



## North American Beaver

*Castor canadensis*

**COMMON NAMES:** American beaver, Canadian beaver, Beaver, flat-tail, bank beaver, castor, castor cat

**TAXONOMY: ORDER:** Rodentia. **CLASS:** Mammal. **GENUS:** Castor. **SPECIES:** canadensis

**FEDERAL LEGAL STATUS:** No special status. **PA STATUS:** regulated hunting by license as fur bearer.

### GENERAL DISTRIBUTION

The American beaver is found throughout most of North America except in the Arctic tundra, peninsular Florida, and the Southwestern deserts. The distribution of seven were not found in the literature, those include: *C. canadensis* subsp. *canadensis* (Kuhl) (Canadian beaver); *C. canadensis* subsp. *belugae* (Taylor) (Cook Inlet beaver); *C. canadensis* subsp. *frondator* (Mearns) (Sonora beaver); *C. canadensis* subsp. *mexicanus* (Bailey) (Rio Grande beaver); *C. canadensis* subsp. *michiganensis* (Bailey) (woods beaver); *C. canadensis* subsp. *pacificus* (Rhoads) (Washington beaver); *C. canadensis* subsp. *phaeus* (Heller) (Admiralty beaver). The distribution of six subspecies is listed below.

- *C. c.* subsp. *carolinensis* (Rhoades) - occurs in the southeastern part of the United States north to southern Virginia, northern Ohio, Indiana, Illinois, and west to southeastern Iowa, eastern Missouri, eastern Arkansas, and Louisiana.
- *C. c.* subsp. *taylori* (Davis) - occurs in northern Nevada in the streams and tributaries of the Snake River drainage.
- *C. c.* subsp. *baileyi* (Nelson) - occurs in the Humboldt River drainage.
- *C. c.* subsp. *repentinus* (Goldman) - occurs along the Colorado River.
- *C. c.* subsp. *texensis* (Bailey) - occurs in eastern Texas.
- *C. c.* subsp. *leucodonta* (Gray) - occurs along the Coast Ranges from California to Alaska.

### TIMING OF MAJOR LIFE HISTORY EVENTS

**Breeding season** - Breeding occurs between January and March. American beavers are generally monogamous, although males will mate with other females. Only the colony's dominant female breeds, producing one litter a year.

**Gestation/litter** - Gestation period lasts 4 months. Average litter size varies between 2.3 and 4.1. Kits are weaned at 2 to 3 months and can swim by 1 week of age.

**Age at sexual maturity** - American beavers become sexually mature between age 2 and 3.

**Colony/dispersal** - The colony consists of three age classes of American beavers: the adults, the kits, and the yearlings born the previous spring (average 5.1 American beavers per colony). After young American beavers reach their second or third year, they are forced to leave the family group. Dispersal may be delayed in areas with high American beaver densities. Subadults generally leave the natal colony in the late winter or early spring. Subadult American beavers have been reported to migrate as far as 147 miles, although average migration distances range from 5 to 10 miles.

**Life span** - Up to 11 years in the wild, 15 to 21 years in captivity.

The species is active throughout the year and is usually nocturnal. Adult American beavers are nonmigratory.

### **PREFERRED HABITAT**

Suitable habitat for American beavers must contain all the following: stable aquatic habitat providing adequate water; channel gradient of less than 15 percent; and quality food species present in sufficient quantity. American beavers can usually control water depth and stability on small streams, ponds, and lakes. Large lakes or reservoirs (20 acres in surface area) with irregular shorelines provide optimum habitat for the species. Lakes and reservoirs that have extreme annual or seasonal fluctuations in the water level are generally unsuitable habitat for American beavers. Intermittent streams or streams that have major fluctuations in discharge will have little year-round value as American beaver habitat.

