NUTRIA HARVEST DISTRIBUTION 2006-2007

And

A SURVEY OF NUTRIA HERBIVORY DAMAGE IN COASTAL LOUISIANA IN 2007

Conducted by

Fur and Refuge Division
Louisiana Department of Wildlife and Fisheries

as part of the

Coastwide Nutria Control Program*
CWPPRA Project (LA-03b)

submitted by

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Section 1

NUTRIA HARVEST DISTRIBUTION 2006-2007

Introduction

Since 2001, annual coast wide aerial surveys assessing herbivory in Louisiana has documented approximately 24,810 acres of marsh converted to open water due to nutria vegetative damage. (This acreage is actual observed acreage multiplied by a constant to account for land not seen from the transects.) This loss of the marsh in Louisiana is devastating to the people that depend on it for their livelihood as well as the people that use it for recreation. It is vital to the people of Louisiana to protect the wetlands from destruction whenever possible. In order to remove the threat of land loss due to nutria, the Coastwide Nutria Control Program was developed.

The nutria (Myocastor coypus) is a large semi-aquatic rodent indigenous to South America. The first introduction of nutria to North America occurred in California in 1899; however it was not until the 1930's that additional animals were introduced in seven other states. These importations, primarily for fur farming, failed during the Second World War as a result of poor pelt prices and poor reproductive success. After the failures of these fur farms, nutria were released into the wild. Sixteen states now have feral populations of nutria.

The Gulf Coast nutria population originated in Louisiana in the 1930's from escapes and possible releases from nutria farms. Populations first became established in the western coastal portion of the state and then later spread to the east through natural expansion coupled with stocking. During the mid-1950s muskrat populations were declining, nutria had little fur value, and serious damage was occurring in rice fields in southwestern Louisiana and sugarcane fields in southeastern Louisiana; farmers complained about damage to crops and levee systems, while muskrat trappers blamed the nutria for declining numbers of muskrats. In 1958, the Louisiana Legislature placed the nutria on the list of unprotected wildlife and created a $0.25 bounty on every nutria killed in 16 south Louisiana parishes, but funds were never appropriated.

Research efforts were initiated by the federal government in the southeastern sugarcane region of the state to determine what control techniques might be successful. This research conducted by the U.S. Fish and Wildlife Service during the 1960's examined movements in relation to sugarcane damage and recommended shooting, trapping, and poisoning in agricultural areas. Ted O'Neil, Chief of the Fur and Refuge Division, Louisiana Department of Wildlife and Fisheries (LDWF), believed that the problem could only be solved through the development of a market for nutria pelts. A market for nutria developed slowly during the early 1960's and by 1962 over 1 million pelts were being utilized annually in the German fur trade. The nutria became the backbone of the Louisiana fur industry for the next 20 years, surpassing the muskrat in 1962 in total numbers harvested. In 1965, the state legislature returned the nutria to the protected list. As fur prices showed a slow rise during most of the 1970's and early 1980's, the harvest averaged 1.5 million pelts and complaints from agricultural interest became uncommon. From 1971 through 1981 the average annual value of the nutria harvest to the coastal trappers was $8.1 million. The nutria harvest in Louisiana from 1962 until 1982 remained over 1 million annually. The harvest peaked in 1976 at 1.8 million pelts worth $15.7 million to coastal trappers (Figure 1).

The nutria market began to change during the early 1980's. In 1981-1982, the nutria harvest dropped slightly below 1 million. This declining harvest continued for two more seasons; then in

the 1984-1985 season, the harvest jumped back up to 1.2 million. During the 1980-1981 season, the average price paid for nutria was $8.19. During the 1981-1982 season, the price dropped to $4.36 and then in 1982-1983, the price dropped to $2.64. Between the 1983-1984 season and the 1986-1987 season, prices fluctuated between $3.00 and $4.00. Then in 1987-1988 and again in 1988-1989 prices continued to fall (Figure 1). From 1982 through 1992 the average annual value of the nutria harvest was only $2.2 million. Between 1988-1989 and 1995-1996 the number of nutria harvested annually remained below 300,000 and prices remained at or below a $3.00 average.

Due to a strong demand for nutria pelts in Russia in both 1996-1997 and in 1997-1998, 327,286 nutria were harvested at an average price of $4.13 and 359,232 nutria were harvested at an average price of $5.17 during those seasons respectively. In September 1998, the collapse of the Russian economy and general instability in the Far East economies weakened the demand for most wild furs including nutria. The demand for nutria pelts in Russia declined quickly due to the devaluation of the Russian ruble. During the 1998-1999 trapping season, pelt values fell to $2.69 and harvest decreased to only 114,646, less than one-third of the previous year. During the 1999-2000 trapping season there was virtually no demand for nutria pelts. The harvest decreased to 20,110 nutria. This was, by far, the lowest nutria harvest on record since the mid-1950s. The number of nutria harvested in 2000-2001 trapping season increased to 29,544. The value of nutria pelts decreased to $1.75 during the 2001-2002 season, prompting another decrease in harvest to 24,683 nutria.

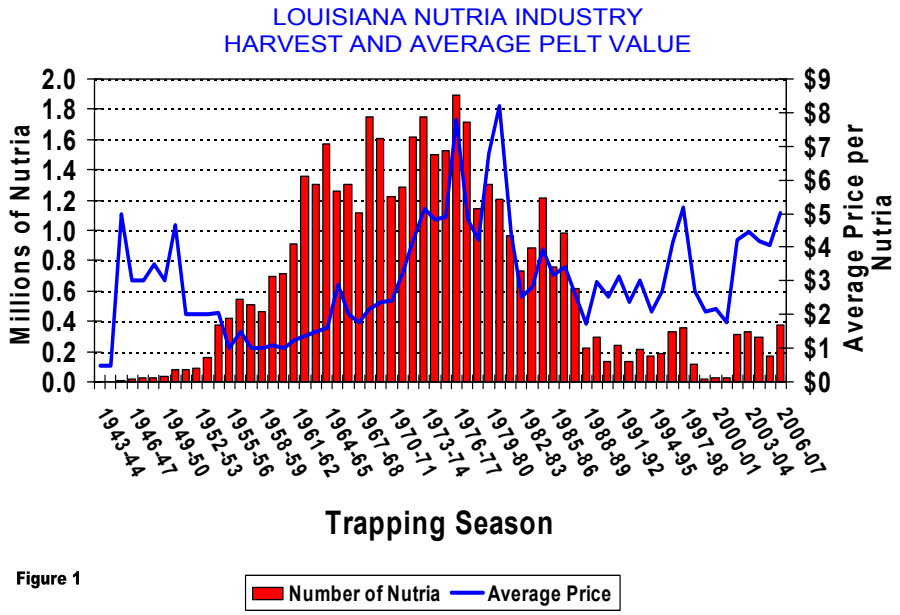


Figure 1

During the strong market period for nutria pelts, no wetland damage caused by nutria was reported. Before the market developed and after the market declined, nutria caused damage to agricultural operations and to the wetlands that they inhabited. Reports of marsh vegetation damage from land managers became common again in 1987. Such complaints became more frequent during the early 1990's, so the Fur and Refuge Division of the Louisiana Department of Wildlife and Fisheries initiated limited aerial survey flights, particularly in southeastern Louisiana. Survey flights of Barataria and Terrebonne basins were conducted during the 1990's, with initial support from Barataria-Terrebonne National Estuary Program (BTNEP) and later support from Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA). From 1993

to 1996 these flights showed acres of damage increasing from approximately 45,000 to 80,000 acres within the basins. The first CWPRA funded coast wide survey, conducted in 1998, showed herbivory damage areas totaling approximately 90,000 acres. By 1999 this coast wide damage had increased to nearly 105,000 acres. This rapid and dramatic increase in damaged acres prompted LDWF to pursue funding for the Coastwide Nutria Control Program (CNCP) in January 2002.

The project is funded by the CWPPRA through the Natural Resources Conservation Service (NRCS) and the Louisiana Department of Natural Resources (LDNR) with the LDWF as the lead implementing agency. Task number 2 of the LDNR and LDWF Interagency Agreement No. 2511-02-29 for the CNCP requires LDWF to conduct general project operation and administration. LDWF is required to 1) conduct and review the registration of participants in the CNCP; 2) establish collection stations across coastal Louisiana; 3) to count valid nutria tails and present participants with a receipt/voucher; 4) to deliver tails to an approved disposal facility and receive documentation that ensures the nutria will be properly disposed of and shall not leave the facility; and 5) process and maintain records regarding participants, number and location where tails were collected. Task 3 requires LDWF to provide incentive payments to program participants and task 4 requires LDWF to provide a report regarding the distribution of the harvest by township.

The program area is coastal Louisiana bounded to the north by Interstate-10 from the Texas state line to Baton Rouge, Interstate-12 from Baton Rouge to Slidell, and Interstate-10 from Slidell to the Mississippi state line. The project goal is to significantly reduce damage to coastal wetlands attributable to nutria herbivory by removing 400,000 nutria annually. This project goal is consistent with the Coast 2050 common strategy of controlling herbivory damage to wetlands. The method chosen for the program is an incentive payment to registered trappers/hunters for each nutria tail delivered to established collection centers. Initially, registered participants were given $4.00 per nutria tail. To encourage participation, the payment was increased to $5.00 per tail in the 2006-2007 season.

This section reports on the Nutria Harvest Distribution for 2006-2007.

Methods

The application for participation in the Coastwide Nutria Control Program (CNCP) was developed in July 2002 but was modified in June 2003 to obtain better information about the location of nutria harvest. The application was made available through the LDWF offices and website, as well as LSU Cooperative Extension offices. In order for a participant to be qualified, the individual must complete the application, obtain written permission from a landowner or land manager with property in the program area, complete a W-9 tax form and provide LDWF with a complete legal description of the property to be hunted or trapped. A map outlining the property boundaries was an added requirement of participants beginning with the 2003-2004 season. Once an applicant was accepted, the participant was mailed information on the program's regulations, collection sites for nutria tails, contact information and a CNCP registration card.

Coastal Environments Inc. (CEI) was selected as the contractor to develop and maintain the program database, collect nutria tails, and distribute incentive payment checks to participants for tail harvests. The contract with CEI, which began with the 2002-2003 season, was extended to include the 2003-2004 through 2006-2007, with the option to renew for 3 years there after. Tail

collection sites were established at Rockefeller Refuge, Abbeville, Berwick (Morgan City), Houma, Luling and Chalmette. Collections were made once a week at each site, except for Rockefeller Refuge and Chalmette, where collections were made by appointment only.

Louisiana's open trapping season began on November 20, 2006, and nutria tail collections began a week later. Collections were made utilizing a 16 foot by 8 foot trailer containing a freezer, sorting table and desk. A participant reported to a collection site, presented his nutria control program registration card and presented his tails to a CEI representative. One CEI representative conducted an exact count of the nutria tails, which was then verified with the participant to ensure they were in agreement. At that time, the counted tails were placed into a plastic garbage bag labeled with the participant's CNCP registration number and the number of tails contained in that bag. Another CEI representative filled out a voucher for the number of tails delivered, checking to make sure the mailing address of the participant was correct. The participant was asked to provide the following information: 1) the method of taking the nutria, 2) the method in which the nutria carcass was used or abandoned, and 3) the month or months in which the nutria were harvested. When complete, the voucher was signed by the participant who also would indicate on a detailed map of their lease the location or locations where the nutria were harvested. The CEI representative recorded township and range of harvest, number of nutria harvested, and the transaction number on the map. One copy of the voucher was given to the participant, while one copy was retained by the CEI representative. The information on the voucher was entered into a laptop computer and transferred electronically to the CEI main offices via an FTP site for analysis and quality control. The data transfer occurred at the end of each collection day.

