Teaching Instructions for Flashcard Exercise

Card Information

Enclosed are educational flashcards with basic information on plants and animals that are commonly found in the intertidal regions of Southern California. The fronts are illustrationed with pictures of the plant or animal taken out of its environment. The backs include the common and scientific name of the organism and basic information on taxomony and natural history. The lower right corner (as shown below) is illutrated with the organsim and the intertidal region in which it most commonly resides.

Suggested Exercise:

Divide students into ten groups

Show each card individually and ask students to raise their hands and identify the plant or animal.
Give card to students with the best answer.
Do not give students in the same group more than one card. Each group should have one card.

Ask students to discuss their card as a group and prepare to present their plant or animal to the rest of the class, taking turns sharing facts or physical characteristics.

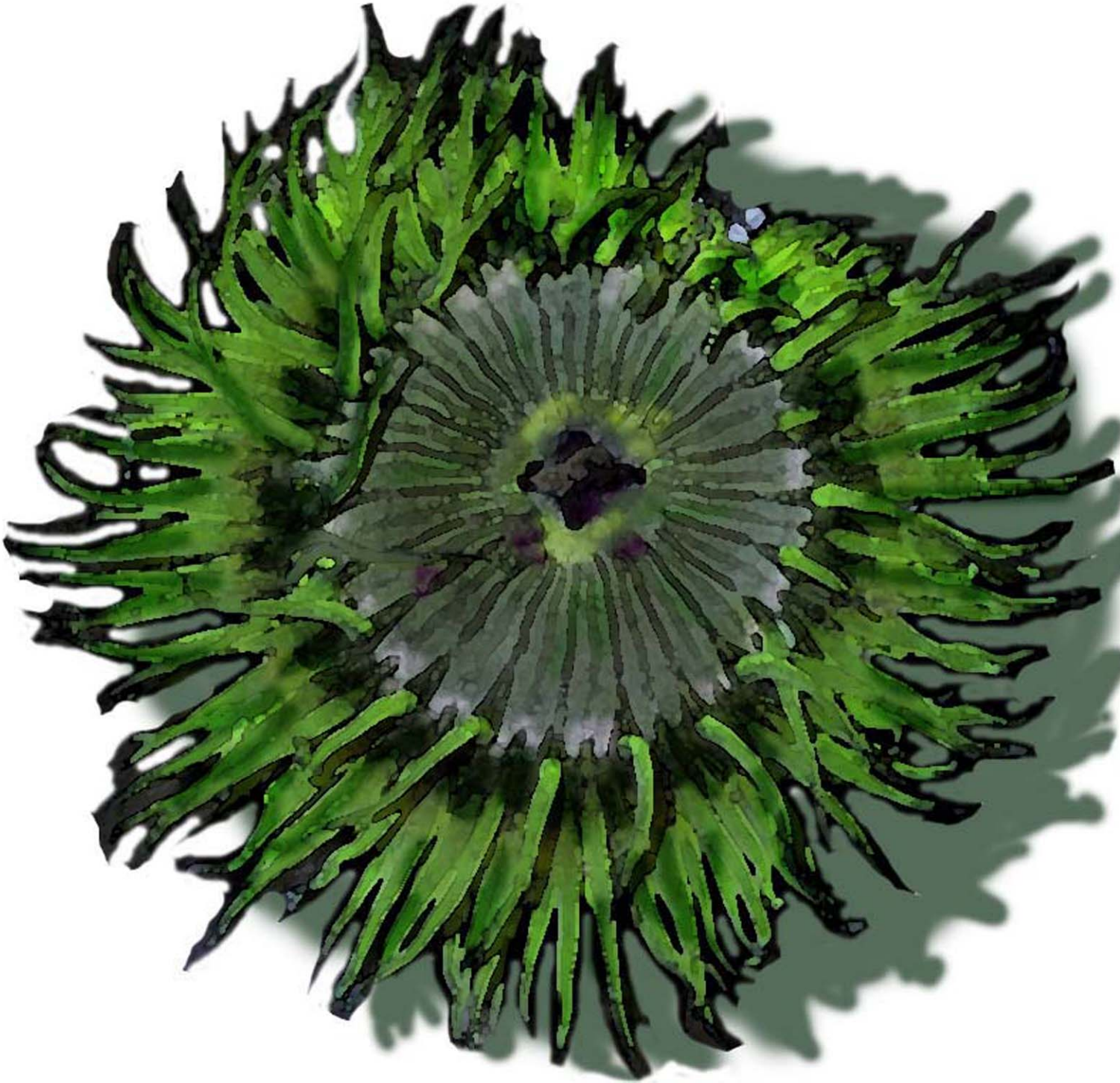
Flashcards include Information taken from:

Gabil, Margaret P. and Rose, Lana. *Seashore Syllabus*. The Santa Barbara Undersea Foundation, Santa Barbara, 1975.

