



**PISCO**  
**Swath Inverts 2013**



Lonhart/SIMoN  
MBNMS NOAA

*Patiria miniata* (formerly *Asterina miniata*)

Bat star, very abundant at many sites, highly variable in color and pattern. Typically has 5 rays, but can be found with more or less.



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*Patiria miniata*  
Bat star (formerly *Asterina miniata*)



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Juvenile *Dermasterias imbricata*  
Leather star

Very smooth, five rays, mottled aboral surface



Adult *Dermasterias imbricata*  
Leather star

Very smooth, five rays, mottled aboral surface



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*Henricia* spp. Blood stars

Long, tapered rays, orange or red, patterned aboral surface looks like a series of overlapping ringlets. Usually 5 rays.



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*Henricia* spp. Blood star

Long, tapered rays, orange or red, patterned aboral surface similar to ringlets. Usually 5 rays. (*H. sanguinolenta*?)



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*Henricia* spp. Blood star

Long, tapered rays, orange or red, patterned aboral surface similar to ringlets. Usually 5 rays.



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*Orthasterias koehleri*  
Northern rainbow star  
Mottled red, orange and yellow, large, long thick rays



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*Mediaster aequalis*

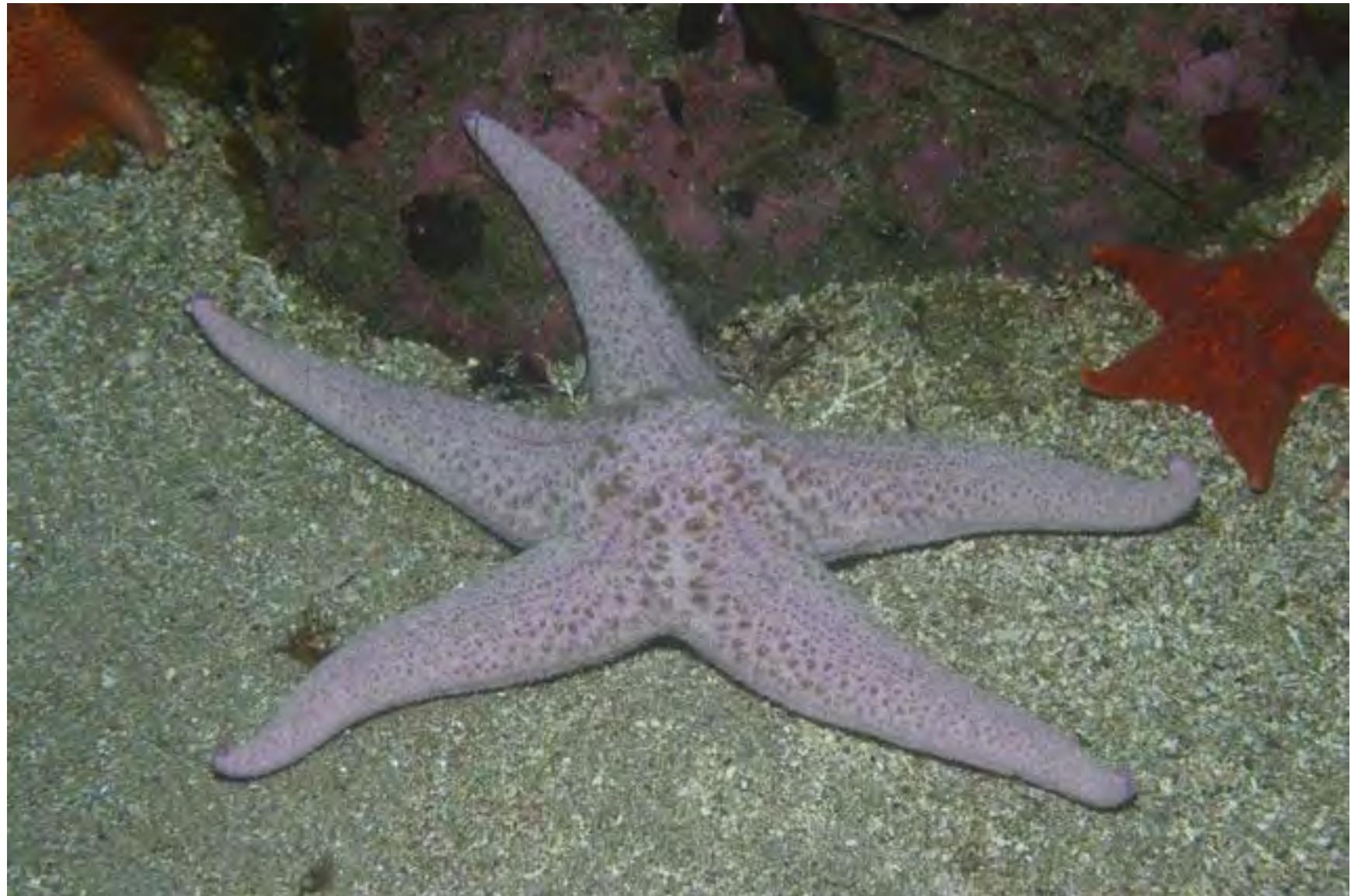
Orange star with five rays, large marginal plates, very flattened.  
Confused with *Patiria miniata*.



