



Beaver

by Chuck Fergus

The beaver, *Castor canadensis*, is North America's largest rodent. Before European colonists arrived, the species was plentiful from the Mexican border to the Arctic. Beaver fur is thick and considered valuable; untanned pelts brought four dollars each in the early 1800s, when the skins were used to make top hats and to trim clothes. Tremendous demand for beaver fur sent trapping expeditions throughout the unexplored West, stimulating expansion of the new American nation.

By the end of the nineteenth century, uncontrolled trapping had eliminated beavers in Pennsylvania and other states, but today this aquatic furbearer is back. Aided by modern wildlife management and its own prolific breeding potential, the beaver has repopulated a great deal of its former range.

Today, beavers are found throughout Pennsylvania. The highest concentrations are found in the northern counties, often in remote territory and always in areas with plentiful, constant water sources. Using branches, mud and rocks, beavers build dams and lodges on streams and creeks, and along the edges of lakes and rivers. Beavers are shy and mainly nocturnal, but people interested in catching a glimpse of a beaver may get lucky by staking out a beaver pond in the early morning and near sundown.

Biology

Adult beavers weigh 40-60 pounds and grow up to 40 inches in length. (An extinct giant beaver of the Pleistocene era was the size of a bear.) They have blunt heads, short necks and legs, and stocky bodies. The coat is glossy tan to dark brown above, paler below; it consists of dense underfur covered with longer guard hairs. The thick pelt and deposits of body fat insulate the animal and allow it to remain in the water many hours at a time.

A beaver's tail is trowel-shaped, 8-12 inches long and five or six inches wide. It has a scaly, leathery covering. When the animal swims, it uses its tail as a propeller and

a rudder; the tail also supports a beaver when it sits erect or gnaws a tree on dry land. A sharp slap of the tail on water is a signal warning other beavers of danger.

A beaver's front feet are remarkably dextrous. They have long claws and are used for digging, handling food and working on dams. The thumb is small and weak, but the little finger is strong and has taken over the thumb's role. The hind feet, broad and webbed between the toes, propel the animal through the water. The second claw from the outside on each hind foot is double (or split) and is used for grooming.

A beaver's vision is weak, but its hearing and sense of smell are acute. Most food is located by smell. Beavers are slow on dry land but quite mobile in the water. A beaver can stay submerged up to 15 minutes; membrane valves seal the ears and nostrils while it's submerged.

Both males and females possess musk sacs, or castors, which produce an oily, heavily-scented substance called "castoreum," which the animals use to mark territories. Commercially, castoreum has been used as an ingredient for some medicines and perfumes, not to mention trapping lures. Beavers have two other sacs, one on each side of the urogenital opening, which secrete an oil. The animal rubs this oil into its fur to repel water.

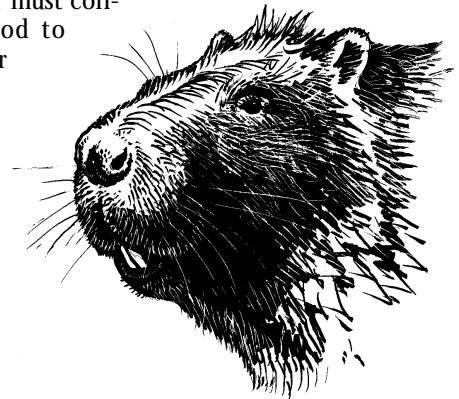
Because its front teeth never stop

growing, a beaver must continually cut wood to

offset incisor

growth. The upper and lower incisors are the primary cutters.

A beaver can close its lips behind its incisors to gnaw on and transport saplings while underwater.



Beavers eat vegetable matter. They prefer soft plant foods, including grasses, ferns, mushrooms, duckweed, algae, and the leaves, stems and roots of water plants such as cattails and water lilies. When soft foods are available, beavers cut down few trees unless they're needed for dam or lodge repair.

