

## *Castor canadensis*

**System:** Freshwater\_terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Rodentia	Castoridae

**Common name** Canadian beaver (English), castor (French), beaver (English), American beaver (English), North American beaver (English), castor americano (Spanish)

### Synonym

### Similar species

*Castor fiber*

### Summary

*Castor canadensis* (beaver) is native to North America, and has been introduced to Tierra del Fuego in southern South America, Finland, France, Poland and Russia in recent times. In its introduced range, the damming activity of the beaver can cause flooding which can damage forests. They also have the ability to quickly cut down large numbers of trees. In Finland, they compete with native beaver populations. In their native range, they cause flooding on major highways by plugging highway culverts.



[view this species on IUCN Red List](#)

### Species Description

*Castor canadensis* (beaver) is a large herbivorous rodent typically found near water. Adults may be up to 1200mm long and weigh between 18-47kg. Colour ranges from yellowish-brown to black with reddish-brown most common. Guard hairs are long and coarse and the under fur is dense and lead grey in colour. The tail is broad, scaly and dorsoventrally flattened. It is black in young animals but becomes lighter with age. Adaptations for aquatic life include nictitating membranes on the eyes, valvular ears and nose, lips closing behind incisors and webbed hind feet (Jenkins and Busher, 1979; Nummi, 2006).

### Notes

*Castor canadensis* (beavers) can swim up to 8 km an hour. They secrete waterproofing oil from glands at the base of their tail.

### Lifecycle Stages

The offspring are born fully furred and eyes wide open. They can swim within 24 hours and after several days they are also able to dive out of the lodge without any accompaniment. They leave the dam at two years of age (Anderson, 2002).

### Uses

*Castor canadensis* (beavers) are trapped and used primarily for their pelt (Langan, 1991). Beavers are being reintroduced to areas where they have been made extinct to improve wetland ecosystems.

## Habitat Description

*Castor canadensis* (beavers) are always found close to water and they require forest to provide food and building material (Nummi, 2006). Beavers have a unique ability to cut trees and this allows them to build mud and wood lodges in which they live, nest and store food. Lodges may be completely surrounded by water or built on the banks of ponds, lakes or streams. They are also able to build watertight dams which create ponds behind them where the beavers are then able to build lodges (Jenkins and Busher, 1979). This behaviour alters large areas of habitat and is the reason why beavers are termed "ecosystem engineers" (Nummi, 2006).

## Reproduction

*Castor canadensis* are monogamous. They usually become sexually mature during their second winter at the age of 1.5 years, although it can be delayed until 2.5 years or later (Nummi, 2006). Beavers mate once a year during winter. Gestation lasts about 105 days and the sole litter is born in spring. Litter size is usually between three and four, but can vary from one to nine (Jenkins and Busher 1979; Hill 1982 in Nummi, 2006). Kits weigh about 500g at birth.

## Nutrition

*Castor canadensis* (beavers) are "choosy generalist" herbivores. They eat leaves, twigs and bark of most species of woody plants growing near water and also herbaceous plants, particularly aquatics. Whilst they have a wide ranging diet they show a large preference for certain plant species such as aspen (*Populus* spp.) and willow (*Salix* spp.). Roots and rhizomes of water lilies are a particularly important source of winter food (Jenkins and Busher, 1979).

