Pacific Northwest Aquatic Invasive Species Profile

# **Nutria, *Myocaster coypus***

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Fish 423

Figure 1. Nutria *Myocastor coypus.* Image is from www.worldofstock.com.

**Diagnostic Information**

Common Names: nutria, coypus, coypu rat, nutria rat, swamp beaver

Class: Mammalia
Order: Rodentia
Family: Myocastoridae
Genus: *Myocastor*
Species: *coypus*

**Identification Guide**

Nutria (Myocastor coypus) are large, dark colored, semi aquatic rodents. Nutria are members of the family *Myocastoridae* and are native to southern South America. They are often mistaken for beavers or muskrats but are actually much smaller than beavers and much larger than muskrats (Link 2004). Nutria, similar to beavers, have large incisors. The incisors are bright, and yellowish to orange in color. The average adult nutria is about twelve pounds (5.4 kg) but can grow up to twenty pounds (9.1 kg). The average adult is about 24 inches (61 cm) in length. Nutria have a thin, rounded, rat-like tail that is pointed at the tip. The tail has little to no hair and ranges from 33 to 41 cm in length (http://www.extension.org/pages/Nutria).

Nutria have a dense gray undercoat that is covered by long, glossy guard hairs that vary in color from yellowish brown to dark brown. The hind legs of nutria are much longer than the front legs. This gives the animal its hunched up appearance when it is on land (LeBlanc 1994). The front paws have four clawed toes and one vestigial toe. The back paws have four webbed toes and one free toe (http://www.extension.org/pages/Nutria). These back paws help with swimming.

Figure 2. Nutria *Myocastor coypus.* . Picture was taken at the Beaverton Oregon transit center. Image is from www.conceitedindependence.com.

Nutria also have other adaptations that help them

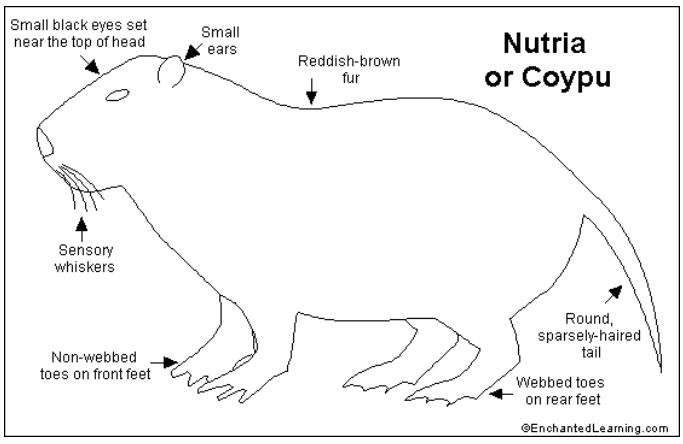


Figure 3. Nutria *Myocastor coypus* general body drawing. Image from Enchantedlearning.com.

in water. They have eyes, ears, and nostrils that are placed high on top of their head. The nostrils have valves that close when swimming and diving to seal out water (Link 2004). These adaptations help them move efficiently through aquatic environments.

**Life History and Ecology**

*Life Cycle and Reproductive Strategies*

Nutria generally live less than three years in the wild. Nutria depend greatly on their ability to find suitable habitats. They prefer swamps and wetlands, but are also found in ponds, drainage canals, rivers, streams, and lakes (LeBlanc 1994). They generally occupy a small area and stay within six hundred feet of it (Link 2004). They will however travel great distances when an old territory becomes unsuitable.

Nutria live in dense vegetation during summer months but dig burrows when temperatures drop. The burrows they dig are located in vegetated banks near water. They prefer slopes that are more than forty-five degrees (Peterson 1998). The burrows are often located in extensive underground tunnel systems. These tunnel systems can be up to 150 feet long and 3 feet across (LeBlanc 1994). The burrows are located just above the water line.

Nutria use a polygynous mating system within an organized social structure (Gosling and Baker 1987). They live in social groups containing about ten individuals. The social groups are made up of juveniles, adult females, and adult males. There is one dominant adult male that is generally larger than the other males in each group (Guichon et al. 2003). It is his job to protect the group's territory, drive away other mature males, and breed with the females (Gosling and Baker 1987).

Nutria breed throughout the year, but have reproductive peaks in early summer, mid-autumn, and late winter (LeBlanc 1994). Females become reproductively active between four to six months in age and can produce up to three liters per year. The gestation period is approximately 130 days long, with an average litter being four to five offspring. Nutria newborns are active immediately after birth and can swim within a few hours (LeBlanc 1994).

