

Observation Sequences Grades K-3

Observation Sequence #1

Animals and Plants: Who Lives in a Tidepool?

In this activity, the students will observe different animals that live in the Intertidal Zone. They will draw their observations on data sheets (enclosed in this packet) and use their drawings with a field guide to identify the animal. *Note- There is one field guide included in this packet.*

Observation Sequence #2

Science in a Tidepool: How Do We Study the Tidepools?

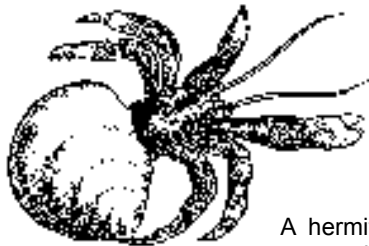
In this activity, the students will practice a sampling technique used by marine biologists to collect data in the field. The participants will observe several different quadrat plots, count the number of a specific animal found in each plot, and log this information on data sheets.

Sample Schedule

12:00	Connect: Welcome to the Ocean Institute Let Us Introduce You to the Intertidal Zone
12:10	Plants and Animals: Animal Identification <i>Observation Sequence #1: Who Lives in a Tidepool?</i>
12:35	Science in a Tidepool <i>Observation Sequence #2: How Do We Study Tidepools?</i>
12:45	Q & A
12:50	Disconnect

Field Guide to Animals in the Intertidal Zone

Phylum Arthropoda ("Joint-Limbed" Animals): This phylum includes crabs, true spiders, centipedes and millipedes. It is the most successful group of animals on Earth.



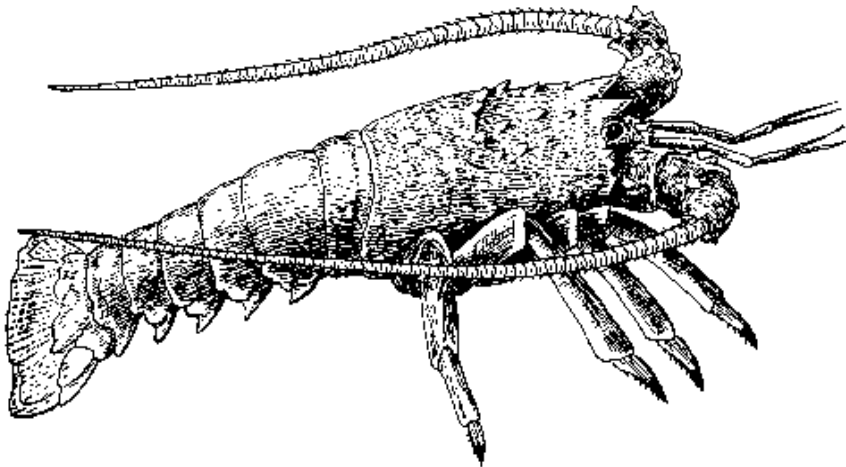
Hermit crab
Pagurus samuelis
Size: to 2.5 cm

A hermit crab wears an empty snail shell to protect its soft body. The back legs hold the shell on tight. As the crab grows, it needs a bigger shell. Even though the hermit crab threatens and fights with its large claws, it is not a hunter. This crab eats seaweed and dead animals.



Striped shore crab
Pachygrapsus crassipes
Size: to 5 cm

The shore crab moves sideways down to the sea and then back up over the rocks. Using tiny cups on its pinchers, the crab scrapes small plants off the rock to eat. This crab is flat and can hide in cracks in rocks. If a hungry animal grabs the shore crab's leg, the crab can shed the captured limb and run away. A new leg will grow back.



California spiny lobster
Panulirus interruptus
Size: to 75 cm

This species of lobster does not have large pinching claws. Even without claws, spiny lobsters are not helpless. The long antennae are set with spines, there are sharp spines across the body, and saw teeth on their under margins. The California spiny lobster is primarily an offshore animal, but smaller lobsters can get temporarily caught in intertidal pools. Also, shed exoskeletons are frequently washed up in the beach.

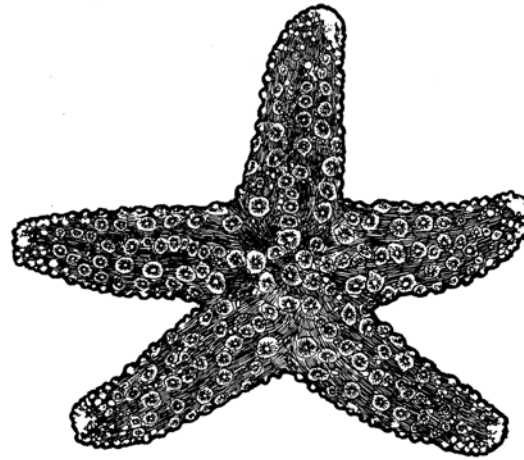
Field Guide to Animals in the Intertidal Zone

Phylum Echinodermata (Spiny-Skinned Animals): This phylum includes sea stars, sea urchins, and sea cucumbers.