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*Mediaster aequalis*

Orange star with five rays, large marginal plates, very flattened. Can be mistaken for *Patiria miniata*



*Pisaster brevispinus*

Short-spined star

Large, pale pink in color, often on sand, thick rays



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*Pisaster giganteus*  
Giant-spined star  
Spines circled with blue ring, thick rays



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Giant-spined star  
Spines circled with blue ring, thick rays



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©Lonhart

*Pisaster giganteus*  
Giant-spined star  
Spines circled with blue ring, thick rays



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*Pisaster giganteus* (tan) and *Pisaster ochraceus* (purple)  
Giant-spined and ochre stars



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*Pisaster ochraceus*

Ochre star

Orange, tan or purple color; five rays, white stubby spines



*Pycnopodia helianthoides*  
Sunflower star

Very large, >20 rays, very soft and flexible, purple or orange



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*Urticina lofotensis*  
White-spotted rose anemone  
Red column with white dots, large



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*Urticina piscivora*  
Fish-eating anemone  
Solid red column, white or red tentacles



Lonhart/SIMoN  
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*Urticina piscivora*  
Fish-eating anemone  
Solid red column, white or  
red tentacles



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*Urticina coriacea*  
Stubby rose anemone  
If in sand, then stubby tentacles



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*Urticina coriacea*  
Stubby rose anemone

If on reef (shallow), then longer tentacles, bumpy pale-pink column



*Urticina coriacea*  
Stubby rose anemone

If on reef (shallow), then longer tentacles, bumpy pale-pink column



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*Urticina crassicornis*  
Painted anemone  
Mottled green and red column, smooth



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*Urticina crassicornis*  
Painted anemone  
Mottled red and green column, smooth



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*Metridium farcimen* (used to be *Metridium giganteum*)

Giant metridium

White or light yellow column, white tentacles, often >50 cm



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*Anthopleura sola*  
Solitary anemone or Sunburst anemone  
Has radiating lines on the oral disk, often has debris on the column



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*Anthopleura xanthogrammica*  
Large green anemone  
Green oral disk, no lines



*Strongylocentrotus purpuratus*

Adult Purple urchin

Green when young, not as large as adult red urchins



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*Strongylocentrotus purpuratus*  
Juvenile Purple urchin

Green when young, not as large as adult red urchins



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Adult *Strongylocentrotus franciscanus*  
Red urchin



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*Strongylocentrotus franciscanus*

Adult Red urchin

Solid red to black underwater, largest in the region



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3 Red urchins in middle, 1 Purple urchin on right



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*Cucumaria miniata*  
Embedded cucumber  
Orange body and tentacles



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*Cucumaria miniata*  
Embedded cucumber  
Orange body and tentacles



Lonhart/SIMoN  
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*Cucumaria miniata*  
Embedded cucumber  
Orange body and tentacles



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*Parastichopus californicus*  
Spiky cucumber  
Papillae are fleshy and flexible, light brown



*Parastichopus californicus*

Spiky cucumber

Papillae are fleshy and flexible, light brown



Lonhart/SIMoN  
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*Parastichopus californicus*  
Spiky cucumber  
Papillae are fleshy and flexible, light brown



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*Parastichopus parvimensis*  
Warty cucumber  
Papillae are small, small black marking



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MBNMS NOAA

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*Parastichopus parvimensis*  
Warty cucumber  
Papillae are small, small black marking



Cancer spp. Cancer crabs  
This is *Cancer antennarius*--purple spots on ventral surface



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Cancer spp. Cancer crabs  
Juvenile *Cancer antennarius*--very hairy when young



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Cancer spp. Cancer crabs  
Juvenile *Cancer gracilis* -- Graceful cancer crab



Cancer spp. Cancer crabs  
Juvenile *Cancer magister*—Dungeness crab



*Pugettia producta*  
Northern kelp crab

Golden brown or red, smooth clean carapace, often on kelp



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*Pugettia producta*

Northern kelp crab

Golden brown or red, smooth clean carapace, often on kelp



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*Pugettia richii*  
Spider crab

Red, bumpy carapace, often decorated with algae, anterior spines



©Lonhart

*Pugettia richii*

Spider crab

Red, bumpy carapace, often decorated with algae, anterior spines



©Lonhart

*Pugettia richii*

Spider crab

Red, bumpy carapace, often decorated with algae, anterior spines



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*Loxorhynchus crispatus*  
Adult Moss crab

Very camouflaged when young, large when older, can look like other spider crabs



Pederson/MBNMS

*Loxorhynchus crispatus* Juvenile Moss crab

Very camouflaged when young, large when older, can look like other spider crabs



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*Scyra acutifrons*      Sharp-nose crab

Heavily decorated, large, spade-like rostrum, can be confused with  
juvenile *Loxorhynchus*



Lonhart/SIMoN  
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*Scyra acutifrons*      Sharp-nose crab

Heavily decorated, large, spade-like rostrum, can be confused with  
juvenile *Loxorhynchus*



