

Assessment of Feral Hog Damage in Marshes of Louisiana

March 14, 2014

3/15/2013 – 3/14/2014



Photo Credits: U.S. Fish and Wildlife Service

A Report of the:
Barataria-Terrebonne National Estuary Program

By:
Dr. Kim Marie Tolsen, Department of Biology, University of Louisiana at Monroe

Prepared for the:
Environmental Protection Agency's National Estuary Program
EPA Tracking Number: 2011-44

Assessment of Feral Hog Damage in Marshes of Louisiana

Table of Contents

Sampling Design and Methods.....	3
Results.....	5
Discussion.....	5
Conclusions.....	6

ASSESSMENT OF FERAL HOG DAMAGE IN MARSHES OF LOUISIANA

Professional Services Agreement No. BTNEP 13-
14 LUMCON Project# 674-EPI1

Final Report Submitted by: Kim Marie Tolson, Ph.D.

This project was designed to collect sound biological data that document the quantity and quality of feral hog damage in marshes of Terrebonne Parish, Louisiana. Landowners and multiple agencies have reported the presence of feral hogs in this region of the state and expressed a desire to identify hog populations and the extent of their damage for subsequent control efforts. The study area was a 498,000 acre block of land in the northwest section of the parish that contains fresh, intermediate, brackish and salt marsh habitats (Figure 1).

Sampling Design and Methods

Damage was identified by flying seventeen north-south transects in a Bell 206B helicopter outfitted with floats to support marsh landings. Flights were conducted on 28 February and 26, 27 March 2013. The transects (Figure 1) were flown at an elevation of approximately 250-300 feet, were 1.87 miles apart, and covered an observation width of 0.5 miles (0.25 miles on each side of the helicopter). Feral hog damage found along transect lines was marked with a Garmin 296 Avionics GPS unit, photographed (Ricoh Caplio 500-SE-W digital camera) from the air (Figure 2), documented on a field data sheet, and then delineated into a shape file using Arcmap 10 synched with the GPS unit. The Arcmap 10 program allowed researchers to track real-time location along the transect lines on a Dell Latitude ruggedized laptop computer. The perimeter of each damage site was stream digitized to create polygons that reflected real-time acreage of damage. All polygon data were saved as a shape file and stored on multiple flash drives as well as computer hard drives.

The helicopter touched down on each damage site as soon as the aerial mapping was completed in order to ground truth the site and confirm that damage was inflicted by feral hogs. Hog sign was identified by tracks, scat and rooting. While on the ground, researchers photographed damage sites again, documented the plant species impacted, plant species recovering and plant species adjacent to damage sites (identified to the genus level at the minimum). To determine the quality of feral hog damage, a vegetative damage rating was recorded using the following subjective criteria: (1) Minor vegetative damage= less than 25% bare ground; (2) Moderate vegetative damage= 25-50% bare ground; (3) Severe vegetative damage= greater than 50%, but less than 100% bare ground, and (4) Bare ground 100%. When feral hogs were seen in the study area their numbers and age (adult or juvenile) were recorded.

All shape file data were imported into ArcGIS 10 as a layer and then projected onto the study area map to delineate the areas of feral hog damage along the transect lines. Based on the survey area covered, these data were extrapolated to estimate acreage of feral hog damage within the entire study area.