Collected tails were transported to the BFI waste storage facility in Sorrento, Louisiana at the end of each collection day or multiple times a day if necessary. The CEI representative checked in at a guard station where the vehicle containing the tails was weighed. The vehicle was also weighed when exiting the disposal site in order to calculate the exact amount of waste deposited at the facility. The tails were deposited into a biohazard waste pit under supervision of a BFI employee. The number of bags disposed, as well as weight deposited, was recorded on a receipt given to the CEI representative. Copies of the receipts for all disposals made were supplied to LDWF.

At the end of the collection week, the maps were transported to CEI's office in Baton Rouge. At this time QA/QC of the data transferred for the entire week took place. The trapped/hunted areas that were outlined on the lease maps were digitized into Arc Map GIS 9.2. CEI sent a weekly report to LDWF detailing each transaction, including a digitized map of that week's trapped/hunted areas. Each Monday morning, after receiving a weekly report and bill, LDWF sent a payment to CEI for the amount of tails collected and services rendered. CEI in turn sent participants checks through the mail for the amount of tails turned in. Louisiana's open trapping season ended on March 31, 2007, and nutria tail collections continued for one week into April. After the conclusion of the season, CEI provided LDWF with all the transaction information for the entire season from November to March. This final report contains information recorded on the vouchers, the digitized trapped/hunted area, the nutria control program database and an Arc Map 9.2 project map with related information.

Results and Discussion

Participant Totals

A total of 375,683 nutria tails, worth $1,878,415 in incentive payments, were collected from 365 participants in the 2006-2007 season. Approximately one third of these participants turned in 800 or more tails (Figure 2.)

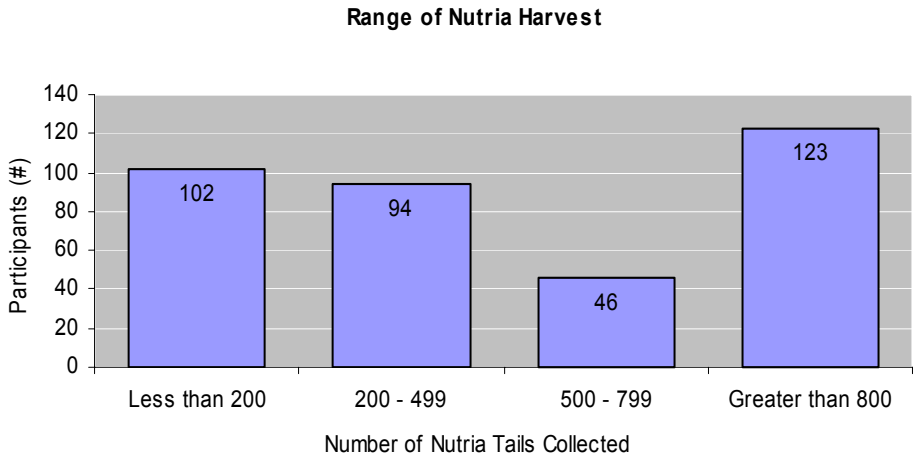


Figure 2.

Harvest by Month

The trapping season begins November 20th and continues through March 31st. One hundred twenty three thousand, six hundred and eighty four (123,684) tails were harvested in the month of January making it the most active month of the season (Figure 3.)

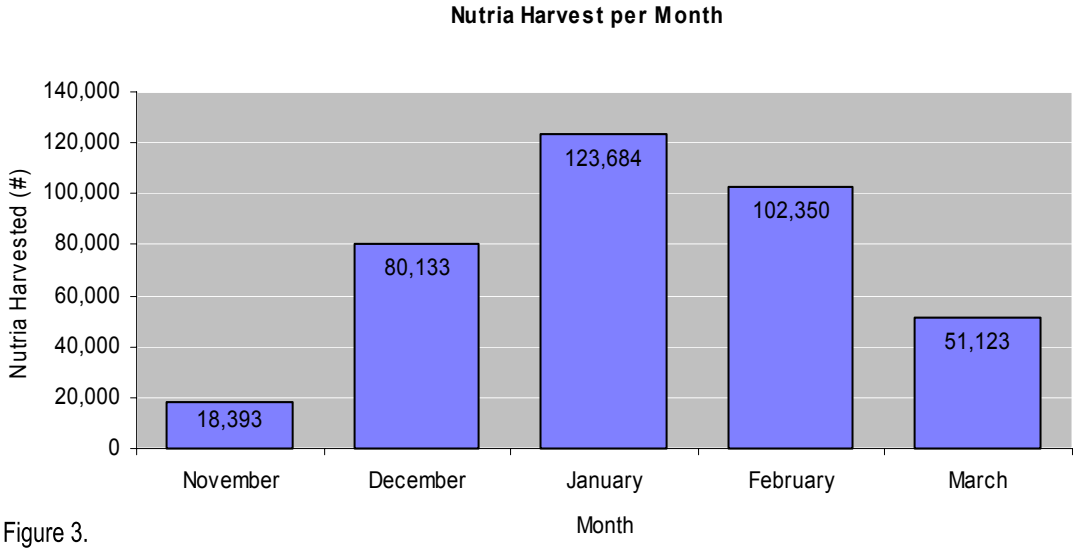


Figure 3.

Harvest by Marsh Type

Harvest data was classified by marsh type, which includes: fresh marsh, intermediate marsh, brackish marsh, salt marsh and other. The category "other" includes swamp, mixed forest, open water and agriculture land types.

This season, 50% of the nutria harvested fell into the "Other" category, which consisted mainly of swamp habitat. This was followed by 41% being harvested from the "Fresh Marsh" (Figure 4.) Due to large rain events in December and January that produced high water levels, trappers were able to trap/hunt in areas that were previously inaccessible.

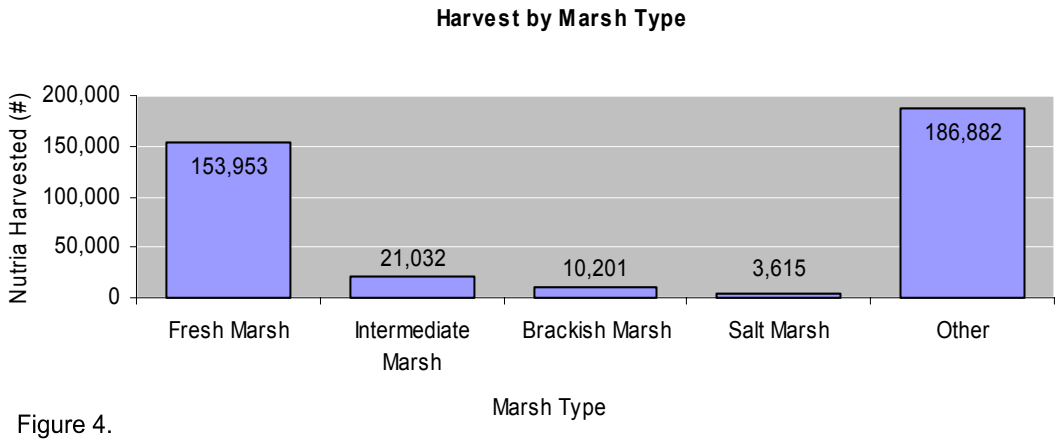


Figure 4.

Method of Take

During collection transactions, participants indicated what percentages of nutria were harvested by each approved method of take: trapped, shot with rifle, or shot with shotgun.

The predominant method used in the 06-07 season was shooting with a rifle (Figure 5.)

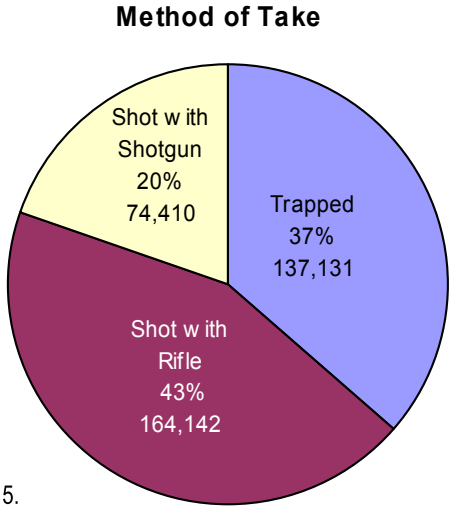


Figure 5.

While shooting with a rifle was the most popular method of taking nutria in fresh marsh, trapping was the most utilized method in brackish and intermediate marshes (Figure 6.)

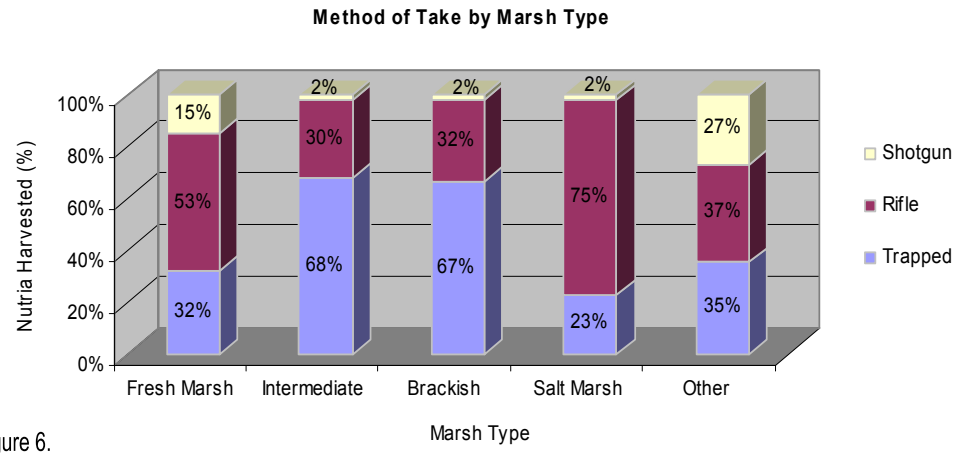


Figure 6.

Carcass Use

Use of nutria carcasses, was recorded for each participant transaction. For the purpose of this survey, use categories include 1) harvested for meat and/or 2) harvested for fur (Table 1.)

MARSH TYPE	Fur	Meat	Abandon Buried	Abandon Vegetation	Abandon Water
Fresh	957	9,824	81,157	49,880	12,805
Intermediate	3,241	5,401	10,602	4,184	845
Brackish	291	898	6,681	2,283	48
Salt	387	14	3,169	60	0
Other	842	8,433	81,654	88,849	6,966
Total	5,718	24,570	183,263	145,256	20,664

Table 1.

Overall, only 8% of the nutria harvested was utilized for meat and/or fur. The remaining 92% were disposed of by approved methods, categories include: 1) buried carcasses, 2) placed in heavy overhead vegetation or 3) placed in water (Table 1.)

The higher percentage fur utilization in the intermediate marsh vs. the fresh marsh may be attributed to the quality of the fur. In the fresh marsh, fur quality could have been affected by "fourchette," the seeds of *Bidens laevis*. These seeds are covered with small hook-like protrusions which help the plant with seed dispersal. Whenever a seed becomes entangled in the nutria's pelt and comes in contact with the skin, a small pustule is formed rendering the pelt useless. It's possible that though more nutria were harvested in fresh marsh habitat, participants were unable to utilized the fur due to poor pelt quality.

All interested participants were supplied a fur buyer/fur dealer list to encourage the use of animals for the fur and meat, and interested fur buyers/dealers were supplied with a list of program participants.

Harvest by Parish

During the 2006-2007 season of the Coastwide Nutria Control Program, 22 parishes were represented, with nutria harvests ranging from 19 to 113,629. St. Martin Parish turned in the most tails with 113,629 followed by Terrebonne and St. Mary Parish with 99,433 and 34,693 respectively (Figure 7).

