

Heal the Bay
aquarium
GET INSPIRED. MAKE WAVES.

Marvelous Mollusks



Lion's Mane Nudibranch

Melibe leonina



Class: Gastropoda

Habitat: Kelp forests. Range from Alaska to the Gulf of California.

Size: 10 cm (4 in) in length.

Diet: Carnivore - feeds on copepods and zooplankton.

Fun Facts:

- This species is often confused with sea jellies because of their unique oral hood. It has tentacles that are used for sensory, and lack the stinging cells (nematocysts) that cnidarians possess.
- When food lands on the hood, this nudibranch will bring the sides of its hood together, with the tentacles trapping the prey. The hood contracts and the prey is then forced into its mouth (think of a venus fly trap).
- The small white ribbons seen in their tank are their eggs, containing as many as 30,000 eggs.

Scaled Worm Snail (Tube Snail)

Thylacodes squamigerus



Class: Gastropoda

Habitat: Rocky shores and intertidal. Range from Monterey Bay, California to Baja Mexico.

Size: Tube diameter 1.2 cm (0.5 in), and length 12.5 cm (5 in).

Diet: Filter feeder - feeds by secreting a mucus "net" in order to trap plankton and other organic particles. Prey for sea stars and some carnivorous snails.

Fun Facts:

- The tube snail can be found alone or in small clusters up near Monterey Bay, but down in southern California they are more commonly found in large clusters (up to 650 individuals /m²).
- The tubes are typically attached to a hard substrate, such as rocks or animal shells.
- This species forms elongated tubular shells instead of the typical coiled or flat shells of other snails. The formation of the mucus feeding "net" takes 3-4 minutes. The snail retrieves the net by extending their radula out to pull the mucus back in to its mouth.

Chestnut Cowry

Cypraea spadicea



Class: Gastropoda

Habitat: Rocky intertidal zone from central California to Baja California.

Size: 4 cm (3 in) long

Diet: Omnivore - feeds on algae, anemones, sponges, and snail eggs. Prey for sea stars and other snails.

Fun Facts:

- Chestnut cowries have a shiny, brown shell with a slit opening on the ventral (bottom) side, lined with teeth, and no operculum.
- Has a spotted mantle that will emerge and cover the shell to prevent predators from being able to get a grip on the cowry. Will retract mantle when feeling threatened.
- The mantle of this snail also polishes the shell and keeps it smooth
- This is the only true cowry found in California waters, most are found in tropical waters

Limpets

Various species



Class: Gastropoda

Habitat: Rocky intertidal zones, worldwide.

Size: 2 cm (1 in) to 20 cm (8 in).

Diet: Herbivore - most feed on algae. Prey for fish, sea stars, and birds.

Fun Facts:

- Limpets have a single cap-shaped shell with mantle covering.
- Some species of limpet will return to the same “home scar” on a rock. Scientists believe they can follow mucus trails to get back to their exact location
- When limpets are clamped down on rocks it is next to impossible to pry them off

Giant Keyhole Limpet

Megathura crenulata



Class: Gastropoda

Habitat: Rocky intertidal zone and rocky reefs of central California to Baja California.

Size: 13 cm (5 in) shell length.

Diet: Omnivorous: feeds on algae and tunicates. Prey for fish, sea stars, and sea otters.

Fun Facts:

- Giant keyhole limpets have a hole on their dorsal (top) side to facilitate excretion of waste products and to pass water over their gills.
- True limpets do not have this hole.
- Some of the coastal tribes used the shells for money and for hair decorations.
- Like the chestnut cowrie, giant keyhole limpets have a mantle, which covers its shell to prevent predators from being able to grip on to the limpet

Noriss' Top Snail

Norrisia norrisi



Class: Gastropoda

Habitat: Rocky reefs, kelp forests and intertidal zones between 3-36 m (10-100 ft). Range from Point Conception to Baja California.

Size: 6.3 cm (2.5 in) shell diameter.

Diet: Herbivore - feeds on kelp and other brown algae. Prey for sea stars, octopuses, and shorebirds.

Fun Facts:

- Norris' top snails migrate up and down the kelp stipe (stem) as the intensity of sunlight changes throughout the day. This is called diurnal vertical migration.
- After Western gulls pick snails off the kelp forest canopy, they fly high above the rocky shores dropping the snails on the rocks to smash the shell open in order to eat them.

Chiton

Various species



Class: Polyplacophora

Habitat: Rocky intertidal zone from the Aleutian Islands to San Diego.

Size: 1 cm (1/2 inch) to 33 cm (13 in).

Diet: Omnivore - feeds on algae, diatoms and sometimes sponges and bryozoans.

