

Beaver

Castor canadensis



Other common names

North American Beaver, Canadian Beaver

Introduction

The beaver (*Castor canadensis*) is New York's official state mammal, and there happen to be a few family groups living in the Dyken Pond wetlands. Beavers are the second largest rodent in the world, only the capybara is larger, and they're the largest rodent in North America. A semi-aquatic species, they spend time both on land and in the water. They're also known as nature's engineers and aquatic architects for their dam-building activities. Particularly industrious people are often described as being "busy as a beaver".

Physical Description and Anatomy

Beavers are large, plump, aquatic rodents, with rounded ears. They are 40 – 52 inches (101.6 – 132 cm) long and anywhere from 22 – 75 lbs (10 – 34 kg). They have rich, dense fur, from yellow-brown to almost black. This made them a prime target for the fur trade when Europeans settled America. The fur is composed of two types of hair: long coarse outer hairs, and short fine inner hairs. This fur, combined with a thick layer of fat, provides insulation from cold temperatures.

Their eyes have a second, transparent inner eyelid called a nictitating membrane that protects the eye while allowing them to see under water. Other adaptations to aquatic life include a valvular nose and ears that can be closed to keep out water, as well as flexible inner lips that close behind the large incisors, which allows them to carry sticks while swimming without swallowing water.

They can make their fur water repellent using grease produced in their anal glands. They also have webbed hind feet that they use to navigate and propel themselves through the water. The shape of their skull allows them to see, hear, and smell with only a few inches of their head showing above the water, allowing them to stay hidden while scouting for predators.



Beaver with ears, eyes, and nose above water checking its surroundings.

The two most recognizable features of beavers are their broad, flat, scaly tails, and their prominent orange incisors. The flattened tail is 9 – 10 inches (22.9 – 25.4 cm) long and 6 inches (15.3 cm) wide. The outer layer is scaly, and the tissue under this layer is compressed aggregated hairs. The base is highly vascularized, which serves to regulate body temperature. The tail can also store fat, and can be a good indicator of individual health. The incisors are made up of two layers, hard enamel on the front and softer dentin on the back. The teeth are continuously growing, as they are constantly worn down to a manageable length by gnawing activities performed to acquire food and building materials. The outer layer contains iron to make it harder and more wear resistant, which creates a self-sharpening wear pattern when combined with the softer dentin of the back layer. The iron, combined with tannins from vegetative material, give the teeth their characteristic orange coloration.



Beaver skull.

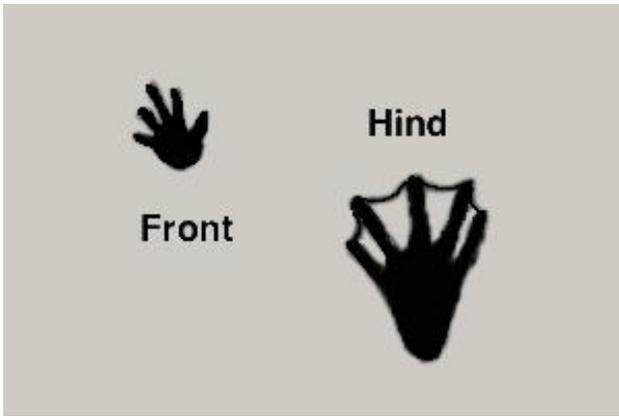
Identifying features (tracks, scat, calls)

Beavers are easily recognizable from their prominent orange incisors and wide flat tails. However, like many wild animals, they tend to remain hidden when humans are near. Luckily, their activities leave lots of signs to look for when you're hiking through wetlands.

Their tracks are distinctive, with small front feet, and larger webbed hind feet. These tracks may be partially smoothed away by tail drag marks. Look for trails and drag marks left by beavers dragging branches into the water to reinforce dams and lodges, which are other highly visible signs of beavers. They leave behind distinctively pointed stumps when they collect building materials or fell larger trees for food. In winter, when water has frozen over, look for large holes in the ice near lodges.

The lodge is a dome-shaped structure, 5 – 6 feet tall and 20 – 30 feet wide. Dams are highly variable, depending on the waterways they're built in and how many beavers are involved in their construction. An average dam is 100 – 200 feet long, and 5 – 7 feet high. Keep in mind that beavers only build dams when the surrounding water is too shallow to protect their lodge. If there is a suitable existing pond or lake there is no need to build a dam, so the lodge will be the only structure.

Finally, don't forget to listen. Beavers will slam their flat tails against the surface of the water to produce a loud splash or a slapping sound. This is thought to be a warning to fellow beavers that there is a threat nearby, and it may scare away potential threats.



Beaver tracks.

Front: 2 1/2 – 3 3/4 inches long by 2 1/4 – 3 1/2 inches wide.

Hind: 4 3/4 – 7 inches long by 3 1/4 – 5 1/4 inches wide.



Beaver track pattern with tail drag marks



Beaver scat with dime for scale.



Beaver chew.