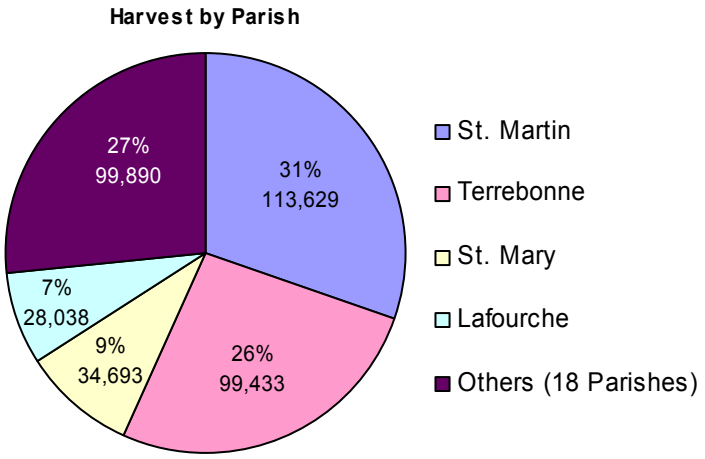


Figure 7.

Both St. Martin and Terrebonne Parish had 115 active participants in the CNCP, followed by St. Mary Parish with 81. In the 2005-2006 season, the total number of active participants in St. Martin Parish was 44. Increased participation in this Parish may be due to displaced trappers from storm damaged areas, or simply a product of the increased incentive payment.

Harvest by Damage Site

In the 2006 Vegetative Damage Survey, there were 74 damage sites. Ten of those sites were converted to open water and 16 sites recovered. These sites were not reevaluated in the 2007 survey. The other 48 damage sites from the 2006 damage survey were overlaid onto a map of the 2006-2007 harvest areas in order to determine which damaged sites were hunted/trapped and which sites received no hunting/trapping.

There were 11 sites that had some level of hunting or trapping activity. Appendix B contains the 2006 damage sites along with the amount of nutria that were harvested in 2007 from, or near, each site. Nutria were classified as being harvested from or near a damage site, if they were harvested from an area which overlapped a damage site polygon.

Section 2

A SURVEY OF NUTRIA HERBIVORY DAMAGE IN COASTAL LOUISIANA IN 2007

Introduction

Herbivory damage was noticed in the late 1980s by landowners and land managers when the price of fur dropped and the harvest of nutria all but ceased. The LDWF was contacted to investigate the problem. The first region wide aerial survey became possible because of the interest and concern of many state and federal agencies, coastal land companies and, in particular, funding provided by BTNEP. The objectives of the aerial survey were to: (1) determine the distribution of damage along the transect lines as an index of region wide damage, (2) determine the severity of damage as classified according to a vegetative damage rating, (3) determine the abundance of nutria by the nutria relative abundance rating (4) determine the species of vegetation being impacted and (5) determine the status of recovery of selected damaged areas (Linscombe and Kinler 1997).

Helicopter surveys were flown in May and December 1993 and again in March and April 1996 across the Barataria and Terrebonne Basins. During the December 1993 survey, 90 damaged sites were observed with more than 15,000 acres of marsh impacted along the transects and an estimated 60,000 acres across the study area. In 1996, a total of 157 sites were observed. The damage observed along the transect lines increased to 20,642 acres, and an extrapolated acreage of 77,408 acres across the study area. All of the 1993 sites were evaluated again in 1996, but only 9% showed any recovery. Clearly, the trend identified was a continued increase in both the number of sites and the extent of nutria damage in the Barataria and Terrebonne Basins.

In 1998, the first coast wide nutria herbivory survey was flown, as part of the Nutria Harvest and Wetland Demonstration Program (LA-03a). A total of 23,960 acres of damaged wetlands were located at 170 sites along the survey transects, with an extrapolated coast wide estimate of 89,850 acres. (The extrapolated coast wide estimate is derived by multiplying the observed acres by 3.75 to account for area not visible from the transect lines.) In 1999, the damage increased to 27,356 acres located at 150 sites, with an extrapolated coast wide estimate of 102,585 acres. In 2000, the damage slightly decreased to 25,939 acres located at 132 sites, with an extrapolated coast wide estimate of 97,271 acres. In 2001, the damage decreased to 22,139 acres located at 124 sites, with an extrapolated coast wide estimate of 83,021 acres. In the 2002 survey, the first survey funded as part of the CNCP and the survey which preceded implementation of the CNCP incentive payments, the damage decreased again, but only slightly to 21,185 acres located at 94 sites, with an extrapolated coast wide estimate of 79,444 acres. During the 2003 survey, a total of 84 sites had some level of vegetative damage and covered a total of 21,888 acres, with an extrapolated coast wide estimate of 82,080 acres. In summary, the coast wide estimates of nutria herbivory damage prior to implementation of the CNCP incentive payments (from 1998 to 2003) ranged from 79,444 to 102,585 acres.

Vegetative damage caused by nutria has been documented in at least 11 Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) project sites in the Barataria and Terrebonne Basins. Nutria herbivory is only one of many factors causing wetlands loss, but the additional

stress placed on the plants by nutria herbivory may be very significant in CWPPRA projects sites and throughout coastal Louisiana. The previous extrapolated estimates of 79,444 to 102,585 acres of marsh damaged was conservative because only the worst sites (most obvious) can be detected from aerial surveys; the actual number of acres being impacted was certainly higher. When vegetation is removed from the surface of the marsh, as a result of over grazing by nutria, the very fragile organic soils are exposed to erosion through tidal action and/or storms. If damaged areas do not revegetate quickly, they may become open water as tidal scour removes soil and thus lowers elevation. This is evident as the damaged sites that converted to open water over the last five years have been in the intermediate and brackish marsh types. Frequently the plant's root systems are also damaged, making recovery through vegetative regeneration very slow.

In an effort to create an incentive for trappers and hunters, the CNCP was implemented. Task number 1 of the LDNR and LDWF Interagency Agreement No. 2511-02-29 for the CNCP requires LDWF to conduct annual coast wide aerial surveys during spring/summer to document the current year impact of nutria herbivory. Survey techniques followed Linscombe and Kinler (1997), and CNCP funded surveys have be conducted in the spring of 2003, 2004, 2005, 2006 and 2007. Results were analyzed and the numbers of acres impacted or recovered were determined.

This section reports on the 2007 Coastwide Nutria Herbivory Survey.

Methods

A coast wide nutria herbivory survey was conducted on April 3rd-7th, April 11th-13th, and April 19th-20th. North-South transects were flown throughout the fresh, intermediate and brackish marshes of coastal Louisiana. A total of 155 transects (covering 2,354.7 miles) were surveyed for damage; the transects were spaced approximately 1.8 miles apart, starting at the swamp-marsh interface and continuing south to the beginning of the salt marsh. Due to low nutria population density, salt marsh habitat was not included in the survey. Depending upon visibility and vegetative conditions, an altitude of 300-400 feet was considered optimum. At this altitude, vegetative damage was identifiable and allowed for a survey transect width of about 1/4 mile on each side of the helicopter. Flight speed was approximately 60 mph. Two observers were used to conduct the survey, each positioned on opposite sides of the helicopter. In addition to locating vegetative damage, one observer navigated along the transect and the other observer recorded all pertinent data.

When vegetative damage was identified, the following information was recorded

1) Location of each site was determined by recording latitude and longitude utilizing GPS equipment. A real time differential corrected (WAAS Enabled) GPS (Garmin GPSmap 296) was utilized to allow for accurate location of damaged sites. The software used was DNRGarmin (written by Minnesota DNR) operating in ArcView 3.2a.
The size of each damage site was recorded by logging polygons using stream digitizing with the GPS equipment.

2) The abundance of nutria was placed in one of the following nutria relative abundance rating (NRAR) categories: **no nutria sign visible (0)**, **nutria sign visible (1)**, **abundant feeding (2)**, **heavy feeding (3)**.

3) The extent of damage to the vegetation was placed in one of the following vegetative damage rating categories: **no vegetative damage (0)**; **minor vegetative damage (1)** which is defined as a

site containing feeding holes, thinning vegetation and some visible soil; **moderate vegetative damage (2)** which is defined as a site that has large areas of exposed soil and covers less than 50% of the site; **severe vegetative damage (3)** which is defined as a site that has more than 50% of the soil exposed; or **converted to open water (4)**.

4) The dominant plant species were identified and recorded for the damaged areas, recovering areas and in the adjacent areas.

5) The age of damage and condition is determined by considering feeding activity and vegetation condition. The age of damage and condition was placed in one of the following categories: **recovered (0), old recovering (1), old not recovering (2), recent recovering (3), recent not recovering (4) or current (occurring now)(5)**.

6) The prediction of vegetative recovery is made considering feeding activity, age of damage and the extent of damage. The prediction of vegetative recovery by the end of 2007 was characterized by one of the following categories: **no recovery (0), full recovery (1), partial recovery (2) or increased damage (3)**.

7) The number of nutria observed at each site was recorded.

In addition to searching for new damaged sites, all previously identified damaged sites were revisited to assess extent and duration of damage or to characterize recovery. All data were entered into a computer for compilation. Damaged site locations are provided on the attached herbivory map and a data summary is provided in Appendix B.

Results and Discussion

There were 50 sites included in the 2007 vegetative damage survey, 46 previously classified as damage sites in the 2006 survey and 4 new sites. Eighteen of the damage sites from 2006 have completely recovered and only 1 site converted to open water. There are 2 sites that have both recovered acres as well as acres converted to open water and 1 site that has acres converted to open water as well as damaged acres. The remaining 28 sites are classified as damage sites and broken into 4 categories (Figure 8.)

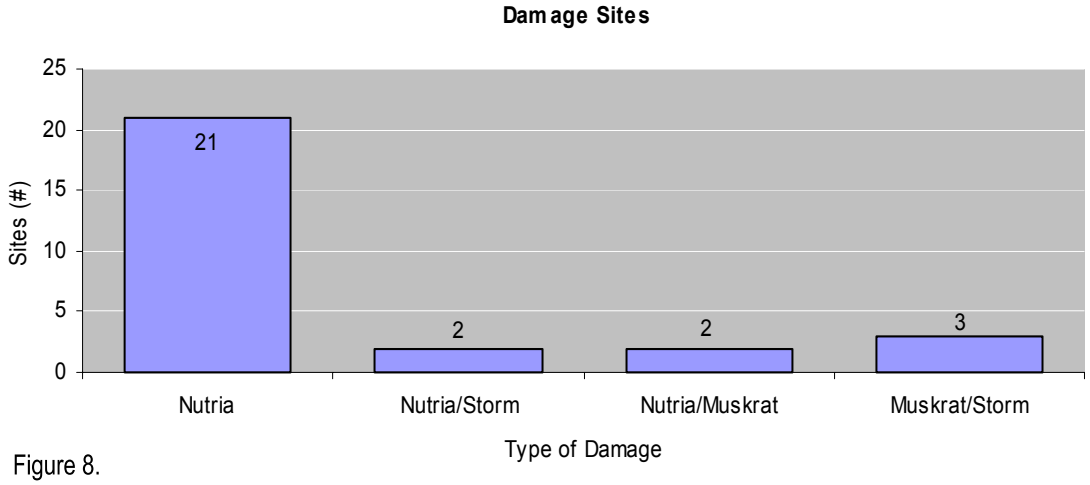


Figure 8.

Nutria Damage

The following discussion details the 23 sites that had nutria, or nutria/storm damage (Appendix A).

A total of 9,244 acres (extrapolated to be 34,665 acres coast wide) along transects in 2007, were impacted by nutria feeding activity. This is approximately a 38% decrease from the 14,868 acres (extrapolated 55,755 acres coast wide) impacted by nutria in 2006. Both the 2006 and 2007 surveys include sites that were initially damaged by nutria, and converted to open water as a result of Hurricanes Katrina and Rita.

Damage by Parish

More than half of the damaged acres in 2007 were in Terrebonne Parish (Figure 9.)