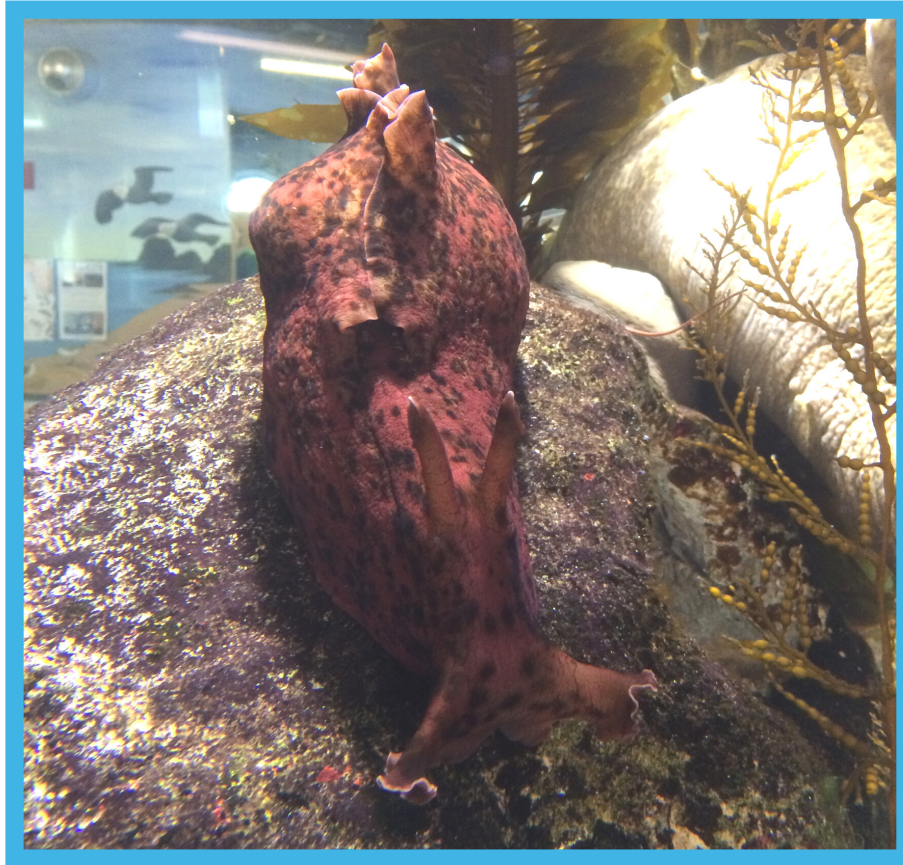
Prey for octopus and sea stars.

Fun Facts:

- Chitons often live on the underside of rocks and in depressions for protection against predators.
- They are light sensitive and respond to changes in light by firmly clamping their foot down to the substrate.
- Due to the overlapping nature of their eight shells, when pried from a rock, chitons often roll into a ball like a pill bug.

California Sea Hare

Aplysia californica



Class: Gastropoda

Habitat: Sandy bottoms, rocky reefs and kelp forests to 18 m (60 ft). Range from Northern California to Baja California.

Size: 40 cm (15 in).

Diet: Herbivore - feeds on various red, green and brown algae and eelgrass. Prey for fish and aggregating anemones.

Fun Facts:

- The sea hare can release a noxious purple ink to deter predators.
- It is a simultaneous hermaphrodite, meaning that each individual has both male and female sex organs at the same time, but an individual cannot fertilize its own eggs.
- Yellowish eggs resemble spaghetti and are laid as entangled, gelatinous masses on seaweed or rocks.
- The CA black sea hare (*A. vaccaria*), a relative, can grow to almost 3 ft (1 m) in length.

Purple Olive Snail

Olivella biplicata



Class: Gastropoda

Habitat: Sandy bottom to 50 m deep. Range from British Columbia to Baja California.

Size: 3 cm (1.5 in).

Diet: Scavenger - feeds on dead animals and plant matter. Predators include octopuses, cone snails, armored sand stars and short-spined sea stars

Fun Facts:

- The Chumash prized the purple olive snail for its shell, which they made into beads and traded as currency.
- The shells are not always purple. Sometimes brown, tan, gray, or even white shells of this species are found.
- Olive snails can live up to 15 years.
- Olive snails can bury themselves under the sand and extend a siphon up into the water like a snorkel. They also possess a plow-like front end that helps them burrow in the sand during the day, leaving a trail behind.

California Cone Snail

Conus californicus



Class: Gastropoda

Habitat: Rocky shores, sandy bottom and intertidal to 30 m (98 ft). Range from San Francisco, California to southern Baja California.

