

USGS Research to Assist Nutria Eradication in Maryland: Detection and Monitoring a Major Need

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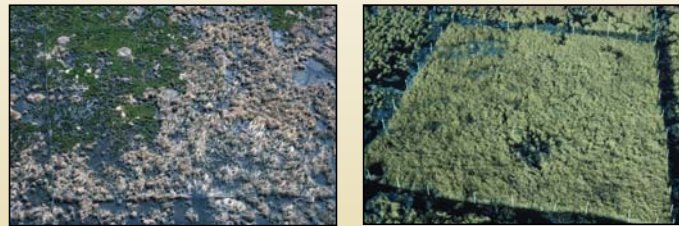
SOUTH AMERICAN NUTRIA



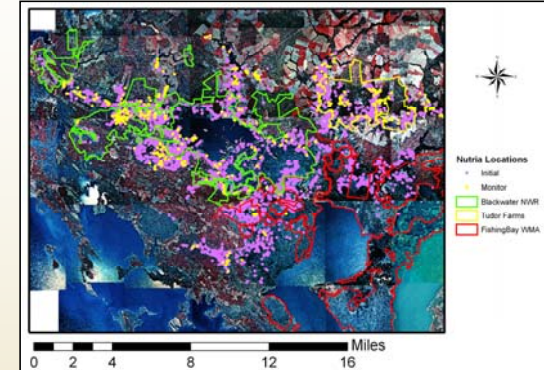
Nutrias are large 8-18 lb., beaver-like rodents introduced to Maryland from South America in the 1940s. A recent decline in world fur markets and lack of any other apparent market for the animals has left populations unchecked. Nutria are 5-10 times larger than native North American muskrats.

In support of interagency initiatives developed cooperatively with the National Invasive Species Council (NISC), the USGS Invasive Species Program is supporting new research to assist with nutria eradication and marsh restoration in the Chesapeake Bay region. This new research will benefit directly the nutria eradication effort managed by the US Fish and Wildlife Service, the Maryland Department of Natural Resources and their partners, and being carried out by the US Department of Agriculture division of Wildlife Services (APHIS). The new research will build on work first started in 1997 to investigate the role of nutria in the extensive loss of emergent marsh at the Blackwater National Wildlife Refuge in Dorchester County, Maryland. Particular emphasis will be placed on developing efficient remote sensing methods to monitor the presence of nutria and to develop approaches to detect nutria at low densities following systematic removal by trapping. Our goal is to provide managers with science-based monitoring methods to assess temporal and spatial changes in nutria densities and in so doing facilitate nutria eradication efforts in the coastal environment. Over 6 square miles of emergent marsh have been lost to open water on the Refuge since 1938 and much of remaining marsh has incurred significant damage and will likely be lost in the near future. Foraging activity and other surface damage by nutria has been determined to be a major contributor to marsh loss.

FENCING OUT NUTRIA RECOVERS MARSH VEGETATION EXCLOSURE STUDY 1997 - 2000



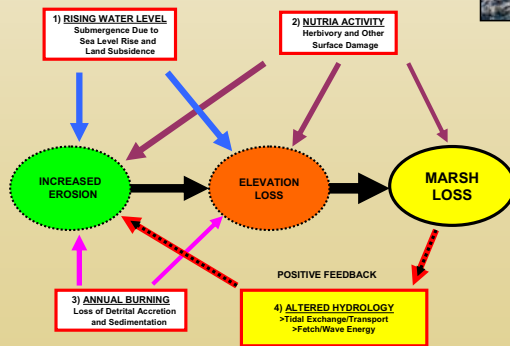
PROGRESS IN NUTRIA ERADICATION: USDA - APHIS



Colored dots record the location of the removal of 9000+ nutria during initial and monitoring phases of trapping in the Blackwater River Basin since September 2002. To date, eradication efforts have covered some 38,000 acres of marshland in Maryland.

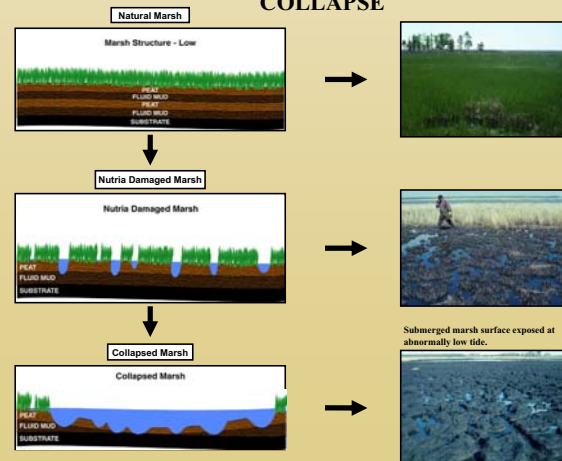


PRIMARY FACTORS CAUSING MARSH LOSS

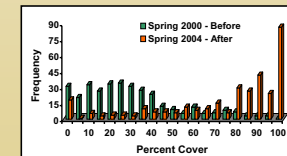


Sea level rise drives marsh loss through direct loss of elevation and associated increase in tidal erosion. Damage by nutria is the major catalyst to surface erosion and annual burning likely contributes by arresting detrital accretion. Positive feedback through altered hydrology makes the conversion of emergent marsh to open water seemingly irreversible.

NUTRIA HERBIVORY INCREASES EROSION AND MARSH COLLAPSE



REMOVAL OF NUTRIA TRIGGERS DRAMATIC VEGETATIVE RECOVERY



Percent Veg Cover Fixed Plots (n=324) Before and After Nutria Removal



USGS ROLE IN NUTRIA ERADICATION

Primary Need of Eradication Program:

Detection and monitoring of nutria following systematic removal (post trapping)

- to evaluate immediate success in removing nutria
- to assist in long-term monitoring

Objectives of New Work (2004):

- Develop remote sensing methods to maximize detection of nutria in low densities following removal process
- Use methods to design and evaluate occupancy surveys for nutria
- Recommend and apply survey methods for benefit of eradication program