcladia*, *Polysiphonia*, *Ceramium*, *Neoptilota*.
- **TURF:** Turflike red mats
 - Any alga that covers an area of rock, like a lawn, and stands 2cm tall or less.
 - **Examples:** Egg-laying sites maintained by male Garibaldi
- **ENCRED:** Encrusting red
 - Any alga that covers an area of rock, flat, without any three-dimensional growth. Dark red in color (as opposed to crustose coralline algae).
 - **Examples:** *Hildenbrandia*

UPC - BRANCH



- Branching, compressed blades that are **FLAT** in cross section and roughly 1 cm or greater across.
- Branching should show a repeating pattern to be distinguished from tearing.



UPC - BRANCH



UPC - BRANCH

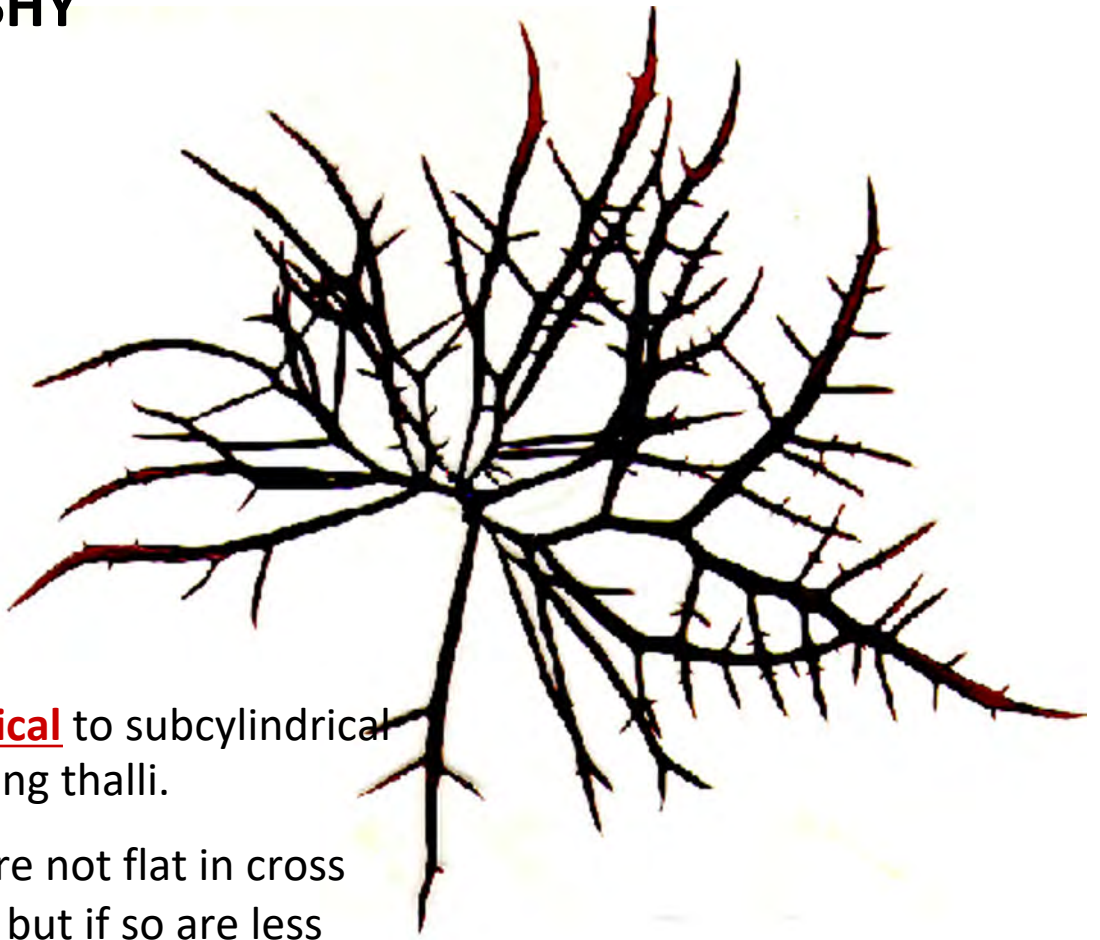




UPC - BRANCH
branching flat
blade.

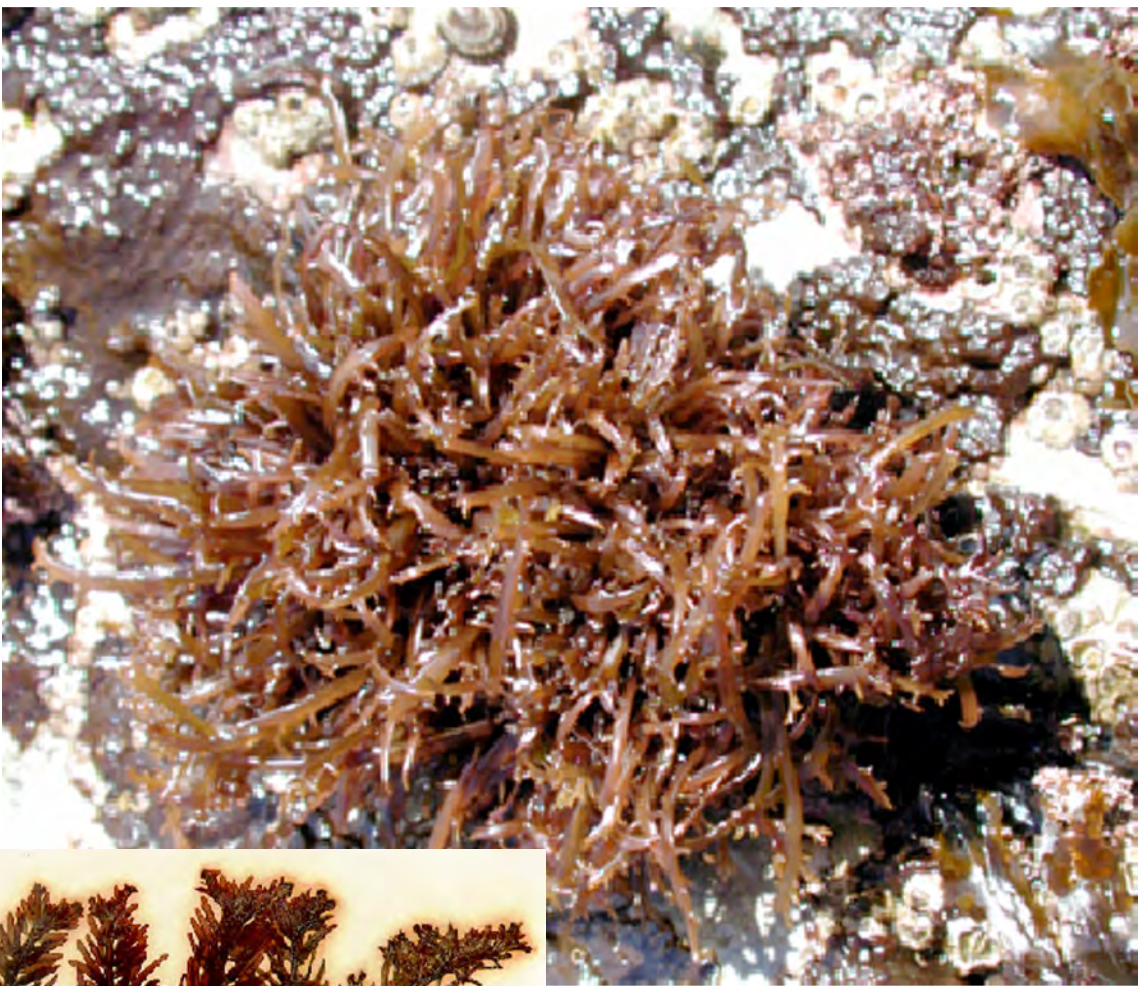


UPC - BUSHY



- Cylindrical to subcylindrical branching thalli.
- Thalli are not flat in cross section but if so are less than 1 cm across.