Size: 4 cm (1.6 in).

Diet: Carnivore - feeds on snails (e.g. purple olive snails), clams, polychaetes and small fish. Sometimes scavengers since they have been observed feeding on dead fish and octopuses.

Fun Facts:

- Cone snails have evolved to feed with spear-like teeth instead of a radula. They follow their food by scent with their proboscis extended. When the proboscis makes contact with the prey, a single hollow tooth spears forward like a harpoon and injects venom to paralyze the prey. The proboscis then envelopes the paralyzed animal and digestion begins.
- Cone snail venom has been used in biomedical research. The conotoxins in the venom have been used effectively as pain medication without paralysis. This venom has shown to be 1000 times stronger than morphine.



Wavy Turban Snail

Megastraea undosa



Class: Gastropoda

Habitat: Rocky shores, kelp forests and intertidal zones to 21m (70 ft). Range from Point Conception to Baja California.

Size: 11 cm (4.5 in) shell diameter.

Diet: Herbivore - feeds on kelp and other brown algae.

Fun Facts:

- Wavy top turban snails can often be seen with calcareous red algae growing on their shells.
- For protection, wavy top snails are able to close off their shell opening with a thick operculum (trap door).

California Black Sea Hare

Aplysia vaccaria



Class: Gastropoda

Habitat: Found to 18m deep in calm waters of sandy bottoms, rocky reefs, and kelp forests. Range from Northern California to Baja California.

Size: 1 m (3 ft); weight up to 14 kg (31 lb).

Diet: Herbivore: feeds primarily on brown algae. Prey for fish and aggregating anemones.

Fun Facts:

- This sea hare does not have the ability to release ink like its relative, the California sea hare.
- It is a simultaneous hermaphrodite, meaning that each individual has both male and female sex organs at the same time, but an individual cannot fertilize its own eggs. Yellowish eggs resemble spaghetti and are laid as entangled, gelatinous masses on seaweed or rocks.
- The CA black sea hare can grow to almost 3 feet in length! This makes it the world's largest gastropod

Kellett's Whelk

Kelletia kelletii



Class: Gastropoda

Habitat: Kelp forests, rocky reefs, low intertidal zones to 69 m (230 ft). Range from Monterey Bay, California to central Baja California.

Size: 17.8 cm (7 in) shell length.

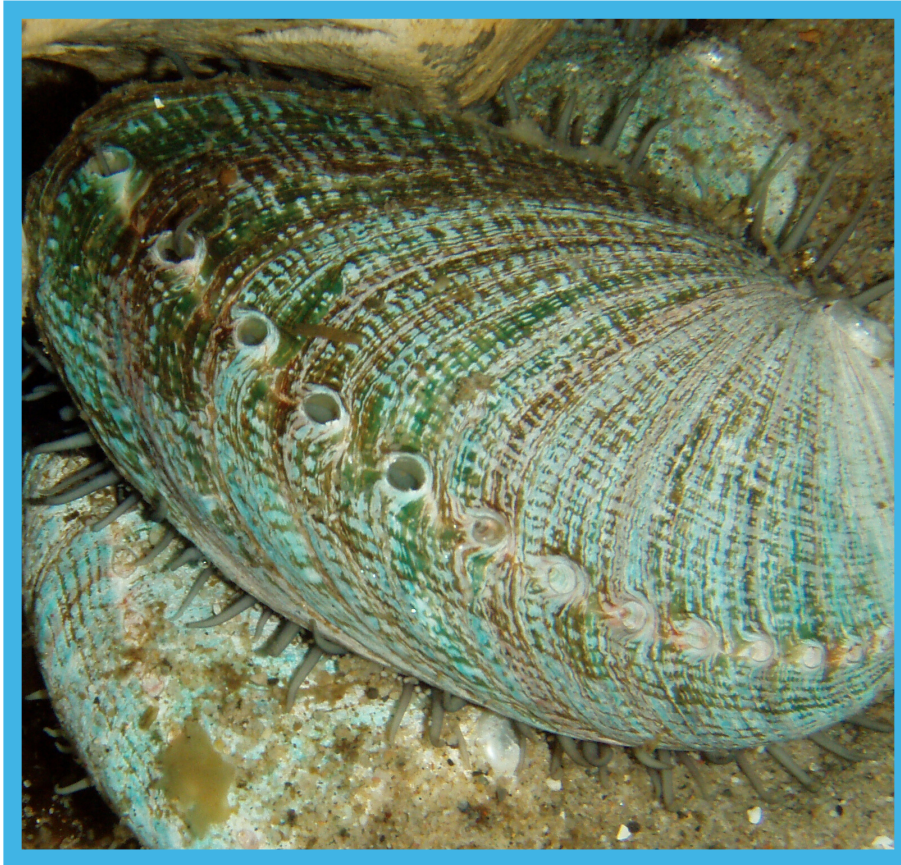
Diet: Carnivore/Scavenger - feeds on variety of prey including turban snails, worm snails, sessile annelid worms and will scavenge when possible. Prey for sea otters, sea stars, moon snails and octopuses.