Gunzi, Christine. *Tidepool*. Dorling Kindersley, Inc., New York, 1992.

Seashore Life of Santa Barbara County. Chambers Group, Inc., Santa Barbara, 1994.

Illustrations by
Kelly Campbell



Green Sea Anemones (*Anthopleura spp.*)
Phylum Cnidaria/ Class Anthozoa

Where do I live?

All along the west coast, Alaska to Panama, in the mid to low tide zone

What do I eat?

Plankton, mussels, crabs, and small fish

The anemone has only one hole for both its anus and its mouth. During feeding, it uses nematocysts on its tentacles to capture and sting prey. Once food is caught, it closes in and digests its meal within fifteen minutes!

Cool Facts:

Anemones are the squirtguns of the ocean.

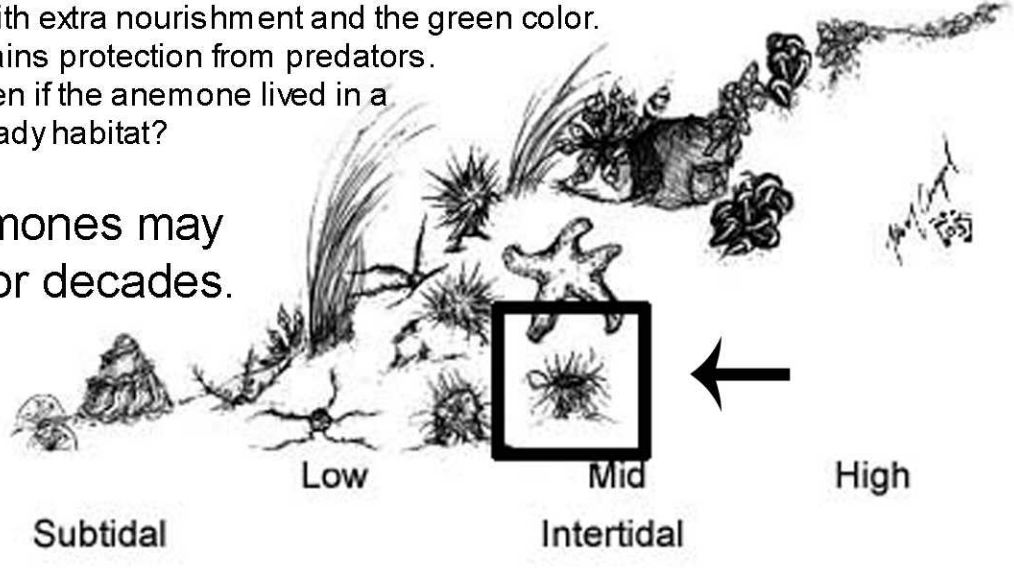
They have no skeleton and consist mostly of water.

The Green Sea Anemone is not really green.

The tissues of this animal are part of a symbiotic relationship with a unicellular marine plant. The two organisms help each other out. Through photosynthesis, the algae provides the animal with extra nourishment and the green color. In return, the algae gains protection from predators.

What would happen if the anemone lived in a shady habitat?

Anemones may live for decades.



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Wavy Top Turban Snail (*Lithopoma undosum*)
Phylum Mollusca/ Class Gastropoda