Beaver chew. Note the teeth marks where a hungry beaver chewed off the bark and soft cambium like you would eat corn on the cob.



Beaver pelt.



Close up of beaver fur, showing longer guard hairs and fine inner hair.



Beaver lodge near Dyken Pond.



Active beaver lodge in Dustin Swamp, July 2014.

Habitat

Beavers are found in aquatic habitats in wooded areas like lakes, ponds, rivers, reservoirs, swamps, and marshes. They prefer waterways with a low gradient and stands of willow, aspen, alder, and other woody and herbaceous vegetation. They rarely leave the water for any extended length of time. When they do leave, it is to find food or a new habitat once they've eaten all suitable vegetation in their current habitat.

Behavior and Diet

Beavers are active year-round, feeding, storing food for the winter, and reinforcing their lodges and dams. They are crepuscular creatures, most active at dawn and dusk, when they venture out for food and building materials. Beavers are herbivores, feeding on woody and herbaceous plant material. They eat cellulose in the form of leaves, twigs, and the soft inner bark of trees known as cambium. Their favorite food trees in winter are poplar, aspen, birch, willow, and red maple. In the summer they feed on available aquatic plants like water lilies, and rhizomes of shoreline plants like cattails and grasses. They also cache food underwater near the entrance to their lodge in preparation for winter. This raft or feedpile can sustain them when thick ice prevents access to fresh food. When collecting material for their feedpile, they wait for sap to retreat to the roots, or else it can ferment and go sour over the winter. Once they begin eating white pine, it is a sign they've consumed most of the available food in their home range and will likely move to a new area soon.

Beavers will establish a home range which they will passively defend via scent-mounding. This is when adults pile up muddy debris and coat the top with castoreum, which is washed out of the castor glands with urine. They can live up to 20 years if they are not preyed upon by coyotes, fishers, bears, and bobcats when they are on land. The kits are targeted by mink, otter, fox, and great horned owls.

Human Interactions

Beaver activities can become a nuisance near human structures, threatening to flood agricultural land and undermine roadways. This can create conflicts, and beaver families may be relocated further from human habitations. However, beaver activities also create valuable wetlands that provide habitat for furbearing and waterfowl species, filter contaminants, recharge groundwater, stabilize shorelines and reduce runoff and erosion, and ameliorate flooding and drought conditions.

Reproduction

Beaver social structure is built around the family unit. Beavers mate for life, and a colony consists of the parents, the current year's offspring, and perhaps the previous year's litter as well. They expand breeding and foraging territory as the colony grows, building extra dams and lodges. There are typically between 4-6 individuals in a single colony, but there may be as many as 12. Beavers reproduce once a year, breeding in January or February. Young are born in May or June after a gestation of 107-120 days. Litters range from 2-7 kits, which are born fully furred and with their teeth already erupted. Their eyes are open at birth, and they can enter water within a few hours, although their fur is not yet water repellent. They gain this ability when anal glands become fully functional at 3-4 weeks of age. They are weaned by 6 weeks and they reach sexual maturity at 1.5-2 years of age.

Fun Facts

Woody plants are hard for most mammals to digest, so beavers have special adaptations to deal with their diet. They have flat molars to grind their food, and a flap of skin at the back of their mouth to prevent slivers from passing into their throat. Their digestive system is aided by bacteria and fungi that help them break down tough cellulose.

One beaver can chew down hundreds of trees every year. One family can eat up to one ton of bark over the winter.

