

BEAVERS

The beaver (*Castor canadensis*) is a large, aquatic mammal and a symbol of Canada, perhaps best known for its depiction on the nickel. In Richmond, beavers are found in areas near the Fraser River where natural habitat remains. Because they are mostly nocturnal, their presence may first be revealed by their modifications to our shared habitat, the felling of trees and damming of waterways with sticks and mud.

Beavers are rodents, a large group of mammals characterized by their constantly growing incisors. Adults are bulky animals, measuring almost a metre from nose to tip of tail, and weigh about 20 kg. Adapted to life in water, beavers have small ears, large, webbed hind feet, and a broad, flat, paddle-shaped tail, which provides propulsion and may be slapped loudly against the surface of the water to signal danger.

Beavers live in family groups, or colonies, which consist of a breeding pair, their most recent litter, and older siblings born the previous year. Two year-olds leave the colony when the third year's young, known as kits, are born. Litter sizes are 3 to 6 (usually 4 or 5), and birth occurs from April to June. Beavers mate for life, but if one partner dies the survivor may take a new mate.



Their homes are either lodges, which are massive domes constructed of heavy sticks with the bark removed, cemented together with packed mud, or burrows excavated into river banks. In lakes or deep ponds, lodges are built at the water's edge, but in shallower ponds they may be located far from shore. Both lodges and burrows contain an inner nest chamber raised above the water level, which is accessed by one or more underwater entrances.

Beavers are herbivorous. In summer they consume large amounts of herbaceous (non-woody) food, including waterlilies, cattails and other aquatic plants. In winter their diet is dominated by woody food, mostly the bark of tree branches that they have stockpiled in the water near their home. Poplar, alder, birch, and willow are among their favourite trees.

Beavers are active year-round, and are most often seen outside their homes at dawn and dusk as they gather food, or maintain dams and living quarters. They are encountered on land more often in spring, when two-year-olds leave their family home to search for new habitat, and in fall, as adults travel farther from water to gather food for the winter.



Ecological Importance

Beavers are known as a keystone species, which means that their activities create and sustain an ecosystem that supports many other species. The flooding of fields and forests creates ponds and wetlands that provide habitat for freshwater fish, amphibians, aquatic invertebrates and waterfowl. Dead standing trees in swamps become homes for tree-nesting birds, bats and insects. Wide pools that are formed along the lengths of salmon streams provide overwintering habitat for juvenile salmon, and protect them from being harmed or washed away during rapid spring run-off.

History and Habitat in Richmond

Historically, beavers were found throughout sub-Arctic North America. Beaver populations naturally rise and fall, depending on the presence of natural predators such as bears and cougars, and the availability of suitable food, but beavers have been long-eradicated from some parts of their former range due to over-trapping or habitat loss. However, in urban areas throughout North America, in recent years, because of the absence of natural predators, beavers have begun to return.

In Richmond (Lulu Island, Iona Island, Sea Island and the smaller South Arm islands), beavers from the Fraser River have probably always denned along the shores where sufficient food is accessible, and have occasionally moved short distances inland by way of connecting sloughs and ditches. Beavers are currently found in Richmond in the Terra Nova Rural Park and Terra Nova Natural Area, where they have built lodges in ponds that were excavated during park preparation.

Conflict with People

Beavers are shy and will avoid people, but their determined home-building and food-seeking activities occasionally lead to conflict with humans.

Water Levels

Because beavers move easily in water but are slow and vulnerable to attack on land, they work tirelessly to convert fields and forests to wetlands, where they can swim to the trees needed for food and building material. Using branches from felled trees and large amounts of mud, they construct dams up to hundreds of metres long that block the flow of streams flood terrestrial habitats. In Richmond, beavers have not created large dams, but they have blocked culverts and drainage ditches near the perimeter of the island.

Sustained effort may be required to counteract the activities of beavers. Blocked culverts must be unblocked frequently, and the materials the beavers used must be carried away to prevent their reuse. Flow control devices have been devised, such as wide-bore pipes with holes bored along the sides or large metal baskets placed at the exit channels of ponds that create larger areas for beavers to plug and help maintain water flow. Still, the beavers persist. They respond to the sound of running water, and will work tirelessly to plug the leaks, so flow control devices still require periodic clearing of sticks and mud.

Burrowing

In 2019, a stretch of Richmond's western dyke, where the inner ditch had been broadened and incorporated into the decorative pond of a subdivision, was colonized by beavers, which excavated burrows with entrances hidden below the water in the pond. The burrows were considered a threat to the integrity of the dyke. After the water of the pond was lowered, the beavers abandoned the area, but the episode served as a reminder of their penchant for burrowing, which should be considered when creating aquatic habitats near beaver populations.

Beavers and Trees

Beavers occasionally fell trees that are of aesthetic, ecological, or other importance. To protect valued trees, chicken wire, double-wrapped around trunks in a band reaching one metre high can be an effective barrier, although the mesh requires monitoring and occasional maintenance, because beavers can, over time, nip through the wires.



General Response to Beaver Issues

As fur-bearing animals, beavers are protected under federal and provincial law, which means that "problem" beavers cannot legally be harmed, unless they are legally trapped by a licensed trapper. This may not remove all beavers from an area, however, because licenses have limits that may fall short of the beaver population.

Live-trapping and relocating is not considered a long-term or optimum solution. Beavers are territorial, and once one colony of beavers is removed, it is possible that another will move in to replace it. In addition, transporting beavers to another area may lead to conflict with resident beavers and lead to injury or death in either group.

A beaver colony will eventually exhaust the nearby resources and move on as part of a natural cycle. Sometimes the simplest course of action is to wait beavers out. It is also important to recognize that in urban areas where seeing wildlife is uncommon, many people become fond of beavers and are happy to live alongside them as long as a balance is met, where beavers are able to feed and house themselves without causing significant damage to infrastructure and private property.

Other aquatic mammals in Richmond

There are two other aquatic mammals that may be seen in ponds and ditches in Richmond and may be mistaken for beavers. One is the muskrat, another rodent that is superficially similar to the beaver but is much smaller (smaller than a house cat) and has a narrow, black, furless tail in contrast to the beaver's broad paddle. Muskrats can be observed within or near some of the city's ditches, or in wet areas with cattails, their primary food.

A second is the river otter, a slender, long-bodied animals the size of a cat or a little larger, with a long, fur-covered tail. River otters are agile on land and in water, and, often in small groups, quickly move from one to the other, scampering up and sliding down muddy banks. They are inquisitive, and may swim close to humans, raising their heads from the water to take a look. In Richmond they are seen most often along the banks of the Fraser River, but have been known to venture inland to places such as the pond at Garden City Park.