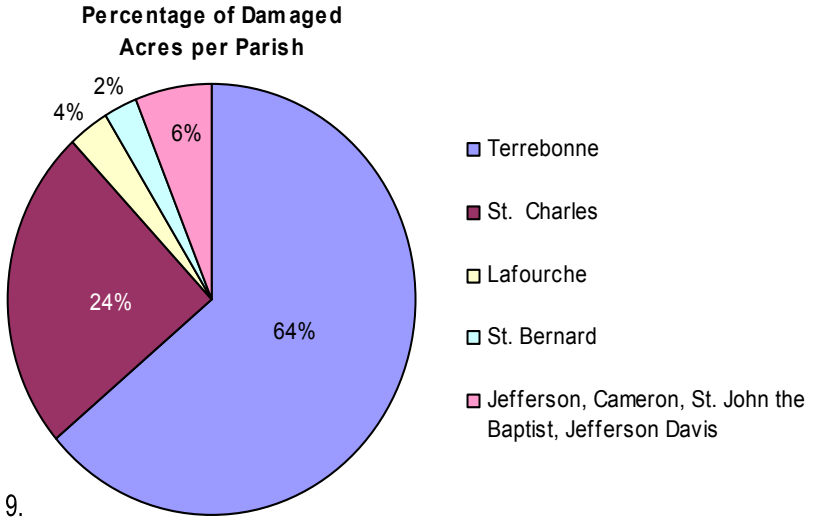


Figure 9.

Damage by Marsh Type

Marsh type was recorded for each damage site, as well as the type of vegetation based on the Linscombe and Chabreck 2001 survey (Figure 10.)

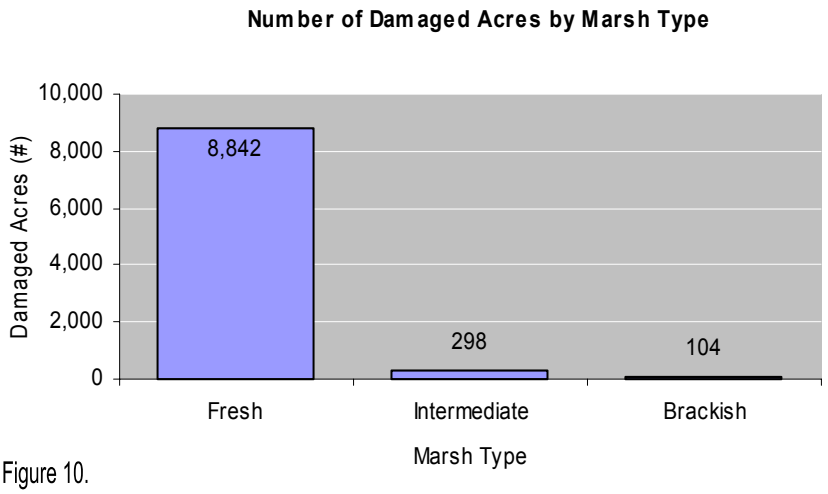


Figure 10.

Fresh marsh continued to be the most affected by nutria herbivory (96%). The typical vegetation impacted in fresh marsh was *Eleocharis* spp. and *Hydrocotyle* spp., while *Schoenoplectus americanus* (formerly *Scirpus olneyi*) and *Eleocharis* spp. were commonly impacted species in intermediate and brackish marshes.

Nutria Relative Abundance Rating

A nutria relative abundance rating (NRAR) was used to quantify the abundance of nutria at each site. Categories include: (0) no nutria sign visible, (1) nutria sign visible, (2) abundant feeding sign, and (3) heavy feeding sign; sites converted to open water are not given a NRAR (Figure 11.)

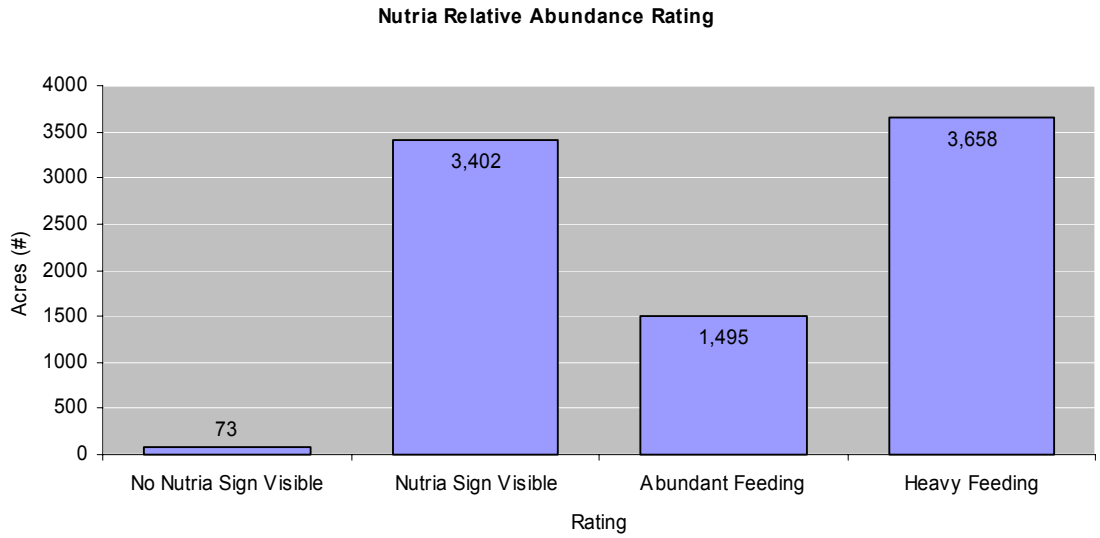


Figure 11.

Vegetative Damage Rating

Vegetative damage was also evaluated at each site. A rating system was developed in order to quantify damage to vegetation by nutria. The vegetative damage rating (VDR) has five categories: (0) no vegetative damage, (1) minor vegetative damage, (2) moderate vegetative damage, (3) severe vegetative damage, (4) converted to open water (Figure 12.)

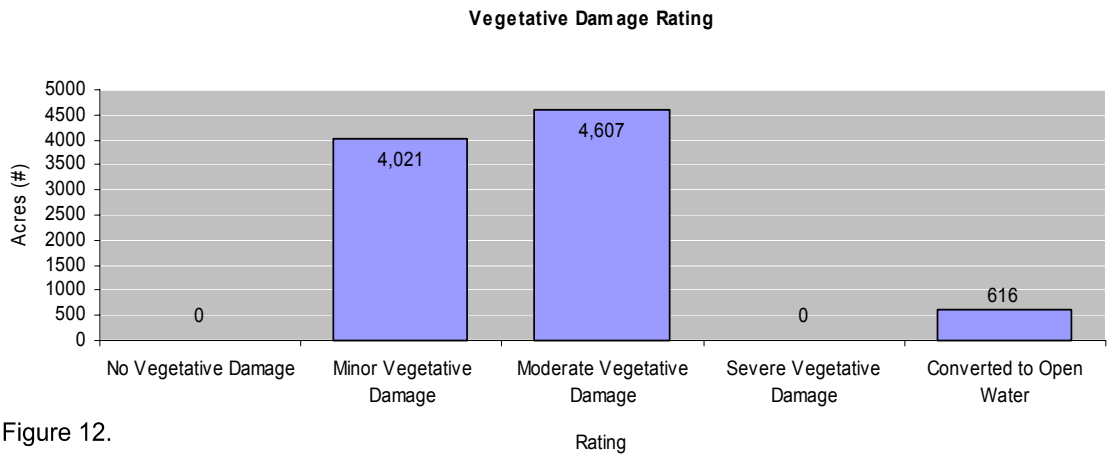


Figure 12.

There were no sites that had completely converted to open water in 2007. The 616 acres represent three partial sites, two of which, (#'s 49 and 258) have partially recovered and one (# 94) that still has some nutria damage.

Age of Damage Rating

Categories for the age of damage and condition rating include: (1) current damage, (2) recent damage-recovering, (3) recent damage not recovering, (4) old damage-recovering, (5) old damage-not recovering, and (0) recovered (Figure 13.)

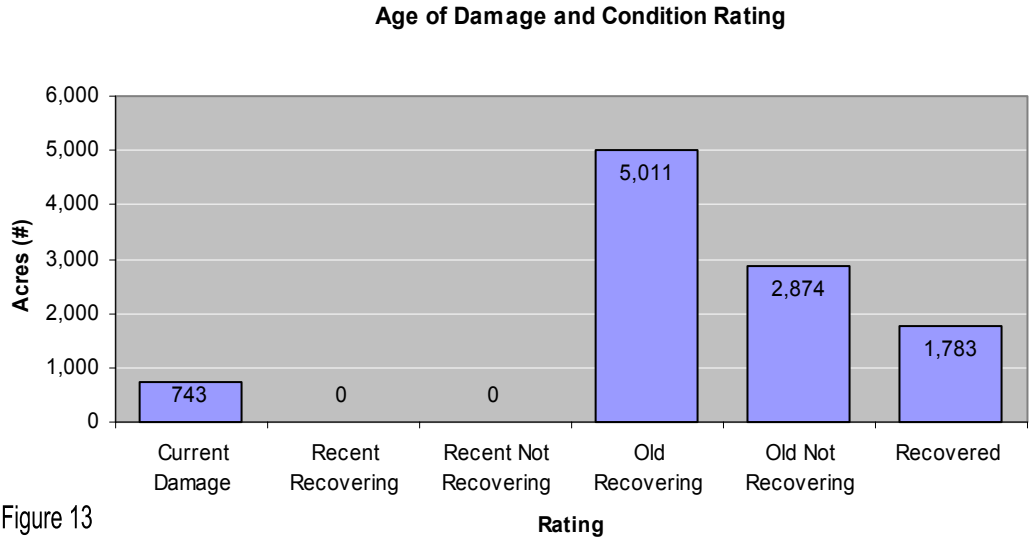


Figure 13

Prediction of Recovery

For each site with current damage, the degree of recovery by the end of the 2007 growing season was predicted. These categories were: (1) full recovery, (2) partial recovery, (3) increased damage and (4) no recovery predicated (Figure 14.)

All of the 23 nutria damage sites are predicted to have some level of recovery by the end of the 2007 growing season.

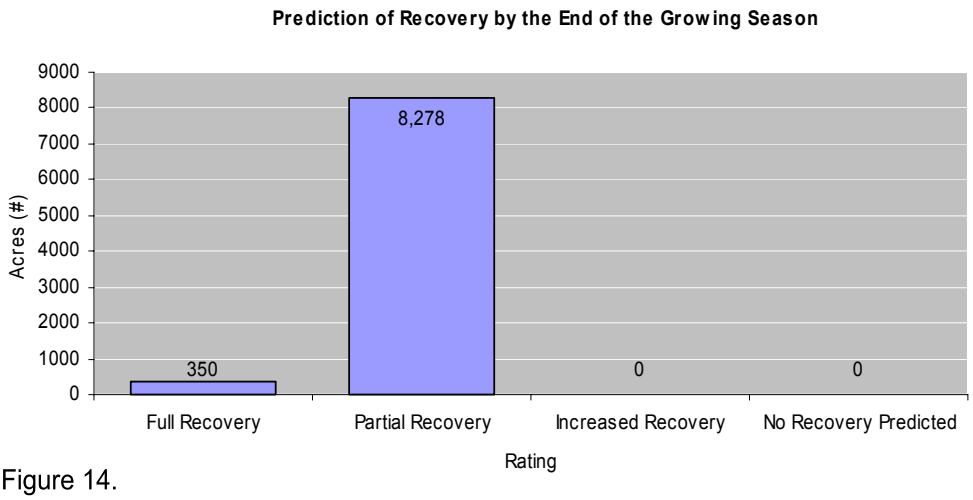


Figure 14.

Muskrat Damage

During the 2007 survey, muskrat damage sites from 2006, were re-evaluated. Nine of the 16 sites were completely recovered, and there were no new sites to report (Figure 15.)