Stream characteristics such as gradient, depth, and width are determining factors in habitat use by American beaver. Steep topography prevents the establishment of a food transportation system. Additionally, narrow valley bottoms cannot support the large amounts of vegetation needed by American beavers. Consequently, American beaver populations in narrow valley bottoms are more cyclic than are populations in wider valley bottoms. Valleys less than 150 feet wide are occupied less frequently. One study found that 68 percent of the American beaver colonies recorded in Colorado were in valleys with a stream gradient of less than 6 percent. No American beaver colonies were recorded in streams with a gradient of 15 percent or more. Valleys that were only as wide as the stream channel were unsuitable American beaver habitat, while valleys wider than the stream channel were frequently occupied by American beavers.

### **COVER REQUIREMENTS**

The lodge is the major source of escape, resting, thermal, and reproductive cover for American beavers. Lodges may be surrounded by water or constructed against a bank. Water protects the lodge from predators and provides concealment for American beavers when traveling to and from food gathering areas and caches. On lakes and ponds, lodges are frequently situated in areas that provide shelter from wind, waves, and ice. Damming large streams with swift, turbulent waters creates calm pools for feeding and resting.

### **FOOD HABITS**

American beavers are herbivores. Food availability is another factor determining suitable habitat for American beavers. Marshes, ponds, and lakes are often occupied by American beavers when an adequate supply of food is available. American beavers generally forage no more than about 300 feet from water; however, foraging distances of up to 656 feet have been reported. American beavers commonly inhabit riparian areas of mixed coniferous-deciduous forests and deciduous forests containing abundant American beaver foods and lodge building material such as quaking aspen, willows, alders, red-osier dogwood, and cottonwoods.

During late spring and summer their diet consists mainly of fresh herbaceous matter. American beavers appear to prefer herbaceous vegetation over woody vegetation during all seasons if it is available. Woody vegetation may be consumed during any season, although its highest utilization occurs from late fall through early spring when herbaceous vegetation is not available. The majority of the branches and stems of woody vegetation are cached for later use during the winter.

Winter is a critical period, especially for colonies on streams because they must subsist solely on their winter food caches. In contrast with stream American beavers, colonies on lakes are not solely dependent on their stores of woody vegetation; they can augment their winter diet of bark with aquatic plants.

Aquatic vegetation such as duck-potato, duckweed, pondweed, and water weed are preferred foods when available. The thick, fleshy rhizomes of water lilies may be used as a food source throughout the year. If present in sufficient amounts, water lily rhizomes may provide an adequate winter food source, resulting in little or no tree cutting or food caching of woody materials. Other important winter foods of American beavers living on lakes include the rhizomes of sedges and the rootstocks of mat-forming shrubs.

Important woody foods of American beavers include quaking aspen, willow, cottonwood, alder, red maple, serviceberry, mountain maple, red-osier dogwood, and green ash. Other woody species occasionally utilized for food include sugar maple, black ash, yellow birch, hazels, hemlocks, and Oregon crab apple. Aspen and willows are considered preferred American beaver foods; however, these are generally riparian tree species and may be more available for American beaver foraging but not necessarily preferred over all other deciduous tree species. American beavers have been reported to subsist in some areas by feeding on conifer trees; however, these trees are a poor-quality source of food.

Woody stems cut by American beavers are usually less than 3 to 4 inches in diameter at breast height. One study reported that trees of all size classes were felled close to the water's edge, while only smaller diameter trees were felled farther from the shore. Trees and shrubs closest to the water's edge are generally utilized first.

### **PREDATORS**

American beavers have few natural predators. However, in certain areas, American beavers may face predation pressure from wolves, coyotes, lynx, fishers, wolverines, and occasionally bears. Alligators, minks, otters, hawks, and owls periodically prey on kits. Humans kill American beavers for their fur.

### **MANAGEMENT CONSIDERATIONS**

American beavers will live in close proximity to humans if all habitat requirements are met. However, railways, roads, and land clearing adjacent to waterways may affect American beaver habitat suitability. Transplants of American beaver may be successful on strip mined land or in new impoundments where water conditions are relatively stable. Highly acidic waters, which often occur in strip-mined areas, are acceptable for American beaver if suitable foods are present.