UPC - BUSHY

UPC - BUSHY

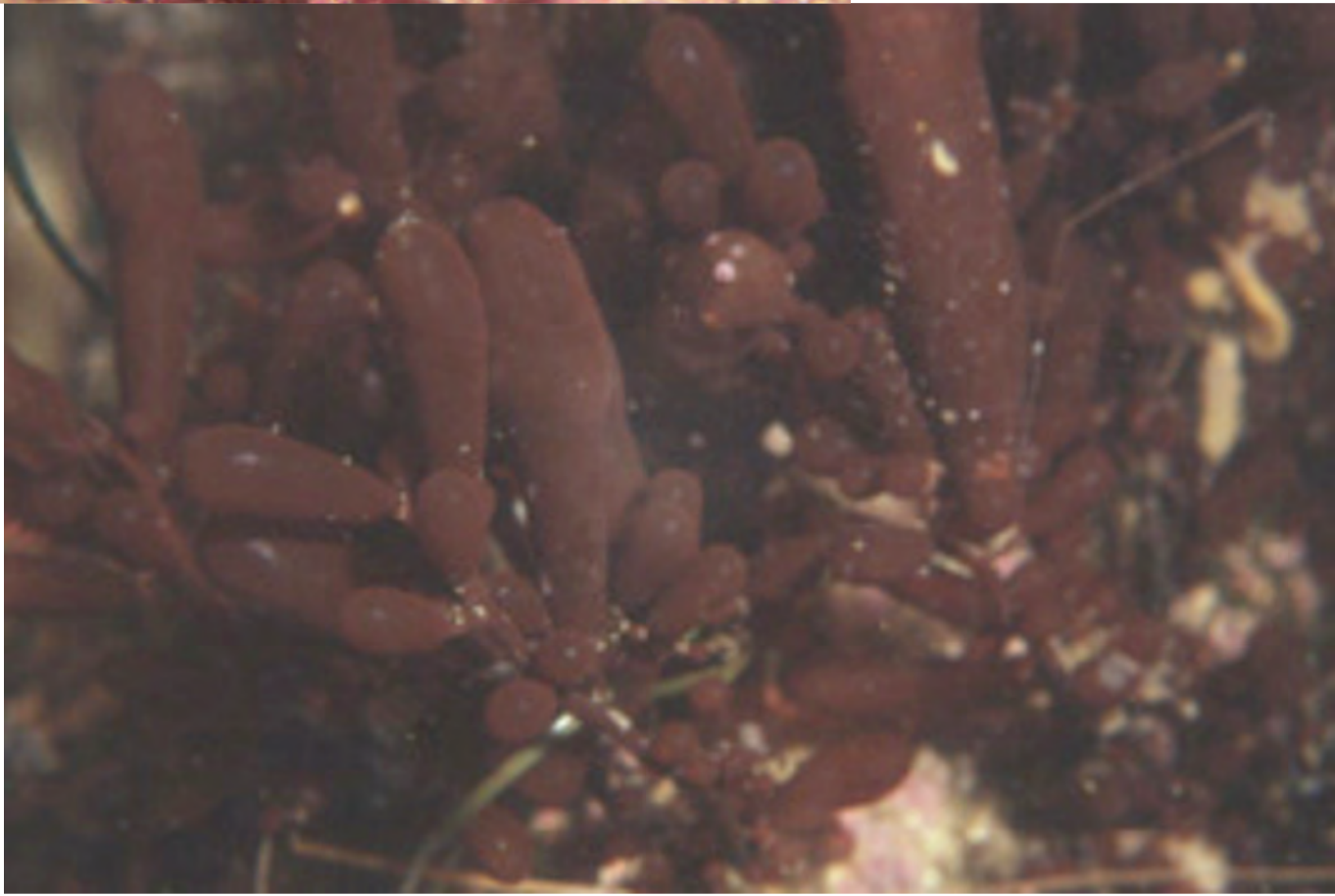


UPC - BUSHY





UPC - BUSHY
cylindrical branches

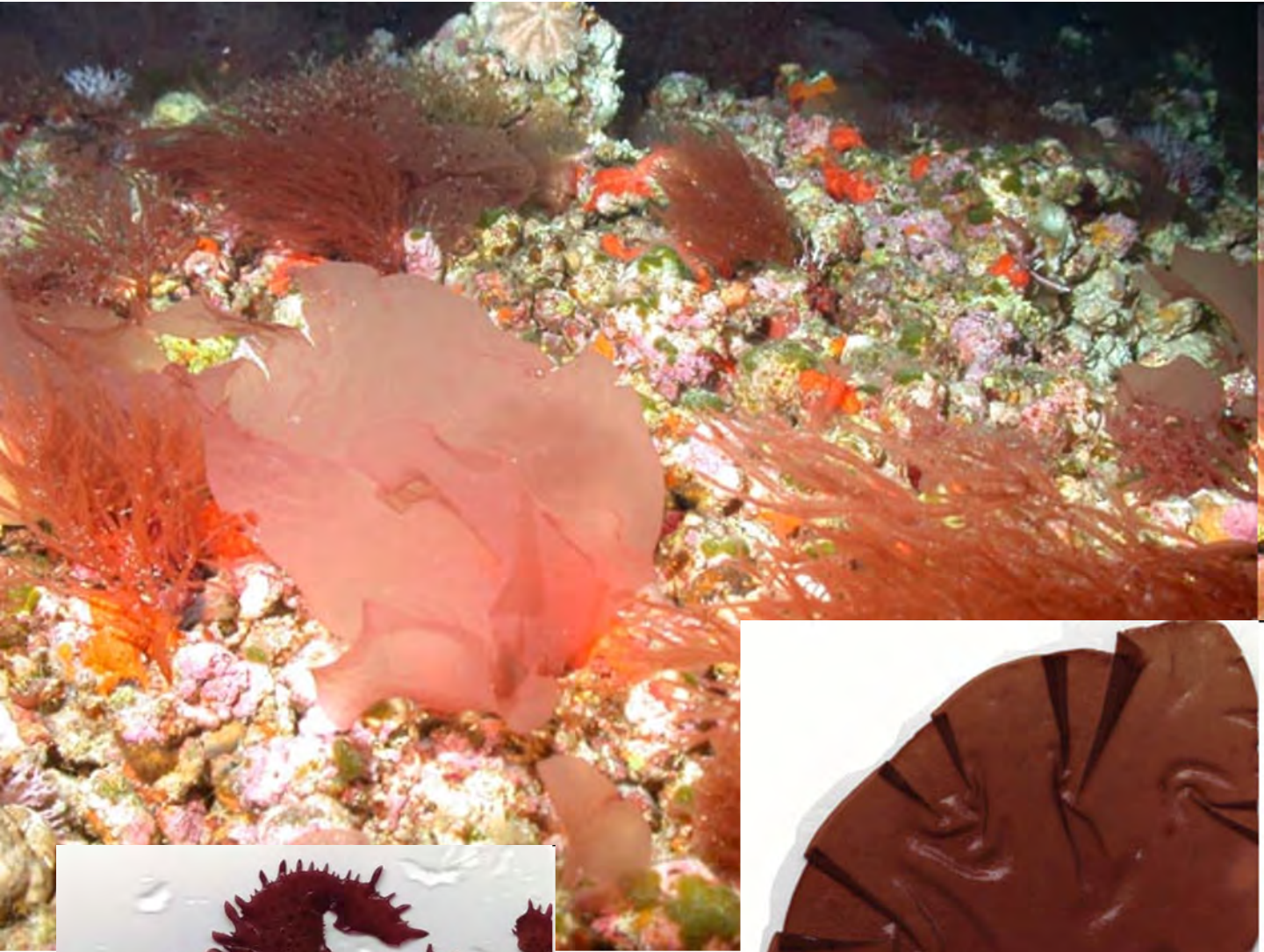


UPC - LEAFY

- Consists of single or multiple blades that have entire margins and do not branch past the basal portions.
- Can be torn but will not be in a repeating pattern.
- Cross section is **FLAT** and there is **NO BRANCHING**



UPC - LEAFY



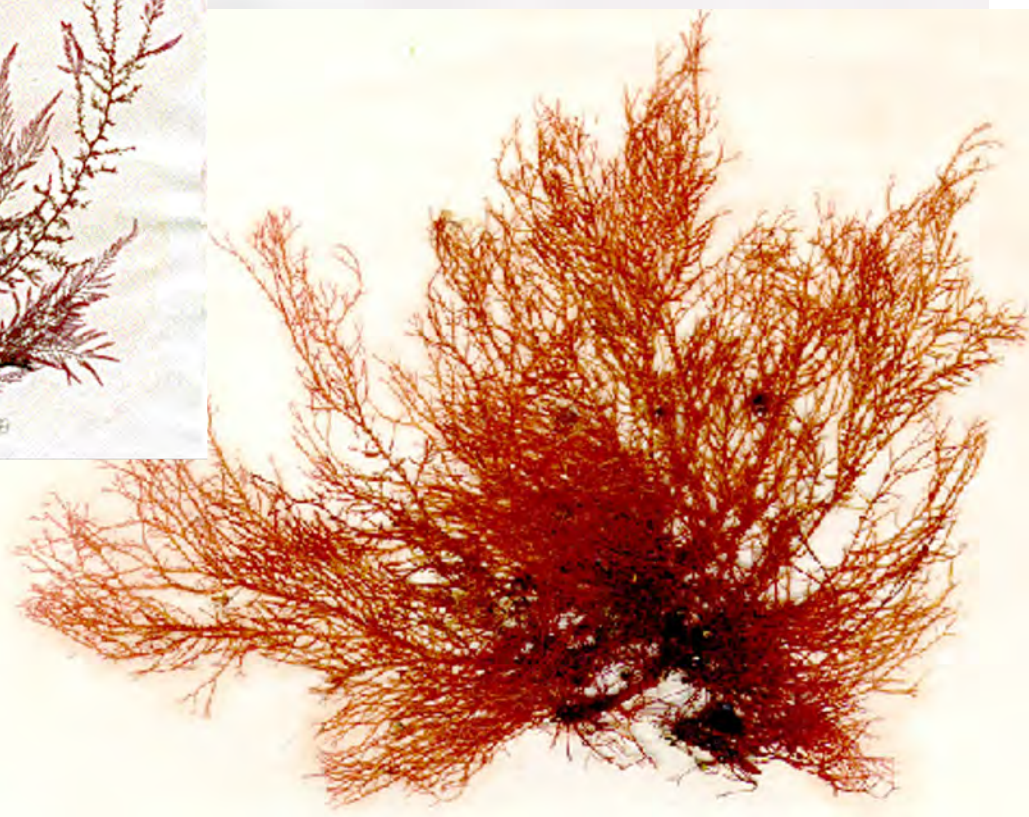
UPC - LACY



- **Filamentous or finely, densely** branched.
- Branches are too small to isolate by hand.



UPC - LACY



UPC - LACY

filamentous/dens
e



Turfy red algae

UPC - TURF



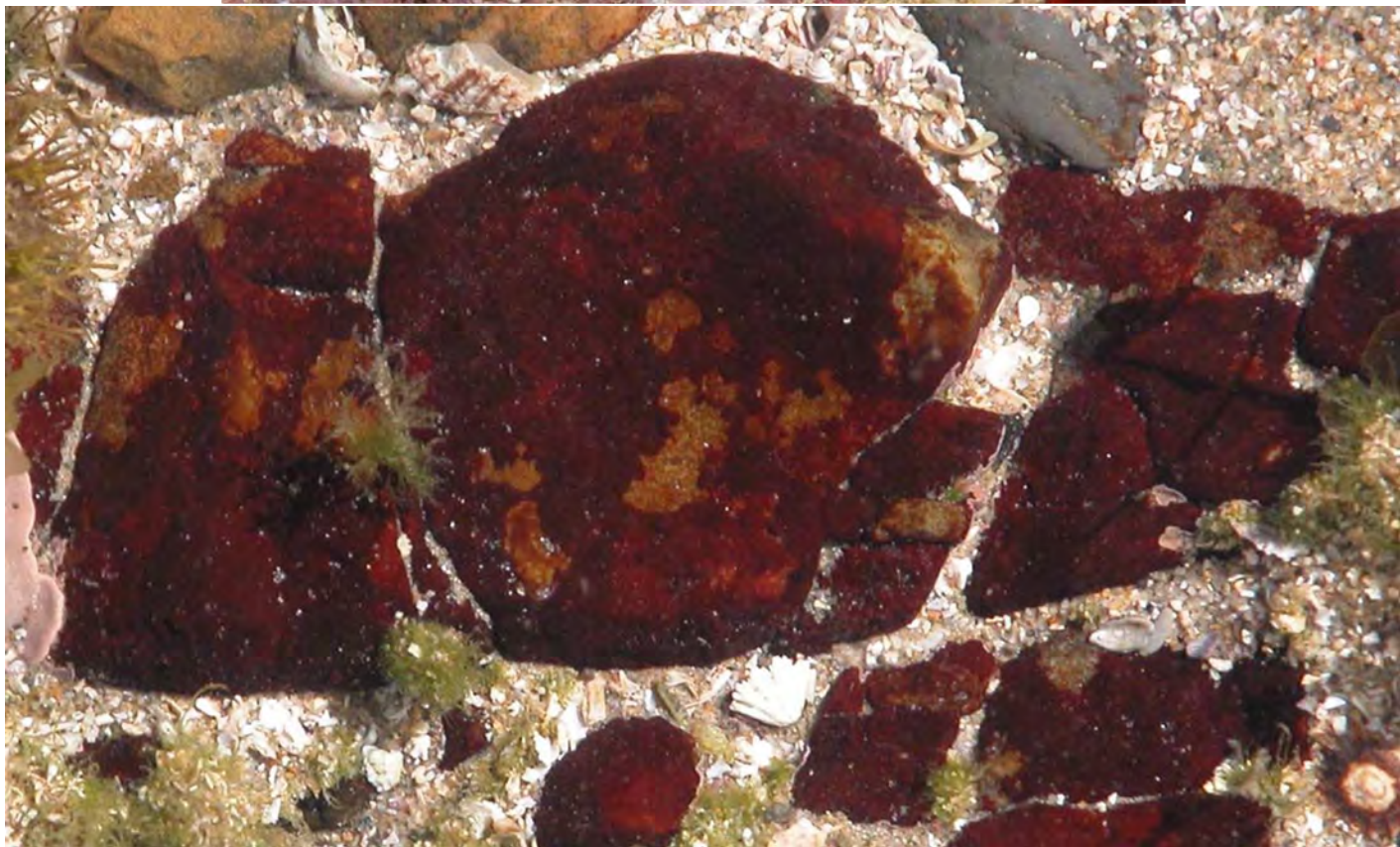
- Mat of filamentous red algae that covers an area of rock, like a lawn, and is less than 2cm tall.
- If greater than 2cm tall THEN = LACY



