

Chesapeake Nutria Eradication Effort  
Combined Annual Report for 2019 and 2020  
with updates through April 2021

MSAR #869



Maryland Department of Natural Resources

April 14, 2021

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## **Project Status:**

Nutria have been eradicated from Maryland. It has been nearly six years since the last nutria was captured in the state. However, the broader Chesapeake Bay estuary remains vulnerable to nutria moving north on the western shore, south of our border.

## **Introduction:**

Nutria (*Myocaster coypus*) are invasive, non-native, semi-aquatic, South American rodents, which were first released into Dorchester County, Maryland in 1943. Since nutria did not evolve in Maryland's wetland ecosystems there are no predators or natural conditions that control their population. Since their release, nutria numbers have increased dramatically, invading at least eight Maryland counties and parts of Delaware and Virginia.

Nutria damages or destroys the root mat that binds marshes together. When this fibrous root network is lost, marshlands are quickly reduced to unconsolidated mudflats; highly susceptible to erosion and eventually converted to open water. This marsh loss represents a significant loss of habitat for nesting waterfowl, including: 1) black ducks, 2.) wetland birds, including the endangered black rail, and 3.) a variety of songbirds. Fish and crabs depend on salt marsh for shelter and protection from predators and as a source of food, since the plants and sediment support many insects and other invertebrates. The loss of these species reduces the value of these areas for commercial fisheries and local ecotourism. The tourist industry brings in approximately \$15 million each year from visitors to Blackwater National Wildlife Refuge alone.

Nutria pose a significant threat to the health of the Chesapeake Bay as well as the very conservation purposes for which state, federal and private conservation refuges were purchased and maintained – with both public and private funds.

Since 2002, the Chesapeake Bay Nutria Eradication Project has been trapping nutria and creating restored nutria-free marsh in Maryland. More than 14,000 nutria have been trapped in this effort.

## **History of the Chesapeake Bay Nutria Eradication Project**

Efforts to control nutria began in the mid-1950s shortly after the first animals that had been introduced for research and fur-farming were released or escaped from captivity. Varying levels of control were achieved over the next 20 years, but populations continued to expand despite these efforts. In the mid-1970s, populations crashed during the severe winters of 1977-78. However, during the next decade, the nutria population significantly increased to the point where they were contributing to unprecedented marsh loss. In 1989, Blackwater National Wildlife Refuge initiated a trapper rebate program whereby trappers were paid \$1.50 for each nutria they killed. The money was then applied to offset the cost of leasing federal lands for muskrat trapping. In 1990, both the Maryland Department of Natural Resources (DNR) and U.S. Fish and Wildlife Service (USFWS) began research projects to estimate nutria numbers.

Multi-agency partnerships are frequently formed to solve natural resource issues that would be difficult for any agency to tackle alone. In 1993, DNR and USFWS established the first multi-

agency task force to investigate potential approaches to combat feral nutria populations. In 1994, Dr. Morris Gosling visited from Great Britain where he had successfully led a program to eradicate nutria. Dr. Gosling assessed the problem and affirmed that eradication was an achievable goal. Dr. Gosling stated that nutria could be controlled in Maryland if additional information were collected on how nutria behave and reproduce in Maryland's habitats, which are distinctly different from habitats found in Great Britain. Two major questions, however, needed to be answered before the U.S. Congress would appropriate funding: "Were nutria a major factor in causing marsh loss?" and "If nutria were eradicated, would the marsh recover?" In 1995, DNR and USFWS, with assistance and direction from the U.S. Geological Survey (USGS), initiated a study that statistically addressed these two questions. It provided scientific proof that nutria were the primary cause of recent marsh loss and that the damaged marshes would recover within one year after their removal.

In June 1997, DNR and USFWS convened the "Nutria Control Summit" in which representatives from 17 federal, state, and private organizations were invited to develop ideas for nutria eradication in Maryland. This effort culminated in July 1998 with the development of a three-year pilot plan entitled *Marsh Restoration: Nutria Control in Maryland* to evaluate nutria eradication. The objectives of the plan were to: 1) develop methods and strategies to reduce nutria populations in Chesapeake Bay wetlands to the point where nutria are unable to maintain a sustainable population; 2) restore marsh habitats; and 3) promote public understanding of the importance of preserving Maryland's wetlands. Strategies included development of accurate population estimates, determining effective trapping strategies to maximize nutria harvest and minimize impacts to non-target species, evaluating the effects of population control on nutria home range and movement patterns, determining how population control affects nutria reproductive behavior, and determining if the health of nutria populations would be influenced by intense harvest pressure.

