

Nutria (*Myocastor coypus*)

Ecological Risk Screening Summary

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Photo: USFWS

1 Native Range, and Status in the United States

Native Range

From GISD (2008):

“Native to South America south of 23 degree latitude, including Argentina, Bolivia, southern Brazil, Chile, Paraguay, and Uruguay (Carter and Leonard 2002).”

Status in the United States

From Pasko and Eich (2005):

“Feral nutria have been reported in at least 40 states and three Canadian provinces in North America since their introduction. About one-third of these states still have viable populations that are stable or increasing in number. Adverse climatic conditions, particularly extreme cold, are probably the main factors limiting range expansion of nutria in North America. Nutria are most abundant in the states along the Gulf of Mexico coast, but they are also a problem in other southeastern states and along the Atlantic coast.”

Means of Introductions in the United States

From Pasko and Eich (2005):

“Nutria were first imported into the United States between 1899 and 1930 in an attempt to establish a fur farm industry. When the nutria fur market collapsed in the 1940s, thousands of nutria were released into the wild. Wildlife agencies further expanded the range of the nutria by introducing the species into new areas of the United States with the intent that nutria would control undesirable vegetation and enhance trapping opportunities. A hurricane in the late 1940s aided dispersal by scattering nutria over wide areas of coastal southwest Louisiana and southeast Texas. Accidental and intentional releases have led to the establishment of widespread and localized populations of nutria in various wetlands throughout the United States.”

Remarks

From ITIS (2015):

“Common Name(s): nutria [English]; nutria [French]; coypu [Spanish]; Coypu [English]”

From GISD (2008):

“This species has been nominated as among 100 of the "World's Worst" invaders.”

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2015):

“Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Tetrapoda
Class Mammalia
Subclass Theria
Infraclass Eutheria
Order Rodentia
Suborder Hystricomorpha

Infraorder Hystricognathi
Family Myocastoridae
Genus Myocastor
Species *Myocastor coypus* (Molina, 1782)”

“Taxonomic Standing: valid”

Size, Weight, and Age Range

From GISD (2008):

“5-9kg; 40-60cm body; 30-45cm tail”

Environment

From GISD (2008):

“*Myocastor coypus* (coypu) are generally found near permanent water, particularly reed beds and swamp/marsh. Also found in rivers, streams, lakes, ponds and brackish marsh in coastal areas.”

Climate/Range

From GISD (2008):

“Severe winter could reduce reproductive success and adult survival.”

Distribution Outside the United States

Native

From GISD (2008):

“Native to South America south of 23 degree latitude, including Argentina, Bolivia, southern Brazil, Chile, Paraguay, and Uruguay (Carter and Leonard 2002).”

Introduced

From GISD (2008):

“Introduced to areas of North America, Europe, Africa and Asia (Carter, 2007).”

Means of Introduction Outside the United States

From GISD (2008):

“Fur farms, introduced for fur exploitation ... Escape from confinement ... Natural dispersal (local)”

Short Description

From Fuller (2015):

“Large rodent, resembling both native beavers and muskrats. The nutria has a long, thin round tail [which] distinguishes it from the beaver which has a flat tail and the muskrat which has a laterally flattened tail.”

Biology

From GISD (2008):

“Nutrition

Herbivorous, *Myocastor coypus* (coypu) eat wetland plants and crops. Selective feeding causes massive reduction in reed swamp. Occasional feeding on freshwater mussels are reported. It practices coprophagy. (Woods et al. 1992, Carter and Leonard 2002, Genesis Laboratories, Inc. 2002).

Reproduction

Placental. Sexual. Significant relationship between winter severity and female reproduction in the following spring. Prenatal embryo losses are high until 13-14 weeks of gestation. Sexual maturity 3-10 months. Gestation 127-138 days. Litter size 2-9; prenatal embryo losses are common during cold winter and in females in poor health condition. (Woods et al. 1992, Genesis Laboratories, Inc. 2002).

Lifecycle stages

Myocastor coypus (coypu) breed throughout the year; post-partum oestrus. Sexual maturity 3-10 months. Gestation 127-138 days. Mean litter sizes 5-6 (2-9), prenatal embryo losses are common during cold winter and in females in poor health condition. Woods et al. 1992).”

Human Uses

From GISD (2008):

“*Myocastor coypus* (coypu) are valued as a source of fur (Carter and Leonard 2002) and have been used as a meat source.”

