NUTRIA HARVEST DISTRIBUTION 2003-2004

And

A SURVEY OF NUTRIA HERBIVORY DAMAGE IN COASTAL LOUISIANA IN 2004

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 2003-2004

Introduction

Since 2001, Louisiana has lost approximately 22,000 acres of marsh to nutria vegetative damage. 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. As a result of these fur farm failures, 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 as well as 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. The agriculture damage became a serious problem with rice and sugarcane farmers complaining about damage to crops and levee systems, and 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 surpassed the muskrat in 1962 in total numbers harvested and became the backbone of the Louisiana fur industry for over 20 years. 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. In 1976 the harvest peaked at 1.8 million pelts worth $15.7 million to coastal trappers.

However, the market began changing during the early 1980's. In 1981-82, the nutria harvest dropped slightly below 1 million. This declining harvest continued for two more seasons, then in the 1984-85 season, the harvest jumped back up to 1.2 million. During the 1980-81 season, the average price paid for nutria was $8.19. During the 1981-82 season, the price dropped to $4.36 and then in 1982-83, the price dropped to $2.64. Between the 1983-84 season and the 1986-87 season, prices fluctuated between $3.00 and $4.00. Then in 1987-88 and again in 1988-89 prices continued to fall (Figure 1). From 1982 through 1992 the average annual value of the nutria harvest was only $2.2 million. Between 1988-89 and 1995-96 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 1996-97 and in 1997-98, 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 1998-99 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 pelts harvested in 2000-2001 trapping season increased to 29,544 nutria. The value of nutria pelts decreased to $1.75 during the 2001-2002 season that prompted another decrease in harvest to 24,683 nutria.

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 agriculture and wetlands that they inhabited. Reports of marsh vegetation damage from land managers became common again in 1988. Such complaints became more routine 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 conducted during the 90’s, with initial support from Barataria-Terrebonne National Estuary Program (BTNEP) and later support from Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), showed acreages of damage increasing from 60,000 to 100,000 acres. This increase in damaged acres prompted LDWF to pursue funding for the Coastwide Nutria Control Program (CNCP) in January 2002.

The project was 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 of origin of tails 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 I-10 east from the Texas state line to Baton Rouge, I-12 east from Baton Rouge to Slidell, and I-10 east from Slidell to the Mississippi state line. The project goal is to significantly reduce damage to coastal wetlands resulting from 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 of $4.00 for each nutria tail delivered to established collection centers.

This section reports on the Nutria Harvest Distribution for 2003-2004.

Methods

The application for the Coastwide Nutria Control Program (CNCP) was developed in July 2002 but was modified in June 2003 in order 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 Extension offices. In order for a participant to be qualified, the individual must have completed the application, obtained written permission from a landowner or land manager that had property in the program area, completed a W-9 tax form and provided 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 for 2003. 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 maintain the program database, collect the nutria tails and provide payments for tails to participants for the 2002-2003 season. The contract with CEI was extended to include the 2003-2004 season as well. Collection sites were established at Rockefeller Refuge, Abbeville, Morgan City, Houma, Luling and Chalmette. Collections were made once a week at each site, except for Rockefeller Refuge and Abbeville where collections were made once a month.

Louisiana's open trapping season began on November 20, 2003 and nutria tail collections began a week later. Collections were made in a 16x8 foot trailer with a freezer, sorting table and desk inside. 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 counted the tails turned in and verified with the participant that the count was correct. At that time, the CEI representative that counted tails placed the tails into a plastic garbage bag labeled with the participant's CNCP registration number and the number of tails contained in the bag. Another CEI representative filled out a voucher for the number of tails the participant turned in and checked to make sure the mailing address of the participant was correct. The CEI representative asked the participant questions concerning the nutria harvest including: 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. After the voucher was completed, the participant would sign and then indicate on a detailed map of their lease where the nutria were harvested. The CEI representative recorded township and range of harvest then wrote the number of nutria taken and the transaction number on the map. Using the hard copy voucher, the CEI representative entered all pertinent information into a laptop computer.

When storage for the tails in the trailer was full, a CEI representative transported the nutria tails to the BFI waste storage facility in Sorrento, Louisiana. The CEI representative had to check in at a guard station and have the vehicle containing the tails weighed. The tails were weighed and mixed with other waste by the BFI representative immediately upon arrival to the dump site. The BFI representative gave the CEI representative a receipt for the disposal of the tails. Copies of the receipts for all disposals made were supplied to LDWF.

At the end of the collection week, the maps and the voucher data were transferred to CEI's office in Baton Rouge. The hunted areas that were outlined on the lease maps were digitized into ArcView GIS 3.2a and the information in the database on the laptop was transferred to the main database at CEI. CEI sent a weekly report to LDWF detailing each transaction and included a map of that week's digitized hunted areas. After LDWF received a weekly report from CEI, 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, 2004 and nutria tail collections continued for a week into April. After the conclusion of the program, CEI provided all of the transaction information for the entire program from November to March. This final report includes all information recorded on the vouchers, the digitized hunted area, the nutria control program database and an ArcView 3.2 project with related information.

Results and Discussion

A total of 332,596 nutria tails, worth $1,330,384 in incentive payments, were collected from 346 participants. One-hundred fourteen participants (33%) turned in less than 200 tails, 68 participants (20%) turned in between 200 and 499 tails, 43 participants (12%) turned in between 500 and 799 tails and 121 participants (35%) turned in 800 or more tails. There were 22 parishes represented in the program with harvests ranging from 25 to 86,720 nutria. Approximately 86% of the harvest came from the southeast portion of

Louisiana. The percentage for each method of taking nutria was 48% trapping, 50% shooting with a rifle and 2% taken with a shotgun. February was the most active month for harvesting nutria (110,627 tails) while November (14,696 tails) was the least active month (Fig. 2).

Harvest by Marsh Type

Harvest data was compiled by fresh marsh, intermediate marsh, brackish marsh, salt marsh and other. The category of "other" included swamp, mixed forest and agriculture land types. Fresh marsh produced 48% of all of the nutria that were harvested during the program followed by 27% from intermediate marsh (Fig. 3). This was not a surprising statistic since the majority of the nutria damage in 2003 occurred in fresh (50%) and intermediate (37%) marsh.