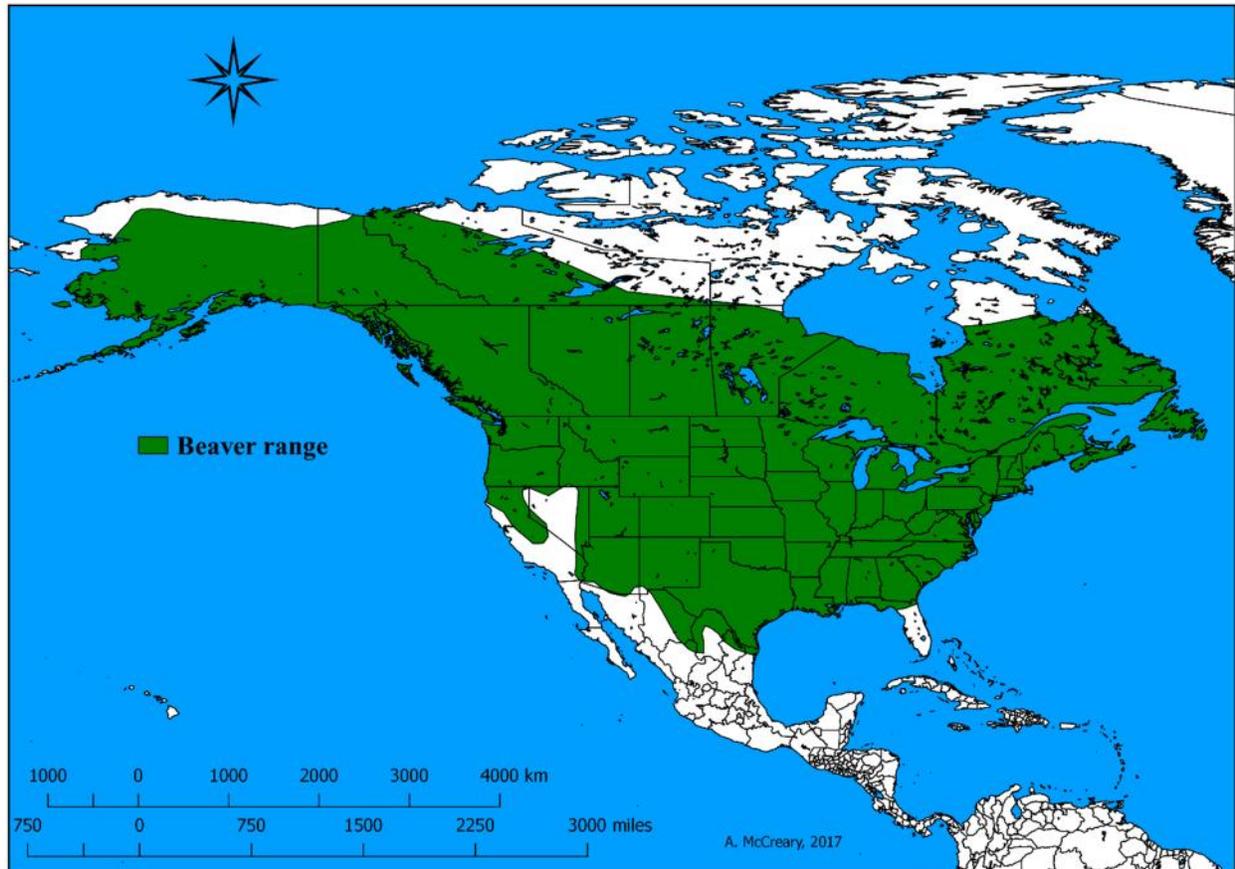
A beaver can hold its breath for up to 15 minutes and swim up to 2 mph (3.2 kph).

The longest beaver dam in the world is located in Wood Buffalo National Park in Alberta, Canada. The dam is 2,790 feet long (850 m), and has been there at least 25 years.

Range and Status

Beavers are widespread across wetland habitats of the United States and most of Canada, and even into northern Mexico. In New York, beavers were abundant prior to settlement by

Europeans, who proceeded to trap them for their pelts. By the early 1900s, the beaver population of New York had been reduced to a single colony. At that point, New York State legislature approved funding to repopulate the area via relocation from other areas, and protected the species. Populations quickly recovered, and trapping resumed in 1924 and continues to this day.



Management and Research in New York

Beaver populations in New York are monitored by the Department of Environmental Conservation and managed through seasonal trapping with appropriate permits, as well as nuisance removal and occasional relocation. While beavers do cause some damage to human infrastructure every year, the benefits of their activities outweigh the costs. New York State Environmental Conservation Law prohibits disruption of beaver dams and lodges without a special permit issued by the DEC. The NYS DEC website has information about how to deal with resident beavers at the following website: <http://www.dec.ny.gov/animals/6992.html>

Pictures



This is the dam (foreground) and lodge (background) at Dustin Swamp, which were built over the course of two weeks in autumn, 2013.



An area recently flooded by beaver activity. The trees die from suffocation, as the flooding prevents their roots from collecting enough oxygen to support the tree.



The boardwalk across Dustin Swamp, shortly after the beavers moved in. Their activities caused flooding, which in turn caused significant damage to the boardwalk.



Beaver lodge near Dyken Pond.



A pair of abandoned beaver lodges in Newcomb Pond, December of 2016.



An unusual beaver chew by Newcomb Pond, December 2016. It looks like a beaver started this chew lower down and was interrupted before getting all the way through the trunk. Perhaps when it returned to finish the job there was snow deep enough to cover its original work.



An image of a beaver in Dustin Swamp captured at night by our trail camera, October, 2013.



Beaver performing maintenance on a lodge, October 2013



Beaver on shore at night, foraging for food or building supplies, September, 2014.



Beaver on shore at night, foraging for food or building supplies, September, 2014.

At Dyken Pond

For three years, we had significant flooding in Dustin Swamp, visible on the right side of the entrance road, due to a family of beavers that moved in and built a dam impounding Teal Creek. In August of 2016, the water level dropped significantly below the entrance of the lodge, and there were no more indications of active beaver residence. They had begun eating white pine, which is a sign that they had eaten all of the higher quality food. We believe they moved to a new area, but we always keep an eye out for their return once their favorite food species have regenerated. There are also several beaver lodges visible from the Newcomb Pond trail. We believe these are inactive as well, but continue to monitor them regularly.

Links

More information on beavers can be found at the following links:

Nuisance Beaver Control

<http://www.dec.ny.gov/animals/6992.html>

Sources

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