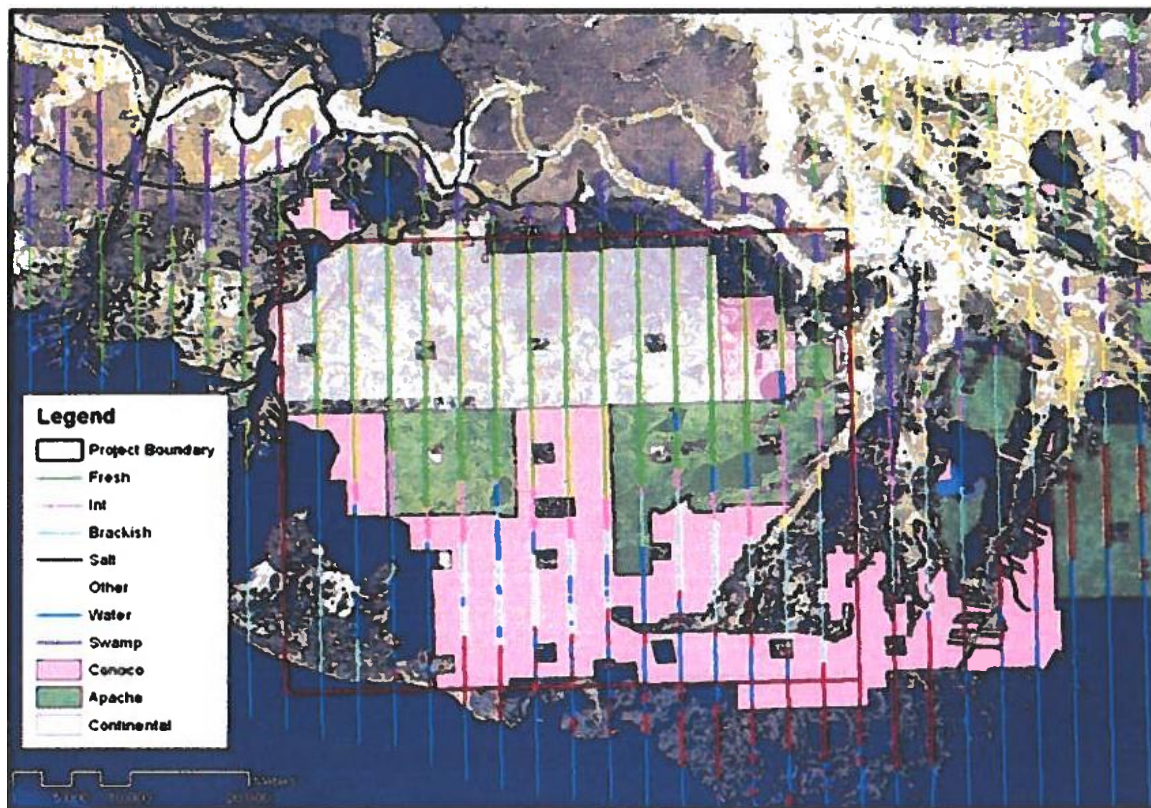


Figure I. Study area outlined in red and north-south transects identified by marsh type.



Figure 2. Aerial photo of hog damage confirmed by ground trothing.

Results

Quantity of damage. A total of 17 damage sites (Figure 3) were detected along the transect lines of the study area. All damage was restricted to freshwater marsh habitat and was concentrated in the northwest section of the area. Damage sites ranged from 3.0 to 76.2 acres in size for a total of 227.5 acres of detected damage within freshwater marsh habitat. Using a correction factor of 3.75 established and used by the Coast Wide Nutria Control Program, damage can be extrapolated for all freshwater marsh within the study boundaries. This correction factor takes into account the area not visible from the transect lines. Assuming equal distribution and occupancy of this area by feral hogs, it is estimated that damage could meet or exceed 853 acres within the freshwater marsh habitat.

The distribution and arrangement of damage sites within the study area followed a distinct pattern (Figure 3). Researchers observed damage was located along the Atchafalaya River and along smaller waterways within this drainage system.

Quality of damage. As mentioned previously the quality of feral hog damage to vegetation was rated as minor, moderate, severe or bare ground. Nine of the seventeen damage sites exhibited minor damage (ranged from 20-100% coverage); fifteen of the seventeen damage sites exhibited moderate damage (ranged from 10-100% coverage); seven of the seventeen damage sites exhibited severe damage (ranged from 40-80% coverage); and one site exhibited bare ground covering 50% of the damage site.

Other data recorded. Researchers observed a total of 83 feral hogs while mapping the damaged sites, 43 adults and 40 juveniles. The locations of the hogs were indicated on the data sheets. Hard copies of all data sheets will be forwarded to BTNEP personnel.

Plant species associated with hog damage were consistent with those found in freshwater marsh habitat. Some of the more commonly encountered plants on damage sites were *Eleocharis* spp., *Iris virginica*, *Sagittaria lancifolia*, *Hydrocotyle umbellata*, and *Scirpus* spp.

Discussion

No major problems with the sampling design or methodology used to identify feral hog damage and create the polygons/maps were encountered by the researchers. Financial constraints did not allow the purchase of recent, high resolution satellite photographs to utilize the remote sensing program (ERDAS) mentioned in the QAPP. However, funding has been secured for a second season of assessment, and that method should be incorporated into this year's data collection.

