

Tide Pools

Lesson 6

Tide pools form in rocks where water collects in depressions in the rocks during low tide. A variety of plants and animals live their entire life in a tide pool. Many animals that colonize tide pools are sessile. Sessile animals are permanently attached to the rocks or are stationary. Some motile animals living in tide pools swim in and out of the area while others like the sea urchins are slower moving. These self propelled animals never leave the tide pools while others seek refuge there only during low tide. These animals forage for food in other areas during high tide.

Starfish, also called sea stars, live in a variety of habitats along the shores of the north Pacific Ocean. They are major predators of shellfish in coastal waters. They move so slowly they appear to be stationary. Their many arms move



Starfish eating a mussel M Buschmann

around tide pools on tube feet that are used to grip the rocks as they search for their prey. Starfish feed on all types of shellfish, corals, and even other starfish. Once they reach their prey they climb on top of the animal and use their feet to pry open the shells of clams and other shellfish. Once the soft bodies of the shellfish are exposed the starfish devour their prey in two ways. They can ingest bits and pieces of organic food by moving it along grooves in their arms to their stomach or they can turn their stomachs inside out and eat their prey outside their body.

Sea urchins are spiny animals that live in tide pools and other rocky areas. They have spines that stick up from their shells when they are alive. Their round globelike shells are often found on the seashore after they die. Inside their shell they have an organ called Aristotle's lantern. It is used to scrape algae off of rocks. They move slowly around rocky shores and tide pools on tube feet looking for food. Their feet extend outward when the sea urchin inflates its tube feet with a substance similar to seawater. The extended feet allow the sea urchins to move forward as a gooey substance on their feet adheres to the rocky surface. The process of inflating and deflating their tube feet continues as the sea urchin moves from place to place in the tide pool.



White Sea Anemone

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Sea anemones are familiar sights in tide pools. They often appear as small jelly-like blobs attached to rocks. Sea anemones wave a circle of tentacles containing stinging cells back and forth in the water to catch food. Zooplankton and other organic matter floating in the water are trapped in the tentacles. The tentacles transport the food to the sea anemone's mouth located in the center of the tentacles. The mouth moves the food to the gut where it is digested. Clown fish

live among the tentacles of the sea anemone and are immune to the poison in the tentacles.

There are approximately 5,000 species of sponges and many of these varieties live in tide pools. Sponges are simple animals that filter water flowing through their bodies for food. Encrusting sponges grow in rocky areas low in the intertidal areas. The sponges cover rocks in patches that are about 2.5 centimeters thick. They do not grow tall because the wave action would tear them apart. Some sponges form vase like structures that live in quiet areas of the ocean. They are harvested by sponge divers and sold at local open air

markets. Natural sponges have been used in households for thousands of years. People wishing to have natural sponges can purchase them in retail stores and on the internet. Most sponges today are synthetic and manufactured in factories. They are sold commercially for use in the kitchen and bathroom.



Tide pool

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Encrusted coralline algae and articulated coralline algae are plants that live in tide pools. Encrusting coralline algae grows in shady areas

covering the rocks with a pink bumpy like growth. Articulated coralline algae grow in the lower parts of the tide pool. They grow as upright plants partly covered with calcium. Breaks in the calcium create flexible joints allowing the plants to bend as the water flows in and out of the tide pools. The calcified sections of the plant offer protection from the waves.

Hermit crabs are small animals that live in tide pools. Their exoskeletons are soft so they seek the safety of discarded seashells. Hermit crabs are continually growing larger and must find a replacement shell each time they outgrow the shell they are living in. Sometimes fierce battles

erupt in tide pools when several hermit crabs want the same shell that is being discarded by a starfish or some other animal after a meal.



Hermit crab

The most abundant life is found in the lower part of tide pools where the water is not so turbulent. Space is limited so some algae live on other plants or animals. *Smithora*, a type of red algae, coats the blades of surf grass. Herbivores eat the red algae instead of the surf grass. Both plants benefit from the arrangement. *Smithora* has a place to grow and the surf grass is not as likely to be eaten by an herbivore. Scuplin are small fish that dart around tide pool when the water is low. They leave the tide pools during high tide to look for food and return as the water recedes.

Lesson summary

- ◆ Sessile animals are permanently attached to the rocks or are stationary.
- ◆ Starfish are major predators of shellfish living in tide pools.
- ◆ Sea urchins are spiny animals that use stinging tentacles to capture their prey.
- ◆ Sponges are simple animals that filter water flowing through their bodies for food.
- ◆ Articulated coralline algae are plants that grow in the lower parts of tide pools as upright plants partly covered with calcium.

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