The method of take was recorded for each participant transaction. Participants indicated what percentage of nutria they harvested by each method: trapped, shot with rifle and shot with shotgun. Shooting with a rifle was the most popular method of taking nutria in the intermediate marsh while trapping was the main method of harvest in the salt marsh. For the fresh and brackish marsh, the method of take was split near 50/50 for both trapping and hunting (Fig. 4). In fresh marsh 47% of the nutria were shot with a rifle and 50% were trapped. In intermediate marsh, 58% of the nutria were shot with a rifle and 41% were trapped. In brackish marsh, 51% of the nutria were taken with a rifle and 48% were trapped. In salt marsh, 89% of the nutria were trapped and 10% were taken with a rifle. Method of take in 2003-2004 differed from that in 2002-2003 and was most likely due to a change in the way the question concerning method of take was asked. In 2002-03, when a participant turned in tails, he was asked how the nutria were taken. All nutria turned in at that time would be lumped together under one method of take. In 2003-04, participants could indicate more than one method of take by giving a percentage of the nutria taken by each method.

The use or abandonment of the nutria carcasses was also recorded for each participant transaction. When an animal was used the choices were 1) percentage used for the meat and 2) percentage used for fur. When the carcass of the animal was abandoned the choices were 1) buried carcasses, 2) placed in heavy overhead vegetation or 3) placed in water. Most of the nutria were abandoned by burying them. The popularity of this method was most likely due to the fact that the substrate in the marsh was soft and participants pushed carcasses into the mud. In fresh marsh 16,198 of the nutria were used for fur while 7,206 nutria were used for their meat (Table 1). In the fresh marsh, the majority were buried. In intermediate marsh there was a greater rate of carcass use. Only 43,200 animals were abandoned while 50,585 were used for the fur and 47,043 were used for meat. Brackish marsh was similar to the results for the intermediate marsh. In brackish marsh, 11,006 nutria were abandoned while 13,927 nutria were used for fur and 12,980 nutria were used for meat.

All interested participants were supplied with 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. The reason for the high percentage of abandonment of animals in fresh marsh could be a factor of fur quality and economics. Fur quality in the fresh marsh could have been affected by "fourchette" damage which is caused by the seeds of Bidens laevis. The seed is 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. Participants with permission to take nutria in this habitat could have harvested the highest number of animals but not attempted to sell the fur due to poor pelt quality. The high amount of nutria vegetative damage found in the fresh marsh appears to confirm the higher density estimates in this habitat found in other studies. The intermediate marsh may have a lower density of animals but better pelt quality, therefore participants in this area could have turned in the carcasses to get the money for the meat and fur thereby increasing the value of each nutria. Since the participants in the fresh marsh area had to deal with "fourchette", they may have decided to harvest more nutria and abandon the carcass.

Harvest by Parish

There was a change in the parish where the most nutria were harvested. In 2002-03, 30% of the nutria were harvested in Terrebonne Parish, 20.5% in Plaquemines, 9.4% in Lafourche and 6.7% in Jefferson. However, during the 2003-04 harvest, 26.1% were harvested in Plaquemines, 21.9% in Terrebonne, 15.6% in Lafourche, 7.5% in Jefferson and 4.0% in St. Bernard (Table 2). In the 2003 Nutria Harvest Distribution and Vegetative Damage Survey (Marx et al.), 84% of the damaged acres found along the coast were in these five parishes. Since these five parishes made up the majority of the harvest, they will be the ones discussed in this section.

Terrebonne showed the greatest percentage of animals taken by trapping (44,419 nutria-61%) with 26,335 (36%) taken with a rifle (Table 3). Plaquemines Parish showed the greatest percentage of animals taken by shooting with a rifle (59%) and 40% trapped. The percentage of animals taken by trapping and shooting with a rifle in Jefferson Parish was 52% and 48%, respectively. The method of take in Lafourche Parish was 55% trapped and 44% taken with a rifle. In St. Bernard the preferred method of take was shooting with a rifle (58%) while trapping accounted for 41% of the harvest.

The use or abandonment of the carcass varied by marsh type but not necessarily by parish. The majority of the harvest in Terrebonne Parish came from fresh marsh so the majority of the carcasses were abandoned. In Plaquemines Parish, the majority of the nutria harvest took place in the intermediate marsh and most of the carcasses were used for meat and/or fur (Table 4). As stated in the marsh type section, fur quality and economics played a role in the use or abandonment of the carcass.

Harvest by Township

Nutria harvest was tracked by township in an attempt to determine if the harvest areas coincided with the damage sites as identified by the 2002 and 2003 Nutria Damage

Survey. Because a standard township contains 23,040 acres and damage sites and trapping/hunting leases are much smaller, it was determined in 2002-03 that tracking nutria harvest by township is not an effective method to determine if nutria are being harvested from damage sites. Therefore, more effective methods were used to track the harvest this year. During the 2003-2004 season, nutria harvest was tracked using participant leases with actual harvest areas indicated by participants.

Harvest by Damage Site

In the 2003 Vegetative Damage Survey, there were 84 damage sites including three sites that had converted to open water in 2003. Those three sites are not included in the 2004 analysis. Eighty-one damage sites from the 2003 damage survey were overlaid onto a map of the 2003-04 harvest areas in order to determine which damaged sites were hunted/trapped and which sites received no hunting/trapping. Of the 81 damage sites, 51 containing 17,409 acres received some level of trapping or hunting while the other 30 containing 4,406 acres did not. Appendix A contains the 2003 damage sites along with the amount of nutria that were harvested off of or near each site. A nutria was classified as being harvested from or near a damage site if it was harvested from an area which overlapped a damage site polygon.

Section 2

A SURVEY OF NUTRIA HERBIVORY DAMAGE IN COASTAL LOUISIANA IN 2004

Introduction

Herbivory damage was first noticed 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 damage region wide, (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 amounting to over 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, an extrapolated acreage of 77,408 acres across the study area. Of all the 1993 sites evaluated again in 1996, 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. A total of 23,960 acres (extrapolated coast wide estimate of 89,850 acres) of damaged wetlands were located at 170 sites along the survey transects. In 1999, the damaged increased to 27,356 acres (extrapolated coast wide estimate of 102,585 acres) located at 150 sites. In 2000, the damage slightly decreased to 25,939 (extrapolated coast wide estimate of 97,271 acres) located at 132 sites. In 2001, the damage decreased to 22,139 acres (extrapolated coast wide estimate of 83,021 acres) located at 124 sites. In the 2002 survey, the damage decreased again, but only slightly to 21,185 acres (extrapolated coast wide estimate of 79,444 acres) located at 94 sites. During the 2003 survey, funded as part of the CNCP, a total of 84 sites had some level of vegetative damage and covered a total of 21,888 acres (extrapolated coast wide estimate of 82,080 acres). The acres impacted coastwide from 1998 to 2003 range from 79,444 to 102,585 acres. The extrapolated coastwide estimate is derived by multiplying the observed acres by 3.75 to account for area not visible from the transect lines.