Helicopter flights along the same transect lines are scheduled for the first week of April 2014. Second year data will be transposed onto the first year data to compare arrangement, location and possible spread of feral hog damage in Terrebonne Parish. While hunting pressure and other anthropogenic activities can affect hog distribution, it is predicted that damage sites will expand and be found to the south and east. Feral hog populations have previously been reported in all four marsh habitat types in other locations within the state of Louisiana.

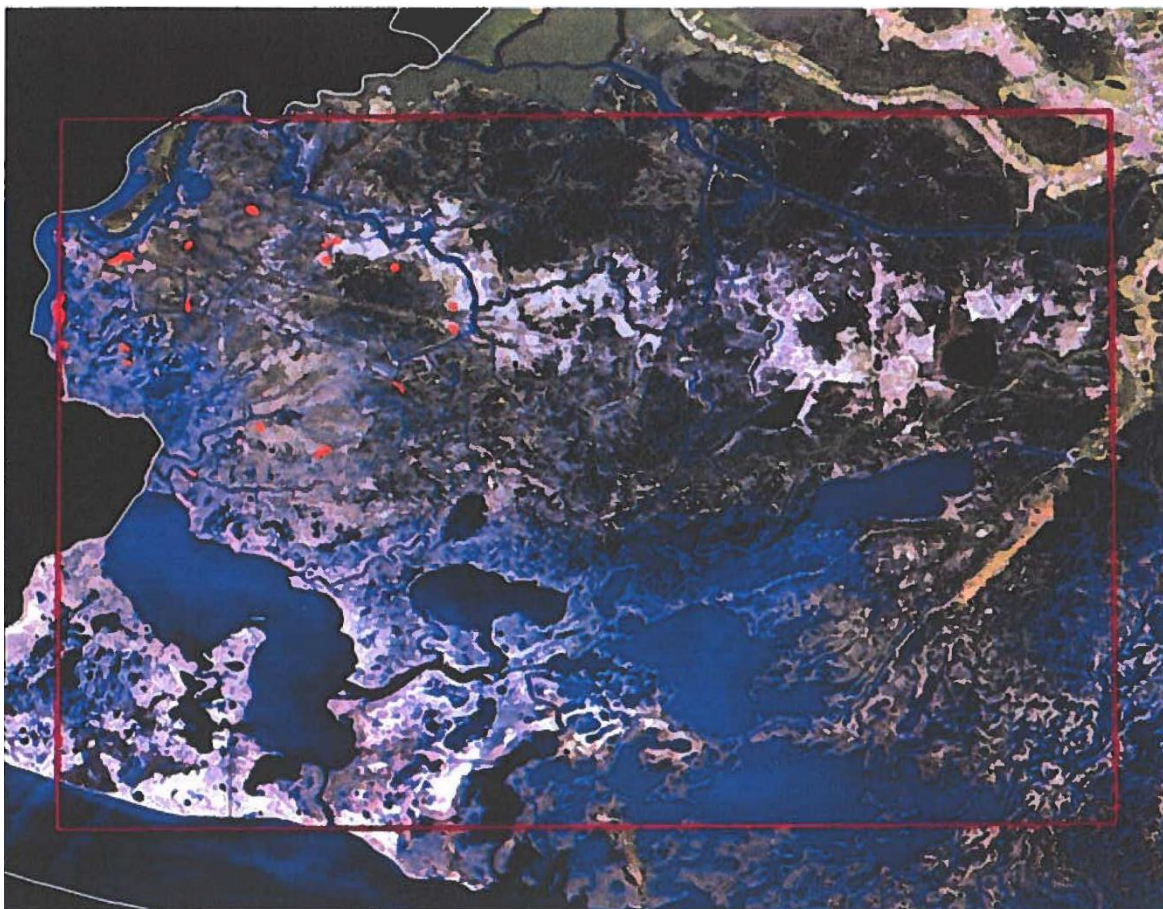


Figure 3. Polygons of damage areas (orange) within study area boundary (red border).

Conclusions

Researchers believe that the primary goal of this assessment to collect baseline data that identified and measured feral hog damage in marsh habitat was achieved. The techniques employed to obtain this information are reproducible and feasible with minimal funding and manpower. The largest expense incurred for the project was helicopter pilot and flight time (\$8,970).

Data from this assessment and the second year's data will be used in an effort to secure funding to establish a regular survey and control program for feral hogs in the Louisiana coastal zone that is similar to the CNCP (Coast Wide Nutria Control Program) operated by LDWF (Louisiana Department of Wildlife and Fisheries) and funded through CWPPRA (Coastal Wetland Planning, Protection and Restoration Act).