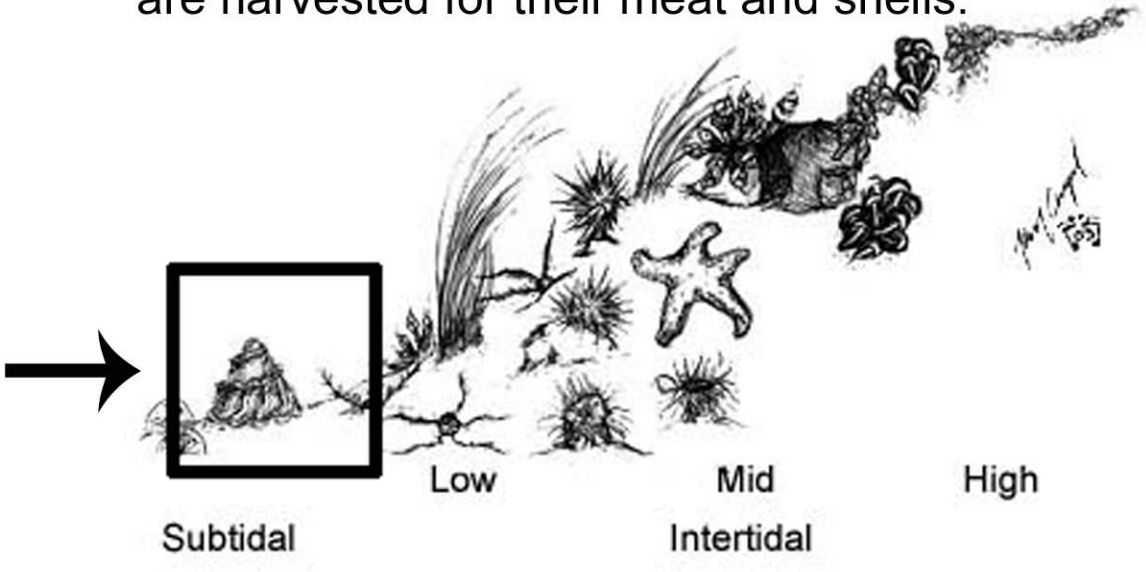
Where do I live?
Subtidal to low tide zone from Point Conception to Baja California

What do I eat?
Microscopic algae, diatoms

Cool Facts:

Snails have simple eyes and chemical receptors on the ends of their tentacles.

Wavy top turban snails can grow to be 10 cm and are harvested for their meat and shells.



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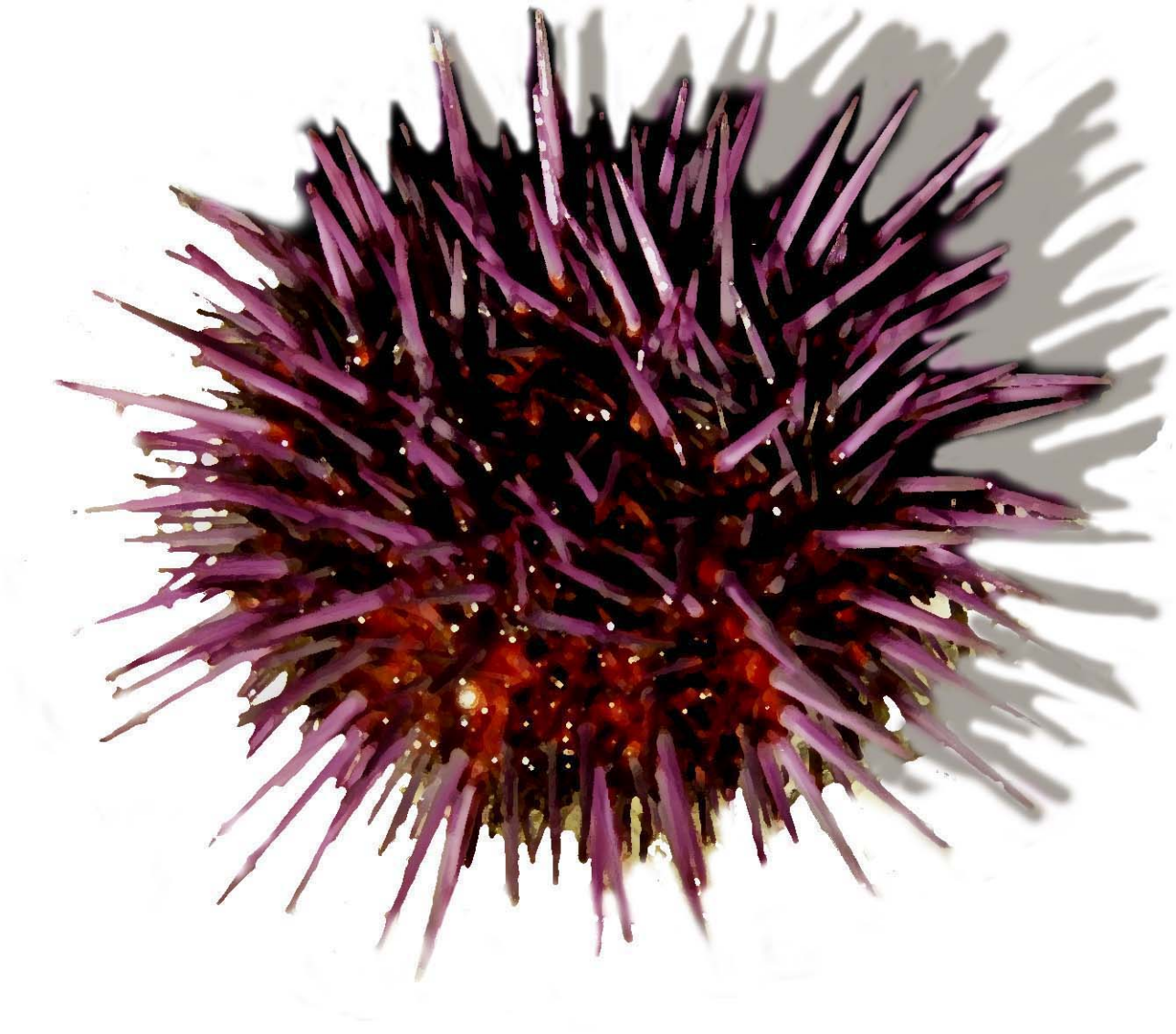