## General Impacts

*Castor canadensis* (beavers) are known as "ecosystem engineers" for their ability to alter the physical and chemical nature of water bodies and their adjacent terrestrial systems in both their native and introduced range (Nummi, 2006). Two recent studies have investigated the impacts of beavers on ecosystems in their introduced range in southern South America. Beavers have been found to cause significant reduction in forest cover up to 30m from water effectively removing riparian forest. In their introduced range of South America Beavers modify the original ecosystem from closed Nothofagus forest to a grass- and sedge-dominated meadow. Nothofagus forest and seedlings are suppressed by beavers but herbaceous plants have been shown to increase in number and diversity. Unfortunately most of the increase in herbaceous plant diversity is due to invasion of the areas by non-native species (Anderson *et al.* 2006). Deforestation caused by *C. canadensis* also has the immediate effect of increased erosion due to exposed slopes (Lizzaralde *et al.*, 2004). Forests may not completely regenerate in meadows for more than 20 years after removal of beavers due to flooding and sediments completely covering the forest floor which impedes seedling germination and establishment (Martinez Pastur *et al.*, 2006). Anderson and Rosemand (2006) investigated the effect of beavers on the aquatic ecosystem and found that ponds created by beavers had increased productivity but at the expense of significantly reduced macroinvertebrate diversity. Via physical, chemical and geomorphological alterations, beavers modify the structure and function of entire biotic communities and ecosystems. Lizzaralde *et al.* (2004) found that beaver colonized sites in the Tierra del Fuego Archipelago, Argentina had submerged vegetation and algae indicative of high nitrogen concentrations. Wood debris from fallen trees causes an accumulation of organic material that modifies the biochemical composition of waters, sediments, soils and adjacent riparian areas. These alterations make beaver-altered sites more suitable for introduced fish species (*Salmo truttafario*, *Salvelinus fontinalis* and *Onchorychus mybis*) and sustained invertebrate communities typical of slow-water habitats (Lizzaralde *et al.*, 2004). Beavers dam the river in which their lodge occurs, and sometimes the dam breaks causing extensive flooding. Dams act as barriers to migration in the stream and also form areas of impounded water behind them, increasing water temperature (Alexander, 1998). Beavers are also known for their ability to rapidly clear a forested area, and also cause flooding to roads by plugging highway culverts (Jensen *et al.* 2001).

## Management Info

Most *Castor canadensis* (beaver) management is through various forms of trapping for pelts. Demand for pelts has decreased so now there is little incentive for trappers to hunt beavers. Beaver colonies have been moved to other areas but in most cases other beavers move into the area and replace the beavers that were removed. Similar problems occur with trapping – removing the resident population simply allows other beavers to replace them. Dams in Canada have been blown up but it is a costly process and frequently new dams are created in the same place. Jensen *et al* (2001) suggest installing oversized culverts as a way of discouraging beaver plugging activity. McKinstry and Anderson (1998) state that Hancock and Bailey traps are typically used for live trapping beavers, but are bulky and expensive, and suggest steel cable snares as an alternative.

## Pathway

*Castor canadensis* (beaver) was introduced to Finland as part of a programme to reintroduce the European beaver (*C. fiber*). (Nummi, 2006). They were introduced to Poland and farmed (Nummi, 2006) *Castor canadensis* (beaver) was introduced to southern South America during an Argentine government program to establish furbearers in Tierra del Fuego. *Castor canadensis* (beaver) was introduced to Finland as part of a programme to reintroduce the European beaver (*C. fiber*). (Nummi, 2006).

**Principal source:** Christopher Anderson and Brett Maley, Institute of Ecology, University of Georgia, Athens GA 30605 and Omora Foundation, Puerto Williams, XII Region, Chile.

Nummi, P. 2006. NOBANIS – Invasive Alien Species Fact Sheet – *Castor canadensis*.

Jenkins, S.H. and Busher, P.E. 1979. *Castor canadensis*. Mammalian Species

Jenkins and Busher, 1979 and Nummi, 2006

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## Review:

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## ALIEN RANGE

[2] ARGENTINA

[18] CHILE

[2] FRANCE

[1] MEXICO

[5] RUSSIAN FEDERATION

[1] AUSTRIA

[4] FINLAND

[1] GERMANY

[1] POLAND

**Red List assessed species 1: LC = 1;**

[Castor fiber](#) LC

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49 references found for *Castor canadensis*

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Di Paola, M.E. and Kravetz, D.G. 1999. Invasive Alien Species: Legal and Institutional Framework in Argentina. Workshop on the legal and institutional dimensions of invasive alien species. IUCN.

**Summary:** This article outlines the legal framework for invasive alien species in Argentina.

Edmonton. 1995. A plague of compulsive dam builders: 1994 was a bumper year in Alberta for bothersome beavers. *Western Report*. 9: 22-23.

**Summary:** A report of the effects of *Castor canadensis* in its native ranges.

Genovesi, P. 2005. Eradications of invasive alien species in Europe: a review. *Biological Invasions*. 7 (1): 127-133.

**Summary:** This paper gives details of the eradications of introduced species in Europe, including the eradication of *M. vison* from Hiimaa Island in Estonia.



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Castor canadensis*

Jensen, P.G., Curtis, P.D., Lehnert, M.E., and Hamelin, D.L. 2001. Habitat and structural factors influencing beaver interference with highway culverts. *Wildlife Society Bulletin*. 29 (2): 654-664.