Encrusting Red Algae

UPC - ENCREC

- Covers an area of rock, flat, without any three-dimensional growth. Dark red in color, and you can scratch it off of rock as opposed to crustose coralline algae

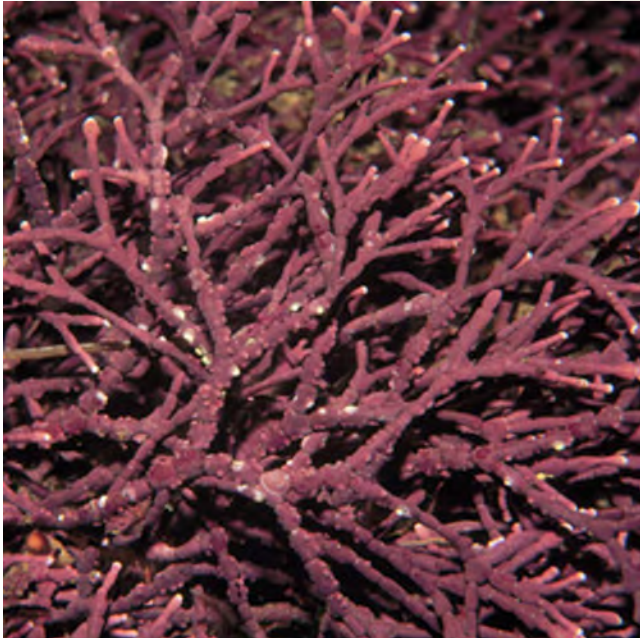


UPC RED CATEGORIES...

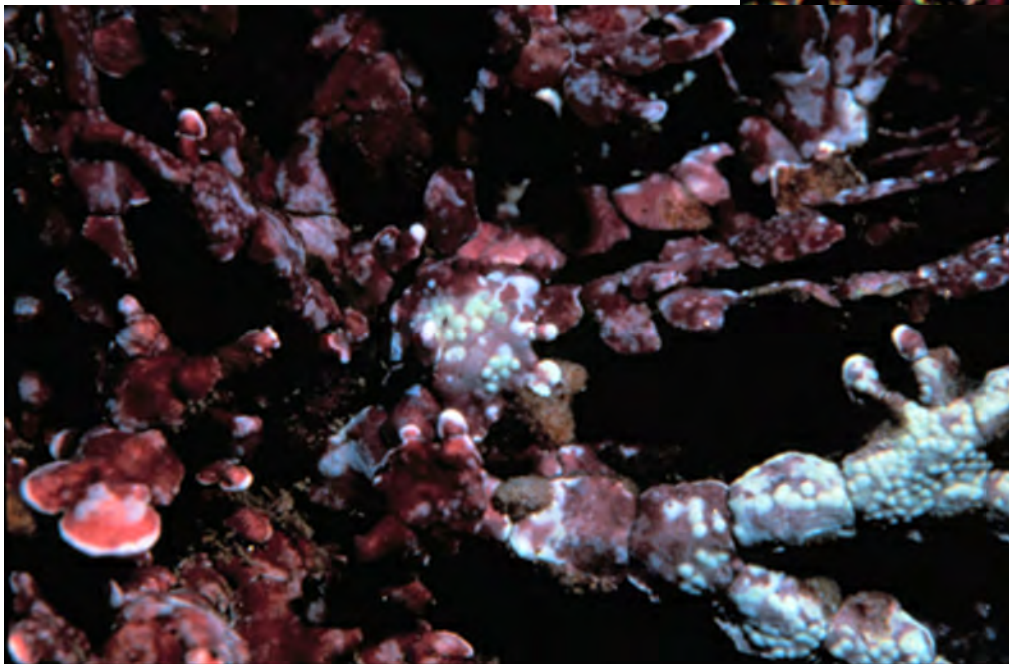
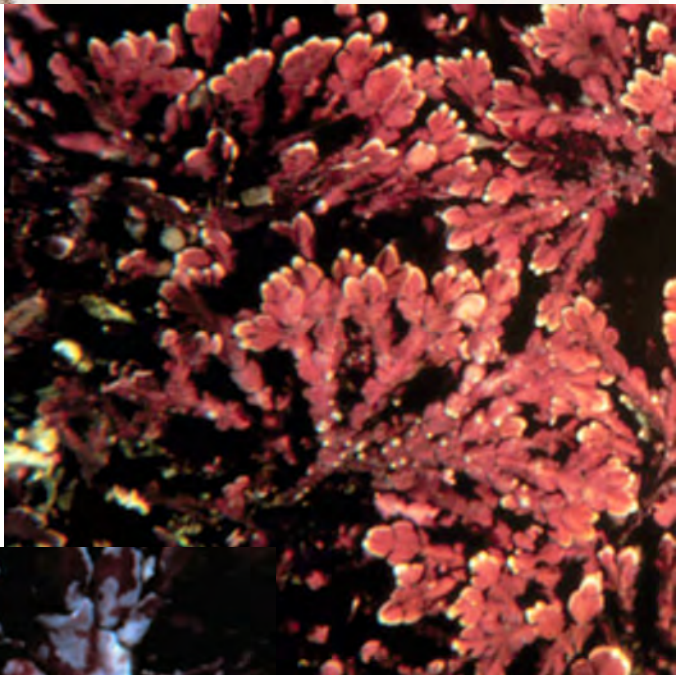
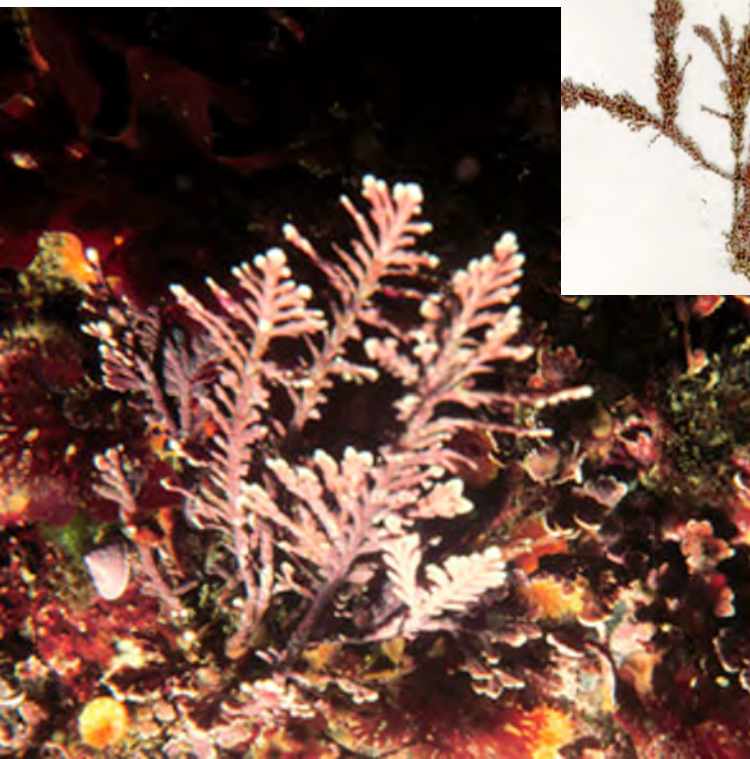
- **BRANCH:** branching flat blade.
 - Any alga that has branching, compressed blades that are flat in cross section and roughly 1 cm or greater across. Branching should show a repeating pattern to be distinguished from tearing.
 - **Examples:** *Cryptopleura*, *Hymenena*, *Botryoglossum*, *Faucheia*, *Rhodoglossum*, *Prionitis lyallii*.
- **BUSHY:** cylindrical branches.
 - Any alga that has cylindrical to subcylindrical branching thalli. Thalli are not flat in cross section but if so are less than 1 cm across.
 - **Examples:** *Gelidium*, *Pterocladia*, *Gastroclonium*, *Gracilaria*, *Chondracanthus canaliculatus*, *Laurencia* (now *Osmundia*).
- **LEAFY:** leafy blade.
 - Any alga that consists of single or multiple blades that have entire margins and do not branch past the basal portions. Can be torn but will not be in a repeating pattern.
 - **Examples:** *Gigartina*, *Mazaella*, *Halymenia*, *Schizymenia*.
- **LACY:** filamentous/dense.
 - Any alga that is filamentous or finely, densely branched. Branches are too small to isolate by hand.
 - **Examples:** *Plocamium*, *Microcladia*, *Polysiphonia*, *Ceramium*, *Neoptilota*.
- **TURF:** Turflike red mats
 - Any alga that covers an area of rock, like a lawn, and stands 2cm tall or less.
 - **Examples:** Egg-laying sites maintained by male Garibaldi
- **ENCRED:** Encrusting red
 - Any alga that covers an area of rock, flat, without any three-dimensional growth. Dark red in color (as opposed to crustose coralline algae).
 - **Examples:** *Hildenbrandia*

Erect Coralline Algae

UPC - ERECOR



UPC - ERECOR



Crustous Coralline Algae

UPC - CRUCOR



THE GREENS

UPC - GREEN

Dead Man's Fingers (*Codium fragile*)



Green Cushion Algae
(*Codium setchellii*)



Sea Lettuce (*Ulva spp.*)



THE FLOWERING PLANTS



Phyllospadix scouleri/torreyi

Surfgrass

UPC - PHYSPP



Phyllospadix spp.