Diseases

From Woods et al. (1992):

“Coypus can be infected by toxoplasmosis (Holmes et al., 1977), papillomatosis (Jelinek et al., 1978), rabies (Matouch et al., 1978), equine encephalomyelitis (Page et al., 1957), salmonellosis (Safarov and Kurbanova, 1976), paratyphoid (Evans, 1970), leptospirosis (Twigg, 1973), richettsia (Kovalev et al., 1978), sarcoporioidosis (Scheuring and Madej, 1976), and coccidiosis (Michalski and Scheuring, 1979). ... Endoparasites include 11 trematodes, 21 cestodes, and 31 nematodes (Babero and Lee, 1961), with the most important ones in South America being the nematodes *Graphidioides myocastoris*, *Trichuris myocastoris*, and *Dipetalonema travassoso*, the trematode *Hippocrepis myocastoris*, and the cestode *Rodontolepis* sp. (Babero et al., 1979). Important ectoparasites are biting lice (*Pitrufulquenia coypus*), fleas (*Ceratophyllus gallinae*), and

ticks (*Ixodes ricinus*, *I. arvicolae*, *I. hexagonus*, *I. trianguliceps*, *Dermacentor variabilis*; Newson and Holmes, 1968; Willner, 1982)."

Rabies, equine encephalomyelitis, and salmonellosis are OIE-reportable diseases.

Threat to Humans

From Jojola et al. (2005):

"Impacts by nutria to agriculture include foraging on crops, weakening irrigation structures by digging burrows, and potential disease transmission to livestock."

"Transmission of diseases and parasites carried by nutria to humans is not well-documented, but could potentially involve toxoplasma, chlamydia, and salmonella (Bounds et al. 2003)."

"Nutria parasites most often transmitted to humans are nematodes and blood flukes (*Strongyloides myopotami* and *Schistosoma mansoni*) that cause what is commonly known as "swimmer's itch" (LeBlanc 1994)."

3 Impacts of Introductions

From Jojola et al. (2005):

"Nutria are recognized as at least a contributing factor to the decline of native Louisiana coastal marsh, declining vegetative biomass, and changing plant communities (Shaffer et al. 1992, Grace and Ford 1996, Evers et al. 1998). Louisiana has lost about 22,000 acres of marsh to nutria vegetative damage and over 100,000 acres of marsh have been negatively impacted by nutria (Marx et al. 2004)."

From Shaffer et al. (2015):

"In the nutria-exclosure experiment, *T. domingensis* displayed nearly 100% cover inside of all ten exclosures within a 3-month period. In stark contrast, cattail in all ten controls was completely destroyed within 48 h of planting. The control plots were replanted four times, and each time suffered 100% mortality due to nutria herbivory. Belowground biomass was nearly 3-fold higher inside of exclosures ($F_{1,16} = 30.04$, $p = 0.0003$) than in controls. ... Based on data from manipulative mesocosm and field experiments as well as observations of nutria eatouts, it is clear that nutria were the dominant cause of vegetation loss at the Hammond Assimilation Wetland. This is supported by studies showing that when nutria were excluded, the marsh flourished, local extinction of *T. domingensis*, except in exclosures (a nitrophilic species that generally dominates under eutrophied conditions, but is a preferred food of nutria), and recovery of the marsh following aggressive nutria control (especially within 200 m of the discharge area where water levels are highest)."

From GISD (2008):

“Coypu eat native freshwater mussels. Some native fish species which lay their eggs in these mussels have become locally extinct. Two fish species predicted to be threatened in this manner are the Nippon-Bara-tanago or Japanese rose bitterling (*Rhodeus ocellatus kurumeus*) and the vulnerable Itasenpara or deepbody bitterling (see *Acheilognathus longipinnis* in IUCN Red List of Threatened Species), are listed in the Japanese Red Data Book of endangered species. *A. longipinnis* is endemic to small parts of Honshu and is a Japanese national natural treasure (Tatsuzawa, S., pers. Comm., 2004).”

“Coypu eat water plants that sustain native insect fauna. This has caused the local extinction of many insects that depend on the natural flora, including some species of dragon fly. One dragon fly species threatened with extinction is the critically endangered or Bekkou-tombo (see *Libellula angelina* in IUCN Red List of Threatened Species). Bekkou-tombo is related to species of painted grasshawk. It is endemic to Japan and is a Japanese national natural treasure (Tatsuzawa, S., pers. Comm., 2004).”

From Bertolino et al. (2011):

“In this study, by using cameras surveying both dummy and natural nests, we showed for the first time that although coypus are not egg predators, they may be nest destroyers, with a potentially high impact on the reproduction performance of waterbirds.”

“By using the camera survey of both dummy and natural nests, we documented that coypu frequently used the nests as resting platforms. Coypus were not attracted by the eggs and did not eat them, but rather jumped on the nests repeatedly, resting during the day as well as at night.”