Fun Facts:

- This is one of the larger gastropods on the California coast.
- This snail has a prehensile proboscis that they can extend up to 3 times the length of their shell in order to feed on tissue from prey or carcasses. Our Aquarium will often showcase the whelk's unique feeding behavior. Food such as a filleted fish is placed inside a clear acrylic box with multiple holes/openings. The whelk's will extend their proboscis through the openings in order to use their radula and feed on the meal

Green Abalone

Haliotis fulgens



Class: Gastropoda

Habitat: Rocky shores and intertidal areas to 18 m (60 ft). Range from Point Conception, California to southern Baja California.

Size: 25.4 cm (10 in) in length.

Diet: Herbivore - feeds primarily on algae. Prey for sea stars, octopuses, large fish, sea otters and humans.

Fun Facts:

- Their exterior shell is typically olive green to reddish in color, and they have 5-7 open circular shell holes.
- The inside of the shell is an opalescent dark green, blue and lavender. This pearlescent layer used to make the abalone extremely valuable when made into jewelry, and used as currency by the Chumash and Tongva. They were also prized by commercial fisheries until the 1970's, when the pink abalone populations in California collapsed from overharvesting. This resulted in strict catch-and-take measures implemented by the Department of Fish & Wildlife.

Red Abalone

Haliotis rufescens



Class: Gastropoda

Habitat: Rocky shores and intertidal areas to 18 m (60 ft). Range from British Columbia to southern Baja California (mostly found in the southern half).

Size: 20-30 cm (8-12 in) in shell length.

Diet: Herbivore - feeds primarily on algae. Prey for sea stars, octopuses, large fish, sea otters and humans.

Fun Facts:

- There are 7 species of abalone that can be found on the west coast and 2 of those species are on the IUCN list. The black abalone is critically endangered and the pinto abalone is listed as endangered. NOAA also lists the white abalone as endangered with that species being the first marine invertebrate to be listed on the Endangered Species Act in 2001. Overharvesting, disease and low population densities has led to the decline of all these species.

Rock Scallop

Crassedoma giganteum



Class: Bivalvia

Habitat: Rocky intertidal zone and rocky reefs from British Columbia to Baja California.

Size: 25 cm (10 in).

Diet: Filter feeder - feeds on organic particles and plankton. Prey for predatory sea stars and humans.

Fun Facts:

- Rock scallops, like many filter feeding mollusks, have a sophisticated sorting apparatus, which allows them to separate small inorganic particles from food particles and eject the inedible items from their bodies.
- As a juvenile, this scallop is free swimming until it grows to about one inch where it settles on a rock, secreting a material that cements it to the substrate.
- Rock scallops have numerous blue, light-sensing eye spots that can detect motion.

California Mussel

Mytilus californianus



Class: Bivalvia

Habitat: Rocky reefs, pier pilings and intertidal zones. Range from Alaska to Baja California.

Size: 25 cm (10 in) long, 10 cm (4 in) high.

Diet: Filter feeder - feeds on phytoplankton and suspended organic particles. Prey for lobsters, sea stars, shore birds, snails, fish and humans.

Fun Facts:

- Mussels attach themselves to a substrate with secretions called byssal threads, to help them withstand the pounding of the surf. They are secreted as a liquid but quickly harden into a fibrous solid upon contact with salt water. Byssal threads are as strong as steel, and scientists are researching how to replicate this material for industrial and medical use.
- The California mussel, under the right conditions, can live for at least 20 years.
- Toxins such as domoic acid can bioaccumulate, or concentrate, in mussels that feed on harmful algal blooms - HABs. These neurotoxins affect mammals that eat the infected mussels, causing memory loss and brain damage in humans, and tremors, seizures and disorientation in marine mammals.

Bean Clam

Donax gouldii



Class: Bivalvia

Habitat: Commonly found in the shallow sandy beaches from Santa Cruz to Baja California.

Size: 2.5 cm (1 in) in length.

Diet: Filter feeder - feeds on phytoplankton and suspended organic particles.

Prey for sea stars, shore birds and carnivorous snails.