The plan suggested a three-pronged approach, including management, research, and public education. The overall budget necessary to implement the plan over 3 years was estimated at \$3.8 million. However, the partners identified \$902,280 of in-kind contributions to support this initiative and sought additional funding of \$2.9 million from federal, state, and private sources to implement the plan. First year implementation was estimated at approximately \$1.4 million.

H.R. 4337 was introduced during the 105th Congress and was signed into law as Public Law (PL) 105-322 on October 30, 1998. PL 105-322 authorized appropriation of up to \$2.9 million to the U.S. Secretary of the Interior, beginning in FY00, to achieve the objectives of the nutria plan. The Pilot Project began on January 1, 2000, and ended in December 2002. The Project's management team included the Maryland Cooperative Fish and Wildlife Research Unit, DNR, University of Maryland Eastern Shore, Tudor Farms, and USFWS.

On February 3, 1999, the president signed Executive Order 13112 to control invasive species and to minimize the economic, ecological, and human health impacts that invasive species cause to agricultural crops and natural ecosystems. In 1999, the partnership was also successful in obtaining a Capacity Building Grant from the U.S. Department of Agriculture (USDA) for almost \$300,000 for a portion of the research component of the nutria plan. In the FY00 budget, Congress earmarked \$500,000 in the USFWS budget to support implementation of the first year

of the pilot program. To implement the first year of the 3-year pilot program at a reduced scale, the partnership agreed to combine these resources (approximately \$800,000). By March 2000, the partnership had expanded and included 23 federal, state, and private partners. The pilot program answered the elemental questions of whether or not nutria can indeed be eradicated from the Chesapeake Bay ecosystem, and what level of effort is required to do so.

In April 2002, the eradication phase was being fully implemented. USDA Animal and Plant Health Inspection Services (APHIS) Wildlife Services, assumed primary responsibility for project implementation. The total cost of the nutria project since its inception in 2000 has been approximately \$15.8 million through FY14.

Without this considerable effort, nutria would clearly continue to destroy wetlands throughout the region. Recognizing this, the president signed the Nutria Eradication and Control Act of 2003, which authorized the expenditure of \$4 million per year for five years to eradicate nutria from the Chesapeake and Delaware bays.

The Nutria Eradication Project is overseen by the Nutria Management Team, consisting of the USFWS Chesapeake Bay Field Office, Chesapeake Marshlands National Wildlife Refuge Complex, USDA APHIS Wildlife Services, DNR, USGS, and the University of Maryland Eastern Shore.

The Chesapeake Bay Nutria Eradication Project has used about \$27 million in federal funds and \$120,000 in state funds, but these figures do not include time spent on the project by DNR and USFWS personnel.

### **Synopsis of Progress to Date**

Maryland has been at the forefront of nutria eradication since 1998, when the Chesapeake Bay Nutria Eradication Project) began experimenting with methods to eliminate the invasive rodents from critical marsh habitats on the Eastern Shore. Two years later, a DNR effort trapped approximately 50 animals from a marsh in Calvert County, eliminating the only nutria population on the Western Shore and demonstrating that localized permanent eradication was possible. From 2002 until 2014 the partnership, using funding from USFWS and professional trappers and scientists from the USDA, eliminated nutria from most of the infested areas on the Eastern Shore.

Every watershed in Maryland thought to have ever been infested underwent a 'knockdown' phase of nutria eradication in accordance with the Nutria Eradication Plan. In the wake of the initial control effort, nutria still existed only in small, isolated populations and were on the verge of disappearing completely.

In FY16 and FY18, DNR was able to allocate \$50,000 in federal aid (via Pittman-Robertson funds) to the expansion and support of the nutria detector dog program. This state-managed federal funding and a small amount of Wildlife Management and Protection Funds are the only funding sources provided to the \$1.5 million annual project budget. All other funds are derived directly through USFWS

Continued monitoring of the two Western Shore sites in Calvert County that were the site of cross-Chesapeake nutria infiltration in 1999 has shown no new activity since the eradication program of 1999-2000 eliminated those populations. The lack of subsequent cross-Chesapeake migrations suggests that those events were a result of high nutria densities in the Blackwater/Fishing Bay marsh complex. The current threat to Western Shore wetlands is from the potential advance of Virginia nutria populations moving northward from the Hampton Roads area. The Mid-Atlantic Panel of the Aquatic Nuisance Species Task Force has been funding efforts to monitor the expansion of Western Shore Virginia populations.

As of the end of 2020, saturation monitoring of formerly infested areas was completed. Table 1 illustrates the completion dates for each watershed.