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 to102,585 acres of marsh damaged was conservative because only the worse (most obvious) can be detected from aerial surveys. The 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 three 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 coastwide aerial surveys during spring/summer to document the current year impact of nutria herbivory. Survey techniques followed Linscombe and Kinler (1997), and the survey was conducted in the spring of 2004. Results were analyzed and the numbers of acres impacted or recovered were determined.

This section reports on the 2004 Coastwide Nutria Herbivory Survey.

Methods

A coast wide nutria herbivory survey was conducted on April 21-23, 27 and May 5-8, 10-12, 2004. North-South transects were flown throughout the fresh, intermediate and brackish marshes of coastal Louisiana. Parishes included in the survey were Cameron, Vermilion, St. Mary, Terrebonne, Lafourche, Jefferson, Plaquemines, St. John, St. Charles, St. Bernard, Orleans, St. Tammany and Tangipahoa Parishes. 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 about1/4 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 (Figure 5):

1) Location of each site was determined by recording latitude and longitude utilizing GPS equipment. A differential GPS (Trimble Ag 124) was utilized to allow for accurate location of damaged sites. The software used was GPS View, operating in ArcView 3.2. The size of each damage site was recorded by logging polygons using stream digitizing with the GPS equipment.

2) The abundance of nutria was classified 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 classified 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 classified 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 2004 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

In spring 2004, a coast wide aerial survey was conducted covering the coastal parishes of Louisiana. The total number of sites visited in 2004 was ninety-three of which twelve were new sites in 2004 and eighty-one were previously classified as damaged in the 2003 survey. Three damage sites that had converted to open water in 2003 were not visited during the 2004 survey. Of the eighty-one sites previously identified as having nutria damage, only fifty-seven were identified as still having visible nutria herbivory impacts

and twenty-four sites were classified as recovered (Table 5). The following discussion details the sixty-nine sites that had nutria damage.

A total of 16,906 acres (extrapolated to 63,397 acres coastwide) were impacted by nutria feeding activity along transects (Table 6) as compared to 21,888 acres in 2003 (extrapolated 82,080 acres coast wide). This is a significant reduction in the number of acres impacted by nutria. Of the sixty-nine sites showing impact, Terrebonne Parish contained the majority of damage with twenty-seven sites (39 %) and damaged acres 7,679 (45 %), which was a decrease from 34 sites and 12,521 acres in 2003, indicating that a number of sites have recovered in Terrebonne Parish. Lafourche Parish had a decrease in acreage from 2003 as well and accounted for five sites (7 %) and 381 acres (2%) of damaged marsh in 2004 versus 7 sites and 610 acres in 2003. Nine sites (13 %) and 1,718 acres (10%) were located in Jefferson Parish. Plaquemines accounted for seven sites (10 %) and 2,494 acres (15 %). St. Bernard Parish had only five sites (7%) with 1,035 acres (6%) impacted. St. Charles parish had a large increase in the amount of damage with 2,564 acres (15%) on nine damage sites (13%) in 2004 versus 1,266 acres on 6 damage sites in 2003. Smaller amounts of damaged wetlands were located in Vermilion, St. Tammany and St. John parishes. Terrebonne, Jefferson, St. Charles and Plaquemines, are the parishes most affected by nutria herbivory.

Marsh vegetative type (based on the Linscombe and Chabreck 2001 survey) was recorded at each damage site (Table 7). Fresh marsh continued to be the most affected by nutria herbivory with thirty-seven sites (54 %) covering 10,565 acres (63 %). Intermediate marsh contained twenty-five sites (36 %) accounting for 5,128 of the damaged acres (30 %). Brackish marsh had only seven sites (10 %) and 1,213 damaged acres (7 %). The typical vegetation impacted in fresh marsh was Eleocharis spp. and Hydrocotyle spp., while Scirpus olneyi and Eleocharis spp. were commonly impacted species in intermediate and brackish marshes.

The NRAR is used to classify the abundance of nutria at a site (Table 8). The categories were: (0) no nutria sign visible, (1) nutria sign visible, (2) abundant feeding sign, and (3) heavy feeding sign. During the 2004 survey, fourteen sites (20 %) covering 3,589 acres (21 %) showed no nutria sign visible. Twenty-nine sites (42 %) covering 6,040 acres (36 %) showed nutria sign visible. Nineteen sites (28 %) covering 5,251 acres (31 %) had abundant feeding signs and seven sites (10 %) covering only 2,026 acres (12 %) had heavy feeding signs. The number of heavy feeding sites was down considerably, fourteen sites covering 5,599 acres in 2003. The number of sites with nutria sign visible was up, twenty-six sites over 3,562 acres in 2003. The increase in the nutria sign visible category is most likely due to the reduction in the number of sites with heavy feeding sign.

The vegetative damage rating was developed in order to classify damage to vegetation by nutria (Table 9). The vegetative damage rating (VDR) has five categories. They are as follows: (0) no vegetative damage, (1) minor vegetative damage, (2) moderate vegetative damage, (3) severe vegetative damage, (4) converted to open water. Thirty-five sites (51 %) covering 6,675 acres (40 %) were classified as having minor vegetative damage in

2004 as compared to twenty-six sites covering 8,732 acres in 2003. Twenty-nine sites (42 %) covering the majority of the acreage, 9,536 acres (56 %), had moderate vegetative damage in 2004 as compared to forty-one sites covering 3,862 acres in 2003. The classification of severe vegetative damage, which has the best chance of being converted to open water had only four sites (6 %) covering only 675 acres (4 %) in 2004. The number of severe vegetative damage sites and acreage decreased dramatically, fourteen sites covering 3,862 acres in 2003. It is very encouraging that the worst category, converted to open water, had only one site and covered only 20 acres in 2004 versus three sites covering 73 acres in 2003.

The age of damage and condition rating was used to characterize each of the damage sites (Table 10). The six classifications included (1) current damage, (2) recent damage-recovering, (3) recent damage not recovering, (4) old damage-recovering, (5) old damage-not recovering, and (0) recovered. During the 2004 survey, nine sites comprising 1,615 acres were classified as having current, ongoing nutria herbivory impacts, which was a little less than the 2003 figure. A promising observation was in the category of old recovering which had fifty-three sites containing 12,338 acres, similar to the 2003 figure. Only a few sites (six covering 2,918 acres) were classified as old damage and not recovering in 2004 as compared to twenty sites over 5,448 acres in 2003. A total of twenty-four sites, comprising 6,049 acres, out of the ninety-three sites visited were classified as recovered.