Color: Emerald green

Abundance: abundant intertidally, forming extensive emerald green masses near mean low tide

Zone: Low intertidal to 6 m

Habitat: along open coast

Eastern Pacific Distribution: entire coast



***Phyllospadix* spp.**

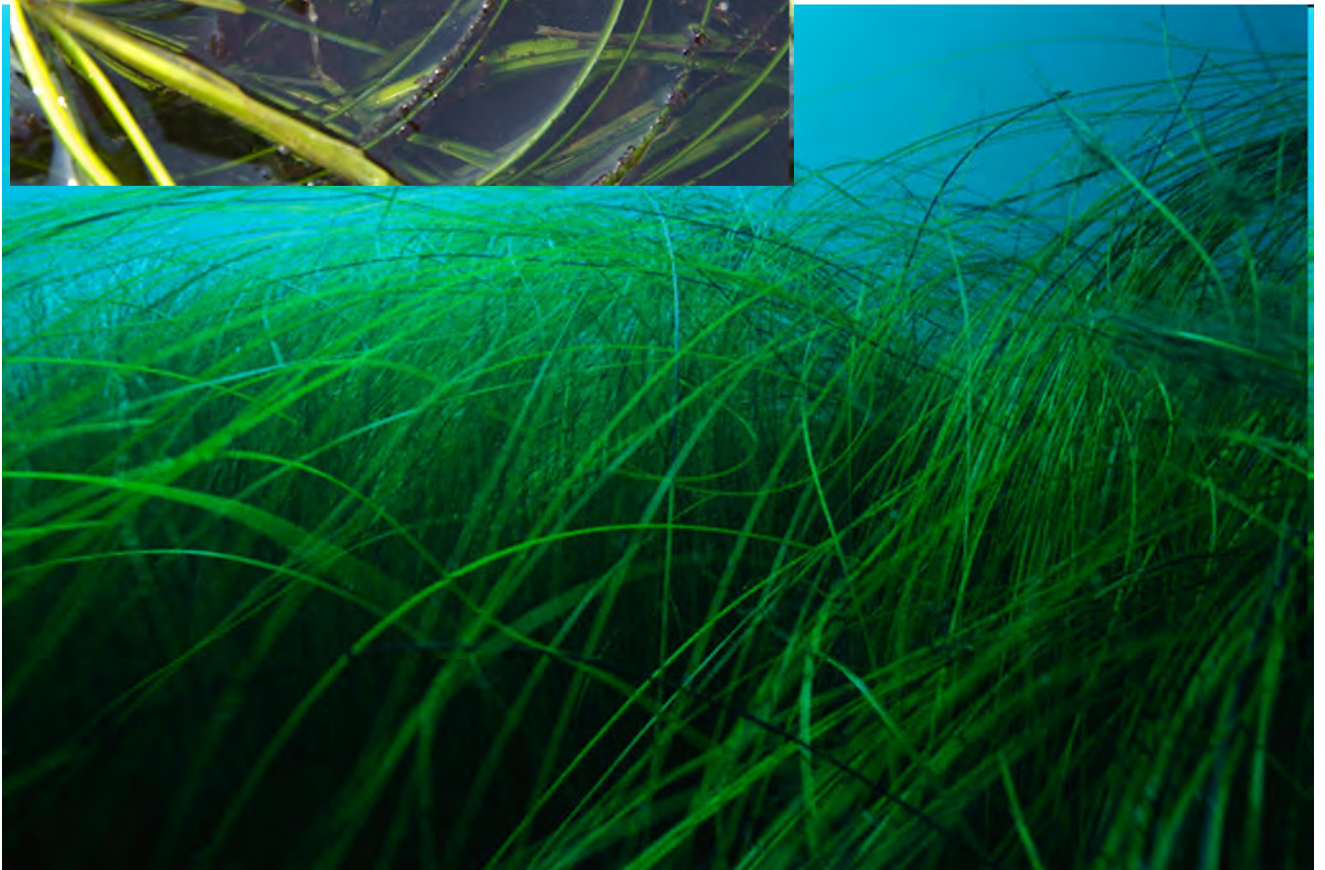
UPC - PHYSPP

P. torreyi (Torrey's surf grass)

- narrow (1-2 mm) somewhat wiry leaves that are elliptical in cross section
- have long, flowering stems bearing several spicules
- most common in protected sandy areas

P. scouleri (Scouler's surf grass)

- broad (2- 4 mm) flat leaves
- have short, basal flowering stems bearing only one or two spicules
- most abundant attached to rocks in areas of heavy surf



Zostera marina

UPC - ZOSMAR

Eel grass



Zostera marina

Eel grass

Flowering plant

Size: Blades ~ 1 cm across

Color: dull light green blades to grass green

Abundance: often form extensive beds

Zone: Low intertidal to 6 m or more (30 m)

Habitat: usually quiet waters on tidal mud flats and in bays & estuaries, also on stretches of sand on open coast (Goleta pipeline; Prisoners Harbor, SCI)

Eastern Pacific Distribution: Oregon Border to San Diego, CA

Juvenile Brown Algae



MACPYR juvenile



PTECAL juvenile



EISARB juvenile



STEOSM juvenile



UNDPIN juvenile



EGRMEN juvenile



SARHOR juvenile

-Each stipe has alternating blades that stick out in a single plane



SARMUT juvenile

-Blades are elongate and narrow and stick out in all directions.

COMMON FISHES OF CALIFORNIA

Part 1 of 2

Updated May 2024



Blue Rockfish - SMYS

Sebastes mystinus



- 2 prominent cheek bars and bluish stripes across the front of their head; blue to black body with light gray or white blotches, dark fins; anal fin slanted
- **Juveniles** have a weak spiny dorsal fin spot and are covered with with red and blue vermiculations; fins are dark
- Size: to 39cm ; Depth: 0-512'
- Common from northern Baja to Canada
- North of Conception mixes mostly with Olive and Black R.F.; South with Blacksmith, Kelp Bass, Halfmoons and Olive R.F.
- Smaller mouth, more uniform grey-black spots and white belly than Black or Dark R.F. In low visibility juveniles can look like Widow R.F. but aren't as streamline and don't have saddles on its back.



Olive/Yellowtail Rockfish – OYT

Sebastes serranoides/flavidus



- Several pale spots below dorsal fins; fins greenish brown to yellow; relatively streamline species with reduced head spines
- **Juveniles** are elongated with a series of dark saddles and white blotches on its back; there's a large black spot on posterior part of its spiny dorsal fin
- Size: to 61cm; Depth: 0-564'
- Olive R.F. are common south of Point Conception to Baja; rare north of Conception
- Yellowtail R.F. is a similar species are rare south of Conception, while being common north
- Juveniles have larger saddles and white blotches on its back, have a prominent dark spot on the spiny dorsal fin and the fins are orange-yellow colored than Black R.F.



Kelp Rockfish - SATR

Sebastes atrovirens



- Tan to brown to greenish brown body; Can change color and markings to blend with surroundings. They are thin, fairly oval fish with relatively sharp snout and large eyes.
- **Juveniles** have 5 gold or brown vertical bars over a clear, white, or pale-gold background. The 4th bar on kelp rockfish YOY is “Y” shaped.
- Size: to 43cm; Depth: 8-269'
- Common southern and central California
- Inhabits kelp beds, rocky reefs.
- Also known as “Dumb Bass”. Juveniles less than 10cm cannot be differentiated from Black and Yellow, Copper or Kelp R.F. Use group code KGB to record them. Once larger than 10cm the generic adult body forms.



Black and Yellow Rockfish - **SCHR**

Sebastes chrysomelas



- Yellow blotches of black/olive brown body; Yellow membrane between third and fourth dorsal spines.
- **Juveniles** have gold or brown vertical bars over a clear, white, or pale gold background with yellow fins.
- Size: to 38.7cm; Depth: 0-120'
- Common central to Southern California
- Inhabits rocky areas/crevices
- Juveniles less than 10cm cannot be differentiated from Gopher, Copper or Kelp R.F. Use code KGB to identify. Juveniles also can look similar to China R.F. but don't have a thick prominent yellow "Y" pigment originating at the top of the nape.



Gopher Rockfish - SCAR

Sebastes carnatus



- Several small white blotches on back; Pale blotch extends from dorsal spine onto back
- **Juveniles** have 5 gold or brown vertical bars over a clear, white, or pale-gold background.
- Size: to 43cm; Depth: 8-282'
- Common central California. Inhabits rocky areas/crevice and is generally territorial.
- Juveniles less than 10cm cannot be differentiated from Black and Yellow, Copper or Kelp R.F. Use group code KGB to record them. Once larger the brownish bars stay that color unlike Black and Yellow R.F. Also the lateral line isn't as defined as the Copper R.F.



Copper Rockfish - SCAU

Sebastes caurinus



- Wide deep bodied, light stripe runs along rear half on lateral line. Have high dorsal fin and relatively sharp snout. Body colors varies: Copper/orange to a more greenish brown
- **Juveniles** have 5 gold or brown vertical bars over a clear, white, or pale-gold background.
- Size: to 66cm; Depth: 0-1,338'
- Common from northern Baja to Canada
- Inhabits rocky reefs, kelpbeds, or other protected areas
- Juveniles less than 10cm cannot be differentiated from Black and Yellow, Copper or Kelp R.F. Use group code KGB to record them. Once larger than 10cm a light-colored lateral line develops.



Brown Rockfish - SAUR

Sebastes auriculatus



- Medium-heavy bodied with a spiny head.
- Dark blotch on rear gill cover; brown to orange-brown body; eye often has a red to orange cast.
- **Juveniles** have similar markings to adults.
- Size: to 56cm; Depth: 0-964'
- Common up and down California's rocky reefs
- Inhabits rocky areas/crevices; known to be solitary bottom dwellers; also called Bolinas
- Grass R.F. are similarly shaped, but tend to be more greenish-brown and lack the dark spot on the rear of the gill cover.



Grass Rockfish - **SRAS**

Sebastes rastrelliger



- Green with gray to black body; short, stout body and rounded snouts. Eyes are relatively small and tend to have a thin yellowish rim.
- **Juveniles** are similarly colored and marked
- Size: to 56cm; Depth: 0-150'
- Common California
- Inhabits a variety of shallow habitats; most common between 2-30'. These are solitary fish found in complex habitats.
- Easily mistaken for Brown R.F, but don't have a distinct dark blotch on the rear of the gill cover.



Treefish- **STRE**

Sebastes serriceps



- are yellow to olive in color with five to six wide dark bars across back; Two dark bands angled from eye; Pointed snout with pink lips; some individuals may have white speckling.
- **Juveniles** have double bars and an additional bar on the caudal fin. Usually pink lips form as they get bigger.
- Size: to 41cm; Depth: 0-338'
- Common to occasional southern California
- Inhabits areas with caves/crevices; Usually shy. Young have bright/intense colors with fin edge white to iridescent blue
- Similar to Tiger R.F but have different coloring.