They also eat the bark, twigs and buds of aspen, maple, willow, birch, black alder and black cherry trees. In autumn, beavers cut branches, twigs and small logs, carry them to the bottom of their home ponds, and anchor them in the mud. Then, when the pond freezes over in the winter, they still have access to food. They may also remove some sticks from the dam to lower the water and create air space under the ice.

Beavers fell trees to get at the higher, newer, more succulent growth. After eating, the beavers gnaw the trees into pieces which are then used in building dams or lodges. Small trees are eaten more completely than larger, woodier ones.

Beavers usually cut trees within 200 feet of the water's edge; apparently they feel safest within this zone, and the trees don't need to be dragged far. Beavers cannot cut trees and make them fall in a certain direction. They sometimes dig canals (1-4 feet wide and up to two feet deep) from the pond inland to float logs back to the dam.

Beavers build dams on streams and creeks. This building behavior appears to be instinctive rather than learned. Dams are made of wood cuttings packed together with mud and rocks; while a dam may hold back a sizeable pond, it also allows most of the stream flow to seep through. A dam backs up a barrier of water around the beaver's home lodge, much like a moat around a castle.

Dams require periodic maintenance, especially after heavy rains and during snow melt. Beavers may heighten the dam to raise the water level so they can reach more food without having to leave the water; or they may build additional dams upstream for the same reason.

For shelter and rearing young, beavers construct lodges. These are dome-shaped islands of sticks and logs plastered with mud. A lodge's interior compartment (the den) may be up to five feet high, with a small air hole at the top. The mud freezes in winter, making the lodge

impregnable to predators that might visit. Along fast, turbulent streams — or creeks and rivers too wide to dam — beavers either burrow deep into the bank or build lodges at the water's edge. The entrance to a lodge (whether it's on the bank or in the middle of a pond) is always below water level, while the den is dry and above water.

Beavers are generally congenial, although rivals fight during the February-March breeding season. Females are believed to be monogamous, while some authorities think males may breed more than one female. A female usually drives her family out of the lodge when she nears the end of the 12-week gestation period. In April or May, she bears 3-6 (usually 4 or 5) young called "kits." Newborns weigh about a pound; their eyes are open, their teeth erupted, and they are fully furred. If an emergency arose, they could swim, but usually they nurse 5-7 weeks before venturing from the nest.

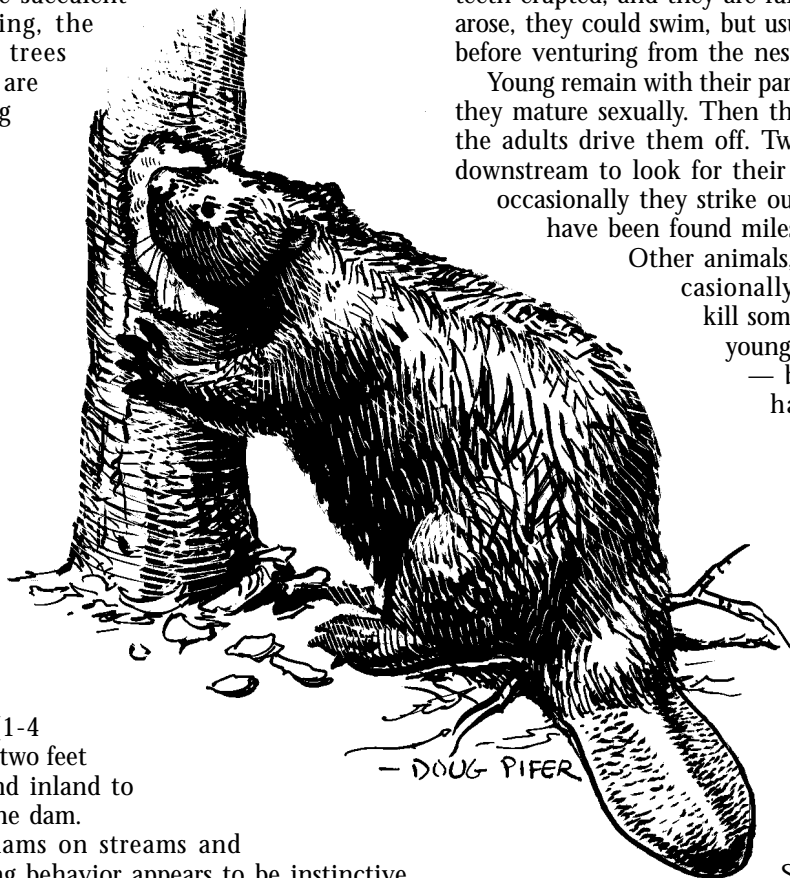
Young remain with their parents up to two years, when they mature sexually. Then they leave on their own, or the adults drive them off. Two-year-olds usually travel downstream to look for their own territories, although occasionally they strike out across dry land. Beavers have been found miles from water.