For each site with current damage, the degree of recovery by the end of the 2004 growing season was predicted (Table 11). These ratings were (1) full recovery, (2) partial recovery, (3) increased damage and (4) no recovery predicated. The majority of the sites were projected to recover partially by the end of the 2004 growing season (fifty sites and 13,440 acres) which was similar to the 2003 survey. For three sites, containing 317 acres, including one converted to open water site, no short term recovery was predicted. Ten sites were predicted to fully recover by next year, while six damaged sites were predicted to worsen. The acreage predicted to fully recover was down drastically from 2003. This reduction could be from the high number of recovered sites during the 2004 survey.

During the survey, several marsh areas that were damaged by muskrat were observed. Information was also collected for the muskrat damage sites. In addition to the 84 nutria damage sites, a total of thirteen muskrat damage sites were observed totaling 5,768 acres. This is a reduction in the number of sites and acres from last year. A vegetative damage rating was collected for these sites: six sites had minor vegetative damage covering 741 acres; four sites covering 1,508 acres had moderate vegetative damage and three sites covering 3,519 acres showed severe vegetative damage. The severe vegetative damage sites were in southern Vermilion parish and have a long history of damage and recovery.

Conclusion

The 2004 vegetative damage survey yielded a total of 16,906 acres of damage along transect lines. This figure, when extrapolated, shows that 63,397 acres were impacted at

any one time coastwide. When compared to 2003 (21,888 acres or 82,080 acres extrapolated coastwide), this was a 22.8 % decrease in the number of damaged acres in 2004. The recovered sites in 2004 had a combined acreage of 6,049.

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. The overwhelming bulk of the damage is located in southeastern Louisiana with only isolated small areas of damage in southwestern Louisiana (Appendix B).

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 in the following year, and if that site is in an intermediate or brackish marsh, it could convert to open water.
3. A similar pattern has emerged regarding the nutria relative abundance rating (NRAR). The lower the NRAR, the better chance a damage site has to recover.

These findings strongly support the need for the CNCP to facilitate significantly higher nutria harvest than would be present without such a program. During the 2004 survey, there were thirty-five sites that were rated as having minor damage. Of these thirty-five minor damage sites, seven (1,669 acres) had no nutria sign visible and fourteen (2,072 acres) had nutria sign visible. The other fourteen sites (2,934 acres) had abundant feeding sign. So if the recovery for next season follows the same pattern, twenty-one sites with little or no nutria sign visible have the best chance to recover.

Another significant finding in 2004 is that in this year's survey only four sites (675 acres) had severe vegetative damage and only one site (twenty acres) converted to open water. This is a reduction of 82.5% in the amount of severe damage from last year. Over two years, the amount of conversion to open water has been reduced by 98%.

Finally, fifty-six percent of the damage is still rated as moderate damage. Of the twenty-nine sites that had moderate damage, eleven of those had abundant or heavy feeding signs. These sites should have a concentrated effort to remove nutria from the area to prevent further deterioration of the marsh. Fifty of the sites are predicted to partially recover by the end of the growing season of 2004.

The CNCP has demonstrated its impact on nutria populations in problem areas of coastal Louisiana by drastically increasing harvests to over 300,000 animals. Through time this increase in harvest should result in fewer acres impacted in these coastal areas.

Section 3

CNCP: Summary of 2003-2004 and Adaptive Management for 2004-2005

Nutria herbivory is playing a role in the coastal marshes of Louisiana, with a coastwide estimate of 63,000 impacted acres during 2004. Direct vegetation removal can contribute to permanent loss of vegetated wetlands, however, vegetative loss is not the only impact observed. Nutria are currently, and are suspected to have historically, played a major role in affecting plant species composition throughout the coast. The initiation and implementation of the CNCP has dramatically increased the trapping effort in coastal Louisiana especially in areas of damage. In the three trapping seasons prior to the CNCP, less than 25,000 nutria were harvested per year in the coastal zone. Hopefully, by contacting more participants and landowners, all of the current damage sites will have some degree of harvest pressure on them by the end of the 2004-2005 harvest season. This increased trapping/hunting pressure should, over time, decrease the amount and severity of damage along the Louisiana coast. The annual Coastwide Nutria Damage Survey will be used to determine if increased trapping pressure will result in reduced damage.

During the 2003-04 CNCP, the majority of the harvest came from the parishes in the southeast Louisiana. It is these same parishes that contain the majority of the current nutria damage. Terrebonne, Lafourche, Jefferson, Plaquemines, and St. Charles have the bulk of the nutria damage and the harvest efforts should be continued in these areas and increased by contacting and informing landowners and land managers.

Of the eighty-one damage sites for 2003, fifty-one sites (17,409 acres) received some level of trapping/hunting. A total of 65,248 nutria (20% of total) were harvested on or adjacent to those fifty-one damaged sites. In 2003-2004, the requirement for more complete land descriptions and maps outlining property boundaries allowed a more accurate determination of whether nutria were harvested on or near damage sites. This requirement also helped assure that the participant was indicating a take from his registered lease and not accidentally indicating a harvest where none occurred. Although a significant portion of the harvest came from areas without visible nutria damage, the harvest was undoubtedly beneficial with the number of damage sites and damage acres decreasing from previous years. Additionally, as mentioned in section two, only the most obvious damage areas can be seen during the aerial survey. As shown in previous exclosure studies, nutria had an impact on vegetation even in areas where no visible damage was seen.

The 2004 Nutria Damage Survey identified 69 nutria impact sites covering 16,906 acres, yielding a coastwide estimate of approximately 63,000 acres impacted compared to 2003 with 84 sites covering 21,888 acres and a coastwide estimate 82,000 acres impacted. In 2004, fresh marsh was still the most affected marsh type with over 50% of the total acreage impacted. Terrebonne Parish still has the most nutria damage followed by St. Charles and Plaquemines Parishes.

In 2004, there were only four damage sites displaying severe damage as compared to fourteen sites in 2003. It was generally observed that the overall health of the marsh in 2004 was improved from 2003. This improved condition and decreased severity of nutria damage cannot specifically be attributed to the CNCP because this year was the first with precise harvest location information. However with more precise harvest locations each year, the comparison of individual damage sites will be attempted. LDWF continues to predict that three to four years of sustained harvest will be necessary to produce a noticeable reduction in nutria damage.

While the severity of nutria damage decreased in 2003 as well as in 2004, it should be noted that large areas of Scirpus olneyi were observed in the southwestern portion of the coastal zone, along with isolated populations of muskrat and nutria. These areas need to be monitored for a potential population increase in nutria and muskrat. Given time and the right conditions, nutria and muskrat may respond to this increase in desirable vegetation in the southwest.