American beaver activity can have a significant influence on stream and riparian habitats. American beavers are the only mammals in North America other than humans that can feel mature trees; therefore, their ability to decrease forest biomass is much greater than that of other herbivores. Additionally, American beaver ponds conserve spring runoff, thus ensuring more constant stream flow, diminishing floods, conserving soil, and helping maintain the water table.

Through tree harvesting activity, American beavers can have an effect on natural succession. According to Barnes and Dibble tree cutting by American beavers on the lower Chippewa River in west-central Wisconsin will alter the course of succession on the river bottom site studied. American beavers were selective in their choice of woody plants, preferring ash and hickory over all other woody plants. These authors predict a major reduction in density for future populations of ash, hickory, and hackberry in areas of American beaver activity and an increase in the density of basswood and elm.

American beaver activity can be beneficial to some wildlife species. Waterfowl often benefit from the increased edge, diversity, and invertebrate communities created by American beaver activity. Occupied American beaver-influenced sites produce more waterfowl because of improved water stability and increased brood-rearing cover; the production declines with American beaver abandonment. Great-blue herons, ospreys, bald eagles, kingfishers, and many species of songbirds benefit from American beaver activity as well. Otters, raccoons, mink, and muskrat thrive on the increased foraging areas produced by American beaver activity. Berry-producing shrubs and brush in areas cut over by American beavers attract white-tailed deer and black bear.

American beaver activity can also improve fish habitat. Production of three trout species in a stream in the Sierra Nevada increased due to a higher standing crop of invertebrates in American beaver ponds. Smallmouth bass and northern pike also benefit from American beaver impoundments. In some instances, American beaver ponds have provided up to six times the total weight of salmonids per acre than that in adjacent stream habitat without American beaver ponds. In areas of marginal trout habitat, however, American beaver activity can reduce trout production. American beaver-caused loss of streamside shade and diminished water velocity can result in lethal water temperatures.

The amount of influence that cattle have on riparian environment can be reduced by American beaver activity in many valley bottoms. If American beavers are thoroughly established in wide valley willow habitats prior to the introduction of cattle, the immediate effect of cattle on the stream is often minor.

American beaver activity can also have detrimental effects. American beaver-caused flooding often kills valuable lowland timber. Human/American beaver conflicts occur when American beavers flood roadways and agricultural lands, and dam culverts and irrigation systems. The economic cost of nuisance American beaver activities often exceeds the value of their pelts and has been estimated at \$75 to \$100 million annually in the United States. Additionally, American beavers have potential to increase water-borne pathogens (including *Giardia lamblia*) downstream from their activity.

American beavers are harvested for their pelts. In most states with substantial American beaver populations, the species is now managed to provide a reliable annual harvest and a relatively stable population.

### **FIRE EFFECTS ON ANIMALS**

Information on the direct fire effects on American beavers was not found in the literature; however, they can probably easily escape fire. Since lodges are typically built over water, they are probably at little risk of being destroyed by fire.

Fire occurring in riparian areas often benefits American beaver populations. American beavers are adapted to the early stages of forest succession. Quaking aspen, willows, alders, and red-osier dogwood, prime American beaver food trees, all sprout vigorously after fire. As succession progresses, these trees become too large for American beavers to use or are replaced by climax trees. Recurring fires within parts of boreal forests have allowed aspen and willow to replace coniferous forests. This change favors American beaver populations since both species are important food sources. Fire may also help create more open bodies of water.

Fire can be used to maintain American beaver habitat in a subclimax state, thus ensuring adequate food supply for American beavers. High American beaver populations in many areas are the direct result of the extensive clear cutting and forest fires which were characteristic of the northern forests until recent years.

Above excerpts from: <http://www.fs.fed.us/database/feis/> (2015, July 29)

Created by Meg Scanlon 2017