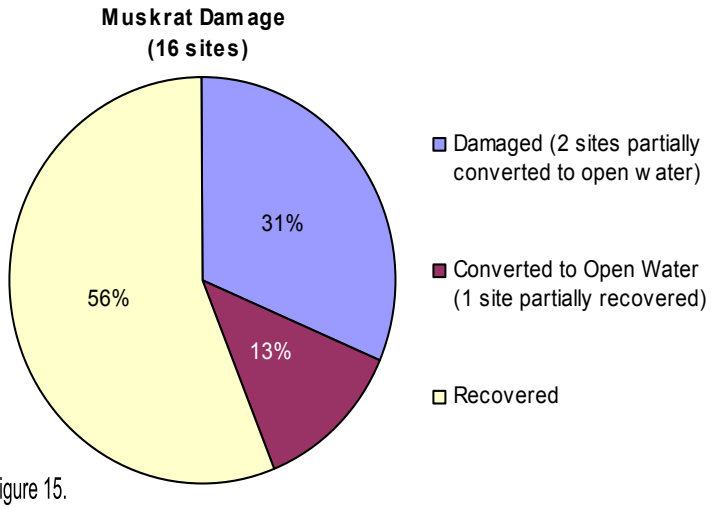


Figure 15.

Conclusion

The 2007 vegetative damage survey yielded a total of 9,244 acres of damage along transect lines. This figure, when extrapolated, demonstrates that 34,665 acres were impacted coast wide at the time of survey. When compared to 2006 (14,868 acres or 55,755 acres extrapolated coast wide), there was a 38% decrease in the number of damaged acres.

It should be noted that in the 2006 vegetative survey, there were 11 nutria damaged sites that were also impacted by Hurricanes Katrina and Rita. These sites were included in the total damaged acres. In 2007, there were only three.

Since the beginning of the Coastwide Nutria Control Program, there has been a definite decline in the number of nutria damaged sites observed by aerial surveys (Figure 16.)

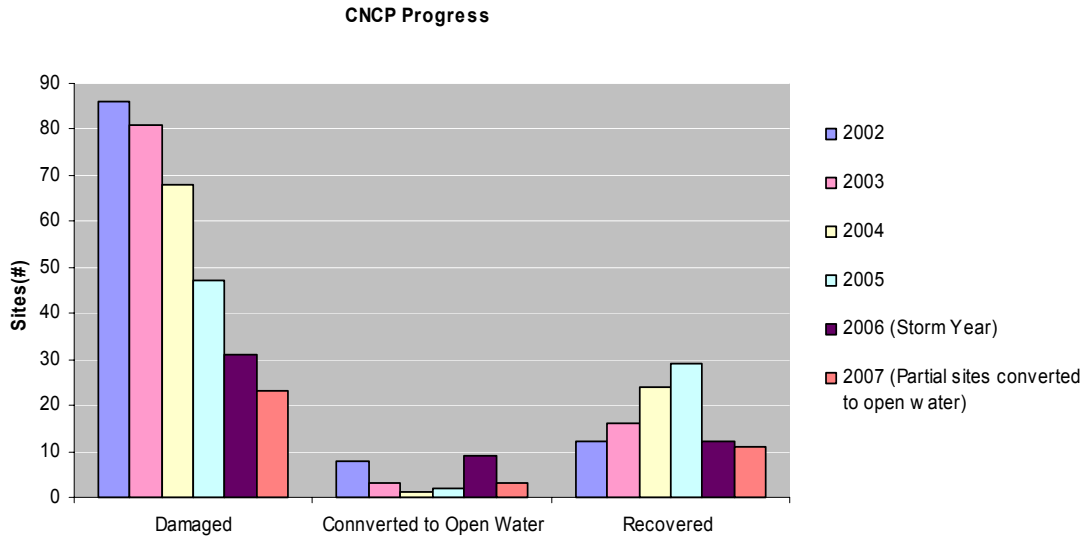


Figure 16.

Successive years of nutria damage data collection have yielded some general patterns of recovery:

1. If the vegetative damage rating is minor or moderate in a given year, that damage site has a greater chance of recovery in the following year.
2. Conversely, if the vegetative damage rating is severe in a given year, that damage site has a low chance of recovery and a higher chance of being converted to open water in the following year.
3. A similar pattern has emerged regarding the nutria relative abundance rating (NRAR). The lower the NRAR, the greater the chance of recovery

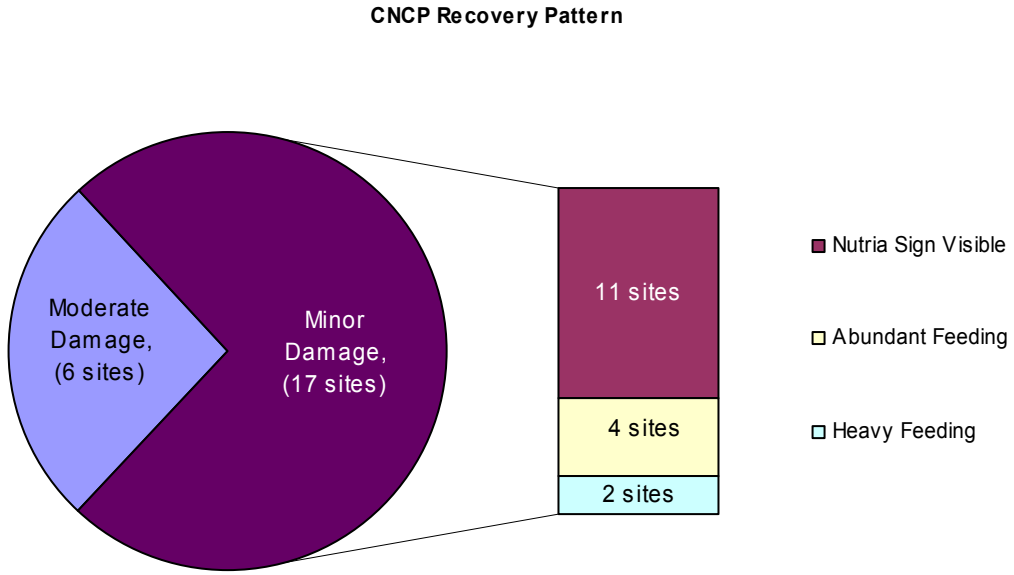


Figure 17.

If the pattern continues, there are 11 sites with a high probability of recovery by the end of the 2007 growing season (Figure 17). Also significant in the 2007 survey, there were no sites with severe damage and only 3 sites that were partially converted to open water.

Due to the distance between survey lines, all areas impacted by nutria herbivory could not be identified. Additionally, there were survey miles where nutria activity was observed but marsh conditions did not warrant a damage classification. Again, only the most obvious impacted areas were detected so the total impact of nutria was probably underestimated, however the trend in decreasing damage acreage and increased marsh recovery is significant. The majority of the nutria damage is located in south-central Louisiana with only isolated small areas of nutria damage in southwestern Louisiana. By comparison, the bulk of the muskrat damage occurs within the intermediate marshes of southwestern Louisiana (Appendix B).

Section 3

CNCP: Summary of Initial Results (2002-2007) and Adaptive Management

Three years prior to implementation of CNCP incentive payments.

	Nutria Harvested		**Herbivory Damage (acres)**
1999-2000	20,110	**2000**	97,271
2000-2001	29,544	**2001**	83,021
2001-2002	24,683	**2002**	79,444

Table 2.

First 5 years of CNCP incentive payment implementation.

	Nutria Harvested		**Herbivory Damage (acres)**
2002-2003	308,160	**2003**	82,080
2003-2004	332,396	**2004**	63,398
2004-2005	297,535	**2005**	53,475
2005-2006	168,843	**2006**	55,755
2006-2007	375,683	**2007**	34,665

Table 3.

The CNCP has served to drastically increase the nutria harvest in coastal Louisiana to an average of 296,000 animals per year. Thus far, this increase appears to have resulted in fewer nutria-damaged acres in coastal Louisiana.

Two closely related adaptive management actions have been implemented in the CNCP: 1) tracking nutria harvest at the lease level versus the township level and 2) encouraging increased harvesting effort on and in the vicinity of damage sites.

In the CNCP's first year (2002-2003), harvest location was tracked at a township level. Because townships include 23,040 acres and damage sites are much smaller (5 – 5000 acres) this level of tracking did not allow a determination whether nutria were being harvested from or near damage sites. Beginning with the 2003-2004 season, more complete land descriptions and maps outlining property / lease boundaries were required and harvest data is now tracked at lease level, allowing

a more accurate determination of whether nutria were harvested on or near damage sites. This approach provides three benefits: 1) Tracking nutria harvest and site recovery over time should allow a determination of what amount of harvest is needed for a damaged site to recover. 2) For those damage sites that received no hunting/trapping pressure, LDWF makes a concerted effort to contact landowners, advises the landowners of the damage observed on their properties, and strongly encourages their participation in the CNCP. These landowners will be provided a CNCP application and a map showing the location of the damage sites. The goal of this adaptive management action is to increase the harvest pressure on and near damage sites, thereby increasing the probability of vegetative recovery. By gaining more participants, there would be a coast wide increase in harvesting pressure and this should, over time, decrease the amount and severity of nutria damage across the Louisiana coast. 3) The improved harvest location tracking also helps assure that the participant accurately indicates the location of nutria harvest from his registered lease and not accidentally indicating a harvest where none occurred.

This year the CNCP has implemented a third adaptive management action, an increase in the incentive payment to encourage participation. In the development of the program it was suggested by Genesis Lab that an increase in incentive payment would be necessary at some point to keep up with cost of supplies and time spent hunting/trapping. After the devastating hurricane season in 2005, and low participation in the 2005-2006 season, this year the incentive payment was increased from $4.00 to $5.00 per nutria tail turned in at collection stations. The 2006-2007 trapping season brought not only a record harvest (375,683), but also a record number of active participants (365).

Other ongoing adaptive management actions being performed by LDWF include the sending out of CNCP applications to all participants who submitted applications over the last five years and the coordination with trappers and fur buyers / dealers to encourage the maximum use of the entire animal.

Appendix A.
A Comparison of Seasons 1-5
(2002-2007)

PARISH	2002-2003		2003-2004		2004-2005		2005-2006		2006-2007	
	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage
Ascension	2,710	0.90%	5,474	1.60%	1,858	0.60%	1,678	1.00%	2,226	0.59%
Assumption	3,128	1.00%	814	0.20%	428	0.10%	2,307	1.40%	2,095	0.56%
Calcasieu	143	-	374	0.10%	448	0.20%	58	0.00%	19	0.01%
Cameron	7,851	2.60%	8,701	2.60%	16,617	5.60%	3,744	2.20%	1,725	0.46%
Iberia	1,412	0.50%	1,960	0.60%	3,521	1.20%	3,014	1.80%	18,910	5.03%
Iberville	0	-	1,567	0.50%	5,559	1.90%	2,360	1.40%	9,172	2.44%
Jefferson	20,529	6.70%	24,896	7.50%	11,036	3.70%	2,875	1.70%	10,405	2.77%
Jefferson Davis	121	-	85	-	175	0.10%	110	0.10%	0	0.00%
Lafayette	39	-	25	-	10	0.00%	0	-	0	0.00%
Lafourche	28,852	9.40%	51,736	15.60%	32,411	10.90%	24,668	14.60%	28,038	7.46%
Livingston	2,631	0.90%	357	0.10%	911	0.30%	1,921	1.10%	1,250	0.33%
Orleans	597	0.20%	0	-	538	0.20%	0	-	575	0.15%
Plaquemines	63,208	20.50%	86,720	26.10%	39,043	13.10%	1,816	1.10%	5,815	1.55%
St. Bernard	5,769	1.80%	13,344	4.00%	4,344	1.50%	0	-	291	0.08%
St. Charles	11,169	3.60%	12,672	3.80%	15,867	5.30%	13,807	8.20%	18,690	4.97%
St. James	95	-	487	0.20%	2,841	1.00%	4,912	2.90%	7,111	1.89%
St. John the Baptist	18,450	6.00%	6,137	1.80%	8,404	2.80%	6,384	3.80%	15,786	4.20%
St. Martin	11,425	3.70%	15,039	4.50%	31,656	10.60%	15,903	9.40%	113,629	30.25%
St. Mary	26,004	8.40%	16,277	4.90%	20,940	7.00%	21,023	12.50%	34,693	9.23%
St. Tammany	4,638	1.50%	3,756	1.10%	5,175	1.70%	1,423	0.80%	2,067	0.55%
Tangipahoa	1,245	0.40%	745	0.20%	565	0.20%	826	0.50%	1,843	0.49%
Terrebonne	92,831	30.10%	72,846	21.90%	81,135	27.30%	57,756	34.20%	99,433	26.47%
Vermilion	5,313	1.70%	8,584	2.60%	14,503	4.70%	2,258	1.30%	1,813	0.48%
West Baton Rouge									97	0.03%
Total	308,160	99.90%	332,596	99.90%	297,535	100.00%	168,843	100.00%	375,683	100.00%

Table 4. Nutria harvested by parish seasons 1-5, Coastwide Nutria Control Program.