Purple Sea Urchin (*Strongylocentrotus purpuratus*)
Phylum Echinodermata/ Class Echinoidea

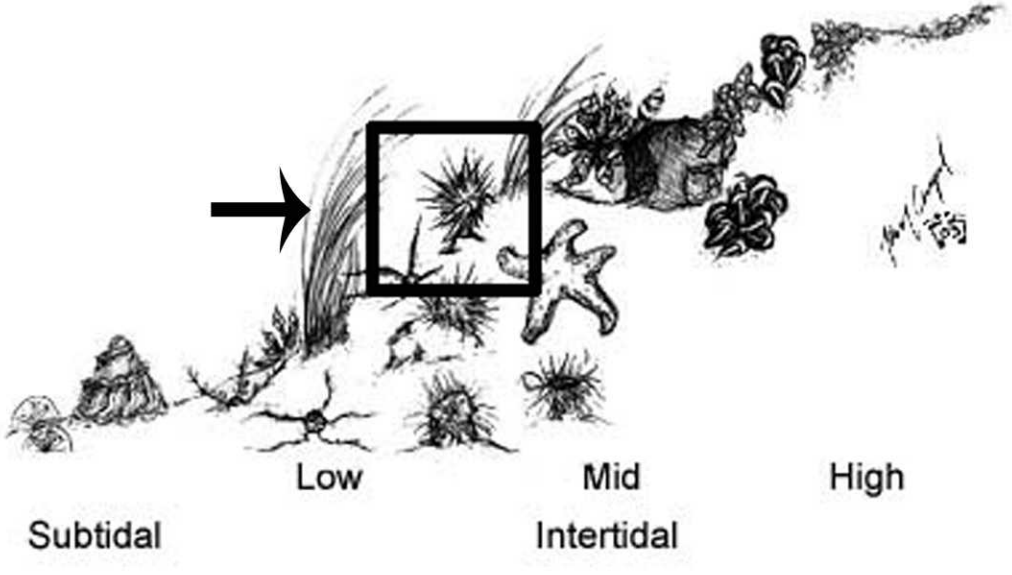
Where do I live?
Low tide zone from Alaska to Mexico

What do I eat?
Algae
The purple urchin has teeth on its bottom side that are used to scrape off algae from rocks.

Cool Facts:

Urchins use their spines to dig holes in rocks for burrowing.

Spines are used as weapons and can break off and inject poison into attackers.



Illustrations by
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Surfgrass (*Phyllospadix spp.*)
Marine Flowering Plant