*Loxorhynchus grandis*

Adult Sheep crab

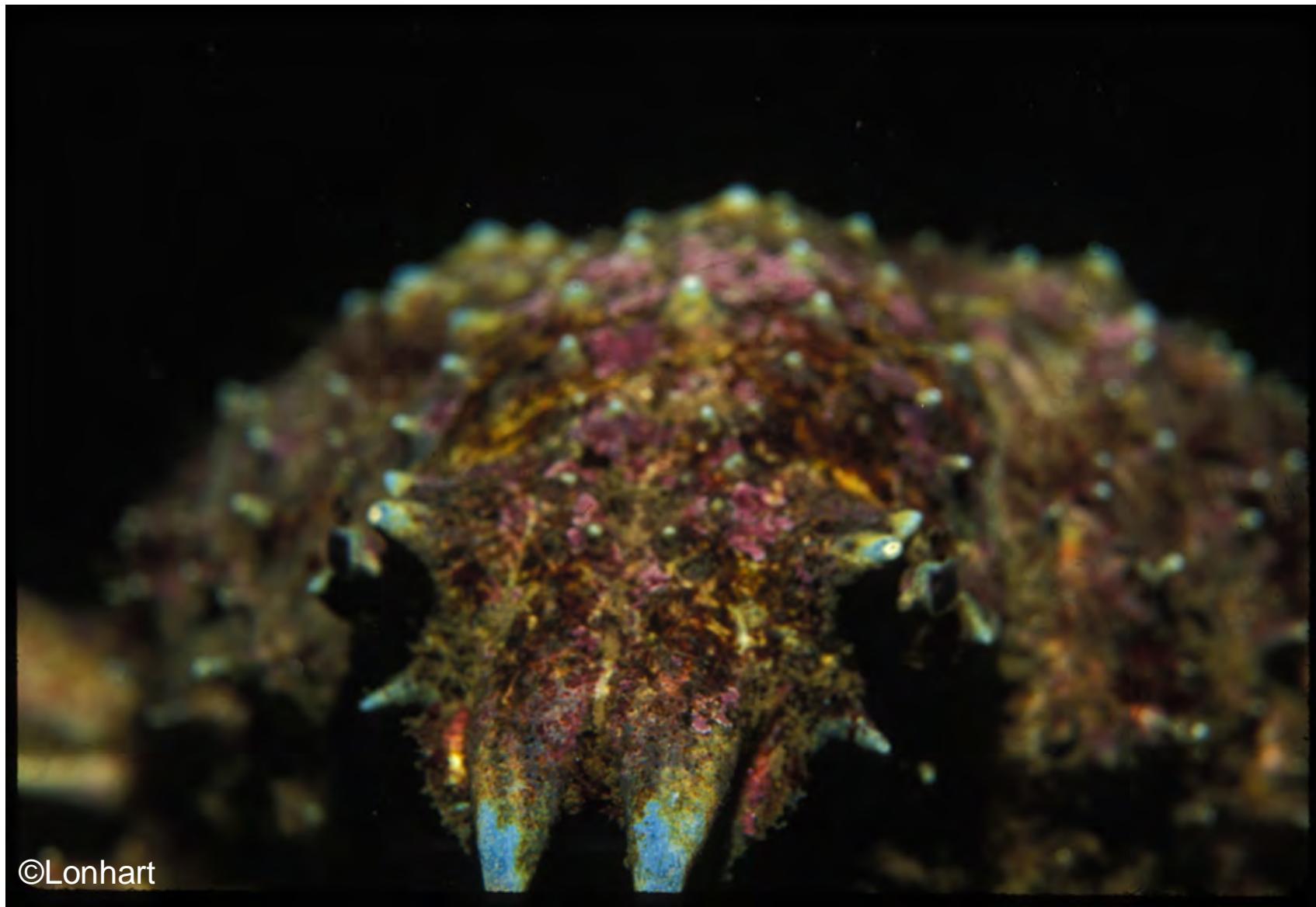
Very large, downward-hooked rostral spines; white bumps



