Science and Legend: The Sand Dollar

Does the top look like a poinsettia? Do doves “fly” out of it? Could it be a coin left by a mermaid? These are stories told about the sand dollar. Many people think of the sand dollar as a white shell on the beach. But sand dollars have interesting lives on the ocean floor.

Sand dollars are invertebrates. This means they do not have a backbone and are cold-blooded. Their body temperature depends on the environment. Usually you can find lots of sand dollars in one area. One square yard can be home to 650 sand dollars!

A sand dollar has a hard skeleton. This shell is called a test. There are spines with small hairs, or cilia, covering it. These spines can be different colors. A living sand dollar can look purple, green, or blue. The cilia help the sand dollar move on the ocean floor. The cilia also help it eat. Food is swept toward the “mouth” of the sand dollar, which is located in the middle of the bottom shell. A sand dollar may take as long as 15 minutes to “chew” its food.

A sand dollar does not have many predators. Only a few ocean creatures eat them such as skates, or sunflower starfish. One of the biggest dangers to sand dollars is habitat destruction. Trawlers and pollution can destroy beds of sand dollars. In some areas you cannot collect live sand dollars. But people do see white sand dollars on the beach. These dead sand dollars are where the legends came from. People say when these sand dollars are broken open, there are tiny parts that look like doves. But these were the teeth of the sand dollar. This is where science and legend meet!
Reading Informational Text

Part A - Match each word with its definition.

A. test
   ______ tiny hairs

B. predator
   ______ an animal that does not have a backbone and is cold blooded

C. cilia
   ______ something that eats or harms another animal

D. invertebrate
   ______ the shell of a sand dollar

Part B - Write a good caption for this photograph.

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Part C - Write a sentence that summarizes the text.

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Dear Colleague,

As a young child I recall carefully opening a sand dollar at Christmas time and talking about the legend of this echinoderm. I thought that the top looked like a poinsettia, the bottom like a star, and that doves were inside. Through the years I heard other legends equating sand dollars with coins left by mermaids or others. But I didn’t know much about the science of the sand dollar until my son visited Snake Island, Sihanoukville, Cambodia with some biologists. They looked at the thousands of sand dollars living just under the water surrounding this island. I was amazed when I heard his story, the tale of the scientific facts of a sand dollar. Struck by the amazing realities about this legendary creature, including its strange feeding behaviors, I hope this story will encourage you to have students delve into the realism behind other legends. And this does not just need to be about science – use social studies, too. If you would like to ask children to think about the lessons of legends, please visit our Teachers’ Guide for our “Herd of Elephants?, Part 2” at http://www.missmaggie.org/2011/06/21/herd-of-elephants-part-2/#more-338. Check out the Zulu Folktale unit and have children imagine what civics lessons these tales helped impart.

To extend this activity, ask students to draw and label the parts of a sand dollar. You may want them to paint a scene of a sand dollar’s life in the sandy depths. I can imagine you integrating this with the life of an artist such as Monet and having children use his style to paint such a scene. It’s that time of year when these types of activities can make meaningful holiday gifts for families. I have framed art from each of my children and treasure those pieces. You may want to have students research the various kinds of sand dollars in the world and make a map showing these locations along with the name for sand dollars in different countries.

Happy teaching,
Dr. Kathy

Answer Key:
Vocabulary –C, D, B, A
Other answers will vary.

Goals:
Students will read a nonfiction text about the sand dollar. Its habits and habitat are explained along with various legends surrounding this invertebrate. The follow-up activity asks students to define vocabulary as used in context, use the facts to write a caption and summarize the material. Several extension activities include social studies, art, and geography connections. This activity is available on the emergent, primary, and intermediate levels and correlates with the IRA/NCTE Standard, “Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).” It is aligned with Vocabulary Acquisition and Use along with the Key ideas and Details strands of the Common Core ELA Standards.

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