Mammalia 72 (2008): 352–354 © 2008 by Walter de Gruyter • Berlin • New York. DOI 10.1515/MAMM.2008.032

Short Note

A live trap model and field trial of a nutria (Rodentia) multiple capture trap

Gary W. Witmer*, Patrick W. Burke, Susan Jojola and Dale L. Nolte

USDA/APHIS Wildlife Services, National Wildlife Research Center, 4101 Laporte Avenue, Fort Collins, Colorado 80521-2154, USA,
e-mail: Gary.W.Witmer@aphis.usda.gov

*Corresponding author

Keywords: coypu; multiple capture trap; *Myocastor coypus*; nutria; Rodentia; trapping.

Nutria (*Myocastor coypus*, also known as coypu) are large semi-aquatic rodents native to South America. The species was first introduced to the United States in 1899 for the establishment of a fur farm in California. Since then, accidental and intentional releases have permitted nutria to become established in wetlands in at least 15 states (Carter and Leonard 2002). Today, nutria are an important resource for the Louisiana fur industry. Despite this economic advantage, nutria can be detrimental to an area. Burrowing and foraging by nutria often inflict severe damage and can be devastating to native vegetation and crops (LeBlanc 1994). Nutria are recognized as a contributing factor in the decline of the native Louisiana coastal marsh (Grace and Ford 1996, Evers et al. 1998). Management plans to control nutria impacts typically involve population reduction or eradication (Gosling and Baker 1989). At present, public hunting and trapping, encouraged by an incentive payment program, are the primary approaches used to reduce overabundant populations in Louisiana. Alternative tools, however, including toxicants and attractants used to increasing trapping success, need to be assessed for possible use (Genesis Laboratories, Inc. 2002, Nolte et al. 2004).

One possible method that could increase nutria capture rates would be a multiple capture trap (MCT). Traditional control methods have involved either single-set leg-hold traps or shooting of individual nutria. Both methods are quite labor intensive per nutria collected. Additionally, leg-hold traps, toxicants, and shooting cannot be used in many urban-suburban settings because of non-target hazards to children, pets, livestock, and protected wildlife. An effective multiple capture trap could reduce the amount of effort required to capture multiple animals and reduce non-target animal losses. For population management purposes, it is also important that an MCT is able to capture target animals of both sexes and both juvenile and adult animals. The MCT would also be useful to capture nutria for research purposes with less chance of injury than the use of leg-hold traps.

This study evaluated one MCT in two different configurations with two different types of bait. This field study was conducted on the Mandalay National Wildlife Refuge in Terrebonne Parish, southeastern Louisiana. The refuge was approximately 97 km southwest of New Orleans and encompassed 1700 ha. The area was comprised of freshwater marsh and bald cypress (*Taxodium distichum*)-tupelo (*Nyssa aquatica*) swamp. Access to the area was by boat only. Nutria were abundant in the area and were hindering efforts to restore the floating marsh.

The basic MCT was a box 1.2 m×1.2 m square and 0.9 m in height. The frame of the trap was made of 2.5-cm polyvinyl chloride (PVC) tubing with galvanized welded wire fencing making up the sides of the trap. The mesh of the welded wire was 5.1 cm×10.2 cm and was arranged with the narrower portion of the mesh running horizontally. The trap was completely enclosed including the top and bottom of the trap. The welded wire was attached to the PVC frame via heavy cable ties. The trap was constructed out of panels, so that the trap could be folded for easy transport into the field on airboats, a total of six panels were used for each MCT. The six pieces of the MCT were attached to each other by cable ties. One side of the trap included a one-way door constructed of heavy gauge metal wire and funnel shaped in a declining diameter so that nutria could enter, but not exit the MCT.

Two configurations of the MCTs and two different types of bait were tested in January 2007. The first configuration consisted of two basic MCT units placed back to back with a 0.8-m gap between the two traps (Figure 1). In this opening, we placed two trays of fertilized maidencane (*Panicum hemitomon*) marsh grass totaling approximately 30 pots. Plants were given water and a foliar fertilizer to prevent desiccation and to increase their attractiveness to nutria. This area between the two traps was protected by three panels (bottom and two sides) of welded wire on a PVC frame constructed in the same manner as described above. Six traps in this configuration were set out on the refuge. The other configuration tested involved only one basic MCT unit (Figure 2). We placed food, such as sweet potatoes, feed corn, and carrots, inside these traps. The vegetables were cut into sections to increase the amount of odor released to draw nutria in from a further distance, and the feed corn was placed in an aluminum tray to prevent it from becoming water-logged. Unlike the double unit trap, the bait for the single unit trap was placed so that nutria would be able to access and consume the bait. A total of six traps in this configuration were also tested.

Traps were placed both on levees and on floating marsh habitats. All traps were monitored daily. All nutria

Figure 1 Fertilized marsh plant-baited multiple capture trap configuration. Six of these traps were deployed to catch nutria in southeastern Louisiana, USA, in January, 2007.

Figure 2 Food-bait multiple capture trap configuration. Six of these traps were deployed to catch nutria in southeastern Louisiana, USA, in January, 2007.

captured were removed from the trap via an animal catch pole and euthanized. All captures were recorded by date, trap number, treatment, sex, and weight. Trapping was conducted for 10 consecutive nights. We used t-tests to compare captures by bait type (food vs. fertilized plant lure) and to compare male vs. female captures (SAS Institute 2003).