*Loxorhynchus grandis*

Sheep crab

Relatively clean but very bumpy carapace

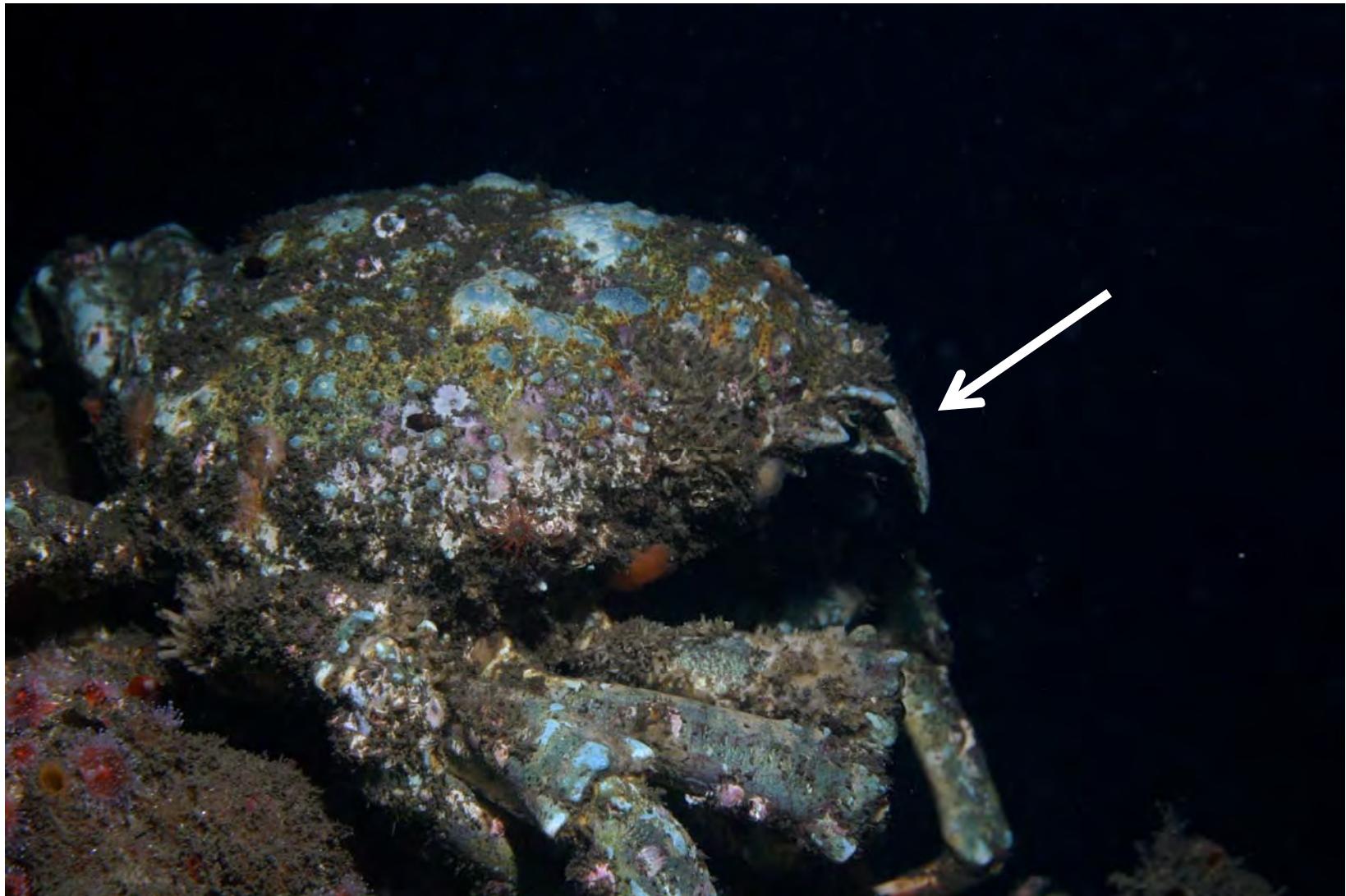


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*Loxorhynchus grandis*

Sheep crab

Very large, downward-hooked rostral spines, bumpy carapace



*Loxorhynchus grandis*  
Sheep crab

Very large, downward-hooked rostral spines, bumpy carapace



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*Mimulus foliatus*  
Foliate kelp crab  
Large chelipeds, broad wings on carapace

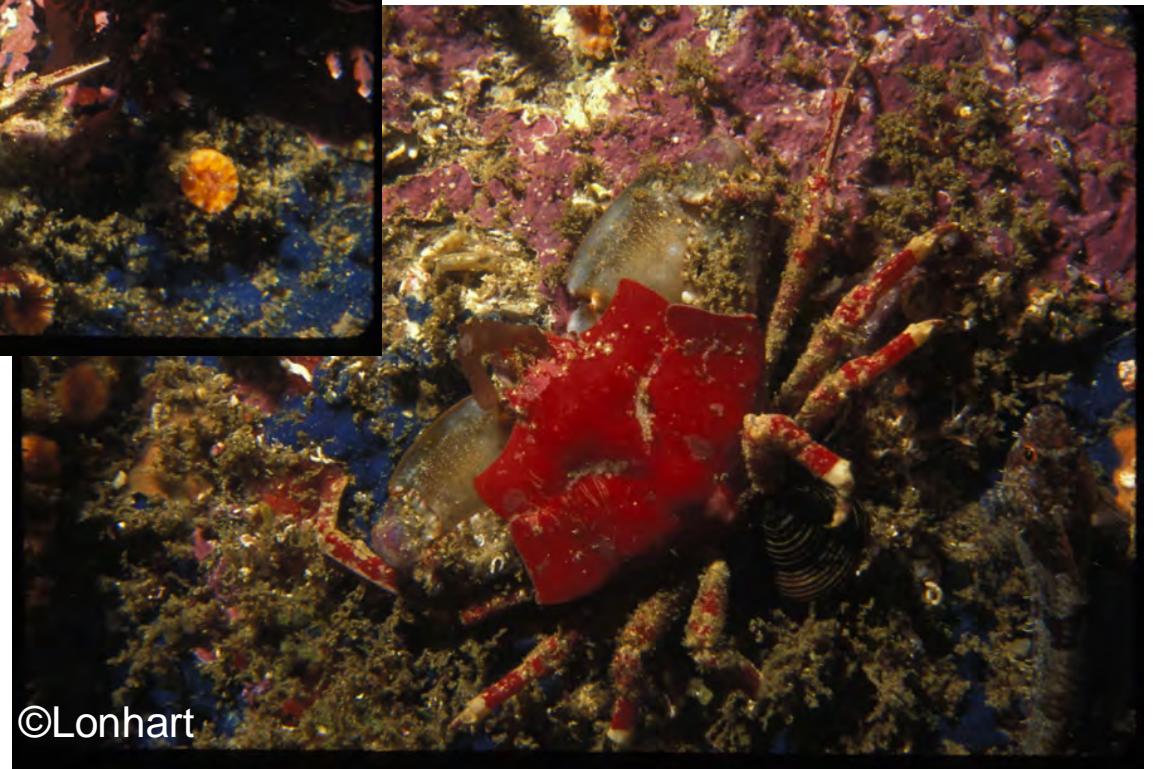


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*Mimulus foliatus*  
Foliate kelp crab  
Large chelipeds, broad wings on carapace



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*Mimulus foliatus*  
Foliate kelp crab  
Large chelipeds, broad wings on carapace



*Cryptochiton stelleri*  
Gumboot chiton  
Deep red color, to 40 cm



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*Cryptochiton stelleri*  
Juvenile Gumboot chiton  
Mottled-banded, red/pink color



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*Crassadoma gigantea*  
Giant Pacific rock scallop

One valve attached, highly ribbed, many marginal eyes, up to 12 cm  
in diameter



Lonhart/SIMoN  
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*Crassadoma gigantea*  
Giant Pacific rock scallop

One valve attached, highly ribbed, many eyes, up to 12 cm in diameter



Pederson/MBNMS

*Haliotis rufescens*  
Red abalone

Most common abalone in subtidal, bright red lip of shell, margin of foot, epipodial tentacles and mantle are black



*Haliotis rufescens* Red abalone

Most common abalone in subtidal; the foot, epipodial tentacles and mantle are all black in adults



Red abalone

Most common abalone in subtidal, bright red lip of shell, margin of foot, epipodial tentacles and mantle are black



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*Haliotis kamtschatkana*

Pinto abalone

Epipodium "mottled pale yellow to dark brown", epipodial tentacles  
yellow-brown, sometimes greenish



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*Haliotis kamtschatkana*      Pinto abalone  
Epipodium “mottled pale yellow to dark brown”, epipodial tentacles  
yellow-brown, sometimes greenish



*Haliotis kamtschatkana*      Pinto abalone  
Epipodium “mottled pale yellow to dark brown”, excurrent opening  
tentacles (tremata) are bright yellow



*Haliotis kamtschatkana*

Pinto abalone

Epipodium “mottled pale yellow to dark brown”, epipodial tentacles  
yellow-brown, sometimes greenish



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*Haliotis walallensis*      Flat abalone  
Epipodium "mottled yellowish and brown", epipodial "tentacles  
greenish and slender", red lip



