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Title: DESTRUCTIVE EROSION.

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Abstract: Erosion can destroy things of value to humans. Erosion became more destructive because of human interference with the environment. Barrier islands along the southeastern coast of the United States became popular vacation spots in the early 1900s. More and more people built houses on the beach. People also built walls between their houses and the water to protect the houses from erosion. But these walls have actually made erosion of the beach worse. Road building, new housing developments, mining that is anything that removes plants and disturbs the soil can lead to destructive erosion. (Copyright applies to all Abstracts)

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DESTRUCTIVE EROSION

On a barrier island in North Carolina, a luxury hotel crumbles into the ocean. In California, a mud slide engulfs dozens of homes and buries a highway. In Iowa, heavy rain sweeps tons of rich soil from a farmer's fields.

These examples have two things in common. They show how erosion can destroy things of value to humans. And in each case, the erosion became more destructive because of something humans did.

Barrier islands along the southeastern coast of the United States became popular vacation spots in the early 1900s. More and more people built houses on the beach. People also built walls between their houses and the water to protect the houses from erosion. But these walls have actually made erosion of the beach worse. Before the walls went up, wind and waves removed sand but also brought in new sand. The walls allow sand to wash away from beneath them but block new sand from being deposited on the beach. Waves can then eat deeper and deeper into the islands, eventually scooping out so much sand that the walls- and the buildings behind them — collapse. Whole beaches have shrunk, and the plants and animals that lived there have lost their homes.

The mud slides in California happen largely because people change the landscape so that it erodes too quickly. People living there cut down many of the native trees and bushes so they can build more houses and have clear views of the ocean. Without those plants, the soil has less protection from rain and fewer roots to cling to underground. The weight of the houses puts an extra burden on the steep hillsides. When the area receives a lot more rain than usual, the soil turns to mud and becomes unable to hold itself up. Tons of

mud rumble down the hillsides, crushing the houses as if they were made of popsicle sticks.

Erosion of topsoil from farmland has become a serious problem in many areas around the globe. Topsoil is the upper, most fertile layer of soil, the layer our crop plants need in order to grow well. In the 1700s, the layer of topsoil in the Great Plains of North America was about 9 inches (23 cm) deep. By the 1990s, it was only about 6 inches (15 cm) deep. U.S. farms lose an average of over 4 tons (3.6 metric tons) of topsoil from every acre every year.

Most loss of topsoil is due to what humans have done with the land. In the 1800s and early 1900s, many farmers plowed straight up and down hillsides. The plowed furrows provided little gullies for rainwater to run into. This sped up erosion by making it easier for the water to create bigger gullies. To avoid this, most U.S. farmers have switched to contour plowing. That means they plow in curved lines along the contours or outlines of the hills. Each row of plants makes a terrace, or small level area, that can catch water. This leaves no quick, easy way for water to run down the hill and carve out a gully.

Contour plowing has helped preserve the soil, but many other problems remain. Plowing of any kind loosens the soil and breaks it into smaller pieces. These small pieces are easily washed or blown away. Growing just one kind of plant in the same field year after year hurts the soil, too. The earthworms, tiny plants, fungi, and microorganisms that help protect soil from eroding have a hard time surviving in soil that always has the same kind of crop growing in it. This is because each kind of plant takes certain nutrients from the soil and provides other nutrients in return. If a field has only one kind of crop year after year, its soil becomes rich in a few nutrients and poor in all others. Crop rotation, or growing a different crop in a field each year, helps prevent this problem and keep the soil organisms healthy.

Erosion is also a problem in many forests that are used as a source of lumber. Where the woods are clear-cut — that is, where every tree in an area is cut down — the soil is left bare, with no protection from wind and rain. When clear-cutting is done on steep hillsides, the soil has little chance to stay in place. With the first big rain, or the melting of snow in the spring, soil is washed into gullies and streams.

Road building, new housing developments, mining — anything that removes plants and disturbs the soil — can lead to destructive erosion. Even things that people do for fun can cause problems. Mountain bicycles and off-road vehicles often harm the soil, killing plants, digging ruts, and speeding up the rate of erosion.

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PHOTO (COLOR): Rainwater drains from a flooded farm field, taking loads of soil with it.

PHOTO (COLOR): A house collapses into the ocean due to erosion of the beach on the Outer Banks, a barrier island in North Carolina.

PHOTO (COLOR): This apartment building in Ventura, California, was crushed by a mud slide in February 1998.

PHOTO (COLOR): Planting crops along the contours of hilly areas helps prevent rainwater from flowing downhill and carving out a gully.

PHOTO (COLOR): Patches of this hillside have been clear-cut by loggers.

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**Source:** Erosion