Name_____ Date_____

Sunflower Stars

Spreading across the sandy bottom of a shallow bay on the Pacific Coast of the United States, a Sunflower Star glides rapidly to find its prey. The fastest of all the sea stars, moving about 150 feet per hour in a straight line, the Sunflower Star uses its 22-24 arms and more than 15,000 tube feet to speed to dinner.

Like other sea stars, Sunflower Stars usually dine on invertebrates they find on the seafloor such as clams and mussels they pry open using their strength until an opening allows them to extrude, or throw out, their digestive juices. The digestive juices turn the fleshy meal into a soup-like mixture that is easily consumed. Sometimes a small invertebrate is drawn in whole and then its shell is spit out when its body is digested. Sunflower Stars don't have "eyes" such as we do, but have eyespots on the tips of their many arms that allow them to respond to touch, water currents, and light.

So how does a Sunflower Star coordinate all those thousands of tube feet? An amazing system, called the water vascular system, allow the animal to move in a chosen direction using each individual tube foot to move forward. Seawater passes into the star through the madreporite, an opening on the topside of the surface of the sea star. The madreporite is easily spotted as it is almost white, slightly off center, and looks like a small circle. Seawater passes to each arm, down to each tube foot and its sucker. The tube feet contract and relax making a vacuum with the aid of adhesion secretions.

Sunflower Stars have gills on the surface of their skin that are called dermal gills. They tiny pouches of soft tissue contract when touched. When seen moving across the seafloor, however, they give the sea star a fuzzy appearance. Sunflower Stars are usually orange, yellow, or various shades of pink, red, purple, and brown. Their circular center, or disk, is the size of a large dinner plate.

Pedicellarias are tiny, thorn-like pinchers distributed among the dermal gills that have the ability to swing around and pinch or hold onto materials such as algae for camouflage, to catch small animals to eat, or to ward off attackers with their sharpness.

Although they look soft and beautiful, moving effortlessly across the sand as if in a dream, these voracious predators are formidable enemies of other seafloor dwellers including other stars they can entangle with their many arms when they don't find other invertebrates to eat. They will even eat egg cases or other organic material they find when other food sources are not available. Beautiful but deadly, Sunflower Stars are not endangered but admired by man for their ability to move efficiently in the sea and for their ability to survive and adapt in their ocean habitat.

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Sunflower Stars Questions

Using the article or your dictionary, define the following words as they apply to the article.

madreporite

extrude

disk

tube feet

adhesive

voracious

water vascular system

dermal gills

organic material

invertebrates

pedicellarias

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Sunflower Stars Questions (Cont'd)

Answer the following questions using complete sentences.

1. What is special about a Sunflower Star compared with other sea stars?

2. How do Sunflower Stars eat their food?

3. Where do they live?

4. Where are their gills located?

5. How do the pedicellarias aid the sea star?

6. Where are the eyespots located on the Sunflower Star?

7. What do Sunflower Stars look like?

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Sunflower Stars Answers

madreporite – opening on the surface area of a sea star in which seawater enters

extrude – to force something out

disk – an object that is thin, flat, and circular

tube feet – outside opening of a sea star on which suckers are usually attached

adhesive – a substance used to bond two surfaces together

voracious – consuming food in great quantities

water vascular system – system by which se stars use water that enters through the madreporite and flows down through the arms to the tube feet. Each tube foot contracts and relaxes making a vacuum with the help of adhesive juices.

dermal gills – gills located on the skin of the sea star used for taking in oxygen from the sea

organic material – living things

invertebrates – animals without backbones

pedicellarias – spiky pinchers on the surface of stars that ward off attack and collect food.

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Sunflower Stars Answers (Cont'd)

1. Sunflower Stars have 22-24 arms and are the fastest stars in the sea.

2. Usually the star finds an invertebrate, pries it open using its tube feet, and extrudes digestive juices into the animal making a soup-like substance that it then digests.

3. Sunflower Stars can be found in sandy seafloors on the Pacific Coast of the United States.

4. Their gills are located on their skin surface.

5. Pedicellarias aid the Sunflower Star by collecting small animals and warding off attack.

6. The eyespots are located on the tips of the arms of the Sunflower Star.

7. Sunflower Stars are usually orange or yellow or various shades of pink, red, purple, and brown. The center, or disk, is shaped like a large dinner plate and they have 22-24 arms with thousands of tube feet that move them across the ocean floor.