Lonhart/SIMoN  
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Epipodium "mottled yellowish and brown", epipodial "tentacles  
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*Megathura crenulata*  
Giant keyhole limpet  
Solid black or cream with dark lines



*Megathura crenulata*  
Giant keyhole limpet  
Solid black or cream with dark lines



©Lonhart

*Megathura crenulata*  
Giant keyhole limpet  
Solid black or cream with dark lines



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*Lithopoma gibberosa*  
Red turban snail

Reddish shell but often overgrown, operculum is smooth and calcareous



*Lithopoma gibberosa*  
Red turban snail

Reddish shell but often overgrown, operculum is smooth and calcareous



*Lithopoma gibberosa*  
Red turban snail

Reddish shell but often overgrown, operculum is smooth and calcareous



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*Lithopoma gibberosa* (on right)  
Red turban snail

Reddish shell but often overgrown, operculum is smooth and calcareous



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*Kelletia kelletii*  
Adult Kellet's whelk

Natural shell color white with brown lines, usually covered with green and pink algae, yellow foot with black lines and white spots, large

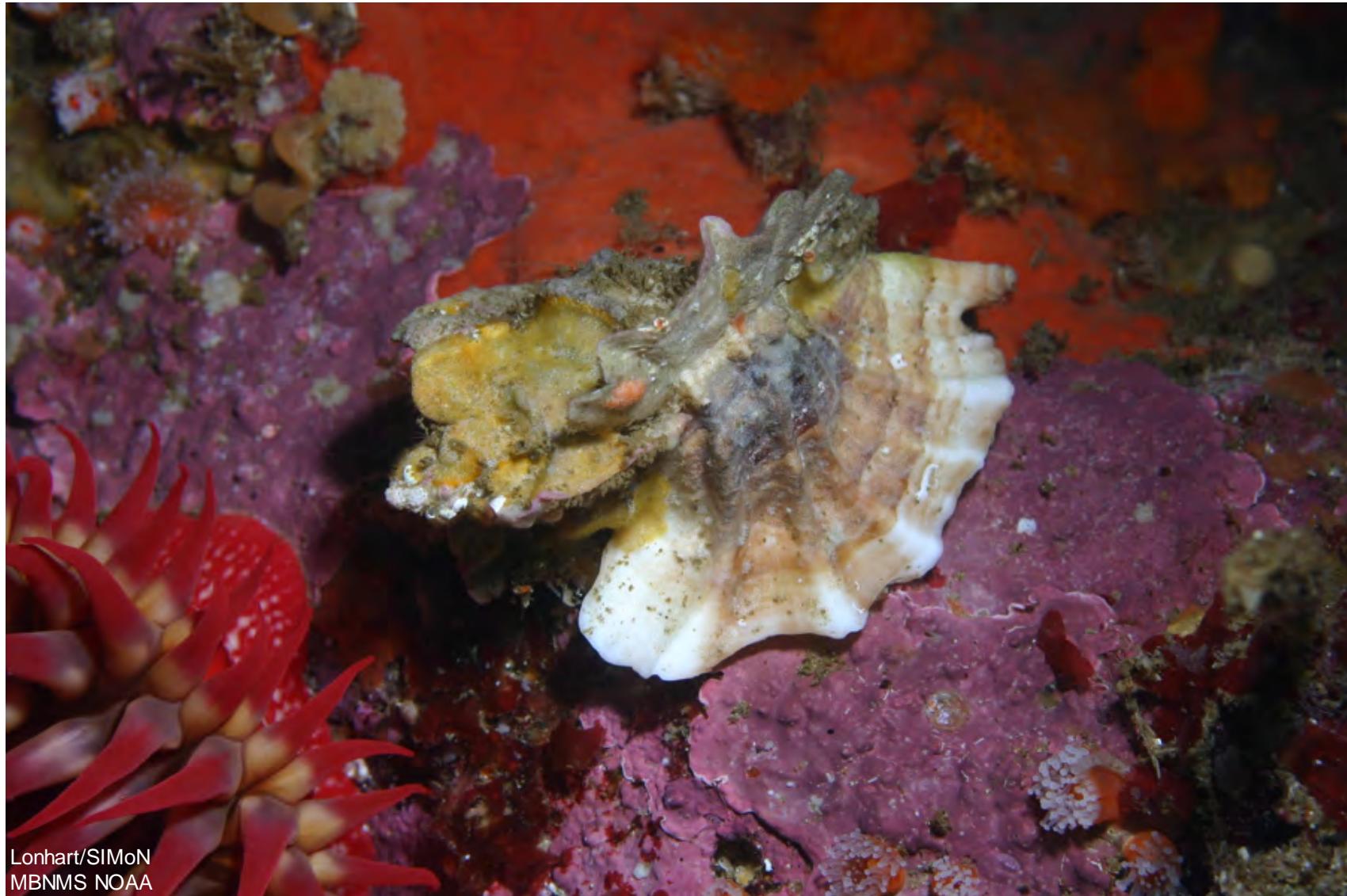


*Kelletia kelletii* Juvenile Kellet's whelk

Natural shell color white with brown lines, usually covered with green and pink algae, yellow foot with black lines and white spots, large



*Kelletia kelletii*      Adult Female Kellet's whelk  
Natural shell color white with brown lines, usually covered with green  
and pink algae, yellow foot with black lines and white spots, large



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*Ceratostoma foliatum* Leafy hornmouth  
Three varices (wings), tooth at aperture, white shell with brown  
banding if not encrusted with epibionts