Because tracking the 2002-2003 harvest at a township level did not allow a determination whether nutria were being harvested from or near damage sites, the 2003-2004 harvest was tracked a lease level. This method of tracking the harvest allowed a determination of whether damage sites received hunting/trapping pressure versus those damage site which received no nutria harvest.

As with last year's damage sites, LDWF will contact landowners that have 2004 nutria damage sites on their property. Landowners will be supplied with an application as well as a map showing the location of the damage sites. A special effort will be made to encourage trapping/hunting in the vicinity of damage sites which did not experience trapping/hunting in 2003-2004. LDWF will also send out applications to all participants who submitted applications over the last two years. Participants with 2004 damage sites on their registered property will be supplied with a map of their lease along with where the nutria damage is located. LDWF will coordinate with trappers and fur buyers / dealers to encourage the maximum use of the entire animal.

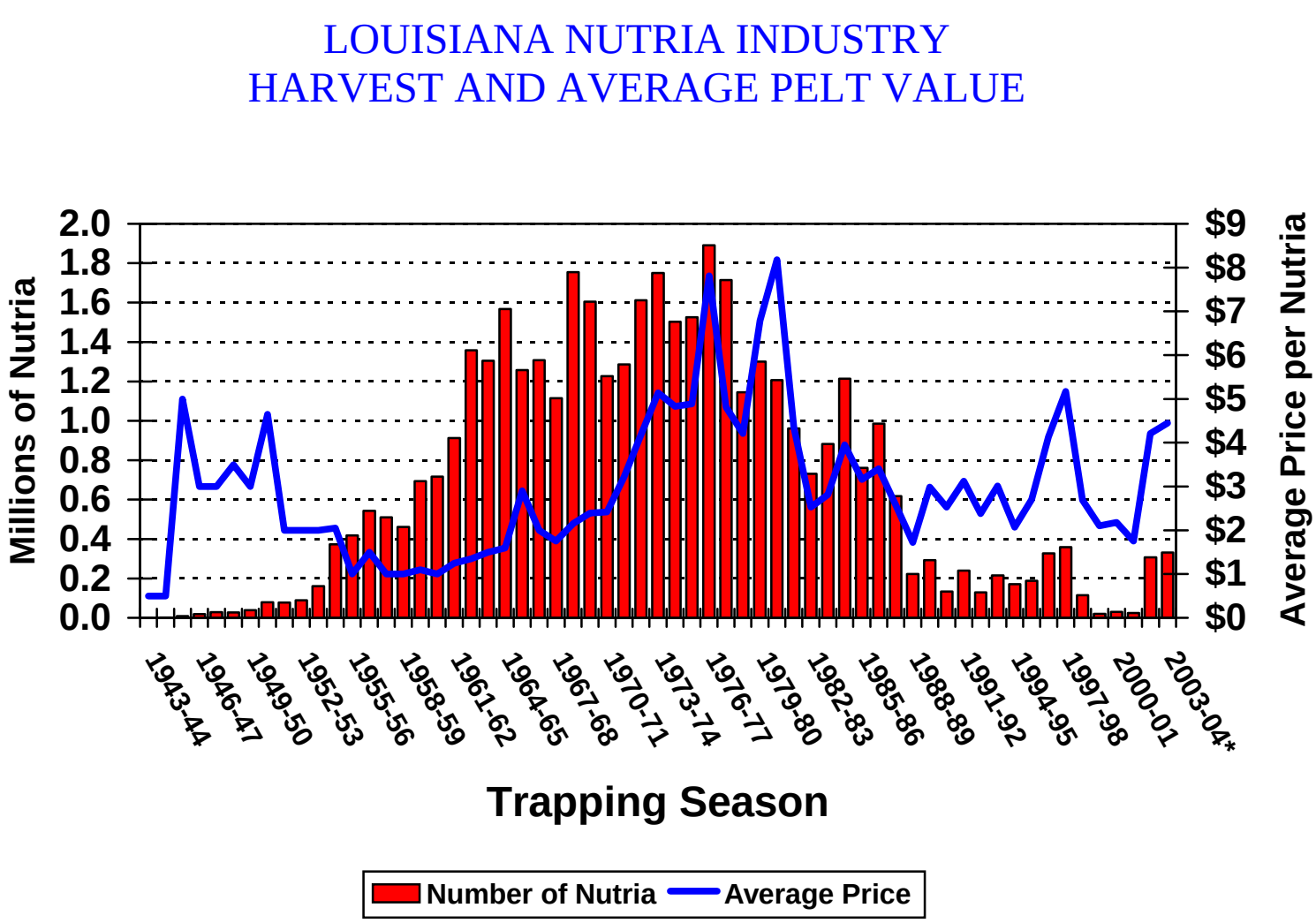


Figure 1. Annual harvest and average price of nutria from 1965-2004.
* This figure includes the CNCP $4.00 incentive payment that began in 2002-2003.

