



Starfish

Starfish are spiny-skinned members of the invertebrate phylum *Echinodermata*. These slow moving and often colorful intertidal and sub-tidal critters are relatives of the sea urchin, sand dollar, and sea cucumber. They are some of the most conspicuous and brightly colored creatures encountered in tide pools throughout most of the maritime region of Alaska.

Description and feeding habits: Most starfish have spiny or warty skin that is supported by tiny bone-like plates. The skin's surface has many tiny arms with pincers called "pedicellaria" which act to clean off debris. Numerous protruding spines keep most predators at arm's reach.

There are many common varieties of starfish. Identification can be made with the assistance of a good guide to marine intertidal invertebrates. Starfish range in size from an inch in diameter to nearly a yard in diameter. The more commonly encountered tide pool stars include the purple or orange *Pisaster* and the **mottled star**, *Evasterias*, with its narrower tipped arms. The small and beautiful *Henricia*, sometimes called a **blood star**, with its brilliant red or orange arms, seems out of place among the subdued pigments of the kelp. The gaudy giant **sunflower star**, *Pycnopodia*, is the rogue of the family. This sprinting cannibal preys on fellow starfish, as well as any other critter that it can catch. Its predaceous nature makes it an unwelcome diner in crab pots and fishing gear. Starfish have a very simple body structure with five or more legs in a radial array around a central body disk. Each leg has paired rows of small tube feet in a groove on the bottom of each leg. The tube feet are used for locomotion and feeding. They are tipped with a small suction cup which can be extended or withdrawn to move the starfish over the sea bottom. While most starfish travel at speeds measured in inches per hour, the giant sunflower stars have been observed galloping along at nearly 2 feet a minute.

Once gripped in a starfish's arms a clam is doomed! Tube feet make the starfish the nemesis of clams and other slow moving mollusks. Imagine ten thousand powerful suction cups pulling relentlessly on the valves of a clam's shell. There is no escape as the vacuum-like action relentlessly pries open the clam's only defense. Once the clam's muscles relax, the starfish extrudes its stomach through its mouth into the clam's shell and digests the mollusk's soft body. Although clams are often the favorite prey of starfish, some varieties prefer to feed on plankton, or even dead marine organisms.

Starfish have the ability to regenerate lost arms or body parts. This fact was discovered by fishers who used to cut them in half to kill them, only to find twice as many starfish growing new legs the following year.

Life history: Starfish have separate sexes. Each arm has a pair of sexual organs, or gonads. Pores in the arm release eggs or sperm into the water during the first days of spring. Sometimes starfish will gather together in sexual aggregations to improve the odds of successful fertilization. The embryo will pass through different larval stages before it changes, or metamorphoses, into a tiny replica of its parents.

Habitat: While common in rocky intertidal areas near the shore, some types of starfish like the brittle and basket stars, Ophiuroids, are distributed out to the deepest, muddy depths of the ocean.

Economic and ecological importance: At first glance, starfish seem like a total menace to humans and mollusk. They are viewed by many commercial fishers as pests; the predacious nature of the sunflower star often results in fouled long-line gear as well as crab pots. Starfish are viewed as direct competitors with both subsistence and sport clam diggers. Many consider the starfish's only value as garden fertilizer.

The ecological relationships of the ocean are complex. Like many predators, starfish are thought to have little value to man except as curiosities or competitors. While this view is held by many, feeding studies have shown that some species of starfish are, in fact, prey for Alaska king crab! In reality, starfish are important in maintaining the balance of nature by thinning out biological excess, consuming carrion, and directly and indirectly creating a diversity of species which provides man a varied menu of seafood.

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