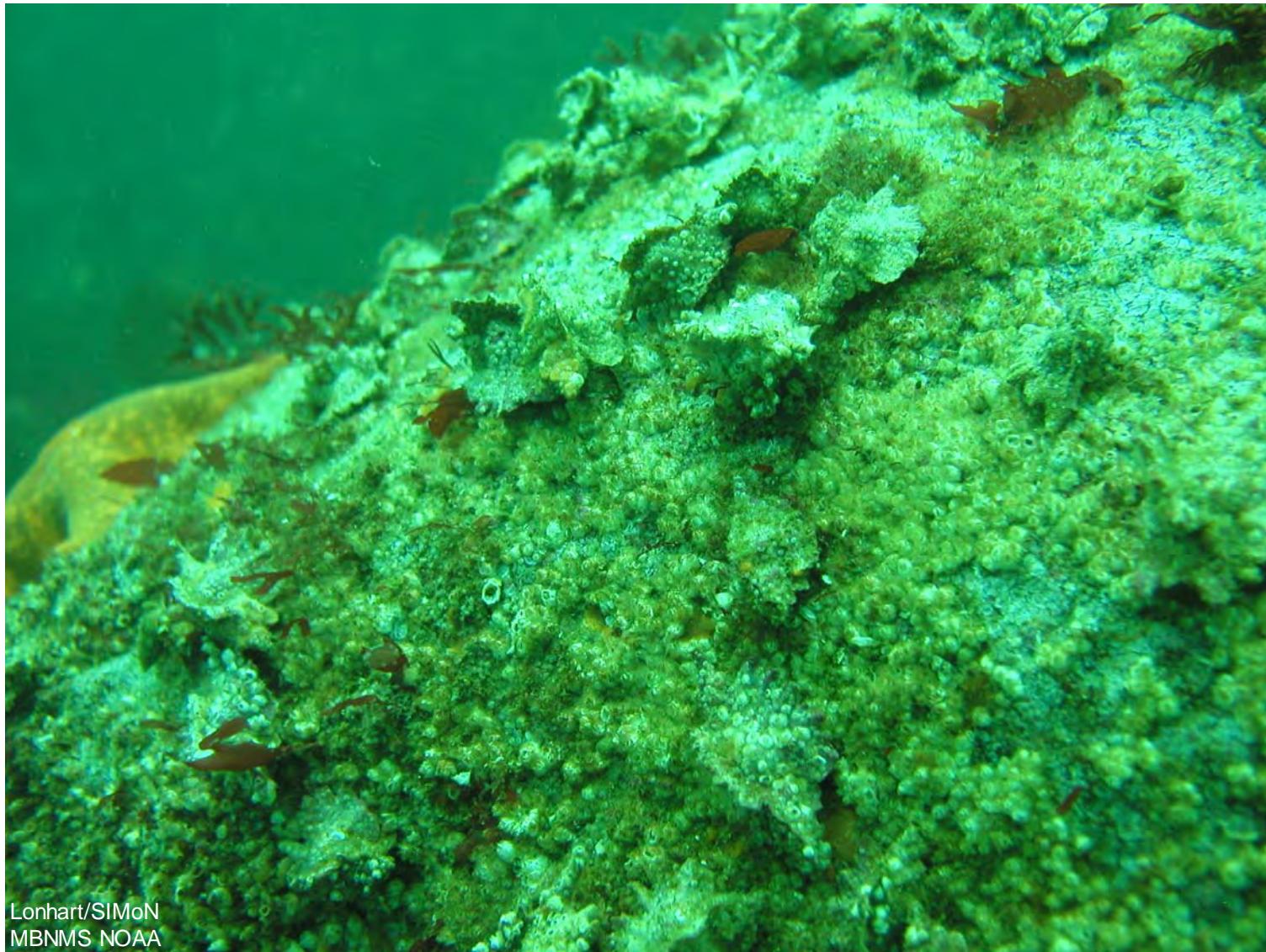
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*Ceratostoma foliatum* Leafy hornmouth  
Three varices (wings), tooth at aperture, white shell with brown  
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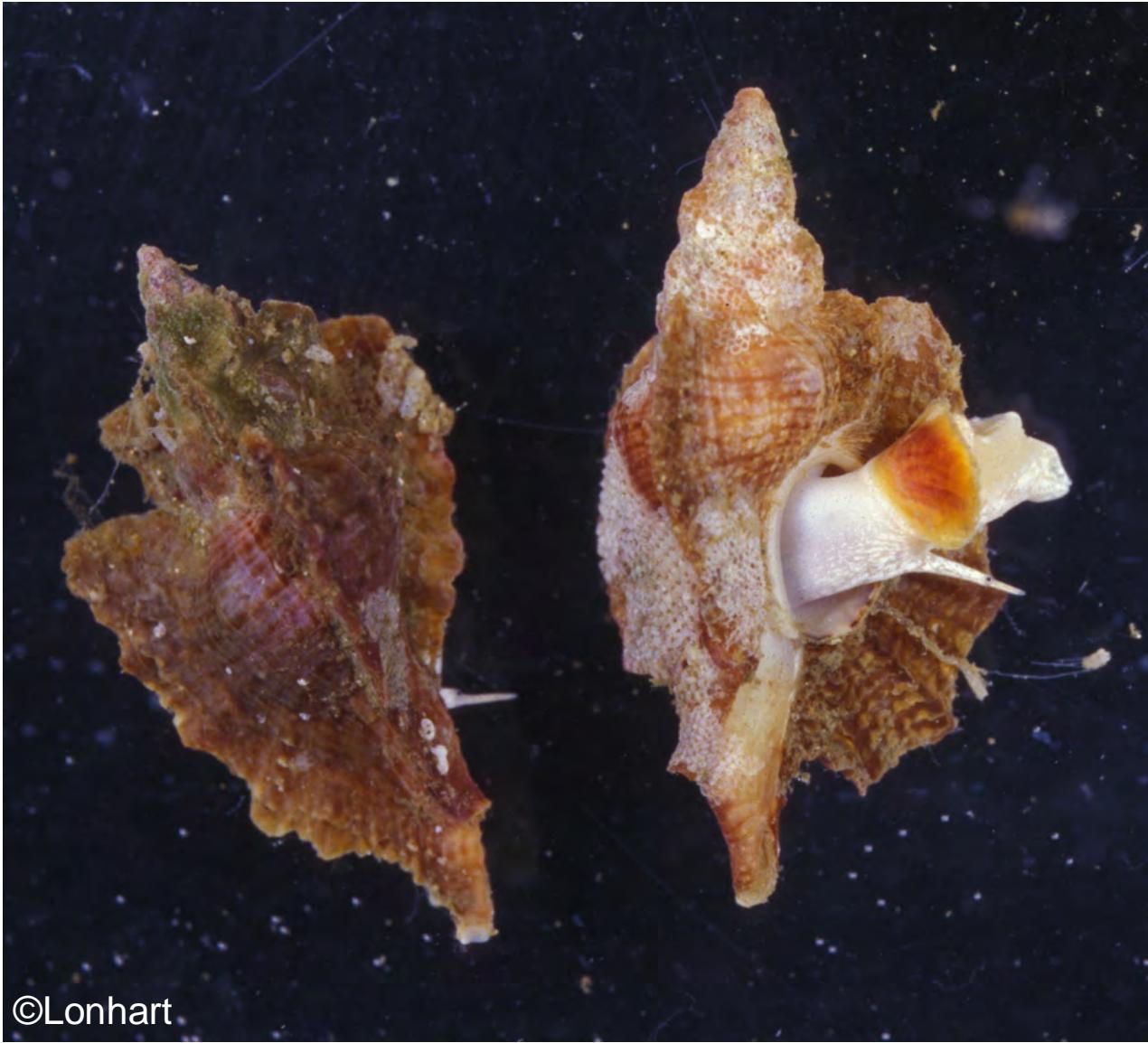
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*Ceratostoma foliatum* Juvenile Leafy hornmouth  
Three varices (wings), tooth at aperture, white shell with brown  
banding, old tooth evident between lower brown bands