*Feeding Habitats*

Nutria are herbivores that eat a large variety of plants (Link 2004). The plants they eat are almost all aquatic or semi aquatic vegetation, but they will eat crops, lawns, and gardens if they are within their habitat (www.dfw.state.or.us/swwd/NutriaDamage_alt.html). When feeding nutria will construct feeding platforms near their burrows. They platforms are made up of aquatic vegetation and will grow larger depending on how long the group stays in that area. Nutria also eat up to 25% of their body weight everyday (www.dfw.state.or.us/swwd/NutriaDamage_alt.html). They generally are opportunistic and will eat whatever plant life is available including roots, bark, and leaves (Link 2004).

*Environmental optima and tolerances*

Nutria are tolerant of a wide range of aquatic environments. The main limiting factor for their distribution is that they have a low tolerance to cold (Link 2004). They are not able to survive freezing temperatures for more than a few days (Link 2004). However they have been found in regions that were thought unsuitable. They survive these areas by using their burrows and each other for warmth (Doncaster and Micol 1990).

*Biotic associations*

Nutria carry a wide variety of diseases and pathogens like rabies, equine encephalomyelitis, paratyphoid, salmonellosis, pappilomatosis, leptospirosis, toxoplasmosis, richettsia, coccidiosis, and sarcoporidiosis (Sheffels and Sytsma 2007). They also host a wide variety of external parasites like chewing louse, fleas, and ticks. The most common external parasite is the nematode and larval roundworms that cause a severe skin rash called 'nutria itch' (Sheffels and Sytsma 2007). This is common to anyone who handles nutria without proper gloves.

**Current Geographic Distribution**

The United States distribution of nutria is shown in Figure 4. Nutria are currently found in most of the southern states indicated in green. They are found in a small portion of the northeast, also indicated in green. Nutria are also found in the Pacific Northwest, meaning Oregon and Washington. The map in Figure 4 also shows where nutria have never established, have gone extinct, or have been eradicated (www.nwrc.usgs.gov).

The distribution of nutria in the Pacific Northwest is shown in Figure 5. The map shows the areas of high, middle, and low density in blue. It also shows suitable nutria habitat where densities have not yet been reported in red. This does not mean that nutria are not present in these areas.

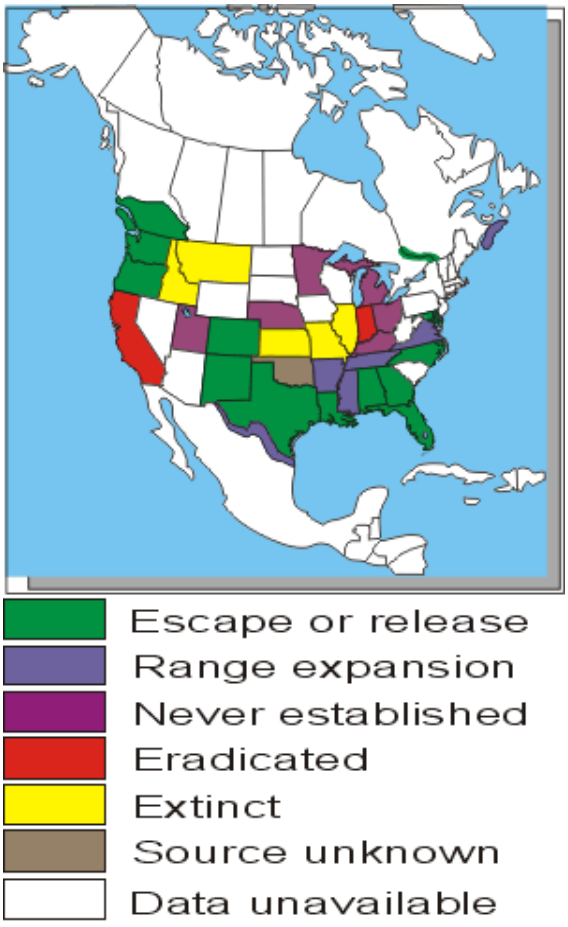


Figure 4. Map showing the current distribution of Nutria in the USA. Map provided by www.nwrc.usgs.gov.