Other animals, particularly dogs but occasionally bobcats and bears, may kill some individuals — especially young ones away from the water — but on the whole, beavers have little to fear from predators. Some are struck by cars, and a few die when hit by trees they felled. Beavers live up to 15 years in captivity; the estimated lifespan in the wild is 10-12 years.

Population

By the beginning of the twentieth century, there were few if any beavers in the Keystone State. In 1903, the state legislature passed a law protecting the species; in 1917, the Game Commission released a pair of Wisconsin beavers in a remote Cameron County valley. Over the next decade, the pair and its offspring reproduced and prospered. Beavers from this original stock — supplemented with animals bought from Canadian agencies — were live-trapped and released on refuges throughout the state. By 1934, the population was large and stable enough to allow a trapping season. That year more than 6,000 were harvested. Today, beavers are found throughout Pennsylvania in suitable habitat.

We have had mild winters and good trapping conditions since the winter of 1995-96. Over the past six seasons, we've harvested an average of 9,811 beavers per year. During the prior six years, we had an average of 5,244 beavers harvested per year — nearly half the re-



cent harvests.

Beavers can and do become troublesome for some people. Water backed up by their dams floods pastures, crop fields and roads, disrupts public water supplies and kills trees. They also cut down valuable shade trees and excavate unwanted channels. Trapping has proven to be an acceptable and economical method of controlling their numbers.

Habitat

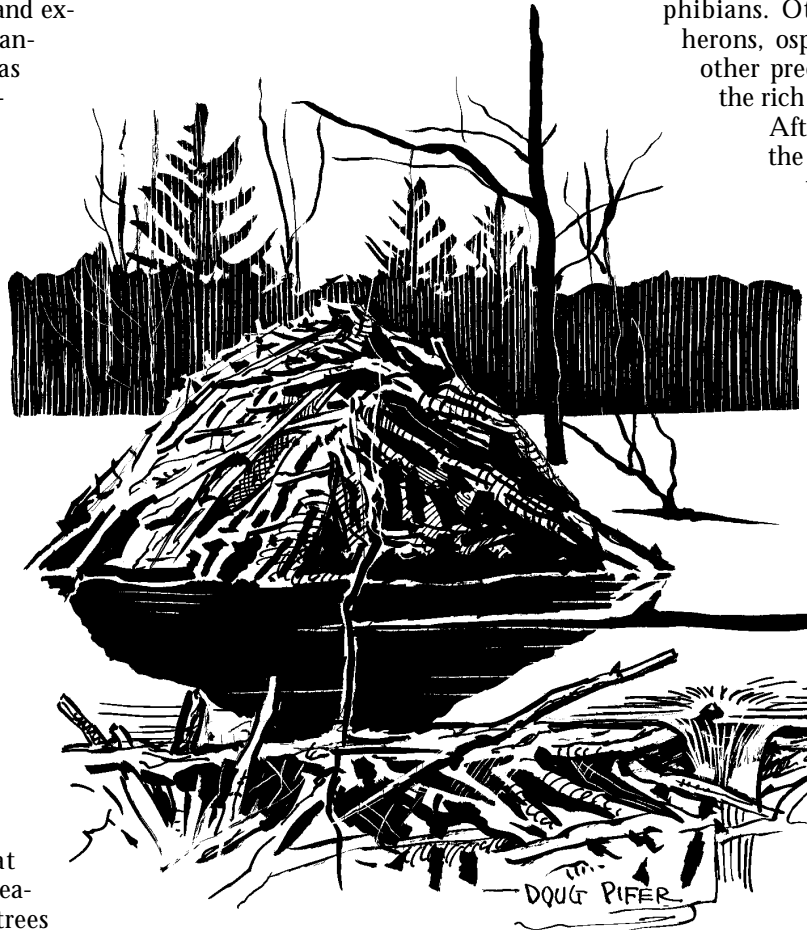
Beavers prefer streams and creeks narrow enough to be dammed. They also live along rivers, on timbered marshland and around forest-edged lakes. They prefer remote areas, but will live near man if other sites aren't available.

