

Heart Urchin

Echinocardium cordatum



Sometimes called a sea biscuit, heart urchins are small, only a few inches in diameter. The test (internal skeleton) is fragile with four porous spaces (petaloids). The body is elongated with its mouth at one end and the anus at the other. This gives it a heart shape; hence its

name. It is covered with spines of various colors, such as brown, green and red.

Heart Urchins normally live in waters to 160 feet but have been documented as deep as 1,500 feet. The urchins burrow 6 to 8 inches into the sand, head first. They continuously move their tubular feet, creating a shaft of water which provides them with oxygen. The tube feet also gather organic particles from the wet sediment around them and move the nourishment to its mouth. Living buried in the sand, they are not normally found alive.

Heart Urchins reproduce by releasing sperm and eggs into the water. After the egg is fertilized, it forms a planktonic larva which subsequently settles to the seafloor and develops into a Heart Urchin.

Live Animals should never be taken from any FL State Park

Short-spined (Variegated) Sea Urchin

Lytechinus variegatus



The Short-Spined Sea Urchin has a symmetrical, slightly flattened test (skeleton) composed of calcium carbonate. The test, which can be up to 4 ½ inches across, is covered with blunt, short tubular spines which readily detach after death.

The Sea Urchin's mouth, located on its bottom surface, has five teeth, called "Aristotle's lantern", used for rasping food from surfaces. It feeds on sea grass. In addition, it also collects floating debris with its tube feet for added nourishment.

Sea Urchins may cover themselves with shells and small rock fragments. It is believed that this behavior is to shield themselves from light or ultraviolet radiation and or to provide stability in turbulent water.

Sea Urchins reproduce by ejecting eggs and sperm into the water, where they are fertilized. Larvae develop through several stages. Then through metamorphosis (abrupt change in body structure) become juvenile urchins. *Live Animals should never be taken from any FL State Park*

Lined Sea Star

Luidia clathrata



Sea Stars used to be referred to as Starfish. This has changed since they're not fish. Sea Stars are echinoderms, related to sea urchins and sand dollars. Most are divided into 5 sections.

Echinoderms have no blood or brains. Instead sea stars have a hydraulic vascular system that pumps seawater to circulate food and oxygen throughout the body. By changes in pressure it also provides ambulatory power to the hundreds of tiny tube feet on each arm. They have light-sensitive "eyes" at the end of each arm.

The Lined Sea Star is an opportunistic predator which uses chemical sensory cells to find its prey. Suction cups on the ends of the tube feet attach to its victim. In the case of a bivalve, they attach to each side of the shell and pull outward until it starts to open. Then they extrude their stomach around or into their victim to dissolve the meat. Next they pull that stomach back in and a second stomach finishes the digestion and passes the nutrients into the hydraulic system.

This sea star also feeds by ingesting sediment and extracting food particles. Most Sea Stars can regenerate arms that are lost to predation.

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Keyhole Sand Dollar

Mellita tenuis



The *Mellita tenuis* is native to Florida's Gulf Coast. Sand Dollars, sea biscuits and sea stars are echinoderms (Greek, meaning spiny skin). The white Sand Dollar found on the beach is actually a bone-like inner structure called a test. Counting the rings on the Sand dollar can determine its age, which can be up to ten years.

Live animals have a soft brownish purple covering of moveable spines and hairs with which they move along sandy bottoms and over food particles. Their mouth (bottom center) has five tooth-like sections used to "chew" their food. The spines also serve as gills.

The 5 "keyholes" provide a shortcut in moving food to the mouth and also allow them to sink into the sand. In calm water, they bury themselves on edge, leaving one half protruding above the sand. In rougher conditions they lie flat or burrow into the sand. When continuously exposed to turbulent water, they can grow to be thicker and stronger.

Sand Dollars can only live a few minutes out of the water. Please do not remove them from the water.

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