Invert Trivia: What group of invertebrate species shares these three distinctive features? 1) A body with five-part symmetry; 2) an internal skeleton made of calcium carbonate; and 3) a water vascular system of fluid-filled vessels that manifests to the outer surface as structures called tube feet. Stumped? Here’s a few more clues. This group of species are entirely marine, and they lack a head, heart, brain and eyes. They have separate sexes but it’s generally impossible to tell them apart based on their outward appearance. And, they can regenerate body parts. 

These awesome creatures can only be echinoderms. In Greek, echino means spiny, and derma refers to skin, and these spiny-skinned creatures comprise sea urchins, sea cucumbers, feather stars, sea stars, and brittle stars. Echinoderms have an ancient lineage that dates back at least 600 million years. Today, at least 6,500 species are recognized within six living classes which are highlighted below.

**Sea Stars: (~1,800 species)** Also known as starfish, consist of a central disk and five or more projecting arms. Sea stars may be predators; scavengers; deposit feeders (ingest mud and extract food particles; or suspension feeders (extract prey and food particles from the water). Some sea stars give ‘going out to dinner’ a whole new meaning in that they have the ability to extrude their stomach into very small openings to consume prey.

**Feather Stars: (~700 species)** They have five or more (usually at least 10) arms that are feathery in appearance. These ‘feathers’ are called pinnules and serve as food-gathering organs. Feather stars typically feed at night and are seldom seen, hence no photo!

**Brittle Stars and Basket Stars: (~2,000 species)** They owe their name to their ability to voluntarily break their arms, which they do to avoid predation. They also are able to cast off their central disk, discarding their stomach, gonads, and other tissues, AND then regenerate these parts in two weeks to two months. Basket stars are not often seen. They resemble brittle stars but with branching arms.

**Sea Urchins: (~900 species)**
Sea urchins can be ‘regular’ like the round spiny ones we typically see, or ‘irregular’ like our sand dollars and sea biscuits. Regular urchins and sand dollars are herbivores and have five triangular shaped teeth for grinding called the Aristotle’s lantern. Sea biscuits are detritivores. They eat sediments and extract their food from it. Urchins are host to a wide variety of parasites and beneficial organisms. Bizarre and kind of gross, one species of crab lives only in the rectum of sea urchins.

**Sea Cucumbers: (~1,200 species)** Last but not least, sea cucumbers are so absolutely awesome! Their mouth is surrounded by 10-30 feeding tentacles, which are actually modified tube feet. Sea...
cucumber have the ability to eject a toxic sticky substance when threatened. They can also eject their intestines and other organs, which they do to confuse predators. These organs are quickly regenerated.

So that was only five classes right? Well the fairly recently discovered sea daisies, with 2 known living species appear to live exclusively on pieces of wood on the deep sea floor.

Want to collect echinoderms in Florida? **Know the rules!** Generally if it’s dead its fair game, although not always in state and federal parks. If it’s alive, echinoderms fall under FWC’s Marine Life regulations. Collection of some species, like the cushion sea star or long-spined urchin is prohibited. For other species, there is a bag limit, and in most cases there are gear and holding requirements. In all cases a valid saltwater fishing license is required. In Manatee County, collection is limited to only two per person per day. And, in Lee County all collection of echinoderms is prohibited.

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**Sources:**


All photos Florida Sea Grant