**Summary:** This article discusses the factors involved in beaver damage to highway culverts, and methods to reduce this damage.

McKinstry, M.C., and Anderson, S.H. 1998. Using snares to live-capture beaver, *Castor canadensis*. *Canadian Field-Naturalist*. 112 (3): 469-473.

**Summary:** This article outlines the various methods used for live-trapping of beavers in Wyoming.

[Nummi, P. 2006. NOBANIS Invasive Alien Species Fact Sheet Castor canadensis. From: Online Database of the North European and Baltic Network on Invasive Alien Species NOBANIS www.nobanis.org, Date of access 13/02/2008](#)

**Summary:** The North European and Baltic Network on Invasive Alien Species (NOBANIS) is a gateway to information on alien and invasive species in North and Central Europe. The participating countries are Denmark, Estonia, Finland, Faroe Islands, Germany, Greenland, Iceland, Latvia, Lithuania, Norway, Poland, European part of Russia, Sweden. The NOBANIS project will provide fact sheets on 60 of the most invasive alien species of the region, covering both animals and plant as well as microorganisms. We intend to upload 60 fact sheets - so please visit this page regularly.

NOBANIS is available from: [www.nobanis.org](http://www.nobanis.org), this page is available from: [http://www.nobanis.org/files/factsheets/Castor\\_canadensis.pdf](http://www.nobanis.org/files/factsheets/Castor_canadensis.pdf) [Accessed 16 February 2008]

Skewes, O., González, F., Rubilar, L. and Quezada, M. 1999. Investigación, aprovechamiento y control castor, islas Tierra del Fuego y Navarino. Instituto Forestal-Universidad de Concepción, Punta Arenas.

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**Summary:** This report gives details about the impacts of the beavers damming activity in its native range.

Anderson, C.B. 2004. Exotic vertebrate fauna in Cape Horn County, Chile. Report BIOKONCHIL Biodiversity Assessment Project. UFZ-Halle Environmental Research Center. Leipzig, Germany. 37 pp.

**Summary:** This gives information on exotic vertebrate species in Cape Horn County, Chile.

Anderson, C. B., Rozzi, R., Torres-Mura, J. C., McGehee, S. M., Sherriffs, M. F., Schüttler, E., & Rosemond, A. D. (2006). Exotic vertebrate fauna in the remote and pristine sub-Antarctic Cape Horn Archipelago, Chile. *Biodiversity & Conservation*, 15(10), 3295-3313.

**Summary:** This article gives information on the exotic vertebrate species in the Cape Horn Archipelago region of Chile.

[Anderson, R. 2002. Castor canadensis, Animal Diversity Web.](#)

**Summary:** This web page gives a wide variety of information on both *Castor canadensis* and *Castor fiber*. It also has a wide variety of links and resources for more information.

Available from: [http://animaldiversity.ummz.umich.edu/site/accounts/information/Castor\\_canadensis.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Castor_canadensis.html) [Accessed July 01, 2004]

Bailey, J.K., Schweitzer, J.A., Rehill, B.J., Lindroth, R.L., Martinsen, G.D., and Whitham, T.G. 2004. Beavers as molecular geneticists: A genetic basis to the foraging of an ecosystem engineer. *Ecology*. 85 (3): 603-608.

**Summary:** A report on the molecular genetics of *C. canadensis*.

Bailey, P. 1997. Beaver upcreek: research links Yoho National Park's buck-toothed rodents to biological diversity. *Beautiful British Columbia*. 39: 37.

**Summary:** A man's description of his visit to Yoho National Park.

[Beavers: Wetland and Wildlife. 2002. BWW INC.](#)

**Summary:** A web site with information on *Castor canadensis*.

Available from: <http://www.beaverswww.org/index.html> [Accessed July 15, 2004]

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**Summary:** This article discusses the habitat preferences of the North American beaver in Tierra del Fuego, Argentina.

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Harkonen, S. 1999. Forest damage caused by the Canadian beaver (*Castor canadensis*) in South Savo Finland. *Silva Fennica*. 33 (4): 247-259.

**Summary:** This article gives details about the impacts of the North American beaver in Finland.

[ITIS \(Integrated Taxonomic Information System\), 2008. Online Database Castor canadensis Kuhl, 1820](#)

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=180212](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=180212) [Accessed 14 January 2008]

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# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Castor canadensis*

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