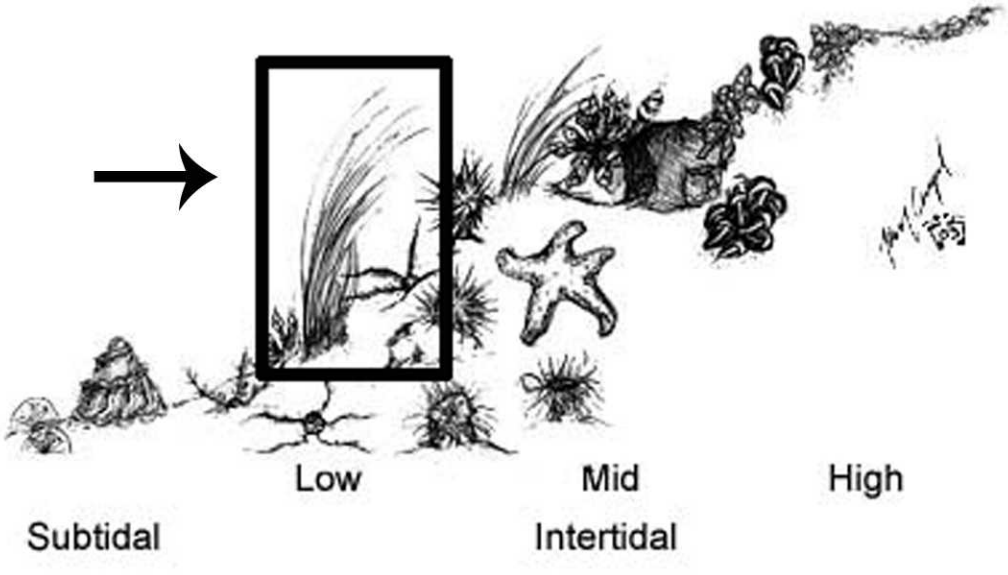
Where do I live?
Subtidal to low tide zones from Alaska to Mexico.

Cool Facts:

This plant uses water currents to pollinate its flowers.

Surfgrass prefers violently surfy conditions and provides habitat for a variety of marine life.

Surfgrass can grow up to 3 meters long.



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California Mussel (*Mytilus californianus*)
Phylum Mollusca/ Class Bivalvia

Where do I live?

Attached to rocks and other mussels in the mid tide zone. California mussels are found up and down the west coast from Alaska to Baja California.

What do I eat?

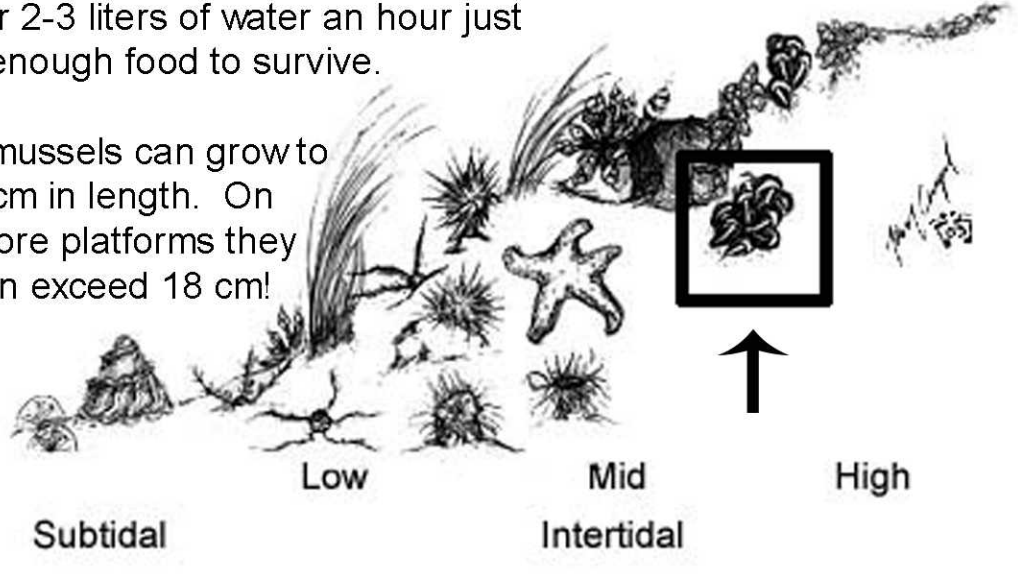
Fine organic debris and living plankton

California mussels are filter feeders. They have tiny hairs called cilia that they use to collect and transfer food from the water column to their mouth.

Cool Facts:

A mussel must filter 2-3 liters of water an hour just to collect enough food to survive.

Some mussels can grow to 12 cm in length. On offshore platforms they often exceed 18 cm!