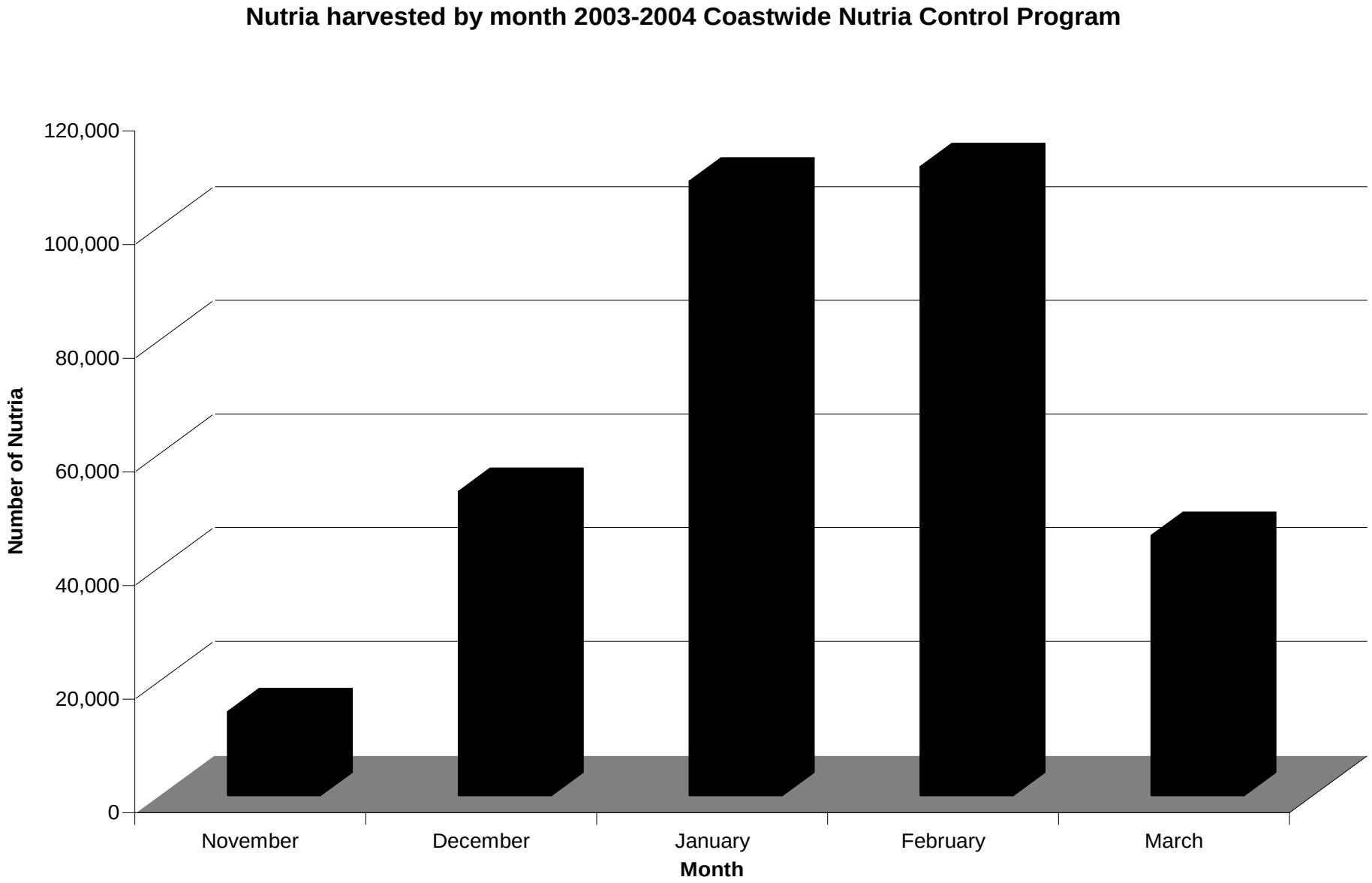


Figure 2. The number of nutria tails harvested by month as indicated by participants during the 2003-2004 Coastwide Nutria Control Program.

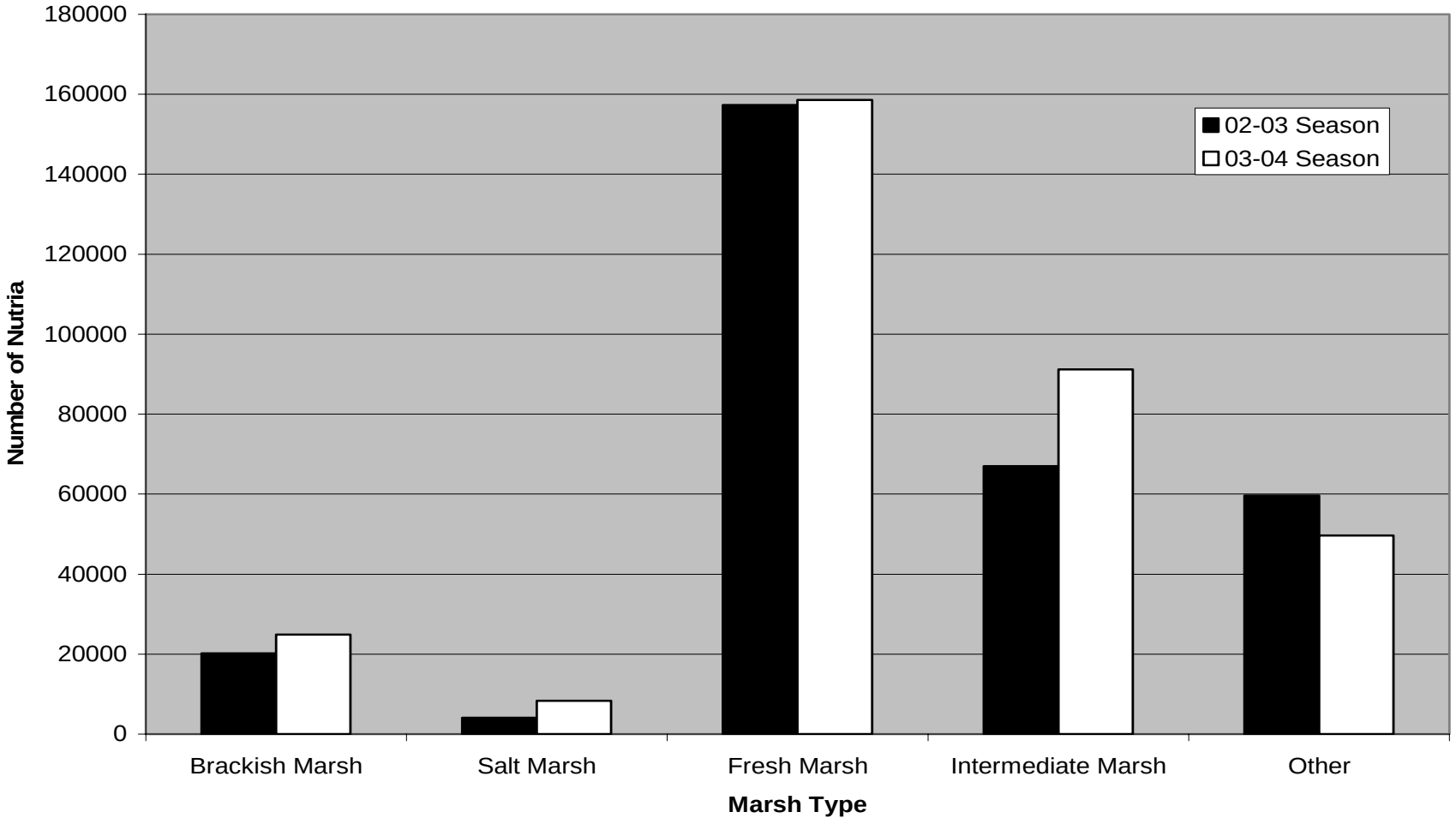


Figure 3. Number of nutria taken by marsh type from coastal Louisiana during the 2002-2003 and 2003-2004 Coastwide Nutria Control Program.