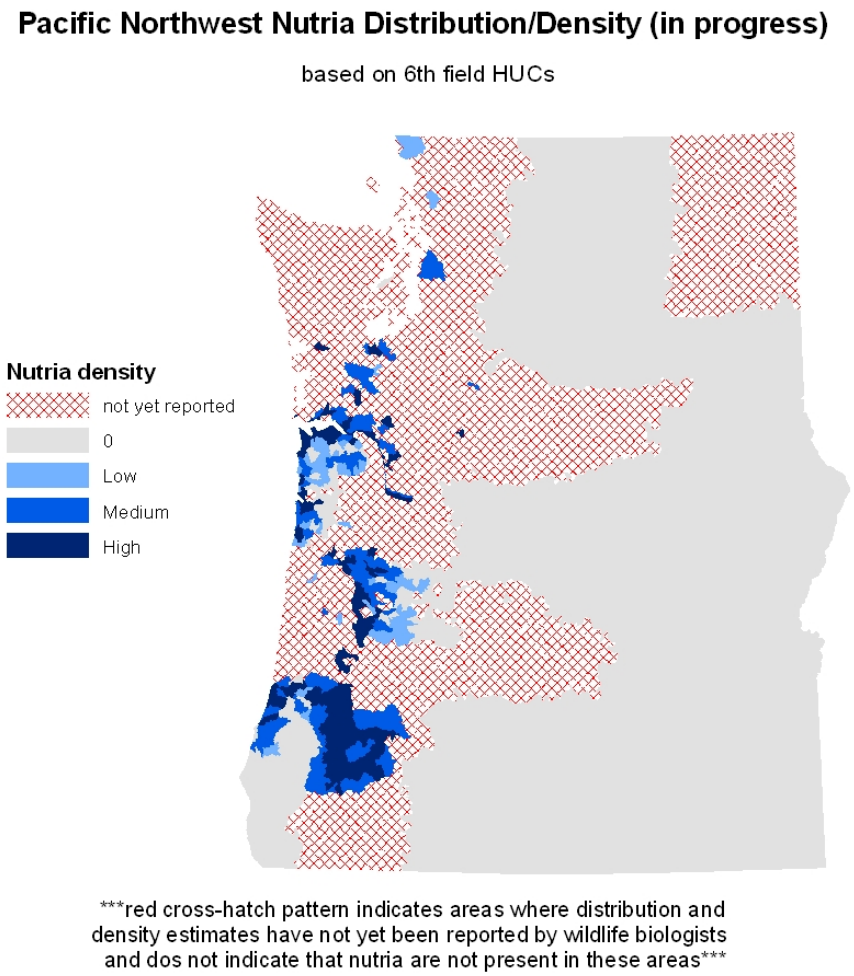


Figure 5. Map showing the current distribution of nutria in the Pacific Northwest. Map provided by Trevor Sheffels, Portland State

## History of Invasiveness

Nutria were brought into the United States from South America from 1899-1940 (Sheffels and Sytsma 2007). They were first brought into California, Oregon, Washington, Michigan, Ohio, Louisiana, Utah, and New Mexico for the purpose of fur farming (Sheffels and Sytsma 2007). The furs of nutria were less expensive to farm then beavers, but their fur sold for the same amount. Federal and state agencies then transported nutria to other southern states and sold them as 'weed cutters' to private citizens (Sheffels and Sytsma 2007).

Between 1930-1940 there were 600 nutria fur farms located in Oregon and Washington (http://wdfw.wa.gov.htm). Flooding, storms, and improper cages led to many nutria escapes in the Pacific Northwest. In the 1940's the fur industry crashed and any nutria that were left on the fur farms were released (http://wdfw.wa.gov.htm).

## Invasion Process

*Pathways, vector, and routes of introduction*

Nutria were introduced through intentional and accidental introductions. They were brought by ship from South America. The vector of introduction has been by the fur farming industry (Sheffels and Sytsma 2007).

Through these fur farms there has been accidental introductions because of escapees and intentional introductions by releasing unwanted nutria into the wild. A secondary vector of introduction has been by the federal and state governments. They took nutria from fur farms

and sold them to the public as ‘weed cutters’ to trim unwanted vegetation from there property (Sheffels and Sytsma 2007).

*Factors influencing establishment and spread*

There is mainly one factor that has limited the establishment and spread of nutria in the United States. The one limiting factor nutria have is their low tolerance to cold weather. Nutria have an 80%-90% mortality rate if exposed to freezing weather for more than a few days (Gosling et al 1998). Otherwise if nutria have access to any sort wetland region with vegetation they are able to establish themselves and spread.