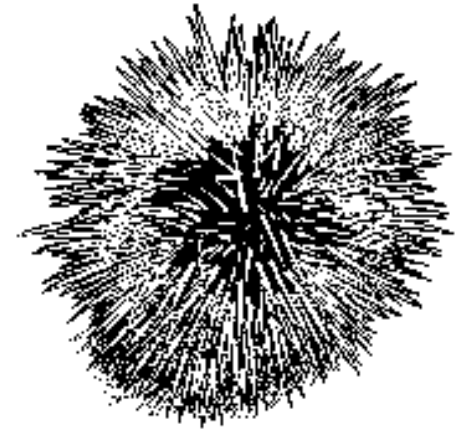
Bat star
Asterina miniata
Size: to 10 cm

Bat stars live on the kelp forest floor, as well as at middle and low tide levels in both rocky and muddy areas. They eat seaweeds and small animals, and scavenge dead animals on the bottom. A bat star's stomach comes out of its mouth and covers its food to eat. The stomach can feel around on the sea floor for bits of food.



Giant Spined Star
Pisaster giganteus
Size: to 46 cm

This sea star has hundreds of tiny suction-cup feet under each arm that help it stick to rocks. The sea star will cling to a rock for weeks. Hungry stars use their feet to pry apart a mussel. When the mussel's two shells open, the sea star slides its stomach between the shells to digest the animal inside.



Purple sea urchin
Strongylocentrotus purpuratus
Size: to 10 cm

Using their spines and teeth, urchins burrow into solid rock. Between the hard spines, an urchin has hundreds of tube feet. Its soft tube feet help the urchin to hold onto the rock and to move kelp to the urchin's mouth.

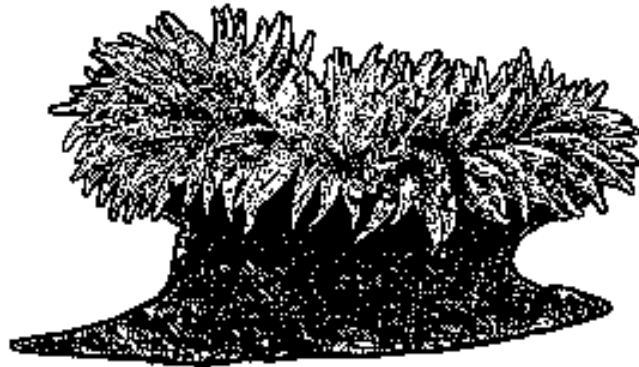


Warty Sea cucumber
Parastichopus parvimensis
Size: to 30 cm

Sea cucumbers creep slowly across the kelp forest floor. Relatives of the sea stars, they use hundreds of tiny suction-cup feet called "tube feet" to move. The tentacles around a sea cucumber's mouth are also a type of tube foot. The sea cucumber brushes the tentacles across the seafloor as it moves, collecting organic particles and stuffing them into its mouth.

Field Guide to Animals in the Intertidal Zone

Phylum Cnidaria: This phylum includes jellyfishes and their relatives.



Sea Anemone
Anthopleura elegantissima
Size: to 25 cm

The sea anemone looks like a flower on a thick, stalk, but it is really an animal. The flowery parts are tentacles with stingers. The stingers sting small animals that get too close; then the anemone swallows them whole. At low tide, the anemone closes up. Small fragments of shell stuck to the bumpy flesh help keep the sea anemone from drying out.

Phylum Mollusca: The Latin word *mollis*, meaning “soft”, gives us the name and describes the soft, unsegmented body that characterizes this group.



California mussel
Mytilus californianus
Size: to 18 cm

Mussels crowd together on wave-swept rocks. To hang on to the rocks and each other, mussels make strong threads that look like plastic and stick better than super glue. A mussel eats by filtering tiny plants and animals from the water. To collect enough food to survive, a mussel has to filter two to three quarts of water an hour.

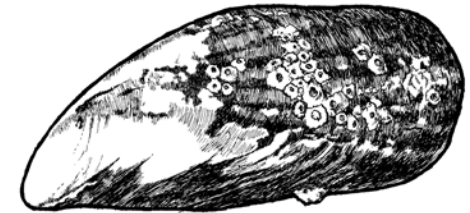
Wavy Top Turban Snail
Lithopomo undosum
Size: to 11 cm

This animal is fairly common in the low-tide zone, but most abundant in the offshore kelp beds. Like many snails, this one has an operculum—a door attached to the soft body parts. The operculum closes the opening when the animal draws its body into the shell.



Observation Sequence #1: Animals

Instructions: Draw a line from the animal to its name. Draw a picture of your favorite tidepool animal on the back of this page.



Hermit Crab

Bat Star



Mussel

Sea Urchin



Sea Cucumber

Observation Sequence #1: Animals-alternate

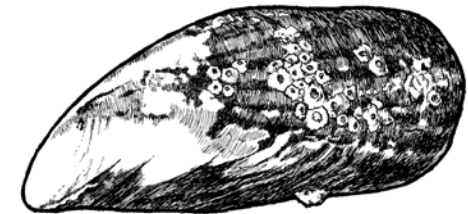
Instructions: Color the tidepool animals that you see during the videoconference! Draw a picture of your favorite tidepool animal on the back of this page.



Bat Star



Hermit Crab



Mussel



Sea Urchin



Sea Cucumber

Observation Sequence #2: Quadrat Counts

Instructions: Write down the number of Hermit Crabs you see in each quadrat square. Then write down the number of Sea Urchins in each square. Were all of the shells filled with crabs? What else could they have been?



Hermit Crab



Sea Urchin