Illusrations by
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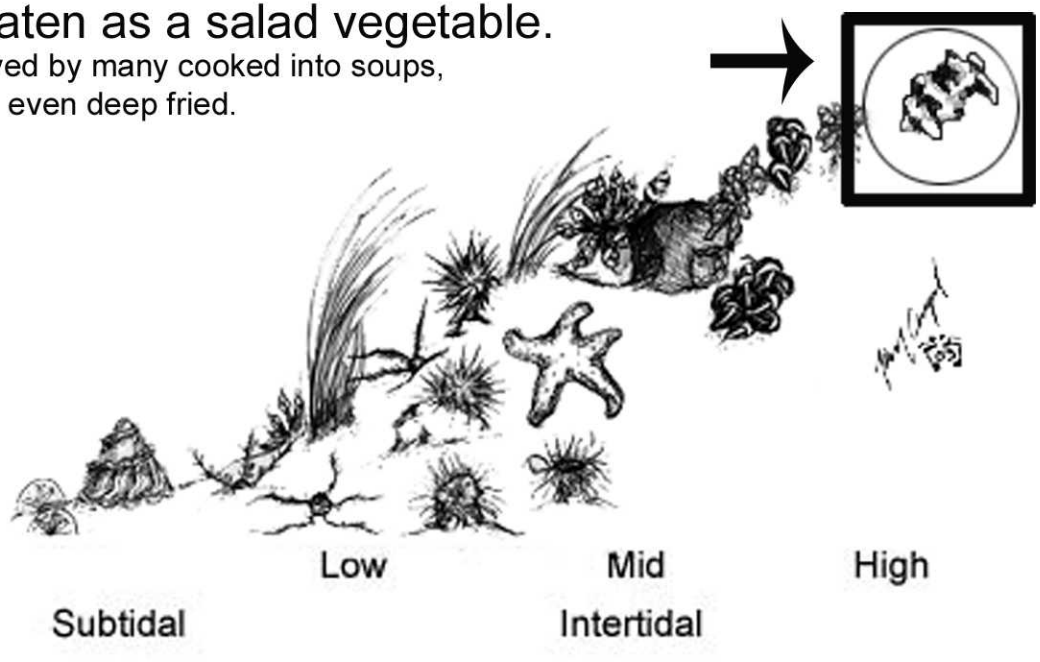
Sea Lettuce (Ulva spp.)
Chlorophyta

Where do I live?
On the surface of rocks in the upper to mid tide zones
This bright green algea forms large mats, attaching itself to rocks with tiny holdfasts.

What eats me?
Worms, fish, sea slugs and birds

Cool Facts:
Sea Lettuce is only two cells thick and
thrives in polluted and disturbed waters.

This green algae is eaten as a salad vegetable.
Sea lettuce is also enjoyed by many cooked into soups,
dried and even deep fried.



Illustrations by
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Sand Dollar (*Dendraster excentricus*)
Phylum Echinodermata/ Class Enchinoidea

Where do I live?

Subtidal zone from Alaska to Baja California

Dead sand dollars are found more commonly than live ones. When they die, sand dollars turn from purple/brown to ghost white.

What do I eat?