*Potential ecological and economic impacts*

Nutria cause severe damage as a result of burrowing and eating. The burrows they make cause weakening to the ground that they are burrowing under. These burrows will collapse when the soil becomes saturated with water (Sheffels and Sytsma 2007). This is the biggest problem in the Pacific Northwest. Burrowing can cause roadways, dams, levees, buildings, lawns, and water banks to collapse (Sheffels and Sytsma 2007). The feeding habits of nutria can cause to an overexploitation of aquatic vegetation. This can lead to areas where vegetative damage is so severe that there is permanent damage to wetlands (Colona et al 2003). Through predation nutria have also damaged valuable crops (http://wdfw.wa.gov).

Muskrats compete with nutria for the same food and habitats. They are out competed for food and habitat by nutria and the muskrat populations have declined in areas where nutria have established (http://wdfw.wa.gov).

Nutria also can do damage by passing along a variety of disease, pathogens, and parasites. Nutria can pass these to people, livestock, and pets (Sheffels and Sytsma 2007). This is a big problem in the Pacific Northwest because nutria are present in urban areas, opposed to other parts of the country where they are primarily in rural wetlands.

**Management Strategies and control methods**

In the past management strategies for the nutria in the Pacific Northwest have been only slightly effective. The efforts have been on a small scale done by individual counties and small organizations will no coordination between each other. The management strategies have consisted of rapid response plans that focus on prevention and eradication (Sheffels and Sytsma 2007).

Prevention efforts have focused on preventing damage nutria can do as a result of burrowing and feeding. Prevention methods that have been and are still used are fencing and electric barriers, water-level management, slope management, embankment barriers, harassment and repellents, and crop location (http://wdfw.wa.gov). Fences that are 3 feet tall with at least 12 inches buried underground have

been used. To prevent nutria from tunneling higher into embankments, water levels can be kept a minimum level or waters levels can be drastically raised to force the nutria out. Underground stones or wire barriers are also used to prevent tunneling into embankments (http://wdfw.wa.gov). Nutria are easily scared so harassment and repellents have been used. Loud noises, high-pressure water sprays, and large dogs are examples of this. Lastly relocating unfenced crops away from water can prevent nutria invasions (http://wdfw.wa.gov). Trapping and lethal controls have been and are still used to eradicate nutria (http://wdfw.wa.gov). Lethal or live bait traps are used. Using live bait traps along waterways with food inside have been the easiest and most effective method of eradication. Bait platforms, looking like floating docks, have been used as well. The platforms are covered with food that has been poisoned. Shooting has been an effective way of eradicated nutria, but only works in small rural areas (http://wdfw.wa.gov).

Nutria are classified as a Prohibited Aquatic Species in Washington and Oregon. All nutria that are trapped should be euthanized and not returned to the wild. A special permit is required for any trap used other than live traps. It is unlawful to transport nutria anywhere in Washington state without a permit (http://wdfw.wa.gov).

Currently Oregon and Washington are coordinating together to make an official regional management plan for nutria. The management plan will focus on preventing damage and preventing further establishment and spread (Sheffels and Sytsma 2007). Due to the length of time since the initial introduction of nutria in the area a long-term effort will be required. Management strategies will also need to address the issue of climate change, which will expand the suitable habitats for nutria. Research and coordinated efforts at a regional scale will be used. Managers will review past management efforts to help them determine how to control nutria and to see if eradication is even possible (Sheffels and Sytsma 2007). Future research on nutria will need to be done.

A draft of an official regional nutria management plan was presented in the spring of 2008. The plan focuses on early detection, rapid response, and development of maps that show areas that are at risk for invasion. It also includes limiting damage, and an eradication program at the watershed level. The plan is in the process of being finalized and funding still needs to be found (Sheffels and Sytsma 2007).

**Literature Cited**

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Sheffels, T. and M. Sytsma. 2007. Report on Nutria Management and Research in the Pacific Northwest. Pp.1-57.

**Other Resources**

National Wetlands Research Center:
www.nwrc.usgs.gov/

Nutria *Myocastor coypus*:
http://www.dfw.state.or.us/swwd/NutriaDamage_alt.html

Washington Department of Fish and Wildlife:
http://wdfw.wa.gov/
Washington State University Extension:
http://www.extension.org/pages/Nutria

Photos provided by:
www.conceitedindependce.com
www.worldofstock.com

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