

Porifera (Sponges)

Sponges are irregular masses of cells, varying in length and thickness, from microscopic to more than 1m across. Channels and pores through the colonies allow water to circulate, enabling the sponges to filter out particles of food. Look for sponges under ledges and in surge channels, commonly anchored to shells or rocks.



mucous sponge
Plocamia karykina
Red to orange.
Smooth texture. 2, 3



red sponge
Ophlitaspongia pennata
Crimson to yellow.
Velvety texture. (Two shown on rock.) 2, 3



crumb-of-bread sponge
Halichondria panicea
Soft. 2, 3



purple sponge
Haliconia sp.
2, 3.

Tips for Favorable Tidepooling

Use a tidetable to find the lowest tides during daylight hours. Arrive at least an hour before low tide, and start at the lowest exposed zone. Always keep an eye on the sea. Sneaker waves can hit at any time. Do not get trapped on offshore rocks or behind rocky headlands by the incoming tide.

The lowest tides of the year occur December-January, and June-August. Spring is a good time to see large numbers of plants and animals because of ocean upwelling. The spring upwelling is caused by cold, oxygen-rich ocean water rising as prevailing winds and the California Current push surface waters offshore. This upwelling brings nutrients to the surface of the ocean to provide nourishment for phytoplankton (microscopic floating plants), which in turn make food for other organisms.

Tidepool Rules and Etiquette

- ✓ Do not interfere with the natural life or death of animals and plants. In any park, refuge or reserve managed by county, state or national agencies, it is illegal to handle, move, capture, collect, feed, poke, restrain, frighten, harm or harass any marine organism in any way.
- ✓ Do not overturn rocks or interfere with natural settings. If you disturb any site, put things back exactly as they were before.
- ✓ Watch your footing. Step only on bare rock when possible, never on tidepool creatures.



Recommended References

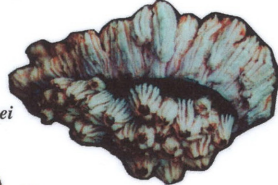
- *Pacific Intertidal Life*; Ron Russo and Pam Olhausen (Nature Study Guild, 1981)
- *The Beachcomber's Guide to Seashore Life of California*; J. Duane Sept (Harbor Publishing, 2002)
- *Introduction to Seashore Life of the San Francisco Bay Region and the Coast of Northern California*; Joel Hedgpeth (University of California Press, 1969)
- *Beachcomber's Guide to California Marine Life*; Thomas Niesen (Gulf Publishing Co., 1994)
- *Between Pacific Tides* (5th edition); Edward Ricketts, Jack Calvin, Joel Hedgpeth, David Phillips, et al. (Stanford University Press, 1985)
- *Intertidal Invertebrates of California*; Robert Morris, Donald Abbott, Eugene Haderlie, et al. (Stanford University Press, 1980)
- *Light's Manual: Intertidal Invertebrates of the Central California Coast* (3rd edition); edited by Ralph Smith and James Carlton (University of California Press, 1975)

Arthropoda (Crustaceans and Insects)

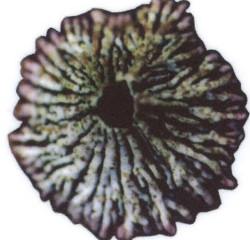
Arthropods are the most numerous of the world's animals, both in number and in species. All have an exoskeleton with jointed limbs. Insects (the winged arthropods) and crustaceans are represented in our intertidal zones. Barnacles attach themselves by their heads to rocks and shells to filter-feed in water with long, feathery cirri (modified legs). Isopods (sow bugs and rock lice) have jointed backs, enabling them to fold and curl their bodies. Amphipods are flea-like scavengers. True crabs have four pairs of walking legs, while anomuran crabs have three pairs plus an extra tiny pair, which porcelain crabs use for cleaning their gills, and which hermit crabs use for adjusting their borrowed shells. All arthropods need to shed; the hollow exoskeletons of crabs commonly found on shore are not dead animals, but just old "skins." **Note:** Measurements of crabs are taken across the carapace (back of shell).



kelp fly
Neocoelopa vanduzeei
0.5cm. Swarms on rotting material.



acorn barnacle
Balanus glandula
2cm wide. On rocks and shells. 2



thatched barnacle
Semibalanus cariosus
6cm high. Exposed rocks. 3



red volcano barnacle
Tetraclita rubescens
3.5cm. Exposed rocks. 2



leaf barnacle
Pollicipes polymerus
5cm. Clusters on exposed rocks. (Cluster at top; individual and young below it.) 2