PARISH	2002-2003			2003-2004			2004-2005			2005-2006			2006-2007		
	Trap	Rifle	Shot Gun	Trap	Rifle	Shot Gun	Trap	Rifle	Shot Gun	Trap	Rifle	Shot Gun	Trap	Rifle	Shot Gun
Ascension	0	2,306	404	0	4,093	1,381	100	1,678	80	470	908	300	0	2,008	218
Assumption	284	2,786	58	47	767	0	188	106	134	1,454	711	143	354	686	1,056
Calcasieu	0	143	0	0	374	0	213	24	212	57	1	0	19	0	0
Cameron	3,611	4,210	30	4,974	3,639	89	5,779	8,961	1,877	1,362	583	1,799	347	902	477
Iberia	0	1,353	59	636	1,324	0	1,286	1,310	926	1,215	449	1,350	6,695	4,635	7,580
Iberville	0	0	0	717	850	0	4,348	1,211	0	1,156	622	582	4,907	460	3,860
Jefferson	5,869	14,094	566	12,991	11,835	70	6,286	4,307	443	2,234	477	164	4,731	5,568	106
Jefferson Davis	121	0	0	85	0	0	158	18	0	109	1	0	0	0	0
Lafayette	19	10	10	0	25	0	0	10	0	0	0	0	0	0	0
Lafourche	11,807	16,826	219	28,516	22,780	440	12,221	18,212	1,977	9,113	11,000	4,555	12,279	11,480	4,279
Livingston	0	2,631	0	0	336	21	0	911	0	0	1,921	0	0	1,250	0
Orleans	287	219	91	0	0	0	538	0	0	0	0	0	575	0	0
Plaquemines	9,899	52,933	376	34,683	51,302	735	18,121	20,642	280	343	843	630	3,200	2,554	61
St. Bernard	2,877	2,892	0	5,412	7,783	149	727	3,617	0	0	0	0	146	146	0
St. Charles	2,099	8,706	364	2,801	9,543	329	1,279	13,958	631	1,863	10,915	1,029	6,637	9,401	2,652
St. James	48	47	0	97	350	40	32	2,752	57	278	4,239	395	203	6,439	469
St. John the Baptist	1,505	11,132	5,813	2,517	2,200	1,420	2,971	4,788	645	2,165	3,488	538	4,223	9,215	2,348
St. Martin	1,497	9,593	335	5,784	8,790	465	10,684	9,703	11,269	4,137	5,355	6,412	39,972	35,737	37,920
St. Mary	11,073	14,849	82	6,616	9,619	42	9,700	10,798	442	9,266	11,202	554	12,810	19,997	1,886
St. Tammany	3,088	1,529	21	2,687	1,069	0	2,692	2,483	0	533	800	90	1,452	529	86
Tangipahoa	335	894	16	577	169	0	35	530	0	142	638	46	542	1,189	113
Terrebonne	46,761	45,317	753	44,419	26,335	2,092	31,730	45,893	3,512	28,132	25,577	4,047	36,867	51,357	11,209
Vermilion	2,370	2,729	214	5,119	3,435	30	5,580	7,900	572	1,076	1,182	0	1,174	494	145
West Baton Rouge	0	0	0	0	0	0	0	0	0	0	0	0	0	97	0
***Total**	103,550	195,199	9,411	158,678	166,618	7,303	114,668	159,810	23,057	65,105	80,912	22,634	137,133	164,144	74,465

Table 5. Method of take by parish for seasons 1-5, Coastwide Nutria Control Program
* Totals may not be exact due to reporting of percentages.

Year	Number of sites surveyed	Number of sites with current damage	Number of site converted to open water	Sites with vegetative recovery
2002	108[1]	86	8	12
2003	100	81	3	16
2004	93	68	1	24
2005	78	47	2	29
2006	52	31	9	12
2007	34	23	3 (partial sites)	11[2]

Table 6. Status and number of nutria herbivory sites surveyed from 2002 to 2007.

[1] Two sites could not be evaluated due to high water.

[2] Total includes 1 site with partial recovery.

PARISH	2002		2003		2004		2005		2006		2007	
	Number of		Number of		Number of		Number of		Number of		Number of	
	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres	Sites	Acres
Terrebonne	41	12,951	34	12,521	27	7,679	18	4,541	14	7,340	12	5,915
Lafourche	8	1,222	7	610	5	381	2	127	0	0	2	328
Jefferson	17	3,003	10	1,805	9	1,718	7	1,383	5	874	3	177[3]
Plaquemines	10	882	13	2,540	7	2,494	7	1,850	7	1,763	0	0
St. Charles	6	768	6	1,266	9	2,564	6	4,690	5	3,249	4	2,216[3]
Cameron	0	0	0	0	0	0	0	0	1	233	1	167
St. Bernard	6	921	5	918	5	1,035	4	882	4	1,004	1	225[3]
St. John	0	0	1	20	2	111	2	240	2	241	0	0
Iberia	0	0	0	0	0	0	1	158	0	0	0	0
St. Tammany	4	752	2	360	0	0	0	0	0	0	0	0
Orleans	2	686	2	962	0	0	0	0	0	0	0	0
St. Mary	0	0	0	0	0	0	0	0	0	0	0	0
Vermilion	0	0	4	886	5	924	2	389	1	76	0	0
Jefferson Davis	0	0	0	0	0	0	0	0	1	88	1	81
St. John the Baptist	0	0	0	0	0	0	0	0	0	0	1	135
Total	94	21185[1]	84	21888[1]	69	16906[1]	49	14260[1]	40	14868[1,2]	25	9,244[1,3]

Table 7. Number of nutria damaged sites and acres damaged along transects by parish in coastal Louisiana, 2002 - 2007.

[1]This figure represents acres damaged along transects only. Actual damage coast wide is approximately 3.75 times larger than the area estimated by this survey.

[2]This figure includes 2,553 acres of marsh previously impacted by nutria that was likely converted to open water in Plaquemines and St. Bernard Parishes due to tidal scour from Hurricane Katrina.

[3]These figures include acres from sites that were partially converted to open water.

MARSH TYPE	2002		2003		2004		2005		2006		2007	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Fresh	41	11,593	36	10,871	37	10,565	26	9,811	23	11,273	21	8,842
Intermediate	39	7,416	31	8,086	25	5,128	19	3,789	16	3,421	3	298
Brackish	14	2,176	17	2,931	7	1,213	4	660	1	174	1	104
Total	94	21,185	84	21,888	69	16,906	49	14,260	40	14,868	25[1]	9,244[1]

Table 8. Number of nutria damaged sites and acres damaged, by marsh type along transects in coastal Louisiana during 2002 to 2007; number includes sites converted to open water.

[1] Total includes sites that were partially converted to open water.

NUTRIA RELATIVE ABUNDANCE RATING	2002		2003		2004		2005		2006		2007	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
NO NUTRIA SIGN VISIBLE	21	5,990	23	5,972	13	3,569	14	2,992	4	519	2	73
NUTRIA SIGN VISIBLE	31	4,379	26	3,562	29	6,040	28	6,748	26	11,223	12	3,402
ABUNDANT FEEDING	17	4,198	19	6,682	19	5,251	4	4,113	1	573	5	1,495
HEAVY FEEDING	17	5,568	14	5,599	7	2,026	1	273	0	0	4	3,658
TOTAL	86	20,135	81	21,815	69	16,886	47	14,126	31	12,315	23	8,628

Table 9. Number of nutria damage sites and acres damaged by revised nutria relative abundance rating in coastal Louisiana during 2002 to 2007; numbers do not include sites converted to open water.

VEGETATIVE DAMAGE RATING	2002		2003		2004		2005		2006		2007	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
NO VEGETATIVE DAMAGE	1	30	0	0	0	0	0	0	0	0	0	0
MINOR VEGETATIVE DAMAGE	28	3,498	26	8,732	35	6,675	34	8,070	21	7,621	17	4,021
MODERATE VEGETATIVE DAMAGE	44	13,156	41	9,221	29	9,536	12	5,905	9	4,581	6	4,607
SEVERE VEGETATIVE DAMAGE	13	3,451	14	3,862	4	675	1	151	1	113	0	0
CONVERTED TO OPEN WATER	8	1,050	3	73	1	20	2	134	9	2,553	3[1]	616[1]
TOTAL	94	21,185	84	21,888	69	16,906	49	14,260	40	14,868	26[1]	9,244[1]

Table 10. Number of nutria damage sites and number of acres by the vegetative damage rating in coastal Louisiana 2002 to 2007.

[1] Total includes sites that were partially converted to open water.

AGE OF DAMAGE AND CONDITON RATING	2002		2003		2004		2005		2006		2007	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Recovered	12	1,119	16	1,674	24	6,049	29	4,169	13[1]	1,341[1]	11[1]	1,783[1]
Old Recovering	51	7,694	51	14,382	53	12,338	39	10,878	21	9,429	14	5,011
Old Not Recovering	31	11,449	17	5,375	5	2,898	2	656	4	1,519	5	2,874
Recent Recovering	0	0	0	0	1	35	1	10	0	0	0	0
Recent Not Recovering	0	0	0	0	0	0	0	0	1	285	0	0
Current Damage	4	992	13	2,058	9	1,615	5	2,582	5	1,082	4	743
Total	98	21,254	97	23,489	92	22,935	76	18,295	44[1]	13,656[1]	34[1]	10,411[1]

Table 11. Number of nutria damage sites by age of damage and condition rating in coastal Louisiana in 2002 to 2007.

[1]Total includes sites that were partially recovered.