Figure 2. Distribution of *M. coypus*. Map from Fuller (2015).

6 Climate Matching

Summary of Climate Matching Analysis

The climate match (Sanders et al. 2014; 16 climate variables; Euclidean Distance) was high across nearly the entire contiguous US. Only coastal New England, northern Minnesota, North Dakota, and isolated patches in the Southeast and West were not high climate matches. Climate 6 proportion indicated that the contiguous US has a high climate match. The range for a high climate match is 0.103 and greater; the Climate 6 proportion for *M. coypus* is 0.957.

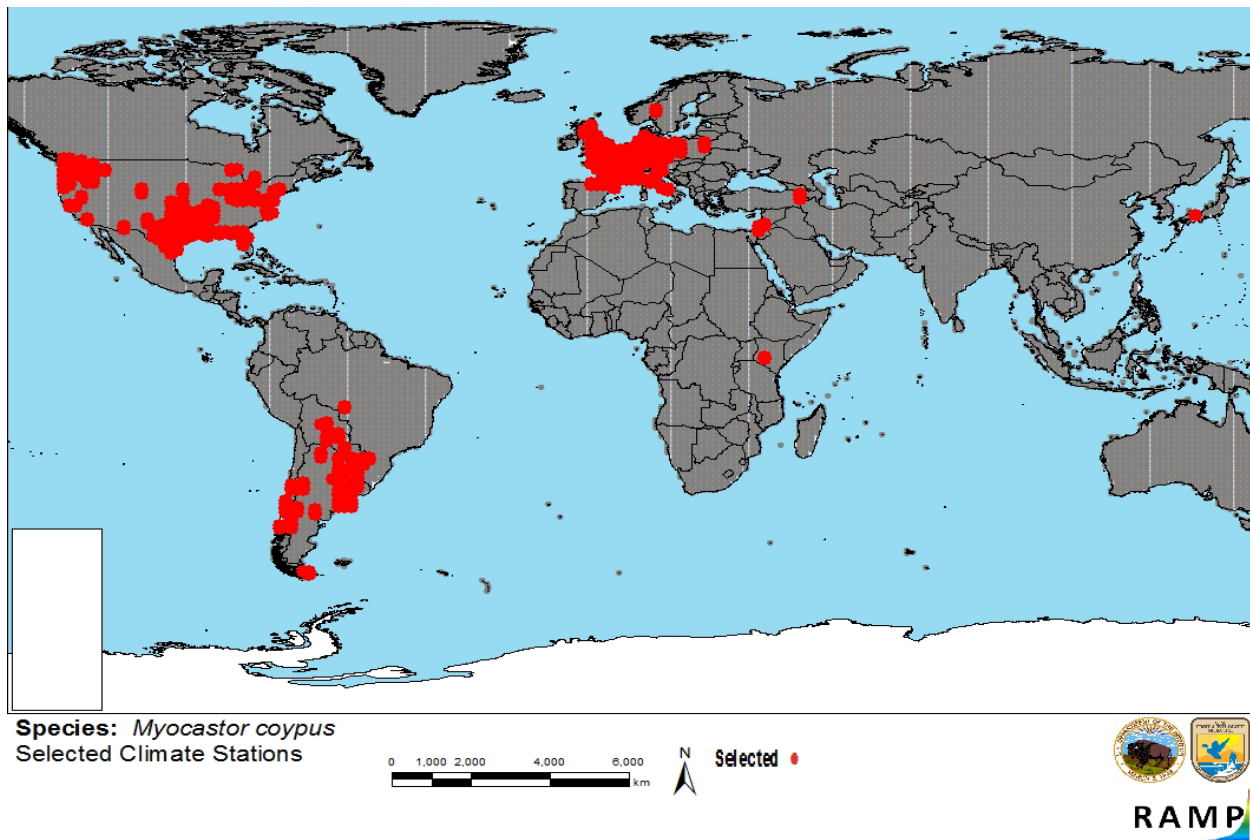


Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (gray) for *M. coypus* climate matching. Source locations from GBIF (2013) and Runami (2013).