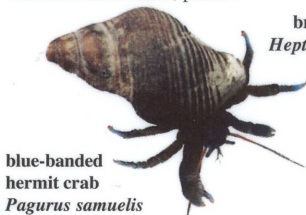
Vosnesensky's seaweed isopod
Idotea vosnesenskii
3cm. Color varies. Rock fields, in algae, surfgrass. 1-3



fat rock louse
Ligia pallasii
3.5cm. Crevices. S Santa Cruz, north.



pistol shrimp
Alpheus clamator
3cm. "Pistol" sound, created when claws snap shut, stuns prey at a distance and frightens intruders. Rock fields, pools. 3



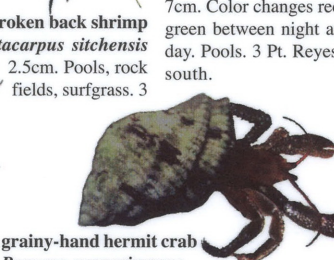
blue-banded hermit crab
Pagurus samuelis
2cm. Similar to *P. granosimanus*, but has hairy, blue-banded legs. Takes up residence in empty shells. (Shown here with *dira* whelk shell.) Pools. 2



kelp crab
Pugettia producta
7cm. Olive to red. On kelp or in pools. 2, 3



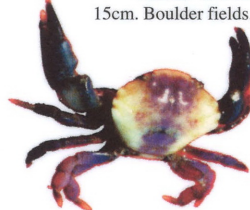
black-clawed pebble crab
Lophopanopeus bellus
2cm. White to purple. Rock fields, mat algae flats. 3



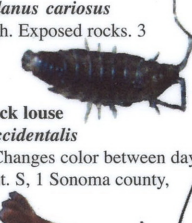
grainy-hand hermit crab
Pagurus granosimanus
2cm. Brown with bluish spots. Takes up residence in empty shells, changing homes as it grows. (Shown here with *Ocenebra circumtexta* shell.) Pools. 2, 3



pacific rock crab
Cancer antennarius
15cm. Boulder fields, crevices. 3



smooth-backed pebble crab
Lophopanopeus leucomanus
2cm. Tan to multicolored. Rock fields, urchin pools. 3



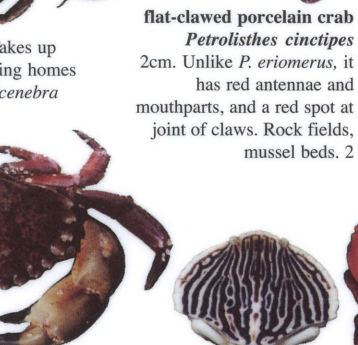
night rock louse
Ligia occidentalis
2.5cm. Changes color between day and night. S, 1 Sonoma county, south.



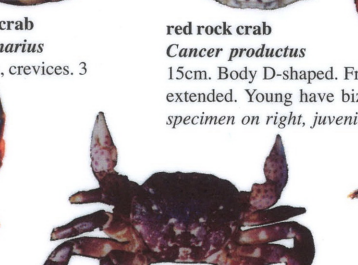
California red shrimp
Lysmata californica
7cm. Color changes red to green between night and day. Pools. 3 Pt. Reyes, south.



flat-clawed porcelain crab
Petrolisthes cinctipes
2cm. Unlike *P. eriomerus*, it has red antennae and mouthparts, and a red spot at joint of claws. Rock fields, mussel beds. 2



red rock crab
Cancer productus
15cm. Body D-shaped. Front end of shell, between eyes, is extended. Young have bizarre colors and designs. (Mature specimen on right, juvenile on left.) Rock fields. 3



purple shore crab
Hemigrapsus nudus
3cm. Rock fields. 1, 2

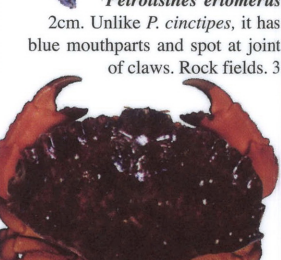


brown buckshot barnacle
Chthamalus spp.
8mm. Abundant on bare rocks. 1, 2

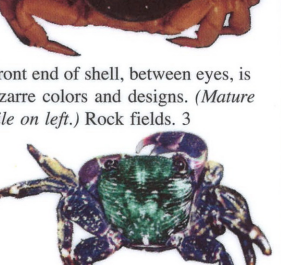
swimming isopod
Cirrolana harfordi
2cm. Rock fields. 1-3



long-horned beach-hopper
Megalorchestia californiana
3cm. This amphipod lives in sand and pebbles. S



flat-top porcelain crab
Petrolisthes eriomerus
2cm. Unlike *P. cinctipes*, it has blue mouthparts and spot at joint of claws. Rock fields. 3



lined shore crab
Pachygrapsus crassipes
2cm. Common. 1, 2