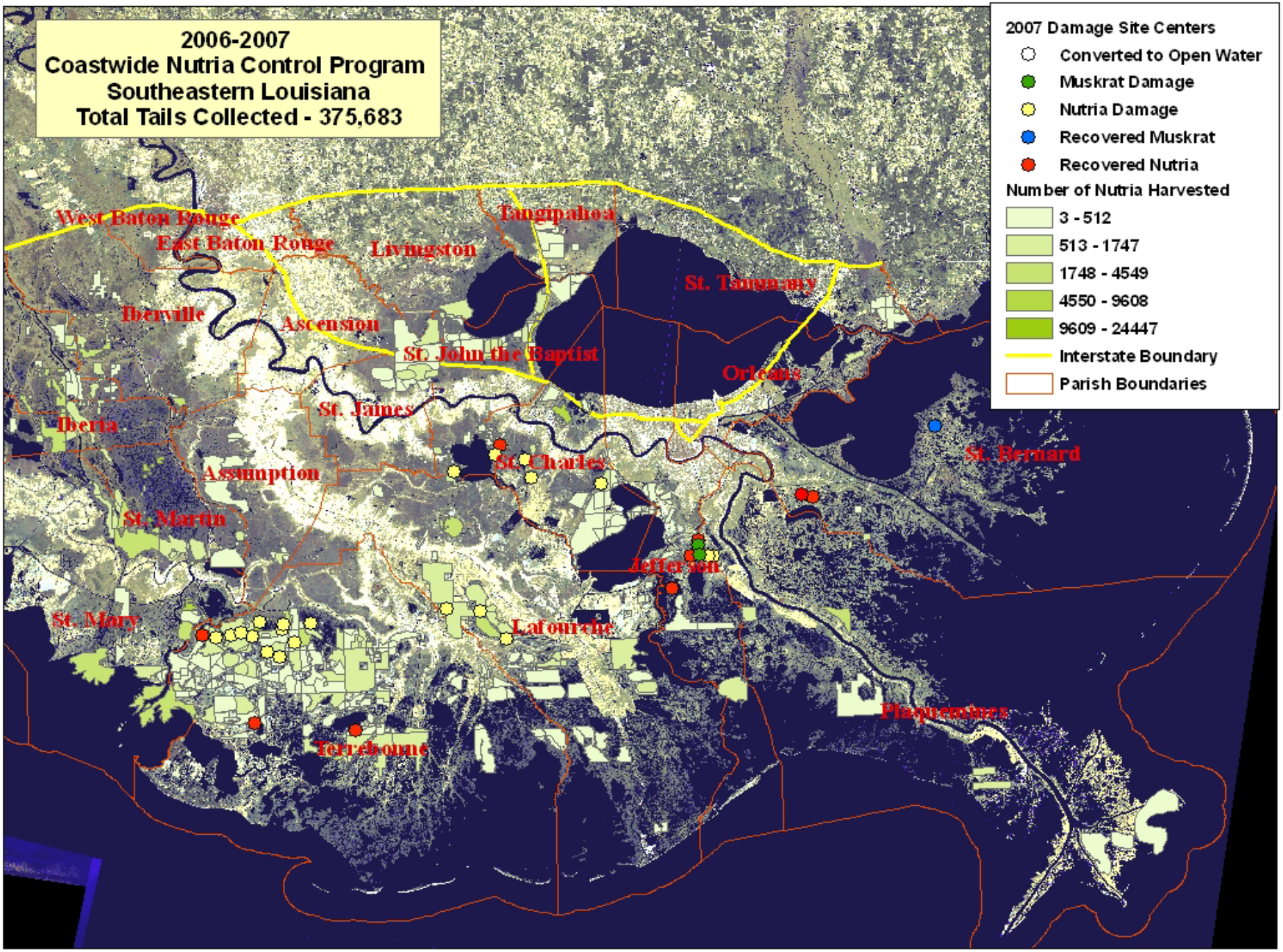
PREDICTION OF RECOVERY BY END OF GROWING SEASON	2002		2003		2004		2005		2006		2007	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Full Recovery	7	919	8	4,238	10	338	6	443	4	828	2	350
Partial Recovery	59	13,950	64	14,497	50	13,440	36	10,073	27	11,487	21	8,278
Increased Damage	5	1,086	6	1,646	6	2,811	5	3,610	0	0	0	0
No Recovery Predicated	15	4,180	3	1,434	2	297	0	0	0	0	0	0
TOTAL	94	21,185	84	21,888	69	16,906	49	14,260	31	12,315	23	8,628

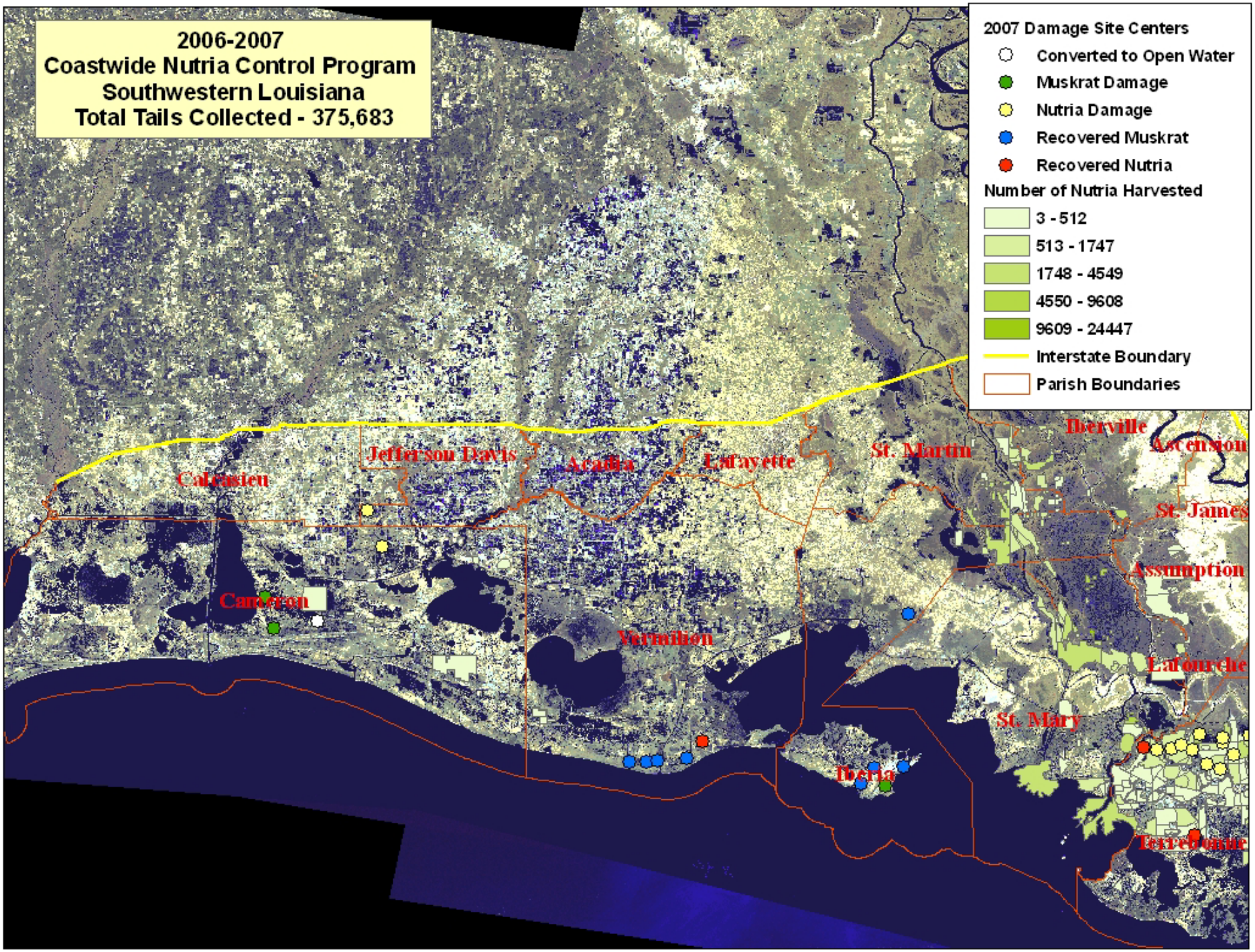
Table 12. Number of nutria damage sites and acres damaged, by prediction of recovery rating in coastal Louisiana in 2002 to 2007.

APPENDIX B.
2006 Nutria vegetative damage sites with tails harvested.

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAM	PREDICTION	PARISH	TOWNSHIP AND RANGE	Nutria Tails Harvested by Site
8	F	29.5697	-91.1638	Nutria	526	0	1	2	1	2	Terrebonne	T17SR13E	945
9	F	29.5737	-91.1296	Nutria	303	0	1	1	1	2	Terrebonne	T17SR13E	1,736
17	F	29.5397	-91.0504	Nutria	563	0	1	1	2	2	Terrebonne	T17SR14E	49
49	B	29.6531	-90.1375	Nutria	174	0	1	2	1	2	Jefferson	T16SR23E	0
60	I	29.7180	-90.0527	Nutria	87	0	1	2	1	2	Jefferson	T16SR24E	0
92	I	29.7121	-90.0750	Nutria	312	0	1	1	1	2	Jefferson	T16SR24E	0
94	F	29.8696	-90.2885	Nutria	717	0	1	2	1	2	St. Charles	T14SR21E	1,880
97	I	29.7012	-90.1965	Nutria	0	0	99	99	0	99	Jefferson	T16SR22E	0
104	F	29.4162	-90.8933	Nutria	0	0	99	99	0	99	Terrebonne	T19SR15E	0
120	F	29.6006	-91.0648	Nutria	2100	0	1	2	1	2	Terrebonne	T17SR14E	10,491
142	F	29.5984	-91.0081	Nutria	0	0	99	99	0	99	Terrebonne	T17SR14E	0
171	F	29.9204	-90.4624	Nutria	1541	0	1	1	1	2	St. Charles	T13SR20E	0
178	I	29.7173	-90.0912	Nutria	97	0	0	1	1	2	Jefferson	T16SR23E	0
238	F	29.9280	-90.5236	Nutria	286	0	1	1	1	2	St. Charles	T13SR19E	2,775
242	B	29.5939	-90.1632	Nutria	0	0	99	99	0	99	Lafourche	T17SR23E	0
244	I	29.7308	-90.0970	Nutria	0	0	99	99	0	99	Jefferson	T15SR23E	0
245	F	29.7499	-90.0735	Nutria	204	0	1	2	1	2	Jefferson	T15SR24E	0
274	F	29.5690	-91.0618	Nutria	596	0	1	2	2	2	Terrebonne	T17SR14E	1,873
278	F	29.5016	-91.0947	Nutria	0	0	99	99	0	99	Terrebonne	T18SR13E	0
311	F	29.5562	-90.9866	Nutria	1481	0	1	1	1	2	Terrebonne	T17SR14E	25
329	B	29.5106	-90.2634	Nutria	0	0	99	99	0	99	Lafourche	T18SR22E	0
331	I	29.7996	-90.2287	Nutria	0	0	99	99	0	99	St. Charles	T15SR22E	0
337	I	29.6827	-89.9443	Nutria	0	154	99	4	99	99	Plaquemines	T16SR12E	0
344	F	29.5283	-91.0200	Nutria	247	0	1	1	2	2	Terrebonne	T18SR14E	185
345	F	29.6134	-90.5673	Nutria	281	0	1	1	1	2	Terrebonne	T17SR19E	218
362	I	29.9137	-91.9718	Nutria	0	0	99	99	0	99	Iberia	T13SR5E	0
367	B	29.5415	-92.2863	Nutria	0	0	99	99	0	99	Vermillion	T17SR2E	0
380	I	29.5977	-92.2108	Nutria	76	0	0	2	1	2	Vermillion	T16SR2E	0
383	F	29.5850	-91.0736	Nutria	135	0	1	1	1	2	Terrebonne	T17SR14E	0
386	F	29.9472	-90.6395	Nutria	189	0	1	1	1	1	St. John the Baptist	T13SR18E	0