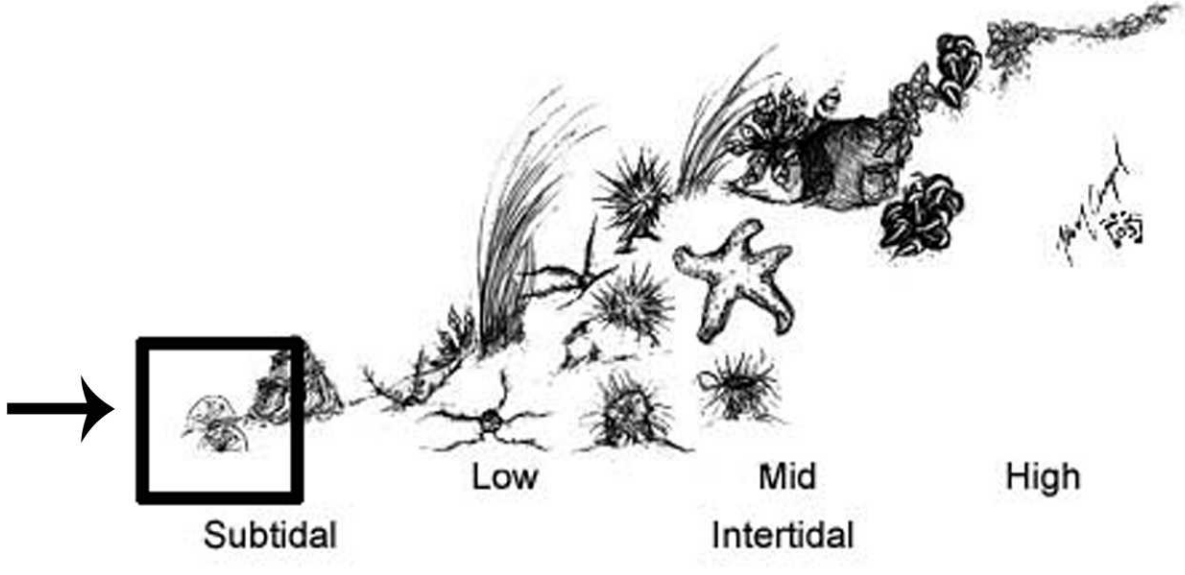
Plankton and plant detritus

Sand dollars bury themselves edgewise in the sand, leaving half of their body exposed to their food source.

Cool Facts:

Sand dollars are closely related to sea urchins sea stars.

Like sea urchins and stars,they have tube feet and their bodies are segmented into fifths.



Illustrations by
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Sea Star (*Pisaster giganteus*)
Phylum Echinodermata/ Class Asteroidea

Where do I live?

On rocks in the mid to low tide zone

Sea stars are found in waters between Baja California and Alaska.

What do I eat?

Preferably the CA mussel but also limpets, barnacles, and chitons

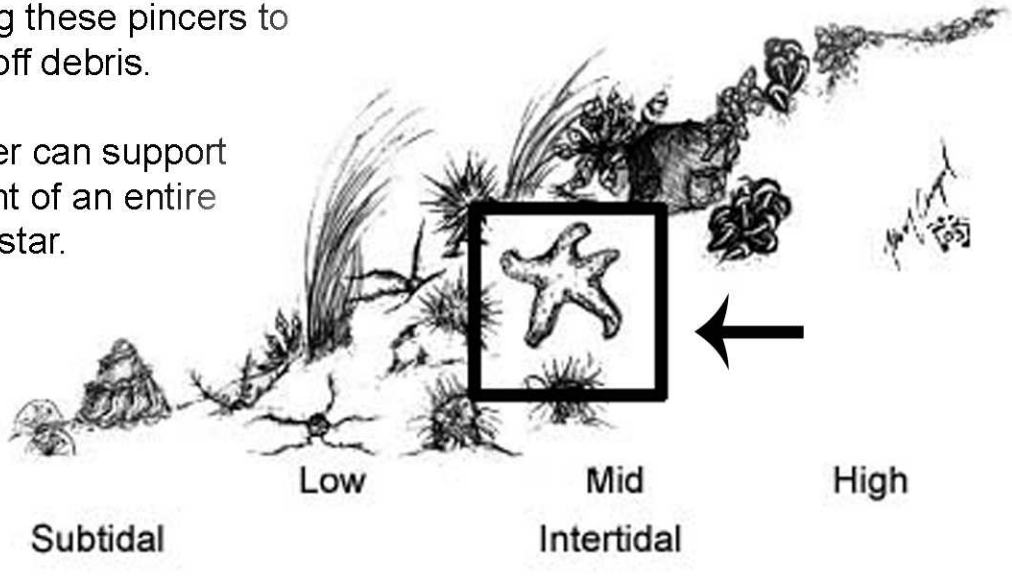
The sea star uses it's tube feet, which also function as taste receptors, to surround the mussel with its whole body. Once the mussel is opened, the star extends its stomach through its mouth and digests the mussel within its own shell. This process can take up to three days!

Cool Facts:

Sea stars can grow to have a diameter of 50 cm.

The upper surface of their skin has very tiny pincers-like body parts that are shaped like little pinching beaks. The star keeps itself clean by using these pincers to pick off debris.

One pincer can support the weight of an entire star.



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Spiny Brittle Star (*Ophiothrix spiculata*)
Phylum Echinodermata/ Class Ophiuroidea

Where do I live?
Low tide to subtidal zones
This brittle star lives in waters
from Northern California to Peru.