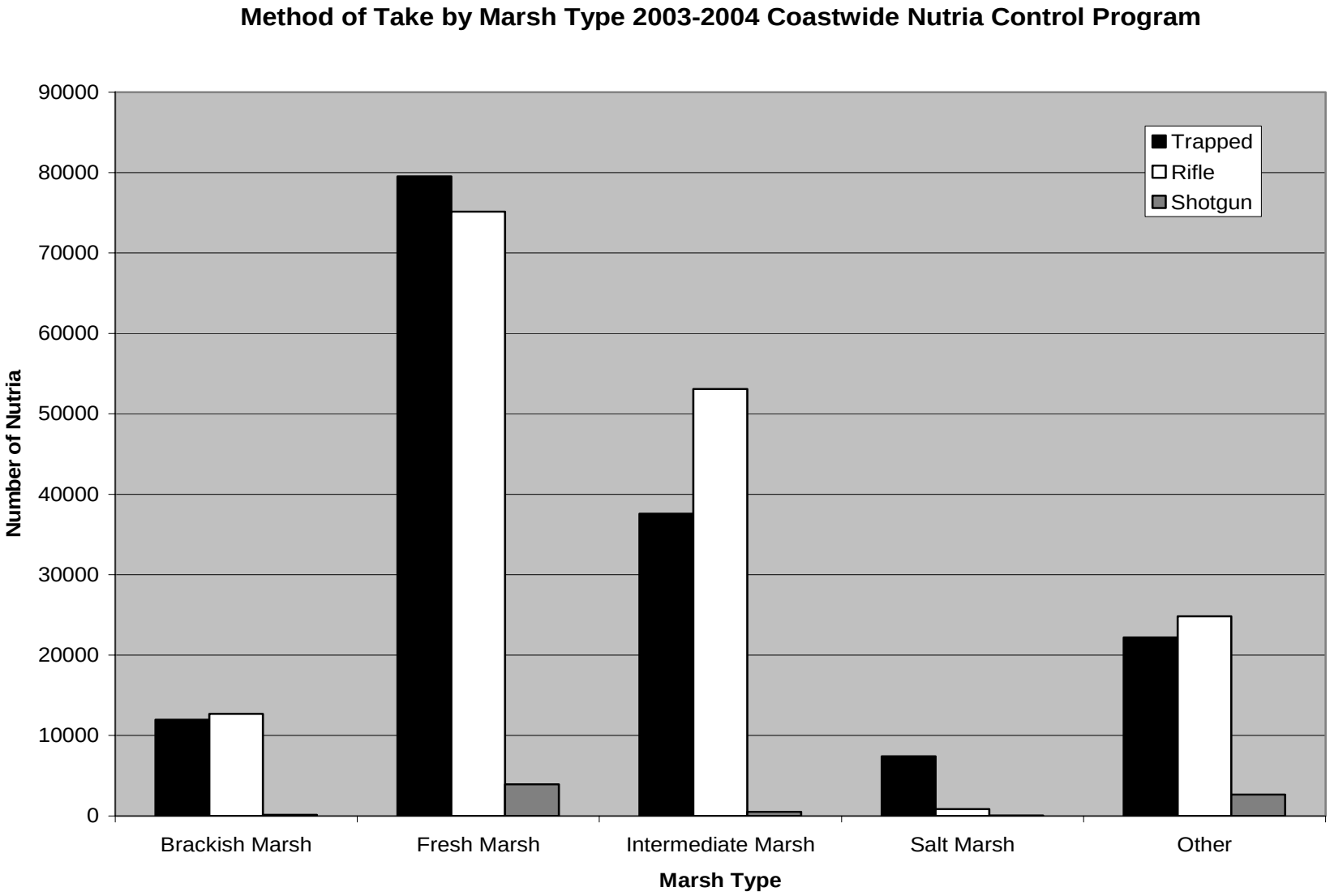


Figure 4. The method of take by marsh type during the 2003-2004 Coastwide Nutria Control Program.

Figure 5. Data Sheet utilized for 2004 nutria herbivory survey.

2004 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 2004 GROWING SEASON

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

Table 1. Carcass use by marsh type for 2003-2004 Coastwide Nutria Control Program.

MARSH TYPE	Meat	Fur	Abandon Buried	Abandon Vegetation	Abandon Water
Fresh	7,206	16,198	104,198	43,194	3,481
Intermediate	47,043	50,585	29,296	12,991	913
Brackish	12,980	13,927	8,488	2,377	141
Salt	4,566	4,802	2,183	1,458	0
Other	1,952	5,268	30,798	14,950	1,536
Total	73,747	90,780	174,963	74,970	6,071

Table 2. Nutria harvested by parish for the 2002-2003 and 2003-2004 Coastwide Nutria Control Program.

PARISH	2002-2003		2003-2004	
	Nutria Harvested	Percentage	Nutria Harvested	Percentage
Ascension	2,710	0.9%	5,474	1.6%
Assumption	3,128	1.0%	814	0.2%
Calcasieu	143	-	374	0.1%
Cameron	7,851	2.6%	8,701	2.6%
Iberia	1,412	0.5%	1,960	0.6%
Iberville	0	-	1,567	0.5%
Jefferson	20,529	6.7%	24,896	7.5%
Jefferson Davis	121	-	85	-
Lafayette	39	-	25	-
Lafourche	28,852	9.4%	51,736	15.6%
Livingston	2,631	0.9%	357	0.1%
Orleans	597	0.2%	0	-
Plaquemines	63,208	20.5%	86,720	26.1%
St. Bernard	5,769	1.8%	13,344	4.0%
St. Charles	11,169	3.6%	12,672	3.8%
St. James	95	-	487	0.2%
St. John the Baptist	18,450	6.0%	6,137	1.8%
St. Martin	11,425	3.7%	15,039	4.5%
St. Mary	26,004	8.4%	16,277	4.9%
St. Tammany	4,638	1.5%	3,756	1.1%
Tangipahoa	1,245	0.4%	745	0.2%
Terrebonne	92,831	30.1%	72,846	21.9%
Vermilion	5,313	1.7%	8,584	2.6%
Total	308,160	99.9%	332,596	99.9%

Table 3. Method of take by parish for the 2002-2003 and 2003-2004 Coastwide Nutria Control Program.

