FL ELFAS
Passage Cover Sheet

Title:	Sinkholes: Florida's Hidden Menace
Stimulus ID:	68129CN
Source:	Commissioned
Grade Band:	6-8
Genre:	Informational Text
Text Type:	Science Article
Word Count:	623
Lexile:	1130
Lexile Range:	925-1185
Flesch-Kincaid:	10.9
Qualitative Ranking:	Moderate

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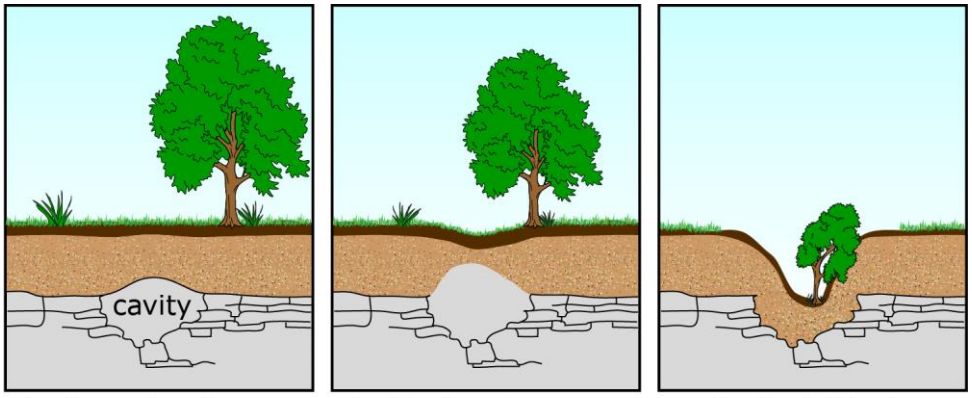
Sinkholes: Florida's Hidden Menace

When most of us think of natural disasters, we imagine extreme weather and the powerful forces of nature. However, not every disaster develops so dramatically. Most people know about hurricanes, tornadoes, and earthquakes, but few people have heard about sinkholes. Yet sinkholes are also serious natural threats, causing significant destruction across Florida.

Sinkhole formation

Due to its submersion in salt water for nearly sixty million years, Florida's *bedrock*, its rocky foundation, is mostly limestone. Limestone is a type of sedimentary rock made of fossilized sea creatures that *calcified*, or hardened, into sheets of bedrock. Because limestone is a very porous rock, it absorbs rainwater. When rainwater seeps through the limestone, the natural acidity of the water reacts chemically with the limestone and causes parts of the rock to dissolve. Over time, this dissolving process causes the bedrock to crack and eventually to collapse. Underground, the destruction of the limestone can form holes called *cavities*. Some cavities continue enlarging to create vast, breathtaking caverns. We cannot see the cavities forming below Earth's surface. We only notice that the ground seems to be sinking.

Formation of a Sinkhole



1. A cavity forms. 2. Bedrock starts to crumble. 3. A sinkhole forms.

Sinkhole collapse

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If an area of land appears to be sagging, scientists might assume that the bedrock below is crumbling and that the land could eventually cave in. However, scientists cannot always determine the rate or speed at which bedrock is dissolving. What may appear to be reasonably solid ground might suddenly open in a matter of minutes, swallowing everything that sits on top of it.

Sinkhole activity has caused significant environmental harm. For example, Payne's Prairie, a 21,000-acre natural prairie in Alachua County, was once called Alachua Lake. Steamboats ran from shore to shore carrying goods and passengers. Over time, however, the ground beneath the lake collapsed and consumed every last drop of water.

Payne's Prairie has certainly recovered since the collapse of the lake. The prairie has thrived, and some species of Florida wildlife have been reintroduced as a result. Today, bison, wild horses, deer, and turkey are among a few of the animal species that call the prairie home. Yet the collapse of the lake might have been a considerable catastrophe at one time, destroying an important resource for many people, and displacing thousands of animals from their habitats.

In addition to causing environmental damage, sinkholes also destroy public property, taking a massive toll on the Florida economy. In 2008, a sinkhole that opened up at Maitland Boulevard and Interstate 4 in central Florida caused so much damage that it took nearly twenty-four months for the Florida Department of Transportation to make repairs. The estimated cost was $8.9 million.

Sinkholes also harm personal property. People have lost furniture, farm animals, and even swimming pools to sinkholes. Homes, too, suffer damage, with average repair costs of around $90,000. Moreover, living in a building damaged by a sinkhole can be unhealthy because sinkholes cause small cracks in walls and foundations. These cracks allow moisture to enter homes, creating the right environment for harmful mold and bacteria to thrive.

If someone owns a home with sinkhole damage, it can be hard to sell the home someday, even after repairing the damage. In Florida, most real estate sellers have forms with a sinkhole disclosure statement. This requires people selling their homes to tell

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possible buyers about any sinkhole activity that has affected the home. Sellers must also share information about what was done, or what was not done, to fix any problems. Of course most homebuyers will be reluctant to consider buying a home with a history of sinkhole damage.

Although sinkholes form quietly underground, largely unnoticed, they ultimately bring about dramatic destruction in Florida by harming the environment and by damaging property. They are hidden natural disasters, lying just beneath the surface.

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ELL CONSIDERATIONS:

- In order to orient ELLs to the topic, show Internet photos of Florida sinkholes to the class. The U.S. Geological Survey is an excellent resource with comprehensive information and photos.

- Discuss natural disasters. Some ELLs might be able to report on natural disasters from their own areas. Some possible topics are volcanoes, tsunamis, earthquakes, flooding, drought, fire, hurricanes, and tornadoes.

- There are many adverbs and adjectives in the passage. Elicit adverbs from ELLs by asking questions such as "How do sinkholes form?" (They form quietly.) Elicit adjectives from ELLs by asking questions such as "What kind of rock is limestone?" (Limestone is sedimentary rock.)

- Review the irregular plurals *deer* and *bacteria* with ELLs.

- Call attention to the following tier two and three vocabulary words in the passage for some pre-discussion. The following key words or phrases reflect important vocabulary or academic concepts appropriate to address at this level. The meaning of vocabulary can be taught to students using a variety of research-based strategies, including student-friendly explanations, synonyms or antonyms, demonstrations, gestures, or illustrations. Explaining the meaning of the word or phrase in the context of a sentence also provides students with an additional language model of how the word or phrase is used in a sentence different from the context in the passage. Demonstrations or examples and non-examples can also be used to explain meaning or check for understanding.

Tier two words:

- porous
- ultimately
- menace
- catastrophe

Tier three words:

- bedrock
- calcified
- sedimentary
- fossilized

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