

# Beavers

## Nature's Engineers



Delaware Water Gap National Recreation Area    Pennsylvania & New Jersey



### What is a beaver?

A beaver is North America's largest rodent! That's right, kids -- a relative of the mouse, squirrel, and rat!

Beavers are pretty big, weighing 40-60 pounds, and growing 3 to 4 feet from nose to tail. They have short legs and necks and are built thick and stocky in the body. They have a thick double fur (called a *pelt*) and lots of body fat to keep them warm when swimming for hours. Beavers can easily dive and swim underwater for 10 minutes at a time.

Their most noticeable feature is a broad, flat tail, which can be about a foot long and half a foot wide. It has a tough, scale-like covering. (Long ago people thought beaver were related to fish!) While swimming, beavers use this big, flat tail like a boat's rudder, helping the beaver to steer and to swim better. The beaver also can prop itself on its tail when sitting up or gnawing on a tree. If you hear a loud **SLAP!** of the tail on the water, the beaver has spotted you and is warning other beavers of danger.

Besides their tails, beavers have a lot of other parts to their bodies that are shaped for a special purpose. These are called *adaptations*. Here are some pictures. On the left and right are an actual skull of a beaver. It is about 4 inches from the front to the back -- not very big but a lot bigger than a mouse! Look at those big front teeth! The orange color comes from the hard coating on the teeth to protect them. If you look closely you can also see big white flat teeth in back of the mouth. These are for grinding down plant foods that the beaver has broken off with his front teeth.



At the right is a rubber model or *replica* of a beaver's back foot. See the webbing between the toes, just like a duck? These feet make a beaver swim really well. If you have ever swum with "flippers" on, you know how nicely you can move around in the water with them. (A beaver's front feet, by the way, are a lot like our hands, but without the thumbs. They are pretty good at grabbing things. Beavers can roll a big branch around in their hands like a corn-on-the-cob, and they can walk on their back legs carrying armfuls of mud to their "construction sites.")



### Where do they live?



Think that's just a bunch of old twigs on the river bank? Look again! It's part of a beaver *lodge* -- a home carefully built by nature's engineers.

Beavers build dams and homes, called *lodges*, out of sticks, logs, and rocks held together by mud. They build them on streams and creeks, where the dams back up water around their house. (It is as if they make a big flat moat around a low round castle.) They also build their lodges in lakes and ponds, and on the banks of rivers, too, as you can see in the picture at the left, where they burrow in and make a *den*.

Beavers have to constantly maintain their lodges, just as we have to take care of our houses, or they fall apart. Because of the moving water, beavers must repair the lodge especially soon after heavy rain or melting snow.



Sometimes lodges look like domes. The inside is usually about 2 feet high. There is even a "skylight" hole at the top to let in fresh air. In winter, the mud plaster freezes, making the lodge really strong so that animals that might walk across the frozen ice to get at the beaver still can't get in! And, the "front door" is a hole below water level, while the inside is above water and dry. Pretty clever, aren't they?

The lodge offers good shelter for raising a family of young beavers, and room for some relatives too! Usually 6 to 12 beavers from the same family will live together in a lodge. Such a group is called a *colony*.

### What do they eat?

Beavers eat the bark, buds, stems, and twigs of trees: aspen, maple, willow, birch, black alder, and black cherry trees. They really like soft plant foods, too: grasses, mushrooms, leaves, ferns and the roots of water plants are some favorite snacks. Because a beaver's front teeth grow all the time, a beaver must constantly chew on wood to trim the teeth down.



In the fall, beavers will take small logs and carry them to their lodges, sticking them in the mud. That way, when the pond freezes, they still have lots of food waiting just outside the door. This heap of food is called a *cache* (pronounced just like *cash*) and it comes from a word meaning to "store away." In this picture, the beaver's lodge is at the shoreline and his cache extends out into the river. Just take a look at all the stuff this

beaver has stored up -- a whole winter's worth of snacks!

### Why are beavers called nature's *engineers*?

Cities don't look like the countryside, and that's because of all the buildings in cities. *Engineers* are the people who plan how to put up a building or bridge or dam; they have to really know what they are doing so things don't fall down!

Beavers are called nature's *engineers* because they can really change the way an area looks, and, they are pretty good builders! You just learned how they build very cozy lodges, with an underwater door, mud plaster, a skylight for air and light, and a handy snack stash by the front door for those cold winter nights. That sounds good so far -- that is, if you are the beaver. Beavers can also *dredge* (scrape out) underwater channels -- grooves in the bottom of a lake that they follow from place to place, and they can build canals, passages of water to a favorite eating place or to another pond. It's pretty exciting to see a beaver "construction project", but, what if a beaver colony moves in to your backyard and starts building? Let's see what would happen.



er cuts up to 300 trees each year. (These pictures show what a  
inch thick tree.) If you live near trees and a stream, you  
er's appetite is bound to cause problems near where people live!

valley in the country can quickly become a muddy pond. Water will cover tree trunks, cutting off air for the trees' roots. What happens? The trees die within a few years. Water that is backed up by a beaver dam may also flood pastures, fields, and roads. Now, instead of the woods and creek you played in, you have a flooded backyard, a pond full of roots, and a lot of dead trees that can fall down on your house or your head!



(Bad news for you, maybe, but not all bad news for nature! The area is now a *habitat* (good natural living space) for ducks, geese, fish, reptiles, and amphibians like frogs and salamanders. The fellows below were photographed on their way to the pond near Headquarters -- they don't mind the "new look" to the neighborhood at all!)



After the food supply is all gone, which could take many years, the beavers will move on. Eventually, without their continual repairs, the dam will fall apart. The pond water will pour away or evaporate (dry up.) Grass will grow in what was the rich muddy bottom of the pond; then bushes will sprout up. Deer and many other animals will come to this new opening to the forest to graze on the grass and nibble on fresh berry bushes. Eventually, *saplings* (young trees) will grow in the meadow while the stream will continue to flow through it. Your old backyard will become a woods again. Perhaps, a new colony of "engineers" will even find it a good place to raise their young!

**Hey ranger! I don't want engineers in MY backyard!**



Because of all the changes they bring in the way the land looks, park managers have to decide what to do about them. *Trapping* (capturing beaver for their pelts) is not permitted in the national recreation area, and since there are few animals here that hunt beaver for food, the number of beaver in the park keeps growing. Like you, they like it here! Also, since more and more houses are being built in the countryside near the park, there are less

places to for beaver to live outside of the park. So, more and more beavers in smaller and fewer areas every year.

What do you think a park manager should do when a beaver colony moves into an area and begins to flood a grassy meadow that is home to some *endangered* plants? (What's *endangered*? See the Kids Home Page!) Should we let the beavers do what they do? Try to keep them from flooding the special places but leave them alone everywhere else, or just hope they will go away? (They won't!)

### **Can I see a beaver?**

Now that you know more about beavers, you can see the effects of a beaver engineering all around you. One of the best areas to see the big change a beaver colony can make is right at park headquarters on River Road in Pennsylvania. This area was once a woods with many trees and songbirds. Now, because of the beaver dam and beaver pond, you may spot muskrats, wood ducks, and frogs; you may see woodpeckers tapping for insects in dead trees; and you will definitely see lots of dead, standing trees called *snags*.

But beavers themselves are hard to spot. They are shy of people and they are *nocturnal* -- this means they come and move around out at night. Also, the opening to their lodge is underwater, so it is hard to catch them coming and going. Late evening is the best time to look for them, but it is only the patient and lucky visitor who will actually see the engineer himself!