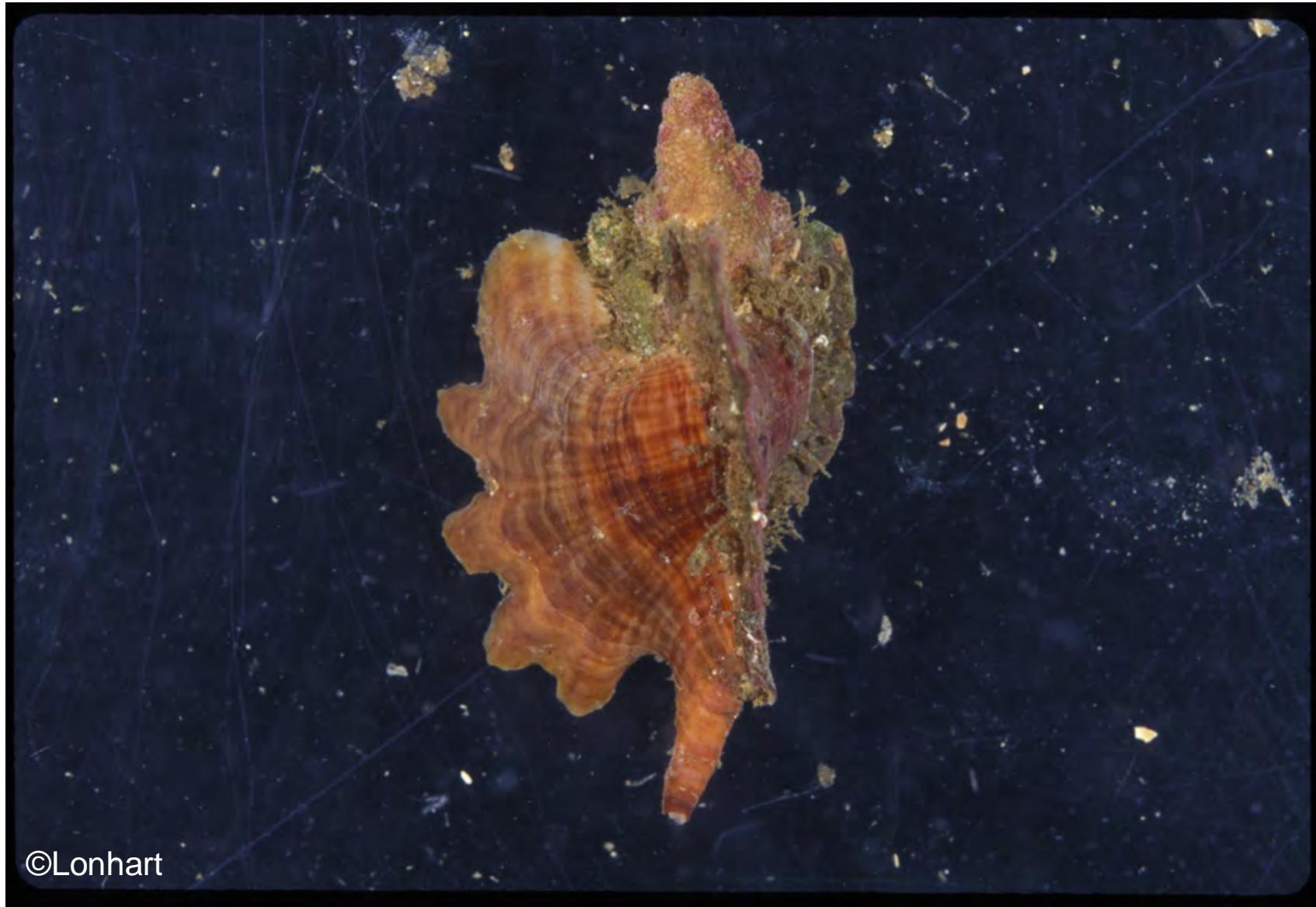
*Pteropurpura macroptera*

Similar to *Ceratostoma*, but much smaller and no tooth. When you see this many in an aggregation, it is typically NOT *Ceratostoma*.