Vermillion Rockfish - **SMIN**

Sebastes miniatus



- Orange to brick red body; caudal fin tends to be dark-edged; Rounded ventral and anal fins
- **Juveniles** are mottled brown with black patches in the spiny and soft dorsal fins and a clear caudal fin. Found in shallow water.
- Size: to 76cm; Depth: 39-1,568'
- Occasional throughout California
- Inhabits rocky reefs; Adults found deep while juveniles tend to be much shallower.
- Similar to Canary R.F. but do not have the white-edge anal fin and have more rounded pelvic fins.



Canary Rockfish - **SPIN**

Sebastes pinniger



- Bright yellow/orange fish with a white stripe along lateral line; Band slopes downward from eye; Pointed ventral and anal fins
- **Juveniles** have a large black spot on the rear of the spiny dorsal fin and brownish saddles on their back and side when they first settle. Found in shallow waters.
- Size: 76cm; Depth: 59-2,749'
- Common central California
- Inhabits rocky areas, usually school near bottom along steep drop off
- Similar to Vermillion R.F. but have white edge fins and juveniles have dark blotch on spiny dorsal fin.



Boccacio - SPAU

Sebastes paucispinis



- Large, upturned mouth with projecting lower jaw. Long dark grey to silver-grey, reddish or olive brown body; often with scattering dark spots
- **Juveniles** are red-brown to brown and may have a number of saddles and bars. Most likely to see juveniles in kelp canopy or rocky bottoms..
- Size: to 98cm; Depth: 0-1,558'
- Common to occasional California
- Inhabits rocky reefs mostly between 100-300'; Form large schools at bottom to midwater.



Calico Rockfish- **SDAL**

Sebastes dallii



- They are brown or yellow-green and generously flecked with red-brown and brown; caudal fin is striated with brown or red-brown; best characterized by the red-brown or brown “Y” shaped bar on the back.
- **Juveniles** look the same as adults.
- Size: to 25cm; Depth: 0-1,000'
- Common southern California
- Inhabits flat/soft to rocky areas
- Similar to Brown R.F. but have that “Y” shaped bar. Can look similar to Copper R.F.



Squarespot Rockfish- **SHOP**

Sebastes hopkinsi



- Light brown, tan, or yellow-brown with a few dark brown square-shaped blotches above lateral line; Dark bars radiate from eye: Long 2nd anal spine
- **Juveniles** are pale yellow-brown and may lack the dark square spots.
- Size: to 29cm; Depth: 50-1,000'
- Common southern California; Rare north
- Inhabits rocky reefs mostly between 100-300'; Form large schools at bottom to midwater.
- Similar to Widow or Speckled R.F. but have dark blotches



Widow Rockfish- **SENT**

Sebastes entomelas



- Brassy brown sides with light belly; Some faint blotching on on back often with a white splotch midbody; Pectoral, pelvic, and anal fin membranes are dark.
- **Juveniles** are grey or brown with dark saddles on back and sides, and have a weak dorsal spot.
- Size: to 62cm; Depth: 0-2,625'
- Common to occasional California
- Inhabits offshore reefs/banks; Adults generally school deep (>80) while juveniles are found in shallower waters
- YOY can be similar to Blue R.F. but don't have red vermiculations and have darker saddling. Also, they can be similar to YOY Squarespot R.F. but have darker fins.



Rosy Rockfish- **SROS**

Sebastes rosaceus



- Rose to yellow-orange fish with 4-6 large white spots and white to purplish blotches on back; purple bar across nape.
- **Juveniles** have a similar pattern and shape to adults.
- Size: to 35cm; Depth: 24-1,076'
- Occasional throughout California
- Inhabits deep rocky reefs with high relief; Solitary bottom dwellers
- Similar species: Honeycomb (outlined scales) and Starry (small spots) R.F.



Halfbanded Rockfish- **SSEM**

Sebastes semicinctus



- Small, dusky body; Two distinct dark diamond-shaped blotches on side: Brownish streaks on caudal fin. Can be heavily saddled and blotched.
- **Juveniles** are often silvery except for these dark diamond-shaped spot.
- Size: to 25cm; Depth: 48-1,320'
- Common offshore from Monterey to Baja
- Inhabits deep water reefs; Young of year found in slightly shallower waters (>100');
- Similar to Stripetail R.F. but have the very dark, mid-body, diamond shaped bar.



Stripetail Rockfish- **SSAX**

Sebastes saxicola



- Fairly elongate body with a big eye, greenish streaks along the membranes of the caudal fin and a white patch at the base of the tail.
- **Juveniles** May be seen on diveable reefs. Body is speckled with dark, triangular bars and narrow vertical bar on caudal fin.
- Size: to 41cm; Depth: 82-1,795' (but recruits may settle shallower)
- Common, SE Alaska to central Baja
- Mostly offshore on soft bottoms and low-rock habitats.
- Similar to Halfbanded R.F. but don't have a dark diamond shaped blotch under the rear part of its spiny dorsal fin.



Black Rockfish - **SMEL**

Sebastes melanops



- Blue to blue-back with white mottling on sides and black dots on their dorsal fins; fairly streamline species with a few head spines and rounded anal fin.

- **Juveniles** are elongated, range in color from light brown to orange to red; sometimes have white spots along the dorsal surface; have a dark spot on the rear part of the spiny dorsal fin

- Size: to 69cm; Depth: 0-1200'

- Common north of Point Conception

- Smaller eyes and a bit more oval than Blue R.F.; juveniles have a smaller black spot, no saddles on the back and a darker caudal fin than Yellowtail R.F.

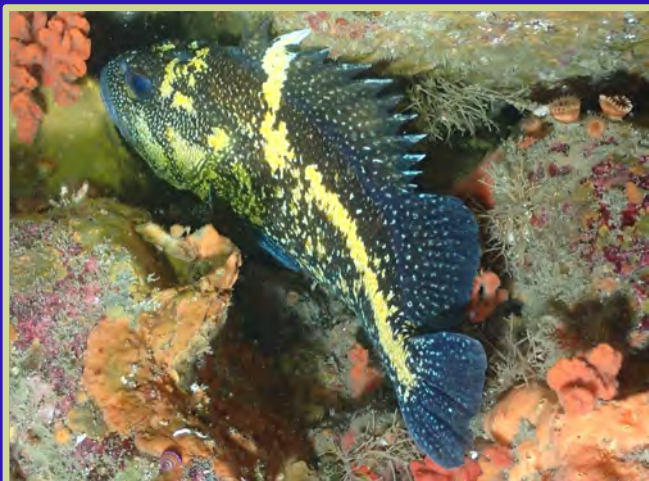
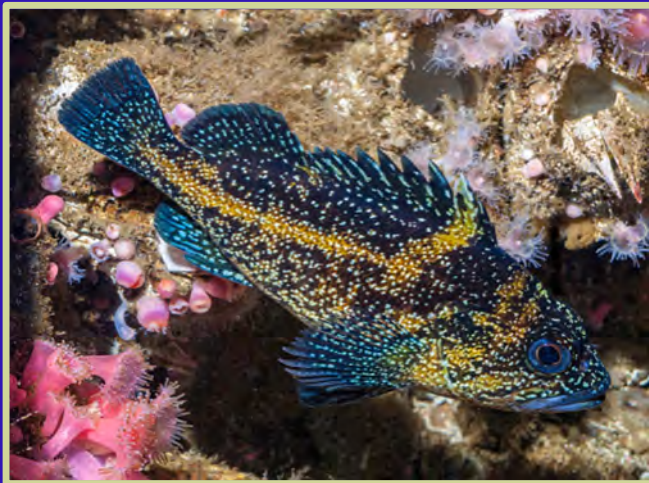


China Rockfish- **SNEB**

Sebastes nebulosus



- Black to blue-black with yellow spots. Yellow stripe from dorsal fin to rear of body.
- **Juveniles** have black or blue-black and bright yellow blotches with white splotches throughout. The snout is bright yellow.
- Size: to 45cm; Depth: 10-420'
- Common, SE Alaska to Redondo Beach and San Miguel Island.
- Inshore, on open coast among rocks and reefs. Live in solitary.
- Similar to juvenile Black and Yellow R.F. except they have yellow snouts and have a thick prominent yellow "Y" pigment originating at the top of the nape.





Kelp Greenling - **HDEC**

Hexagrammos decagrammus

- Five Lateral lines; Male: Blue spots on head and forebody; Female: Speckled reddish orange spots over a gray to bluish white undercolor; Juvenile: reddish, yellow-brown and heavily mottled.
- Size: to 63cm; Depth: 0-489'
- Rare south of Santa Barbara; Common north
- Inhabits rocky reefs, often in dense algae
- Recruits may be found in SoCal



Painted Greenling - **OPIC**

Oxylebius pictus

- Five to six dark bars; Pointed snout; Two pair of cirri
- Size: to 25cm; Depth: 0-816'
- Ranges from northern Gulf of Alaska to northern Baja
- Inhabits rocky reefs; Tends to be solitary Male darkens and are peppered with light spots during winter mating season and are territorial while guarding egg mass

Lingcod - **OELO**

Ophiodon elongatus

- Large mouth with nice chompers; Numerous dark blotches down elongated body
- Size: up to 1.5m; Depth: 0-1,558'
- Common Point Conception north; Occasional south usually in deeper, colder water
- Inhabits mostly rocky areas and tends to rest on bottom; Solitary and territorial



Cabezon - SMAR

Scorpaenichthys marmoratus

- Large, scaleless body with short cirrus near snout and prominent cirrus above eye; Variable body color; Marbled pattern
- **Juveniles** sometimes bright red without mottling
- Size: to 99cm; Depth: 0-758'
- Common from Baja to Alaska usually on hard substrates
- Males tend to red while females are usually green; Seem to be a sedentary fish



California Scorpionfish - SGUT

Scorpaena guttata

- Spiny, thick-bodied fish with large spines; Color variable (bright red to light brown) with dark spots covering the entire body
- Size: to 58cm; Depth: 0-626'
- Common southern California
- Inhabits rocky reefs mostly; Extensive spawning migrations during early summer
- DO NOT TOUCH venomous spines



Lavender Sculpin - LHIR

Leiocottus hirundo

- First two dorsal fin spines form spike-like projection. Mottled body, olive to brown.
- Elongate body
- Size: to 25cm; Depth: 0-120'
- Occasional So CA, South to northern Baja
- Inhabit shallow sand flats and eelgrass beds, rocky reefs within kelp beds

Blacksmith - CPUN

Chromis punctipinnis

- Blue gray body with black spots on scales
- **Juveniles** are bicolored with blue- gray heads and yellow posteriors.
- Size: to 31cm; Depth: 7-203'
- Occasional throughout California
- Inhabits rocky reefs; Adults found deep while juveniles tend to be much shallower; Also referred to as "Chromis" and "Crapper Snappers"



Juv.

