

A beaver uses its long, curved teeth to chew through a fallen tree in Grand Teton National Park in Wyoming.



Very Busy Beavers

Why scientists are bringing these rodents back to the streams where they once lived

As you read, think about how beavers affect the environment where they live.

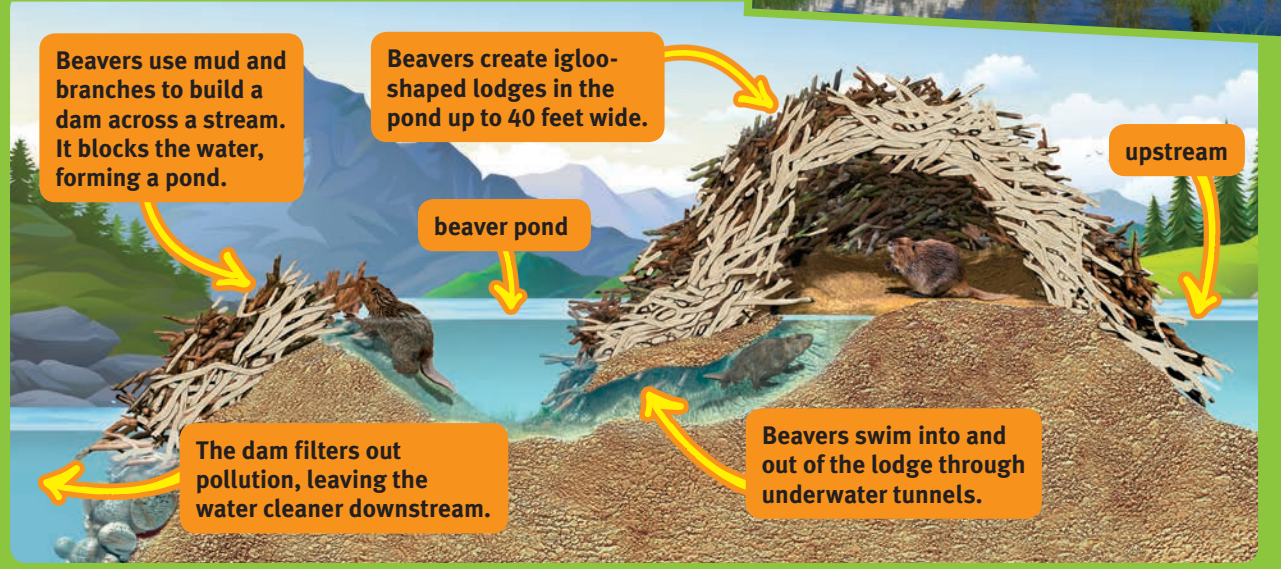
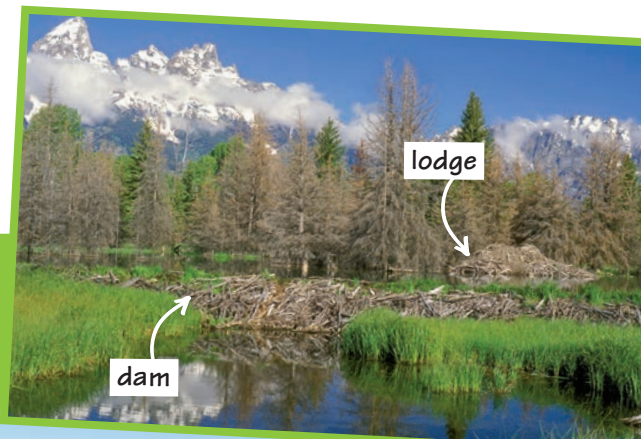
Mike Sevigny hikes to the edge of a muddy pond north of Seattle, Washington. He and a team of scientists lower a metal cage smeared with beaver scent into the water. This smell attracts other beavers. If one of the curious critters swims inside the cage and its feet hit a wire, a door swings shut. Sevigny is the wildlife manager for the Tulalip Tribes, a group of Native American tribes in northwestern Washington. Over the past six years, he and his team have captured about

300 beavers and moved them to different streams. It's part of an effort to restore **wetlands** in the area. Caring for nature is a part of the tribes' cultural heritage. Beavers are the largest **rodents** in North America. An adult can weigh 30 kilograms (65 pounds)—about as much as a golden retriever! Beavers use long, curved teeth to gnaw on tree trunks and branches. They eat the bark, then use sticks and mud to build **dams** across streams or rivers. Beavers once lived all over North America. But in the 1700s, French and British colonists

began trapping the rodents across Canada and the U.S. They used the animals' pelts to make hats. By 1900, millions of beavers had been killed. Today, many people are trying to bring beavers back to places where they once lived. That's because the presence of beavers can benefit a stream in many ways. "I don't know what other animal can build up the **ecosystem** better than a beaver," says Sevigny. *Continued on next page*

Inside a Beaver Lodge

Beaver dams slow the flowing water in streams, forming ponds. Beavers construct homes, called lodges, in the ponds to stay warm and safe from predators.



