



Sea Lion Adaptations

Arizona State Standards: 5.L3U1.9-11; 6.L2U3.11-12

The ultimate goal of an organism is to survive to reproductive age and successfully produce viable offspring. In order to have the best chance of survival sea lions have evolved many adaptations to thrive in the marine ecosystem in which they inhabit.

Sea lions propel themselves through the water at speeds up to 13 miles per hour. Their large front flippers and torpedo shaped bodies enable them to reach these top speeds and to launch themselves over 10 feet out of the water to escape predators like sharks and killer whales. Thick, oily fur and a layer of blubber enables sea lions to retain a high body temperature in frigid waters. A special process called thermoregulation also allows sea lions to keep warm. Thermoregulation occurs because the blood vessels on a sea lion's flipper are exposed as they are not covered by blubber or fur. When a sea lion floats at the surface with their flippers in the air the blood in the flippers is warmed by the sun and then pumped through the entire body. An overheated sea lion on a beach can also dip a flipper into cool water to reverse the process and help to cool down.

Of course, sea lions spend most of the time below the surface of the water. Their small ear flaps are streamlined to avoid water flowing into the ear canal. In addition, sea lions voluntarily control their nostrils allowing them to close their nostrils when they dive. They must consciously open their nostrils to breathe which means they never sleep deeply and never enter REM sleep. In order to hunt, sea lions frequently dive to great depths, up to 900 feet. A sea lion's body is well equipped to make such deep dives. Their heart rate slows on long dives and blood is shunted away from areas that are not as dependent on oxygen to areas like the heart and central nervous system that need oxygen to function. This allows for the maximum dive length without compromising any major body systems.

Clearly sea lions have adapted to a life in the ocean. However, sea lions have not evolved to a life in an ocean polluted by humans. Plastic trash, bycatch from fishing nets, and competition for fish all threaten sea lions and many other marine species. Changing ocean temperatures force sea lions to hunt further from shore and abandon their newborn pups who starve on the beach. To ensure sea lions are able to survive in the ocean for many generation humans must protect our oceans' health.



Animal Adaptations

Directions: Pick a species of animal and consider the following questions:

My species: _____

What resources does your animal need to survive? (food, shelter, water source, etc)

What adaptations does your animal have to find food?

Does your animal have predators? What adaptations has your species developed to help it evade predation? If it is a predator, what adaptations allows your species to stay on the top of the food chain?

What adaptations does your species have to survive in its environment?

What human threats impact your species? What can humans do to minimize the impact on your species?