Garibaldi - HRUB

Hypsypops rubicundus

- A bright orange and very irritable fish
- **Juveniles** show blue spot outlined in black and are found in the shallows (July-Nov).
- Size: to 36cm; Depth: 0-128'
- Abundant in southern California; more occasional to rare north of Point Conception
- Males and females aggressively defend territory; Clicking sound produced by rubbing teeth together.



Juv.

CA Sheephead - SPUL

Semicossyphus pulcher

- These hermaphroditic fish have dog-like teeth, white chins; M: >1 ft; red to pink midbody, dark head/rear body, lump on nape; F: pink body
- **Juveniles** are red, orange, or yellow with at least 1 white stripe on sides; Black spots on dorsal, anal, and caudal fins
- Size: to 91cm; Depth: 0-492'
- Common in southern California
- Inhabits rocky reef



Juv.



Chris Honeyman





Kelp Bass – PCLA

Paralabrax clathratus

- Brown, gray-brown back with large, pale blotches; Dorsal spines 3-5 are equal length
- Size: to 72cm; Depth: 0-200'
- Common to occasional southern California
- Inhabits rocky areas, artificial structures, sandy reefs and kelp beds; Breeding males can have bright yellow snouts



Spotted Sand Bass - PMAC

Paralabrax maculatofasciatus

- Grey to greenish brown with many dark spots along with dark bars; Third dorsal spine is longer than others
- Size: to 38cm; Depth: 0-295'
- Occasional southern California
- Inhabits sandy areas near reefs; Sex changer: Most females become males



Barred Sand Bass - PNEB

Paralabrax nebulifer

- Light gray/olive body with dark bars alongside; Long third dorsal spine
- Size: to 65cm; Depth: 0-600'
- Occasional southern California to Baja
- Inhabits sandy areas near reefs; Often will rest on bottom, perched up on pectoral fins

Ocean Whitefish - CPRI

Caulolatilus princeps

- An attractive, elongated fish with a long dorsal and anal fin; Silvery light gray body with yellowish tails; May have bluish tint
- Size: to 1m; Depth: 10-620'
- Common southern California
- Inhabits rocky reefs, kelps beds, or high relief areas; Most common between 80-180' while often gather in aggregations

Senorita - OCAL

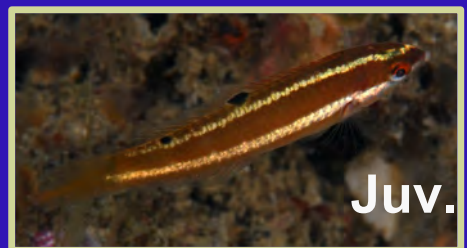
Oxyjulis californica

- Yellow to orange cigar shaped body with white belly; Large black spot on tail base
- Size: to 25cm; Depth: 0-331'
- Abundant to common southern California
- Inhabits kelp beds, rocky reefs, and sandy reef interface; Swim well above bottom; Most common shallower than 70'; Cleans parasites

Rock Wrasse - HSEM

Halichoeres semicinctus

- Green to blue-green cigar shaped body; Males have dark bar behind pectoral fins; Females and immature males have brown to orange body with dark scales on back
- **Juveniles** are yellow-orange with a white horizontal midline and a second line dorsally, and a black spot mid-dorsal
- Size: to 38cm; Depth: 0-259'
- Occasional southern California
- Inhabits rocky/sandy reef areas; These shy solitary diurnal animals occasionally act as cleaners





Island Kelpfish - **NOT SAMPLED**

Alloclinus holderi

- Blotched, barred, and striped body with tiny pale spots; Light patches on each cheek; First few dorsal spines are bent forwards
- Size: to 15cm; Depth: 0-298'
- Abundant around southern California Islands
- Inhabits rocky coastline; Usually camouflaged with surroundings



Giant Kelpfish - **HROS**

Heterostichus rostratus

- Elongated head with pointed snout; Forked tail; Body color and markings varies greatly
- Size: to 61cm; Depth: 0-132'
- Common southern California
- Inhabits kelp beds, blending within blades perfectly; Females change colors (red, green, brown) easier than males do



Sarcastic Fringehead - **NBLA**

Neoclinus blanchardi

- Large mouth extends past eyes; Brown to gray body; Two metallic blue spots on dorsal fin
- Size: to 31cm; Depth: 10-240'
- Occasional central to southern California
- Inhabits crevices, holes, empty shells, etc; Females have relatively large cirri over eyes; Onespot Fringehead is very similar



Ronquil - BATH

Family: Bathymasteridae



- Body elongate with long dorsal and anal fins. Dark brown to purplish with lighter areas. Usually has dark brown and white blotches, sometimes forming vague bars on the back.
- Size: to 25cm; Depth: 9-400'
- Central California to Northern Baja
- Rocks and sand on exposed coast.
- Species are difficult to distinguish in the field so use code BATH

Plainfin Midshipman - PNOT

Porichthys notatus



- Wide, flattened head with protruding eyes and upturned mouth. Rows of luminescent photophores. Eel like body
- Size: to 46cm; Depth: 0-1,522'
- Abundant in Puget Sound and California
- Inhabit sand and mud bottoms, often partially buried. Nocturnal, hover just above bottom at night feeding on small planktonic prey

California Salema - BCAL

Brachygenys californiensis



- **Former code: XCAL**
- **Former name: *Xenistius californiensis***
- Elongate and compressed with a large eye; silvery with 6-7 orange-brown stripes on side. (3-4 showing in small individuals); tail shallowly forked
- Size to to 30 cm; Depth 4-131'
- Monterey Bay to northern Peru
- Schools on shallow reefs and in surfgrass



Blackeye Goby - **NOT SAMPLED**

Rhynogobiops nicholsi

- Tan body with black eye and black edge on front of its dorsal fin
- Size: to 15cm; Depth: 0-640'
- Common within sandy/rocky interface along the west coast
- Territorial; Retreats to burrow or crevices; Bay Goby similar except lacks dark eye
- Formerly *Coryopterus nicholsii*



Bluebanded Goby - **NOT SAMPLED**

Lythrypnus dalli

- Red to orange with 4-9 electric blue bars
- Size: to 6cm; Depth: 0-250'
- Abundant south of Point Conception to central Baja and Gulf of California
- Inhabits open rocky areas; Territorial; Short lived species (3 yrs tops)



Zebra Goby - **NOT SAMPLED**

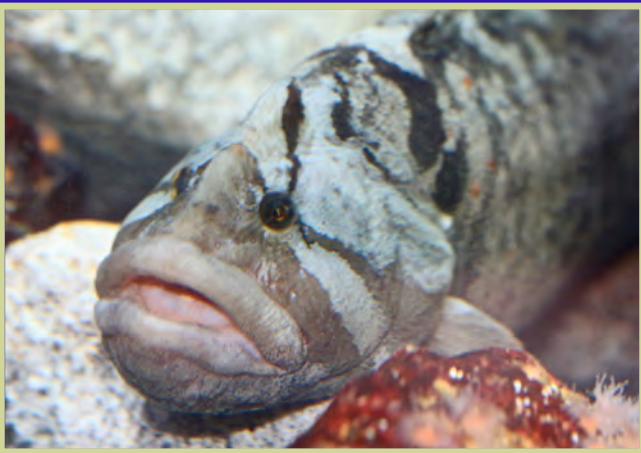
Lythrypnus zebra

- Red/Orange body with numerous bright blue bands
- Size: to 6cm; Depth: 0-318'
- Occasional central to southern California
- Inhabits rocky areas; Cryptic and shy most of the time; Males guard eggs aggressively

Wolf Eel - AOCE

Anarrhichthys ocellatus

- Large, bulbous head with large mouth and blunt teeth. Elongate gray body, may be mottled.
- **Juveniles** may be orange with many large spots
- Size: to 203cm; Depth: 0-1,365'
- Abundant from Central California northward
- Inhabit dens in crevices, caves and other rocky areas



Monkeyface Prickleback - CVIO

Cebidichthys violaceus

- Elongate body; Dark streaks radiate from eye. Pectoral fin large, no pelvic fin. Large lips.
- Size: to 76cm; Depth: 0- 80'
- Southern Oregon to central Baja; can be common along the eastern-most northern Channel Islands.
- Common inshore in tidepools or shallow, rocky areas



California Moray - GMOR

Gymnothorax

- Elongate brown to green body; No pectoral fins
- Size: to 1.5m; Depth: 2-131'
- Abundant Pt. Conception to Baja, especially around the southern California Islands
- DO NOT TOUCH! Prone to bite when provoked.

COMMON FISHES OF CALIFORNIA

Part 2 of 2

Updated May 2024





Sargo - **ADAV**

Anisotremus davidsonii

- Deep bodied perch-shaped silver fish with dark bar
- **Juveniles** have 2 stripes on body which can closely resemble young Black Croaker
- Size: to 60cm; Depth: 0-201'
- Pt. Conception to S. Baja
- Inhabit rocky or rock-sand bottom, often near kelp



Opaleye - **GNIG**

Girella nigricans

- Oval, perch-shaped fish; body is olive-green to gray-green, eye blue-green, usually one or 2 pale spots below dorsal fin
- Size: to 66cm; Depth: 0-105'
- San Francisco to S. Baja, common in SoCal
- Inhabit rocky and kelp areas



Halfmoon - **MCAL**

Medialuna californiensis

- Elongated and oval shaped fish; silvery blue body with countershading, sometimes with dusky bars
- Size: to 48cm; Depth: 0-144'
- San Francisco to S. Baja; common in SoCal
- Inhabit high relief/rocky and kelp areas. Also kelp paddies

Rubberlip Surfperch - RTOX

Rhacochilus toxotes

- Large, flat lips with a dusky/dark bar below dorsal fin. Similar to Sargo and Pile perch (first few dorsal rays or much taller in the Pile Perch)
- Size: to 47cm; Depth: 0-262'
- Common southern California; Occasional northern California
- Inhabits kelp forest, rocky reefs, docks etc; Often form schools



Pile Surfperch - PVAC

Phanerodon vacca

Former name: *Rhacochilus vacca*

Former code: RVAC

- Large surfperch, rays at front of soft dorsal fin twice as long as dorsal fin spines. Caudal fin deeply forked. Usually dark broad bar at midside.
- Size: to 44cm; Depth: 0-328'
- Alaska to Baja
- Inhabits reefs, piers, and kelp beds
- Similar to Rubberlip but has thinner lips



White Surfperch - PFUR

Phanerodon furcatus

- Thin black line on back at base of dorsal fin. Deeply forked tail, often with dusky edging.
- Size: to 38cm; Depth: 0-282'
- Oregon to Baja
- Inhabits shallow bays, sandy rocky reefs and kelp beds
- Similar to Rubberlip but has thinner lips





Black Surfperch - **EJAC**

Embiotoca jacksoni

- Thin body with numerous bars on body; Blue stripe along base of anal fin; Yellow/red lips; coloration varies from brown, red, or orange; patch of enlarged scales under pectoral fins; Often with a black moustache
- Size: to 39cm; Depth: 0-239'
- Abundant southern California
- Inhabits shallow sandy areas/ shallow kelp beds <30'; Usually in large, dense schools; Live bearing
- Small fish are similar to Rainbow surfperch, but have bars stretching across the whole body.



