

Starfish

Starfish are also called sea stars. Most have only five arms and are in the shape of a five-pointed star, but some species have more than five arms. If they lose an arm, they can **regenerate**, or regrow it. Starfish are **radially symmetrical**, meaning all their arms are the same size and shape. They have skeletons that extend into their arms but are invertebrates, meaning they have no spines. Their tops can be smooth, granular, or spiny and are covered with overlapping plates. Starfish can be red, orange, blue, gray, or brown. Depending on the species, starfish can live from 10 to 34 years. Starfish can change gender to help in breeding. Starfish grow from eggs and some species brood, or hold their eggs in a pouch. Some species can be both the mother and the father.

Starfish are found in every ocean around the world. Starfish cannot regulate the salt content in their bodies. This function is known as **osmoregulation**. This is why they are only found in salt water environments. They can live in water as deep as 20,000 feet. Starfish move around very slowly on short, tube-like feet. They do this by a water vascular system, which pulls water into it to expand the starfish's "feet" so they can touch the surface. The feet, or podium, then use an adhesive chemical to stick to the surface. The water is then

squeezed out of the podium as it contracts, using other chemicals to release the adhesive and let go of the surface. This happens in a wave-like motion with several feet releasing and others attaching at the same time to move the starfish forward slowly. In fact, the fastest starfish can only travel nine feet and two inches per minute. Starfish also breathe and get rid of wastes through this flow of water through their podium feet. Some intake of oxygen and excretion of waste also happens through the papulae, or skin gills, on the starfish's surface. Starfish's mouths are on the underside of them and they eat benthic (bottom of the water) invertebrates as they move over them.

Starfish are a keystone species. The starfish is the only natural predator of some kinds of sea urchins, mussels, and shellfish. In turn, the relatively small population of starfish keeps its prey from overpopulating. Too many mussels would drive out other species from the sea floor, and too many urchins would eat up the coral reefs faster than they can grow. Starfish thus act like a keystone in an arch. The keystone itself does not hold much weight, but without it, the arch would collapse.



1. **New terms:** See how these three terms are used in the text, and write a definition next to each one.

regenerate to regrow

radially symmetrical the same all the way around

osmoregulation regulating salt concentration in an animal

2. Starfish help the environment by eating urchins and mussels that would otherwise overpopulate and upset the balance of the ocean ecosystem. What is the term for a species like this? keystone species
3. All starfish have five arms. True or **False?**
4. Starfish can't move once they are stuck to something. True or **False?**