TABLE 1: SATURATION MONITORING COMPLETION

<b>Watershed</b>	<b>Date Started</b>	<b>Date Ended</b>	<b>Months</b>	<b>Season</b>	<b>Round</b>
Choptank	7/1/2015	9/15/2015	2.53	late summer	1
Blackwater	9/16/2015	3/14/2016	6.00	fall/winter/spring	1
Nanticoke	3/15/2016	5/31/2016	2.57	early spring	1
Manokin	6/1/2016	8/20/2016	2.67	summer	1
Wicomico	8/21/2016	1/15/2017	4.90	summer/fall/winter	1
Transquaking	1/16/2017	5/19/2017	4.10	winter/spring	1
Blackwater	5/20/2017	12/1/2017	6.50	spring/summer/fall	2
Choptank	12/1/2017	3/15/2018	3.47	winter/spring	2
Wicomico	3/16/2018	9/1/2018	5.63	spring/summer/fall	2
Transquaking	9/1/2018	12/25/2018	3.83	fall/winter	2
Nanticoke	12/25/2018	3/1/2019	2.20	winter/spring	2
Manokin	3/1/2019	5/10/2019	2.33	spring	2
Blackwater	5/1/2019	9/1/2019	4.10	spring/summer	3
Nanticoke	9/1/2019	11/15/2019	2.50	summer/fall	3
Choptank	11/15/2019	2/1/2020	2.60	fall/winter	3
Manokin	2/1/2020	4/1/2020	2.00	winter/spring	3
Wicomico	4/1/2020	8/5/2020	4.20	spring/summer	3
Transquaking	8/5/2020	11/2/2020	2.97	summer/fall	3

### **Innovative Techniques and Technology**

In the process of removing over 14,000 nutria from Maryland wetlands, the partnership has developed and implemented innovative techniques to find nutria as they become increasingly scarce on the landscape. There are four major fields of endeavor in this effort:

### 1. The 'Judas Nutria Project'

The project has long maintained captive nutria at its Blackwater National Wildlife Refuge headquarters for research purposes. Beginning in 2010, a number of nutria were surgically sterilized by a veterinarian and outfitted with GPS tracking/transmitting collars. These animals were subsequently released into the wild in areas with a small remaining population of nutria in the hope that the radio-collared nutria would find and associate with the remaining wild nutria. This technique proved very effective and led to the discovery and capture of isolated surviving pockets of nutria. It also led to a wealth of new discoveries regarding the movement and habitat of nutria. Nutria had previously been considered generally sedentary, but this practical research project proved that individual nutria are prone to nocturnal wanderings of many miles; traveling for more than 10 miles in a night when seeking other nutria in a landscape with no nutria population.

### 2. The development of scent attractants

The use of scents in trapping probably began thousands of years ago and it is a standard technique of modern trappers. Furbearing animals are finely attuned to scent, and rodents in particular make use of scents in social interactions. The project has used various biological products from captive nutria to experiment with chemical lures to attract nutria to monitoring platforms or traps.

### 3. The use of artificial resting platforms

Nutria like to haul out onto small islands or hillocks in their marshland habitat. The project has taken advantage of this tendency by deploying over a thousand artificial islands in nutria habitat. Just over a meter square and made from plywood fitted with a foam floatation core, these portable 'islands' can be placed in marsh channels and will be visited by passing nutria. While exploring the island, the nutria will encounter a camera, a DNA-collecting hair snare, and/or a lethal trap.

### 4. The implementation of the 'Detector Dog' program:

The project has successfully partnered with the National Detector Dog Training Center (NDDTC) to develop a "nutria detector dog" program using wildlife scent detector dogs. Four dogs have been trained to detect and respond to nutria and are now operating full-time in the field. These dogs are crucial in these final stages of the partnership when nutria densities are low and detections are most challenging, and they will be a valuable tool for determining areas as "nutria-free."

Candidate dogs for detection work are between the ages of 1-3 years, have a high toy drive and no history of aggression. Dogs are usually procured from local shelters, rescues, breeders, or are personally owned pets up for adoption. Hunting dog breeds such as labs, golden retrievers and mixes generally make good candidates because of their temperament and physical characteristics. Before being accepted into the training program, all dogs undergo a specialized temperament test and are medically screened.