Beavers prosper in maple, aspen and willow environments. Studies have indicated that each year an adult beaver cuts up to 300 trees (most having diameters less than three inches); and that under average conditions, one acre of aspen supports a five- or six-member colony for 1 to 2½ years.

The dam building of beavers affects many other wildlife species. After a dam is built, a portion of a wooded valley is changed to an open pond. Water covers the bases

of trees; this prevents oxygen from reaching the roots and kills the trees within a few years. These "snags" provide homes for many cavity-nesting birds. Ponds vary in size from a few to many acres. They provide habitat for ducks, geese, shorebirds, fish, reptiles and amphibians. Otters, raccoons, mink, herons, ospreys, hawks, owls and other predators are attracted by the rich variety of life and food.

After the beavers exhaust the supply of winter food in the area — this may take 10 or more years — they move on. Their dam usually lasts several years longer, accumulating silt, leaves and other organic material. Finally during the spring thaw, or after a long, hard rain, the dam gives way. Most of the pond water drains off, leaving an open area. Grass grows in the rich soil; later, berry bushes and shrubs. Insects and small rodents thrive in the new habitat. Deer, bear, grouse, turkeys, songbirds and insectivorous birds come to these beaver meadows, which provide edge



and openings in the forest.

The stream continues to flow through the meadow, amid many standing dead trees. Aspens and willows send up shoots. In time, another beaver colony may find this valley to be good habitat.

Wildlife Notes are available from the
Pennsylvania Game Commission
Bureau of Information and Education
Dept. MS, 2001 Elmerton Avenue
Harrisburg, PA 17110-9797
www.pgc.state.pa.us

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Wildlife Notes

Allegheny Woodrat	Northern Cardinal, Grosbeaks, Indigo Bunting and Dickcissel
Bats	Opossum
Beaver	Otter
Black Bear	Owls
Blackbirds, Orioles, Cowbird and Starling	Porcupine
Blue Jay	Puddle Ducks
Bobcat	Raccoon
Bobwhite Quail	Rails, Moorhen and Coot
Canada Goose	Raptors
Chickadees, Nuthatches, Titmouse and Brown Creepers	Ring-necked Pheasant
Chimney Swift, Purple Martin and Swallows	Ruby-throated Hummingbird
Chipmunk	Ruffed Grouse
Common Nighthawk and Whip-Poor-Will	Shrews
Cottontail Rabbit	Snowshoe Hare
Coyote	Sparrows and Towhee
Crows and Ravens	Squirrels
Diving Ducks	Striped Skunk
Doves	Tanagers
Eagles and Ospreys	Thrushes
Elk	Vireos
Finches and House Sparrow	Vultures
Fisher	Weasels
Flycatchers	White-tailed Deer
Foxes (Red & Gray)	Wild Turkey
Gray Catbird, Northern Mockingbird and Brown Thrasher	Woodchuck
Hérons	Woodcock
Kingfisher	Wood Duck
Mallard	Woodpecker
Mice and Voles	Wood Warblers
Minks & Muskrats	Wrens