Think: How do you think a beaver dam changes the way a river flows?

PAGE 4: JEFF FOOT/ISTOCKPHOTOS.COM; BEAVER: ARTERRA/UNIVERSAL IMAGES GROUP VIA GETTY IMAGES (LODGE & DAM PHOTO); DORLING KINDERSLEY (BEAVER DAM ILLUSTRATION); ACIVELINES/SHUTTERSTOCK (SKY & MOUNTAIN BACKGROUND ILLUSTRATION)



1 A Tulalip Tribes biologist sets a trap in a streambed where flooding from beaver dams has caused problems for people in the area.



2 The trapped beavers are taken to the Tulalip Tribes facility. They live there until their family can be captured so the group can be moved together.



3 Workers pile up debris and pound stakes into the stream in areas where beavers will be released. That can encourage beavers to build dams there.



4 The beavers are released into wetlands where they can benefit the ecosystem. Their dams improve water quality and create animal habitat.

Eager Engineers

A beaver dam is a marvel of engineering. The animals carefully arrange their materials to block almost every part of a stream (See *Inside a Beaver Lodge*, page 5). Soon, the nearby landscape changes. The flow of water slows to a trickle. Over time, the water builds up to form a pond. The pond helps beavers stay safe from predators. It also provides **habitat** for fish, frogs, and other animals.

The beaver pond helps the environment in other ways

too, says Ellen Wohl. She's a geologist who studies rivers at Colorado State University. Water flows into the pond quickly but takes much longer to flow out through the dam. This filters pollution, making the water safer for people and animals downstream. Slowing the flow of the river can also reduce the risk of flooding when it rains.

The **sediment** beneath the pond also soaks up water. "A beaver pond is like a big sponge," says Wohl. This stored water seeps out and feeds

the stream all year. Streams without beaver dams can go completely dry in the summer!

Living With Beavers

Over the past century, beavers have made a comeback. But many people consider them pests. That's because beavers sometimes build dams across roadside drainage pipes, causing the water to spill into roads. Overflowing beaver ponds can damage farms and homes.

When that happens, wildlife scientists often step in to help.

They might put up fencing to keep beavers away or find other ways to control the water level in a beaver pond. But sometimes these efforts fail. That's when scientists like Sevigny move the rodents to a stream where they can do some good.

On the Move

People started relocating beavers in the late 1940s. The first ones were flown over forests and dropped from planes with parachutes! Today, Sevigny's team moves beaver families by car to streams where beavers haven't lived in a long time.

The beavers quickly get busy building their new homes. Over the next few years, Sevigny's team checks on the animals using hidden cameras or drones. "We can see how what started out as a simple stream has been changed by the beavers," says Sevigny. "They're incredible critters, and they work for free."

—Mara Grunbaum

words to know

- wetland**—a low area of land that is full of water, such as a lake, a pond, or a marsh
- rodent**—a mammal with large sharp front teeth for gnawing
- dam**—a barrier across a stream or river that holds back flowing water
- ecosystem**—all the living and nonliving things that interact in one place
- habitat**—the place where a plant or animal usually lives
- sediment**—silt, sand, or rock that has been moved by water, wind, or glaciers

COURTESY OF MORGAN HEIM (ALL PHOTOS)

ILLUSTRATION BY KATE FRANCIS (STEP 2)

Filter Test

Hands-On Inquiry

OBSERVE A beaver dam cleans a stream's water by filtering out pollution.

MAKE A PREDICTION What type of material works best as a filter?

MATERIALS scissors • 3 types of material that water can flow through, such as fabric, paper towels, or wire mesh • 3 rubber bands • 4 bowls • 4 teaspoons of soil or coffee grounds • measuring cup • spoon • timer

PROCEDURE

STEP 1: Cut pieces of each filter material large enough to fit over the bowls. Cover three of the bowls with material and secure each with a rubber band. Each should be loose enough that the material's center sags a bit.

STEP 2: Mix 1 cup of water with 1 teaspoon of soil or coffee grounds in the measuring cup. This represents polluted water.

STEP 3: Carefully pour all the water from the cup into one of the covered bowls. Time how long it takes the water to seep through the filter. Record the time.

STEP 4: Repeat steps 2-3 with the rest of the bowls, including the one with no filter. This is your control.

RESULTS Compare the amount of "pollutants" that seeped through each material. Rank the filters from best to worst.

CONCLUSIONS

1. Was there a relationship between how fast water flowed through each material and how well it worked as a filter? Explain.
2. What other material might work as an even better filter?
3. Based on this experiment, how do you think a beaver's dam filters water?

STEP 3