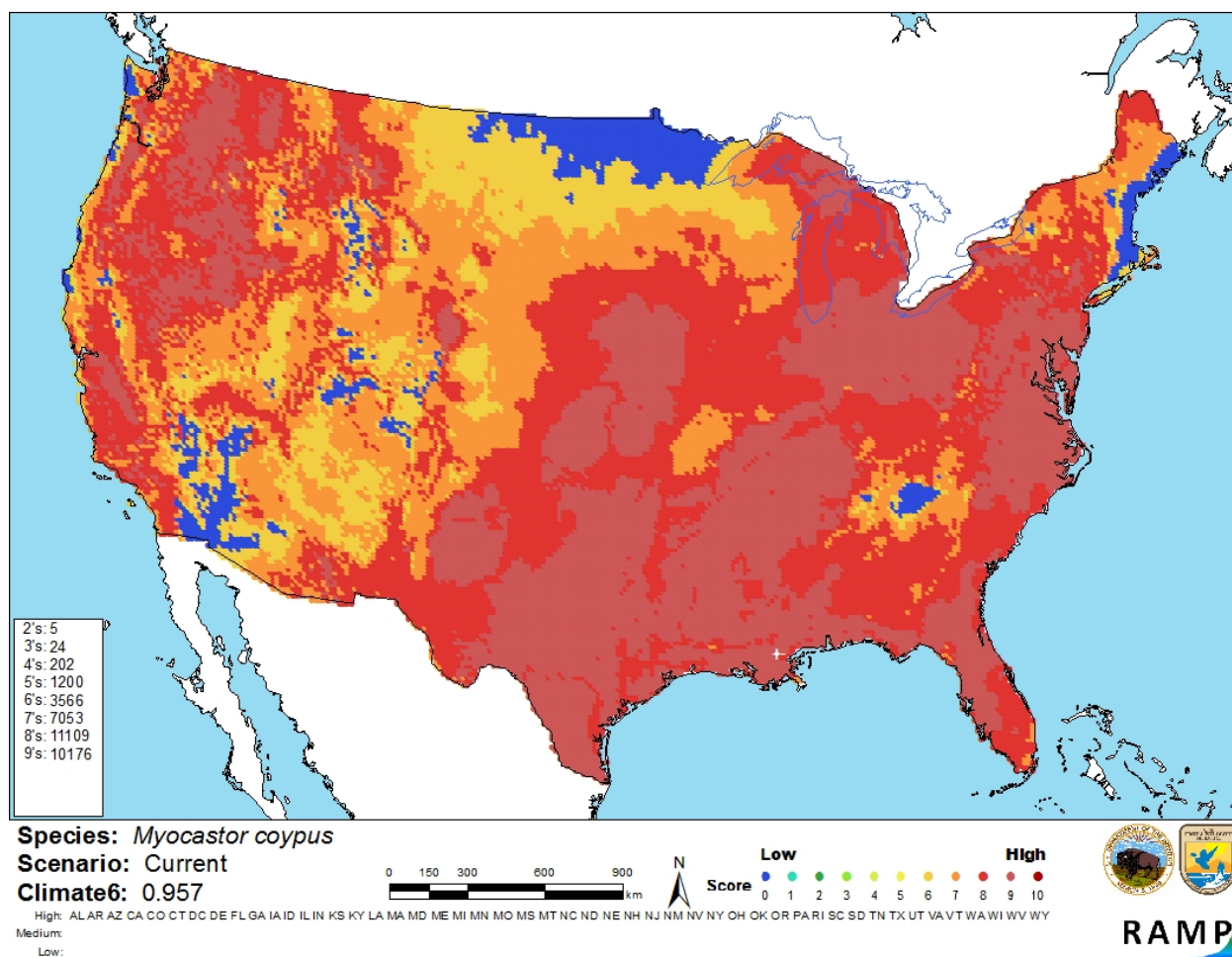


Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *M. coypus* in the continental United States based on source locations reported by GBIF (2013) and Runami (2013). 0= Lowest match, 10=Highest match. Counts of climate match scores are tabulated on the left.

The “High”, “Medium”, and “Low” climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

The biology and ecology of *M. coypus* are well-known. Although the amount of scientific literature on the negative impacts of *M. coypus* is not overwhelming, there is adequate literature to demonstrate that negative impacts exist. Certainty of this assessment is high.

8 Risk Assessment

Summary of Risk to the Contiguous United States

M. coypus is a semi-aquatic mammal native to South America that has been transported around the globe because its value as a fur-bearer. In North America, established populations are currently concentrated in the Pacific Northwest, the Southeast, and the Mid-Atlantic regions. However, nearly all of the contiguous U.S. is a high climate match for *M. coypus*, indicating potential for the species to become established in new locations. The impacts of introduced *M. coypus* are felt by both plants and animals. *M. coypus* has caused extensive damage to wetland vegetation in the southern U.S. It has been observed to destroy waterbird nests and its feeding habits reduce availability of food and reproductive hosts for endangered species in Japan. The overall risk of this species is high.

Assessment Elements

- **History of Invasiveness (Sec. 3): High**
- **Climate Match (Sec.6): High**
- **Certainty of Assessment (Sec. 7): High**
- **Overall Risk Assessment Category: High**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

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