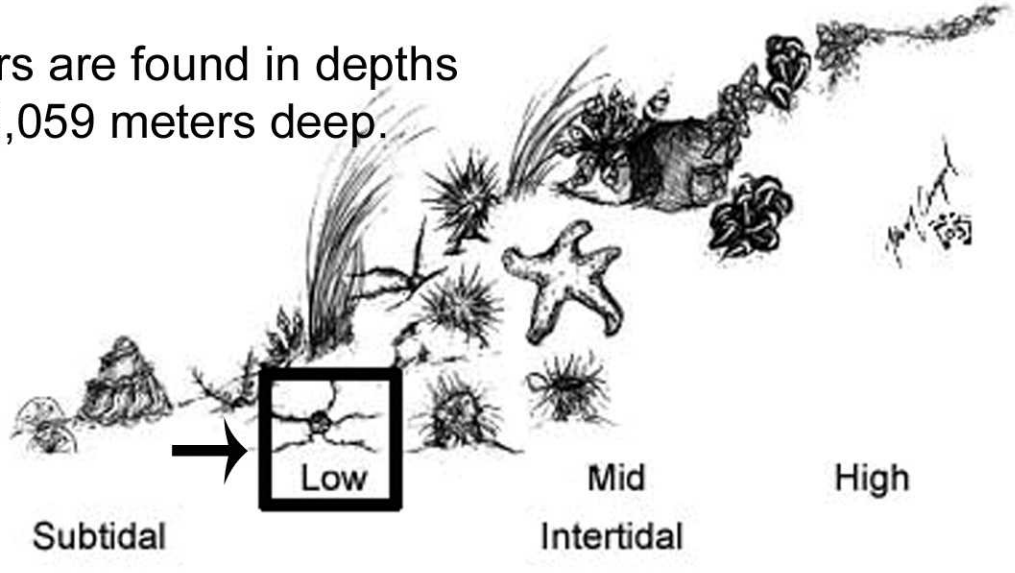
What do I eat?
Organic particles and small animals
A brittle star spends much of its time in crevices or kelp holdfasts with its arms hanging out waiting to catch food.
In some places spiny brittle stars densely coat the bottom, reaching densities of more than 1,000 stars for every meter squared.

Cool facts:

Brittle Stars break their own arms as defense.

If attacked, the part of the arm grabbed snaps off piece by piece and is later regrown.

Brittle Stars are found in depths up to 2,059 meters deep.



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Goose Barnacle (Pollicipes polymerus)
Phylum Arthropoda/ Class Crustacea

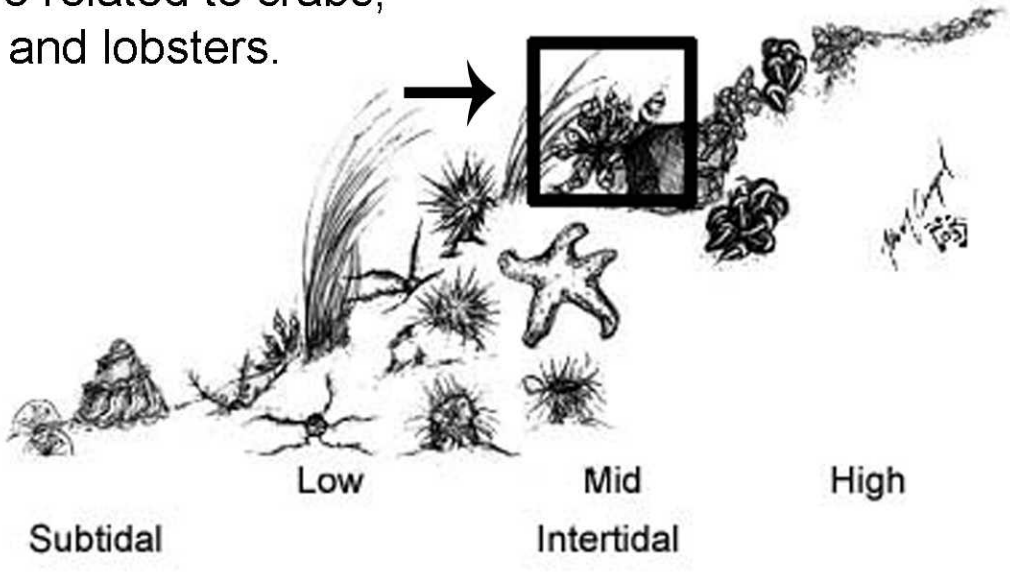
Where do I live?
Mid tide zone from British Columbia to Mexico

What do I eat?
Plankton and detritus (tiny marine debris)
When submerged in water, gooseneck barnacles extend their branched feet. They grab food out of the water column by passing water through spaces between their branched feet.

Cool Facts:

Goose barnacles get up to 8 cm in length.
Their long necks are semi-flexible and allow them mobility.

Barnacles are related to crabs, shrimp, and lobsters.



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