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAM	PREDICTION	PARISH	TOWNSHIP AND RANGE	Nutria Tails Harvested by Site
383	F	29.5850	-91.0736	Nutria	135	0	1	1	1	2	Terrebonne	T17SR14E	0
386	F	29.9472	-90.6395	Nutria	189	0	1	1	1	1	St. John the Baptist	T13SR18E	0
388	F	29.9509	-90.5152	Nutria	505	0	1	1	1	1	St. Charles	T13SR19E	0
390	F	29.8843	-90.4464	Nutria	200	0	1	1	1	2	St. Charles	T14SR20E	0
400	F	29.5802	-91.1073	Nutria	573	0	2	1	5	2	Terrebonne	T17SR13E	3,119
402	F	29.8998	-90.6210	Nutria	52	0	1	1	1	1	St. John the Baptist	T13SR18E	0
413	F	29.3947	-91.0811	Nutria	285	0	1	1	4	2	Terrebonne	T19SR13E	0
414	F	29.5978	-90.9507	Nutria	106	0	1	1	5	2	Terrebonne	T17SR15E	0
415	I	29.3774	-90.8551	Nutria	82	0	1	1	5	1	Terrebonne	T19SR16E	0
416	F	29.9967	-92.9448	Nutria	233	0	0	1	5	2	Cameron	T12SR6W	0
417	F	30.0709	-92.9795	Nutria	88	0	1	1	5	2	Jefferson Davis	T11SR6W	0
256	I	29.7706	-89.8837	Nutria/Storm	0	205	0	4	99	99	Plaquemines	T15SR13E	0
258	I	29.8372	-89.8393	Nutria/Storm	113	262	0	3	2	2	St. Bernard	T14SR14E	0
259	I	29.8245	-89.8470	Nutria/Storm	0	149	99	4	99	99	St. Bernard	T14SR13E	0
260	I	29.8186	-89.8565	Nutria/Storm	0	277	99	4	99	99	St. Bernard	T14SR13E	0
270	F	29.5761	-91.1959	Nutria/Storm	62	0	1	1	1	2	Terrebonne	T17SR12E	0
336	I	29.7252	-89.9126	Nutria/Storm	0	5	99	4	99	99	Plaquemines	T15SR13E	0
360	I	29.7216	-89.8882	Nutria/Storm	0	74	99	4	99	99	Plaquemines	T15SR13E	0
377	I	29.7429	-89.9452	Nutria/Storm	0	413	99	4	99	99	Plaquemines	T15SR12E	0
393	I	29.8297	-89.8138	Nutria/Storm	101	102	1	2	1	2	St. Bernard	T14SR14E	0
403	I	29.7150	-89.8216	Nutria/Storm	0	49	99	4	99	99	Plaquemines	T15SR13E	0
250b	I	29.7949	-89.9160	Nutria/Storm	0	863	99	4	99	99	Plaquemines	T14SR13E	0


2006-2007
Coastwide Nutria Control Program
Southeastern Louisiana
Total Tails Collected - 375,683
2007 Damage Site Centers
Converted to Open Water
Muskrat Damage
Nutria Damage
Recovered Muskrat
Recovered Nutria
Number of Nutria Harvested
3 - 512
513 - 1747
1748 - 4549
4550 - 9608
9609 - 24447
Interstate Boundary
Parish Boundaries
West Baton Rouge
East Baton Rouge
Livingston
Tangipahoa
St. Tammany
Iberville
Ascension
St. John the Baptist
Orleans
St. James
Iberia
St. Charles
St. Bernard
Assumption
St. Martin
Jefferson
St. Mary
Lafourche
Plaquemines
Terrebonne


2006-2007
Coastwide Nutria Control Program
Southwestern Louisiana
Total Tails Collected - 375,683
2007 Damage Site Centers
Converted to Open Water
Muskrat Damage
Nutria Damage
Recovered Muskrat
Recovered Nutria
Number of Nutria Harvested
3 - 512
513 - 1747
1748 - 4549
4550 - 9608
9609 - 24447
Interstate Boundary
Parish Boundaries
Calcasieu
Jefferson Davis
Acadia
Lafayette
St. Martin
Iberville
Ascension
St. James
Assumption
Cameron
Vermilion
Lafourche
St. Mary
Iberia
Terrebonne

APPENDIX C.
Data collected at each damage site during the 2007 vegetative damage Survey.

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAM	PREDICTION	PARISH	TOWNSHIP AND RANGE
8	F	29.5697	91.1638	Nutria	374	0	1	1	1	2	Terrebonne	T17SR13E
9	F	29.5737	91.1296	Nutria	521	0	1	1	1	2	Terrebonne	T17SR14E
17	F	29.5397	91.0504	Nutria	420	0	1	1	2	2	Terrebonne	T16SR23E
49	B	29.6531	90.1375	Nutria	70	104	0	99	0	99	Jefferson	T16SR23E
60	I	29.7160	90.0419	Nutria/Storm	23	0	0	2	1	2	Jefferson	T16SR24E
60B	I	29.7170	90.0520	Nutria/Storm	50	0	0	2	1	2	Jefferson	
92	I	29.7205	90.072	Muskrat/Nutria	171	0	1	3	2	2	Jefferson	T16SR24E
94	F	29.8696	90.2908	Nutria	429	287	1	2	2	2	St. Charles	T14SR21E
120	F	29.6006	91.0648	Nutria	2215	0	3	2	1	2	Terrebonne	T17SR14E
171	F	29.9209	90.4603	Nutria	1268	0	3	2	2	2	St. Charles	T13SR20E
178	I	29.71733	90.09117	Nutria	0	0	99	99	0	99	Jefferson	T16SR23E
238	F	29.9310	90.5279	Nutria	67	0	1	1	1	1	St. Charles	T13SR19E
245	F	29.7499	90.0735	Nutria	0	0	99	99	0	99	Jefferson	T15SR24E
258	I	29.8372	89.8393	Nutria/Storm	150	225	0	99	0	99	St. Bernard	T14SR14E
270	F	29.57606	91.19589	Nutria	0	0	99	99	0	99	Terrebonne	T17SR12E
274	F	29.5703	91.0831	Nutria	372	0	2	1	1	2	Terrebonne	T17SR14E
311	F	29.5571	90.9886	Nutria	538	0	1	1	1	2	Terrebonne	T17SR14E
344	F	29.5287	91.0210	Nutria	212	0	1	1	1	2	Terrebonne	T18SR14E
345	F	29.6147	90.5675	Nutria	130	0	3	1	1	2	Terrebonne	T17SR19E
349	B	29.5040	91.7900	Muskrat/Storm	798	0	0	2	1	2	Iberia	T17SR7E
352	B	29.5107	91.8470	Muskrat/Storm	80	186	0	99	0	99	Iberia	T18SR6E
357	B	29.8943	89.5686	Muskrat	0	0	99	99	0	99	St. Bernard	T13SR16E
358	B	29.9671	89.5335	Muskrat	0	0	99	99	0	99	St. Bernard	T12SR17E
368	B	29.5564	92.3396	Muskrat	0	0	99	99	0	99	Vermillion	T17SR1E
369	B	29.5584	92.3780	Muskrat	0	0	99	99	0	99	Vermillion	T17SR1E
380	I	29.5977	92.2108	Nutria	0	0	99	99	0	99	Vermillion	T16SR2E
386	F	29.8998	90.6210	Nutria	0	0	99	99	0	99	St. John the Baptist	T13SR18E
388	F	29.9509	90.5152	Nutria	0	0	99	99	0	99	St. Charles	T13SR19E
390	F	29.8843	90.4464	Nutria	165	0	1	1	1	2	St. Charles	T14SR20E

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAM	PREDICTION	PARISH	TOWNSHIP AND RANGE
392	F	29.7384	90.0757	Muskrat/Nutria	154	0	1	2	1	2	Jefferson	T15SR24E
393	I	29.8297	89.8138	Nutria	0	0	99	99	0	99	St. Bernard	T14SR14E
394	B	29.5638	92.2467	Muskrat	0	0	99	99	0	99	Vermillion	T17SR2E
395	B	29.5602	92.3132	Muskrat	0	0	99	99	0	99	Vermillion	T17SR1E
397	B	29.5427	91.7466	Muskrat	0	0	99	99	0	99	Iberia	T17SR7E
400	F	29.5802	91.1073	Nutria	622	0	2	2	2	2	Terrebonne	T17SR13E
402	F	29.8999	90.6206	Nutria	135	0	1	1	2	2	St. John the Baptist	T13SR18E
404	B	29.5417	91.8147	Muskrat	0	0	99	99	0	99	Iberia	T17SR6E
407	I	29.8542	91.7319	Muskrat	0	0	99	99	0	99	Cameron	T13SR14W
408	I	29.8950	93.2160	Muskrat	2228	3342	0	2	1	2	Cameron	T13SR8W
410	I	29.8315	93.1977	Muskrat/Storm	203	473	0	2	2	2	Cameron	T14SR8W
412	I	29.8444	93.0959	Muskrat	0	0	99	4	99	0	Cameron	T14SR7W
413	F	29.3947	91.0811	Nutria	0	0	99	99	0	99	Terrebonne	T19SR13E
414	F	29.5958	90.9506	Nutria	96	0	2	1	1	2	Terrebonne	T17SR15E
415	I	29.3774	90.8551	Nutria	0	0	99	99	0	99	Terrebonne	T19SR16E
416	F	29.9966	92.9456	Nutria	167	0	1	1	1	2	Cameron	T12SR6W
417	F	30.0709	92.9795	Nutria	81	0	1	1	1	2	Jefferson Davis	T11SR6W
418	F	29.5838	91.0138	Nutria	122	0	2	1	5	2	Terrebonne	T17SR14E
419	F	29.5939	91.0128	Nutria	293	0	1	1	5	2	Terrebonne	T17SR14E
420	F	29.6216	90.6456	Nutria	283	0	2	1	5	1	Lafourche	T17SR18E
421	F	29.5574	90.5127	Nutria	45	0	3	1	5	2	Lafourche	T17SR19E

Data Sheet utilized for 2007 nutria herbivory survey.

2007 NUTRIA VEGETATIVE DAMAGE SURVEY

DATE:_____
TRANSECT#:_____ PHOTOGRAPHY

MARSH TYPE:_____ FRAME #_____

LAT:_____ LAT:_____

LON:_____ LON:_____

LOCATION DESCRIPTION
ON TRANSECT_____
EAST OF TRANSECT_____
WEST OF TRANSECT_____ SITE#_____

DAMAGE TYPE

_____DAMAGE NOT RELATED TO NUTRIA FEEDING
_____DAMAGE - STORM RELATED
_____DAMAGE - MUSKRAT
_____DAMAGE – NUTRIA
_____DAMAGE – OTHER_____
_____DAMAGED AREA SUBJECT TO TIDAL ACTION:____YES____NO
_____**ESTIMATED SIZE OF AREA (ACRES)**

NUTRIA RELATIVE ABUNDANCE RATING

_____ NO NUTRIA SIGN VISIBLE (0)
_____NUTRIA SIGN VISIBLE (1)
_____ABUNDANT FEEDING (2)
_____ HEAVY FEEDING (3)

VEGETATIVE DAMAGE RATING

_____NO VEGETATIVE DAMAGE (0)
_____MINOR VEGETATIVE DAMAGE (1)
_____MODERATE VEGETATIVE DAMAGE (2)
_____SEVERE VEGETATIVE DAMAGE (3)
_____CONVERTED TO OPEN WATER (4)

NUTRIA VISIBLE IN AREA

_____WERE NUTRIA SIGHTED:_____YES_____NO
_____IF YES, HOW MANY?_____

PLANT SPECIES IMPACTED
PLANT SPECIES RECOVERING
PLANT SPECIES ADJACENT

AGE OF DAMAGE AND CONDITION

_____ RECOVERED (0)
_____OLD RECOVERING (1)
_____OLD NOT RECOVERING (2)
_____RECENT RECOVERING (3)
_____RECENT NOT RECOVERING (4)
_____CURRENT (OCCURRING NOW) (5)

PREDICTION OF RECOVERY BY END OF 2007 GROWING SEASON

_____NO RECOVERY PREDICTED (0)
_____FULL RECOVERY (1)
_____PARTIAL RECOVERY (2)
_____INCREASED DAMAGE (3) _____**CHECK NEXT YEAR**

CODES FOR NUTRIA HERBIVORY SURVEY DATA

[1]Marsh Type

Fresh	F
Intermediate	I
Brackish	B

[2]Nutria Relative Abundance Rating

No Nutria Sign Visible	0
Nutria Sign Visible	1
Abundant Feeding Sign	2
Heavy Feeding	3

[3]Vegetative Damage Rating

No Vegetative Damage	0
Minor Vegetative Damage	1
Moderate Vegetative Damage	2
Severe Vegetative Damage	3
Converted To Open Water	4

[4]Age of Damage and Condition

Recovered	0
Old Recovering	1
Old Not Recovering	2
Recent Recovering	3
Recent Not Recovering	4
Current (Occurring Now)	5

[5]Prediction of Recovery by End of 2007 Growing Season

No Recovery Predicted	0
Full Recovery	1
Partial Recovery	2
Increased Damage	3

99 – Entry does not apply to this site.