Fun Facts:

- When waves of water hit the beach, Bean clams use their siphon and foot to make sure they don't get washed away by the water.
- Bean clams are usually a yellowish color with dark bands, although a variety of colors have been observed.

Two-Spot Octopus

Octopus bimaculoides



Class: Cephalopoda

Habitat: Found in intertidal mudflats and rocky shores to depths of 20 m (66 ft).

Size: The mantle can grow to be 20-40 cm (8-16 in) in length. Their arms can span to a size of 0.6-0.9 m (2-3 ft).

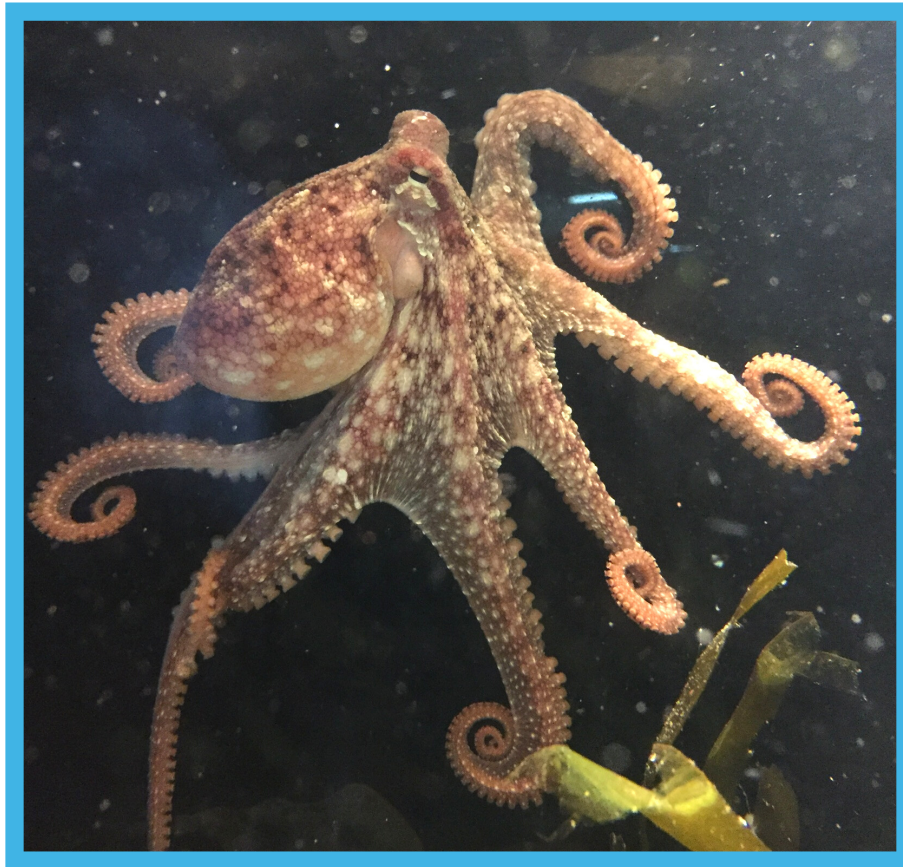
Diet: Carnivore - feeds primarily on various snails, clams, limpets, black abalone, crabs and fish.

Fun Facts:

- Octopuses are believed to be one of the smartest invertebrates, and have shown the ability to learn new skills by watching other octopuses.
- If an octopus loses an arm, it can eventually regenerate, or replace, it.
- Octopuses use pigmented cells called chromatophores to change the color of their skin. This allows them to better camouflage with their surroundings.

Eastern Pacific Red Octopus

Octopus rubescens



Class: Cephalopoda

Habitat: Found in intertidal mudflats and rocky shores. Red octopuses are even found at depths of 183 m (600 ft) in the Monterey Canyon!

Size: The mantle can grow to be 8-10 cm (3-4 in) in length. Their arm span (length) can grow to 30-52 cm (12-20 cm.)

Diet: Carnivore - feeds primarily on various snails, clams, hermit crabs, small crabs and fish.

Fun Facts:

- Octopuses (and other cephalopods) have three hearts: two branchial and one systemic. The branchial hearts move oxygen depleted blood through their gills, and the systemic heart pumps the oxygen-rich blood to the rest of the body.
- Octopuses have a short lifespan. Most (including the red octopus) live for about 1 to 1.5 years, and the longest known lifespan has been observed in the giant pacific octopus, which can live for about 4-5 years.

Heal the Bay
aquarium
GET INSPIRED. MAKE WAVES.

KNOWLEDGE DROPS



healthebay.org/knowledge-drops/