Newest Nutria Team Member “Benny” works the marsh with his handler Lisa Buhr

While undergoing training, dogs are paired with one handler for 10 to 13 weeks to build rapport and learn to work together as a team. Dogs are trained to give a bark response when they find scat, and are not used to actively hunt nutria. Upon completing handler training, the dog/handler pair will work across Delmarva as part of the team. Detector dogs are housed overnight in an agency-owned kennel and will work with their handler daily. The partnership follows the protocols developed by the NDDTC to ensure the health, safety and wellbeing of program dogs. Dogs that are accepted into the program, but are unable to complete the training are adopted out through the NDDTC’s Adoption Program and are not taken back to shelters unless requested. If a dog reaches retirement age or cannot continue working during his/her career then his/her handler has first rights to adoption. If a handler is unable to adopt the dog, it is then adopted out through the NDDTC.

All dogs receive exceptional physical, mental and medical care. Reinforcement training is exclusively positive in the form of treats, toy rewards, attention, praise, etc.

While the primary goal of the project has always been the complete eradication of nutria from the Delmarva Peninsula, the innovative techniques developed in working toward that goal have lasting value that extends far beyond the Eastern Shore. These techniques and technologies will be a vital part of efforts to eradicate nutria in other states and other countries where this rodent has become an invasive threat to native ecosystems.

### Current survey status:

The third and final round of saturation monitoring within the previously infested area with the exception of the Pocomoke watershed is complete. Below is a table of each watershed with the dates covered:

Watershed	Date Started	Date Ended	Months	Season	Round
Choptank	7/1/2015	9/15/2015	2.53	late summer	1
Blackwater	9/16/2015	3/14/2016	6.00	fall/winter/spring	1
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Wicomico	4/1/2020	8/5/2020	4.20	spring/summer	3
Transquaking	8/5/2020	11/2/2020	2.97	summer/fall	3

### Maryland State Funding for the Project

DNR made \$50,000 in Pittman-Robertson funds available in FY16 and FY18. Maryland also provided \$21,000 in FY19 for an external analysis of the eradication project and \$29,000 for continuing support for the detector dog team. This was the last state fiscal contribution outside of routine travel and staff time. Maryland is currently considering spending \$57,000 of its 2021 federal Aquatic Nuisance Species funding allocation to develop a Nutria Eradication Plan for the Commonwealth of Virginia.

### Nutria Advance Northward from Virginia

In early January 2020, the Virginia Department of Game and Inland Fisheries emailed a photograph of a presumed nutria killed on the highway in Providence Forge, Virginia where the Chickahominy River intersects Route 155. The roadkill animal was sent to the partnership where the cause of death was verified as likely vehicle induced trauma. Unsure of where the nutria



originated, the partnership agreed to assist Virginia by helping establish a platform and camera line and conduct canine surveys as time provided. In the last week in February, two USDA Specialists and their dogs traveled to Virginia and worked with staff from the commonwealth. These combined teams had a productive week modifying and deploying 50 platforms, establishing 10 camera sites and conducting several ground/canine surveys in challenging weather. The teams focused on areas around the roadkill site, which seemed to have pockets of suitable habitat. They also ventured toward the mouth of Chickahominy Creek where they were closer to known populations south of the James River. Within a few weeks, 31 of the platforms were checked and nine had samples of hair and/or scat. The collections were sent to Maryland and it was confirmed that many of the samples were indeed nutria. Interestingly, most of the samples were collected in cypress swamps with small intermittent wild rice patches.

Maryland and Virginia wildlife scientists currently have a monthly meeting in order to coordinate control and rapid response measures.

The presence of an actively expanding nutria population north of the James River is a potentially devastating blow to ecological and economic resources in tidewater Virginia and eventually, in the Maryland tidewater as well. If nutria reinvade the upper Chesapeake via this route, they could repopulate the areas from which they have been previously eradicated, undoing years of effort and wasting tens of millions of state and federal dollars.

In an interesting late development, the partnership was contacted in December 2020 by producers for The Discovery Channel to film a documentary on the project with narration by the “rapper/animal lover” Snoop Dog. Discussions are ongoing with the Virginia representatives, and as of this writing there is some optimism that a successful venture in this arena could bring much needed attention to the northward march of the species through the Commonwealth.

### **Next Steps:**

The next step in the eradication of nutria from the Chesapeake Bay must be the migration of the Project to the Commonwealth of Virginia; the removal of this species from Maryland leaves the Chesapeake effort incomplete.

Maryland will continue to host the team (at federal expense) at Blackwater National Wildlife Refuge as the final biosecurity efforts are completed. Without action to our south, the next step will be to await the arrival of nutria in the Potomac or elsewhere and hope that the influx is detected early before damage and populations become significant. Then a decision will have to be made as to whether to attempt to control nutria perpetually in the face of constant inward migration.