Striped Surfperch - **ELAT**

Embiotoca lateralis

- Colorful, reddish orange and blue stripes, blue streaks on head/gill cover.
- Size: to 41cm; Depth: 0-312'
- Alaska to northern Baja
- Inhabits reefs, piers, kelp beds and shallow bays
- Similar to Rainbow surfperch but has dusky fins



Rainbow Surfperch - **HCAR**

Hypsurus caryi

- Orange bars along back; black spot near corner of mouth and sometimes on anal and dorsal fin; belly characteristically flat and long
- Size: to 31cm; Depth: 0-165'
- Common southern California
- Inhabits sandy/rocky/kelp areas; Wary and solitary for the most part; Aggregate at times in the Fall
- Similar to Striped Perch but have bars on back



Dwarf Surfperch - **MMIN**

Micrometrus minimus

- Small with a black triangle at the base of the pectoral fin. Dorsal, anal, and pelvic fins have dark blotches; Pelvic fins are orange to yellow.
- Size: to 16cm; Depth: 0-30',
- Bodega Bay to Cedros Island, Baja
- Around shallow, inshore, algae-covered reefs.



Kelp Surfperch - **BFRE**

Brachyistius frenatus

- Thin silver/golden body with a sharply upturned lower jaw; Head concave above eyes; Elongated caudal peduncle
- Size: to 22cm; Depth: 0-249',
- Alaska to Baja; Common in Southern California
- Inhabits kelp beds; usually up in canopy



Spotfin Surfperch - **HANA**

Hyperprosopon anale

- Thin silver body. Dark splotches on dorsal and anal fins
- Size: to 20cm; Depth: 0-331',
- Oregon to Baja California
- Inhabits kelp beds; usually up in canopy

Sharpnose Surfperch - **PATR**

Phanerodon atripes



- Closely resembles the white surfperch but with reddish speckles on the scales along the sides and dusky black tipped pelvic fins.
- Size: to 29cm.; Depth: 0-750'
- Bodega Bay to San Benito Islands, Baja.
- Around deep reefs, kelp beds, and on occasion, shallow reefs and piers.

Shiner Surfperch - **CAGG**

Cymatogaster aggregata



- Thin silver body with numerous dark scales forming light bars on sides; 2-3 yellow bars also on side
- Size: to 21cm; Depth: 0-480'
- Abundant from southern California to Canada
- Inhabits numerous areas; Common 0- 50'; School in day, may disperse at night; Males tend to have dark striping during mating season

Silver Surfperch - **HELL**

Hyperprosopon ellipticum



- Body oval and strongly compressed; tail usually pinkish with black edges
- Silver with dusky coloration on back and dusky bars on sides
- Similar to Walleye surfperch but lacks black coloration on pelvic fins
- Size: to 27cm; Depth 0-360'
- Common from Oregon to Central California; uncommon along Southern California mainland



Walleye Surfperch - **HARG**

Hyperprosopon

argenteum

Sides and belly silvery with young having narrow golden vertical bars; large eyes; Pelvic fins are black tipped; Scales near pectoral fins have yellow spots

- Size: to 43cm; Depth: 0 - 262'
- Found from Vancouver Island to central Baja
- During the breeding season there will be 5-6 dark bars on its side.
- Schooling species



Reef Surfperch - **MAUR**

Micrometrus aurora

- Black triangle at base of pectoral fin; black edged scales between the pectoral and anal fins; yellow or yellow-orange stripe on the lower sides; crescent shaped black mark on scales on sides
- Size: to 18cm; Depth: intertidal to 20'
- Range from central California to central Baja



Pink Seaperch - **ZROS**

Zalembius rosaceus

- Pink hue body with two brown spots below the dorsal fin
- Size: to 20cm; Depth: 3 - 905'
- Found from Pt. Delgada in Northern California to central Baja California
- Seen commonly over sand, mud, cobble, and sand-rock interface
- Solitary to groups of 20 individuals



Zebra Perch Sea Chub -

KAZU

Kyphosus azureus

Former code: HAZU

Former name: *Hermosilla azurea*

- Green, silvery or brown oval body with blue or black blotch on gill cover and under pectoral fin; has 12 faint bars on its side
- Size: to 45cm; Depth: 0 - 49'
- Southern California to southern Baja
- Schooling species



Bluestriped Chub -

KOCY

Kyphosus ocyurus

- Elongated oval shaped body; caudal fin deeply forked; has one yellow and one bluish wavy horizontal stripe that goes from its mouth to its caudal peduncle; blue streak above eye
- Size: to 70cm; Depth: up to 98'
- Found from southern California to Peru



Black Croaker - CSAT

Cheliotrema saturnum

- Perch-shaped fish with dark brown, black, bluish back; has silvery belly; black on the rear of gill cover; has a pale bar at midbody and light blotches on back.
- **Juveniles** have a series of dark stripes; can look very similar to juvenile Salema or Sargo
- Size: to 45cm; Depth: 0 - 328'
- Often found in caves and crevices



Juv.



Finescale Triggerfish - **BPOL**

Balistes polylepis

- Characteristic triggerfish shape; singular-looking dorsal fin; brownish to grey with blue speckles on head.
- Size: to 80cm; Depth: 6-1,680'
- Crescent City to Chile, rare north of Baja.
- On reefs will often be hiding deep in a rocky crevice.



CA Lizardfish - **SLUC**

Synodus lucioceps

- Elongated cylindrical body with lizard-like head and mouth; have canine teeth; body is uniformly brown on back, sides fading to tan with a white belly; dorsal fin at mid back, yellowish pelvic fins, forked caudal fin
- Size: to 64cm; Depth: 5 - 751'
- Range: southern California to central Baja



♂



♀

Largemouth Blenny - **LXAN**

Labrisomus xanti

- Have shortened elongated robust bodies with large mouth; are colored greenish-brown with eight dark bars along their sides; breeding males are red with a large black spot between the second and fourth dorsal spin.
- Size: to 18cm; Depth: 0-36'
- Common southern California to Baja
- Inhabits kelp-covered, rocky shorelines.
- SIGHTED AT CATALINA ISLAND IN 2016



Tubesnout - **AFLA** *Aulorhynchus flavidus*

- Elongate, needle-like fish; silvery, brownish, greenish body with small tubular mouth at the end of a long snout; breeding males have blue spots, blue snouts and red pelvic fins.
- Size: to 19cm; Depth: 0-130'
- Alaska to Baja
- In kelp beds, eelgrass beds, rocky areas and sandy bottoms. Often in large schools but can be solitary.



Pipefish - **SYNG** *Syngnathus spp.*

- Elongate thin body, with a narrow snout and upturned mouth, can match colors in their environment with a wide range of brown, green, red, and tan
- Size: to 50cm; Depth: 0-60'
- Alaska to Southern Baja
- In kelp canopy, eelgrass/surfgrass beds, occasionally over sandy bottom.
- Males brood eggs on abdomen



Pacific Bonito - SCHI

Sarda chiliensis

- Ten or eleven stripes on back running obliquely from dorsum forward; Blue to violet above, silver ventrally; 6-8 finlets on the dorsal and ventral of caudal peduncle
- Size: to 1.2m; Depth: 0-361'
- Found from northern Vancouver to Mexico; abundant in SoCal.
- Inhabits outside of kelp forests in pelagic schools



Yellowtail - SLAL

Seriola lalandi

- Elongated compressed bodies with a yellow forked tail, dusky stripe from snout to tail and silver colored body.
- Size: to 2.5m; Depth: 0-1,023'
- Found from Baja to Southern CA and worldwide in tropical water
- Small schools can be found near kelp paddies; inhabit rocky reefs and adjacent sandy areas



Pacific Barracuda - SARG

Sphyraena argentea

- Elongated cylinder shaped body and numerous pointed teeth in a long, large mouth with a slight underbite and forked yellowish tail; generally silver to grey bodied
- Size: to 1.2m; Depth: 0-125'
- Occasional from Baja to Point Conception
- Schools are usually, but not always small; Sometime solitary; Work jaws to pump water through gills



Pacific Sardine - **SSAG**

Sardinops sagax

- Silvery elongated fish with a row of black spots along midbody and several striations over operculum
- Size: 41cm; Depth: 0-1,256'
- Found from southern Alaska to Baja
- Form huge, pelagic, polarized schools; Near shore to offshore
- Similar to Pacific Herring



Northern Anchovy -

EMOR

Engraulis mordax

- Long, thin fish with a long snout that overhangs a large mouth; Dorsal side is colored bluish-green, ventral side is colored silver; can have a faint silver stripe on side.
- Size: to 25cm; Depth: 0-1,732'
- Ranging from northern Vancouver to Baja
- Form huge, pelagic, polarized schools; Near shore to offshore; Often found near surface at night



Topsmelt/Jacksmelt -

ATHE

Atherinops affinis/ californiensis

- Slim fish with a dorsally flattened body and pointed head; Silvery body with bluish back and bluish stripe running from head to tail; the anal fin begins below first dorsal fin.
- Size: to 40cm; Depth: 0-95'
- Abundant from Vancouver to southern Baja
- Schools are commonly found near or in kelp forest just below the surface.



Pacific Jack Mackerel - **TSYM**

Trachurus symmetricus

- Elongated compressed silver body with black spot over operculum; Midline dips past second dorsal
- Size: to 81cm; Depth: 0-1,320'
- Ranges from southern Alaska to Baja
- Pelagic schooling fish; can be found mixed with out bait fish schools



Chub Mackerel - **SJAP**

Scomber japonicus

- Dark, slanted bars along back; tinted blu on dorsal side, silvery on ventral side; dorsal fins widely separated
- Size: to 63cm; Depth: 0-985'
- Common from southern Alaska to Baja
- Pelagic; large polarized schools are most abundant during summer/fall
- Also called "Pacific Mackerel and Spanish Mackerel"



Ocean Sunfish - **MMOL**

Mola mola

- Gray-brown disk shaped flat body; dorsal and anal fin are lengthened; reduced caudal fin; no pelvic fins.
- Size: to 2.7m; Depth: 0-2,768'
- Found worldwide in tropical and temperate seas
- Oceanic species often found basking at the surface



White Seabass - **ANOB**

Atractoscion nobilis

- Elongated silver croaker with lower jaw extending slightly beyond upper jaw; No chin barbel; colored bluish-grey on back with silver belly
- *Juveniles* have dusky bars and a yellowish caudal fin.
- Size: to 1.6m; Depth: 0-804'
- Found from Alaska to Baja; common in central Baja
- A skittish species, usually found in schools over rocky bottoms, in kelp forest or surf zone
- Similar to California Corbina but is generally larger in size



Juv.