A total of 22 nutria were captured during the trial. A total of 10 were caught in food-baited traps and 12 were captured in marsh plant-baited traps. In total, 7 females and 3 males were captured in the food-baited traps, while 4 females, 7 males and 1 of unknown sex were captured in the plant-baited traps. The number of nutria caught did not differ by trap bait type ($t=0.35$, d.f.$=2$, $p=0.76$) and the traps caught equal numbers of females and males ($t=0.20$, d.f.$=2$, $p=0.86$). The average weight of nutria captured was 3.77 ± 1.34 kg. The smallest nutria captured weighed 2.0 kg and the largest weighed 6.5 kg.

As many as three nutria were captured simultaneously in one fertilized marsh plant-baited trap. On two other occasions, two nutria were caught in the same trap overnight. Both of these double captures occurred in food-baited traps. No non-target animals were captured in any of the traps. However, it was suspected that swamp rabbits (*Sylvilagus aquaticus*) were entering the food-baited traps, consuming the food bait and then exiting the traps. On several occasions, empty traps were found with all the food bait removed. Swamp rabbits were often found within several meters of these traps. Small birds were also observed consuming the feed corn bait in the traps; they were able to freely move in and out of the traps through the welded wire mesh.

On two different occasions, nutria were able to escape from the trap when it was approached by humans. Both animals were shot after they escaped, as they were running away. A 3.0-kg nutria was able to walk out the one-way door of the trap, while a 2.0-kg nutria was able to escape through the welded wire fencing. The majority of the traps were constructed with 12-gauge welded wire fencing; however, a few of the traps used a lighter 14-gauge welded wire. The trap that the nutria squeezed through was made of 14-gauge wire, and the nutria was able to bend the wire to escape. The lighter gauge wire was quite easy to bend, while the heavier wire was difficult to bend. Consistent use of the heavier 12-gauge wire most likely would have prevented this escape. Use of a welded wire with a smaller mesh of 5.1 cm$\times$5.1 cm should also be considered to eliminate escapes and reduce non-target bird access. The observation of one nutria escaping through the one-way door suggests that a modification of the door might also be required. It is not known if other nutria were able to escape from the traps in this same manner; however, this could have contributed to bait-stealing and low capture rates.

While the results of the field trial with the nutria MCT were very promising, improvements still need to be made on effective lures. During the study, nutria were routinely observed in the general area of the traps, sometimes within just meters of the traps, but were never caught. These observations were made by researchers in the field, via motion-activated cameras and by forward-looking infrared units at night. Using the motion-activated cameras, nutria were observed investigating the traps that were never captured. It was also noted by the researchers that nutria call extensively after dark. Even though auditory lures have been investigated unsuccessfully in the past with captive nutria (Nolte et al. 2004), there might still be potential in auditory lures and they should be investigated further, especially in the field. Nutria were observed calling intensively during the period after last light. Most notably, nutria were seen moving towards each other as they vocalized. Researchers were not in the field at other times of night to know whether this calling after last light represented the peak of calling or if this level of calling continued until morning.

In all, MCTs show the potential to be a major step forward in managing nutria populations and may aid in reducing marsh damage. These traps might be especially useful in areas where native marsh ecosystems restorations are underway and where any damage by nutria would be catastrophic to the effort. The possibility of MCTs to be left out in an area without daily monitoring, assuming food and water were available in the traps for any captured animals, would be especially useful for pro-

tecting small areas from reinvasion by nutria. Their ability to be constantly working would potentially allow them to capture the first individual nutria to invade an area. MCTs might also be especially useful in areas where it is important that non-target animals, such as endangered species, are not harmed. Improvements in baits and lures could make MCTs even more effective. Current plans involve testing the traps in the Pacific Northwest where nutria problems have been increasing in recent years.

Acknowledgements

We thank Andrew Dolan (U.S. Fish and Wildlife Service) for providing financial support for this study. We also thank Dwight LeBlanc (Louisiana State Director, USDA Wildlife Services), Edmond Mouton (Louisiana Department of Wildlife and Fisheries), Paul Yakupzack and Barret Fortier (Mandalay National Wildlife Refuge Manager), Mike Materne (Louisiana State University Plant Materials Center), Vernon Naquin (commercial trapper), and Dane Leget (alligator farmer and landowner) for their assistance in this study.

References

Carter, J. and B.P. Leonard. 2002. A review of the literature on the worldwide distribution, spread of, and efforts to eradicate the coypu (*Myocastor coypus*). Wildlife Soc. Bull. 30: 162–175.

Evers, D.E., C.E. Sasser, J.G. Gosselink, D.A. Fuller and J.M. Visser. 1998. The impact of vertebrate herbivores on wetland vegetation in Atchafalaya Bay, Louisiana. Estuaries 21: 1–13.

Genesis Laboratories, Inc. 2002. Nutria (*Myocastor coypus*) in Louisiana. Unpublished report. Genesis Laboratories, Inc., Wellington, Colorado. 155 pp.

Gosling, L.M. and S.J. Baker. 1989. The eradication of muskrats and coypus from Britain. Biol. J. Linnean Soc. 38: 39–51.

Grace, J.B. and M.A. Ford. 1996. The potential impact of herbivores on the susceptibility of the marsh plant *Sagittaria lancifolia* to saltwater intrusion in coastal wetlands. Estuaries 19: 13–20.

LeBlanc, D.J. 1994. Nutria. In: (R.M. Timm, ed.) Prevention and control of wildlife damage. Cooperative Extension Division, Institute of Agriculture and Natural Resources, University of Nebraska, Lincoln, NB. pp. B71–B80.

Nolte, D.L., A. Barras, S. Adams, R. Linscombe and D. LeBlanc. 2004. Assessing potential for using zinc phosphide bait to control nutria on Louisiana coastal marsh. Proc. Vertebr. Pest Conf. 21: 150–157.

SAS Institute. 2003. SAS Version 9.1. SAS Institute, Cary, NC, USA.