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*Pteropurpura macroptera*  
NOT *Ceratostoma*, much smaller and no tooth.



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*Pteropurpura macroptera*

NOT *Ceratostoma*, much smaller and no tooth. New varex  
(i.e. a new “wing” on left) with no epibiotic overgrowth on it yet.



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*Cypraea spadicea*  
Chestnut cowry

Golden-brown top, very smooth, uncommon in central CA



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*Cypraea spadicea*  
Chestnut cowry

Golden-brown top, very smooth, uncommon in central CA



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California sea hare  
Burgundy red with black mottling, up to size of football, called a “hare”  
due to large “ears”

*Aplysia californica*





*Dendronotus iris* (not *Aplysia*!)

Burgundy red, no mottling, many branched cerata, up to 15 cm long



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*Tethya californiana*  
Orange puffball sponge  
Solitary or in clumps, can be partially overgrown



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*Tethya californiana*  
Orange puffball sponge  
Solitary or in clumps, can be partially overgrown



Lonhart/SIMoN  
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*Styela montereyensis*  
Stalked tunicate  
Can be smooth or covered with epibionts



*Styela montereyensis*  
Stalked tunicate  
Can be smooth or covered with epibionts



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*Stylaster californicus*  
California hydrocoral



Lonhart/SIMoN  
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*Stylaster californicus*  
California hydrocoral



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*Balanus nubilus*      Giant Acorn Barnacle

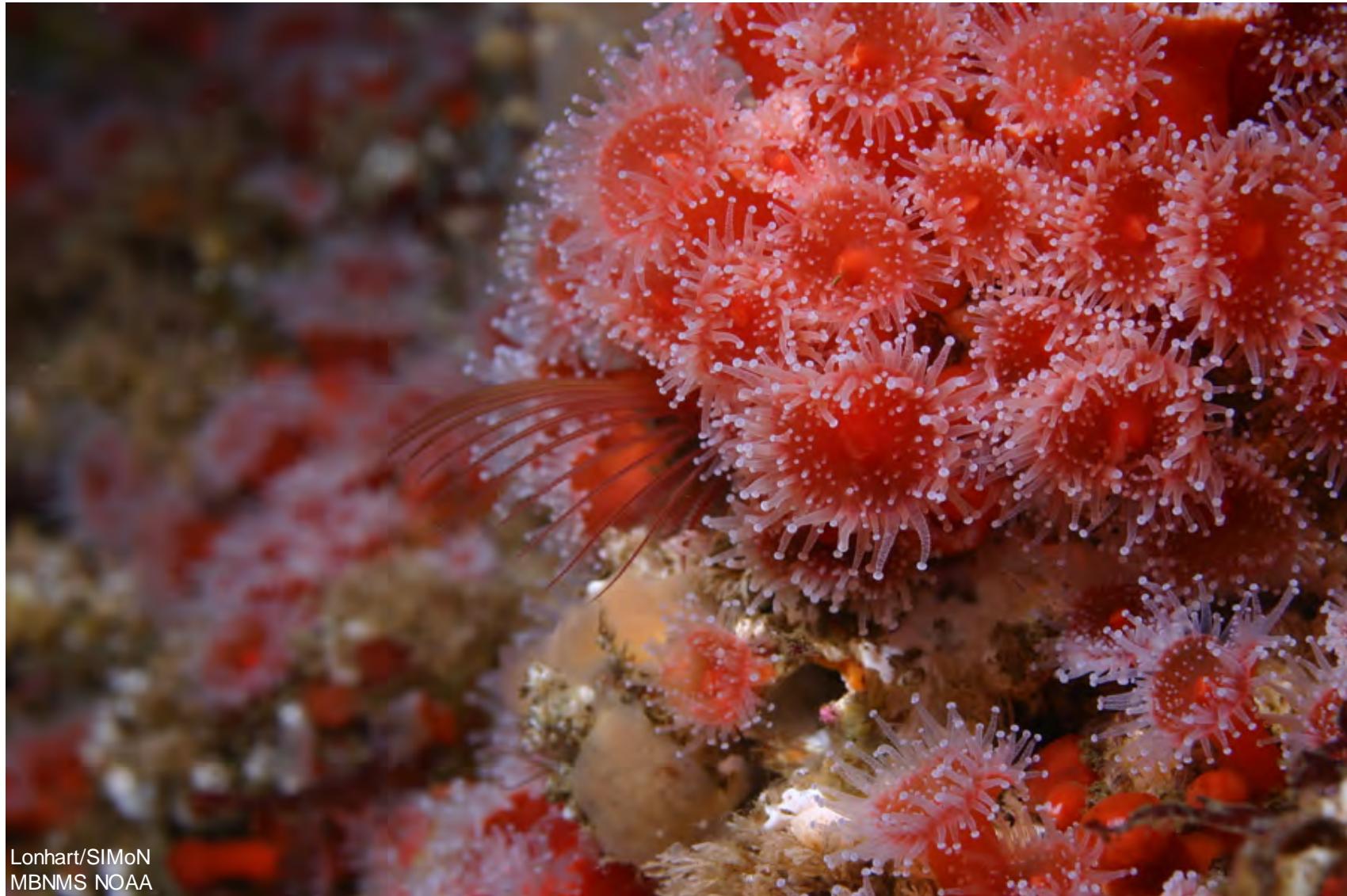
Filter feeder. It is a common inhabitant of vertical rock walls on offshore pinnacles  
that receive high water flow.



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*Balanus nubilus*    Giant Acorn Barnacle

Filter feeder. It is a common inhabitant of vertical rock walls on offshore pinnacles that receive high water flow.



Lonhart/SIMoN  
MBNMS NOAA

*Balanus nubilus*    Giant Acorn Barnacle

Filter feeder. It is a common inhabitant of vertical rock walls on offshore pinnacles that receive high water flow.