Giant Sea Bass - **SGIG**

Stereolepis gigas

- Numerous large black spots over a large gray/brown body; low foredorsal fin; large mouth
- *Juveniles* are orangish-red colored with black spots
- Size: to 2.7m; Depth: 18-180'
- Found from Humboldt to Gulf of California
- Inhabits rocky bottoms and kelp forest
- Large individuals tend to be in deeper waters



Juv



C-O Sole - PCOE

Pleuronichthys coenosus

- Right eyed flatfish with large eyes; mottled light to dark brown pattern with a dark crescent shaped marking and dark spot on caudal fin.
- Size: to 36cm; Depth: 0-1,146'
- Found from Alaska to northern Baja
- Inhabits flat sandy areas; Near reef/sand interface
- Similar to other soles, but has that distinct C-O marking on caudal fin



Sanddab - CITH

Citharichthys sp.

- Lefteye flounder with a straight lateral line; Black speckles/blotches across top of brown body
- Size: Speckled to 19cm, Pacific to 41cm; Depth: 0-1,200'
- Common Alaska to Baja
- Inhabits sand/silt/gravel flats; Changes color and marking to match surroundings



California Halibut - PCAL

Paralichthys californicus

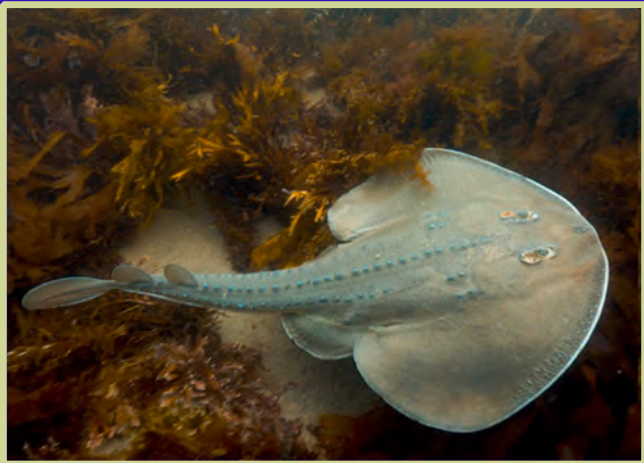
- A brown/gray diamond shaped body; have right or left eyes; Lateral line arches over pectoral fin; Large mouth extends past eye; Caudal arched in middle with outer edges cut cleanly.
- Size: to 1.5cm; Depth: 0-1,040'
- Found from Washington to Baja
- Inhabits flat sandy bottoms; Often covered with bottom sediment; Adults tend to be deep



Leopard Shark - **TSEM**

Triakis semifasciata

- Gray body with a short rounded snout; has a series of dark blotches down the length of body.
- Size: from 20cm to 2.3m; Depth: 0-515'
- Found from Oregon to the Gulf of California
- Cruises in bays, over shallow inshore areas of sand. Summer months found very shallow sandy areas



Thornback - **PTRI**

Platyrrhinoidis triseriata

- Disc-shaped, tan colored, flattened body with three parallel rows of large, curved spines
- Size: from 11cm to 91cm; Depth: 3-298'
- Ranges from San Francisco to the Gulf of California
- Usually found partially buried, resting on sandy/muddy bottom in shallow waters < 25'



Bat Ray - **BRAY**

Myliobatis californica

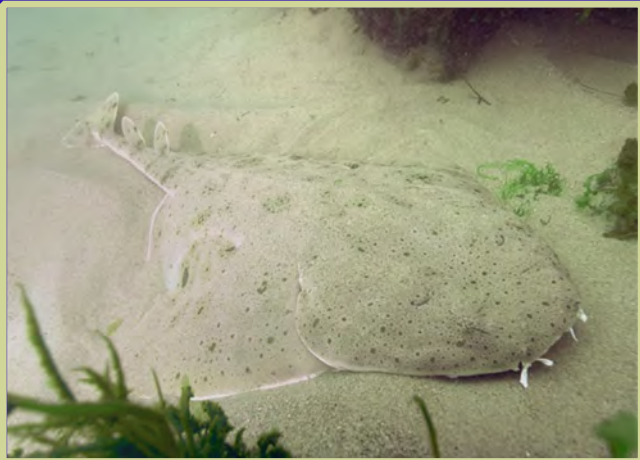
- Large bulbous, blunt head with long pectoral fins and a whip-like tail; three venomous spines at base of tail
- Size: width from 20cm to 1.6m; Depth: 0-577'
- **Measure wingspan**
- Common southern/northern California
- Inhabit an array of habitats: sand/mud flats to kelp beds; More active at night



Pacific Torpedo Ray - **TCAL**

Tetronarce californica

- Thick round body, short tail base with large fin; dark grey, slate or brown coloration with dark spots.
- Size: from 18cm to 1.4m; Depth: 0-3,539 '
- Found from Baja to British Columbia; common in SoCal
- Inhabits a wide range of habitats from sandy bottoms to rocky reefs and kelp forests.
- Solitary and nocturnal
- DON'T TOUCH!



Angel Shark - **SCAL**

Squatina californica

- Broad and flat body with dorsal eyes and spiracles and 5 gill slits; blunt head with terminal mouth; large fins; light in color with speckling.
- Size: from 25cm to 1.7m; Depth: 0-672'
- Occasional California. Generally rare everywhere due to overfishing
- Inhabit sand and other soft bottoms near shore and rocky reefs
- Similar to guitarfishes in shape



Shovelnose Guitarfish - **PPRO**

Pseudobatos productus

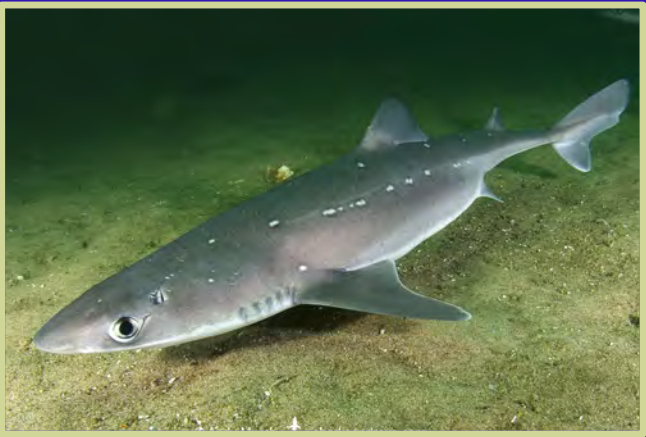
- Spade shaped head; uniformly gray or light brown with a thin row of spines down the back ending in a long thin tail.
- Size: to 1.6m Depth: 0-40ft
- Ranges from San Francisco to southern Mexico
- Inhabit soft seafloor habitats often in shallow water.
- Females give birth between June - August.



Blue Shark - **PGLA**

Prionace glauca

- Dark blue back with light underside; slender and elongate with a long pointed snout, underslung mouth and long pectoral fins
- Size: from 34cm to 3.8; Depth: 0-3,280'
- Common California, occasional Oregon to Alaska
- Inhabit open ocean, commonly in deep waters



Spiny Dogfish - **SACA**

Squalus acanthias

- Sharp spine extends from each dorsal fin; anal fin absent; long, flattened, pointed snout; gray back with white spots and white belly
- Size: from 22cm to 1.4m; Depth: 0-4,789'
- Common NorCal to Alaska; occasional in central CA
- Usually solitary swimming over soft bottoms in shallow waters



Thresher Shark - **AVUL**

Alopias vulpinus

- Slender blue bodied with a cone shaped nose; tail length equal to or longer than body length.
- Size: from 1.2m to 5.7m; Depth: 0-2,132'
- Common Baja to Alaska
- Seen in shallow coastal water, common in solitary



Soupfin Shark - GGAL

Galeorhinus galeus

- Elongated pointed snout; blueish to dusky gray above, white below; terminal lobe of caudal fin is large, about 1/2 length of upper lobe.
- *Juveniles* have black markings on their fins
- Size: from 30cm to 2m; Depth: 0-3,608'
- Temperate waters worldwide.
- Sometimes a diver will come across one lying on the bottom and spook it.

Bluntnose Sixgill Shark -

HGRI

Hexanchus griseus

- Six gill slits, mostly brown or blackish gray on back and lighter underneath, one dorsal fin
- *Juveniles* tend to live in shallower water
- Size: to 6m; Depth: 0-8,200', adults usually below 298'
- Temperate and tropical waters worldwide, common from Washington to southern California
- Some adults migrate to shallow water during summer



Broadnose Sevengill Shark - NCEP

Notorynchus cepedianus

- Seven gill slits, pale silvery grey to reddish brown, commonly with black spots on their back, one dorsal fin
- *Juveniles* tend to live in shallower water
- Size: to 3m; Depth: 0-446'
- Temperate waters worldwide, common from Washington to southern California
- More common on our surveys than sixgill
- Will swim at all levels of the water column and have been known to "spyhop" at the surface





Horn Shark - HFRA

Heterodontus francisci

- Prominent spine at front each dorsal fin; Spots scattered over tan/gray body; Ridge above eyes
- Size: 1-3+ ft; Depth: 0-500'
- Occasional southern California; rarely north of Conception
- Inhabits rocky reefs and kelp beds; Active bottom dwellers at night while reclusive during the day; Generally docile
- Spiral egg case bare young; Females spawn during late winter/ early spring
- Sex if possible. Males have claspers around cloaca
- Note egg cases on transect



Swell Shark - CVEN

Cephaloscyllium ventriosum

- Dark brown blotches and spots over light brown to tan body; Flattened head with two dorsal fins back on body
- Size: 1-3+ ft; Depth: 15-1500'
- Common southern California; Occasional north of Conception
- Inhabits rocky reefs, kelp beds, sandy bottoms; Generally solitary bottom fish and rather docile; When excited they can suck in water into their stomachs, giving them a balloon like appearance
- Produce brown to tan rectangular egg cases; Near mainland these egg cases have long tendrils, while those around Catalina do not
- Sex if possible. Males have claspers around cloaca
- Note egg cases on transect



Juvenile Fishes



Blue Rockfish (SMYS)



Kelp Rockfish (SATR)



Stripetail Rockfish (SSAX)



Blacksmith (CPUN)



Vermilion Rockfish (SMIN)



Canary Rockfish (SPIN)



Kelp/Gopher/Black and Yellow/Copper Rockfish Complex (KGB)



Kelp Bass (PCLA)