PARISH	2002-2003			2003-2004		
	Trapped	Rifle	Shotgun	Trapped	Rifle	Shotgun
Ascension	0	2,306	404	0	4,093	1,381
Assumption	284	2,786	58	47	767	0
Calcasieu	0	143	0	0	374	0
Cameron	3,611	4,210	30	4,974	3,639	89
Iberia	0	1,353	59	636	1,324	0
Iberville	0	0	0	717	850	0
Jefferson	5,869	14,094	566	12,991	11,835	70
Jefferson Davis	121	0	0	85	0	0
Lafayette	19	10	10	0	25	0
Lafourche	11,807	16,826	219	28,516	22,780	440
Livingston	0	2,631	0	0	336	21
Orleans	287	219	91	0	0	0
Plaquemines	9,899	52,933	376	34,683	51,302	735
St. Bernard	2,877	2,892	0	5,412	7,783	149
St. Charles	2,099	8,706	364	2,801	9,543	329
St. James	48	47	0	97	350	40
St. John the Baptist	1,505	11,132	5,813	2,517	2,200	1,420
St. Martin	1,497	9,593	335	5,784	8,790	465
St. Mary	11,073	14,849	82	6,616	9,619	42
St. Tammany	3,088	1,529	21	2,687	1,069	0
Tangipahoa	335	894	16	577	169	0
Terrebonne	46,761	45,317	753	44,419	26,335	2,092
Vermilion	2,370	2,729	214	5,119	3,435	30
Total	103,550	195,199	9,411	158,678	166,618	7,303

Table 4. Carcass use by parish for the 2003-2004 Coastwide Nutria Control Program.

PARISH	2003-2004				
	Meat	Fur	Abandon Buried	Abandon Vegetation	Abandon Water
Ascension	0	0	2,941	1,810	723
Assumption	0	0	566	137	111
Calcasieu	0	0	374	0	0
Cameron	1,412	3,469	4,101	2,779	249
Iberia	589	484	427	944	0
Iberville	50	59	732	776	0
Jefferson	1,883	1,323	13,183	9,248	446
Jefferson Davis	85	85	0	0	0
Lafayette	0	0	25	0	0
Lafourche	8,459	13,705	30,328	10,942	1,670
Livingston	0	0	357	0	0
Plaquemines	42,347	48,346	30,809	12,341	314
St. Bernard	9,153	9,182	3,374	536	0
St. Charles	194	1,130	9,113	3,058	290
St. James	0	0	358	0	129
St. John the Baptist	543	0	3,240	1,736	618
St. Martin	626	708	9,771	4,206	256
St. Mary	2,140	2,415	9,555	4,377	105
St. Tammany	1,912	2,111	1,351	390	141
Tangipahoa	625	34	236	0	0
Terrebonne	2,687	4,861	48,943	20,163	970
Vermilion	1,043	2,868	5,180	1,529	50
Total	73,748	90,780	174,964	74,972	6,072

Table 5. Status and number of nutria herbivory sites surveyed in 2002 -2004.

Year	Number of sites surveyed	Number of sites with current damage	Sites with vegetative recovery
2002	108[1]	94	12
2003	100	84	16
2004	93	69	24

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

Table 6. Number of damaged sites and acres damaged along transects by parish in coastal Louisiana, 2002 - 2004.

PARISH	2002		2003		2004	
	Number of		Number of		Number of	
	Sites	Acres	Sites	Acres	Sites	Acres
Terrebonne	41	12,951	34	12,521	27	7,679
Lafourche	8	1,222	7	610	5	381
Jefferson	17	3,003	10	1,805	9	1,718
Plaquemines	10	882	13	2,540	7	2,494
St. Charles	6	768	6	1,266	9	2,564
Cameron						
St. Bernard	6	921	5	918	5	1,035
St. John			1	20	2	111
Iberia						
St. Tammany	4	752	2	360	0	0
Orleans	2	686	2	962	0	0
St. Mary						
Vermilion			4	886	5	924
Total	94	21,185[1]	84	21,888[1]	69	16,906[1]

[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.

Table 7. Number of damaged sites and acres damaged by marsh type along transects in coastal Louisiana during 2002 to 2004.

HABITAT TYPE	2002		2003		2004	
	NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES
Fresh	41	11,593	36	10,871	37	10,565
Intermediate	39	7,416	31	8,086	25	5,128
Brackish	14	2,176	17	2,931	7	1,213
Total	94	21,185	84	21,888	69	16,906

Table 8. Number of nutria damage sites and acres damaged by revised nutria relative abundance rating in coastal Louisiana during 2002 to 2004.

NUTRIA RELATIVE ABUNDANCE RATING	2002		2003		2004	
	NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES
NO NUTRIA SIGN VISIBLE	29	7,040	25	6,045	14	3,589
NUTRIA SIGN VISIBLE	31	4,379	26	3,562	29	6,040
ABUNDANT FEEDING	17	4,198	19	6,682	19	5,251
HEAVY FEEDING	17	5,568	14	5,599	7	2,026
TOTAL	94	21,185	84	21,888	69	16,906

Table 9. Number of nutria damage sites and number of acres by the vegetative damage rating in coastal Louisiana 2002 to 2004.

VEGETATIVE DAMAGE RATING	2002		2003		2004	
	NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES
NO VEGETATIVE DAMAGE	1	30	0	0	0	0
MINOR VEGETATIVE DAMAGE	28	3,498	26	8,732	35	6,675
MODERATE VEGETATIVE DAMAGE	44	13,156	41	9,221	29	9,536
SEVERE VEGETATIVE DAMAGE	13	3,451	14	3,862	4	675
CONVERTED TO OPEN WATER	8	1,050	3	73	1	20
TOTAL	94	21,185	84	21,888	69	16,906

Table 10. Number of damage sites by age of damage and condition rating in coastal Louisiana in 2002 to 2004.

AGE OF DAMAGE AND CONDITION RATING	2002		2003		2004	
	NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES
Old Recovering	51	7,694	51	14,382	53	12,338
Old Not Recovering	39	12,499	20	5,448	6	2,918
Recent Recovering	0	0	0	0	1	35
Recent Not Recovering	0	0	0	0	0	0
Current Damage	4	992	13	2,058	9	1,615
Total	94	21,185	84	21,888	69	16,906
Recovered	12	1,119	16	1,674	24	6,049

Table 11. Number of damage sites and acres damaged by prediction of recovery rating in coastal Louisiana in 2002 to 2004.

PREDICTION OF RECOVERY BY END OF GROWING SEASON	2002		2003		2004	
	NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES
Full Recovery	7	919	8	4,238	10	338
Partial Recovery	59	13,950	64	14,497	50	13,440
Increased Damage	5	1,086	6	1,646	6	2,811
No Recovery Predicated	15	4,180	3	1,434	2	297
*****Converted to Open water	8	1,050	3	73	1	20
TOTAL	94	21,185	84	21,888	69	16,906

*Sites that have “Converted to Open Water” are considered to be in the “No Recovery Predicted” category.

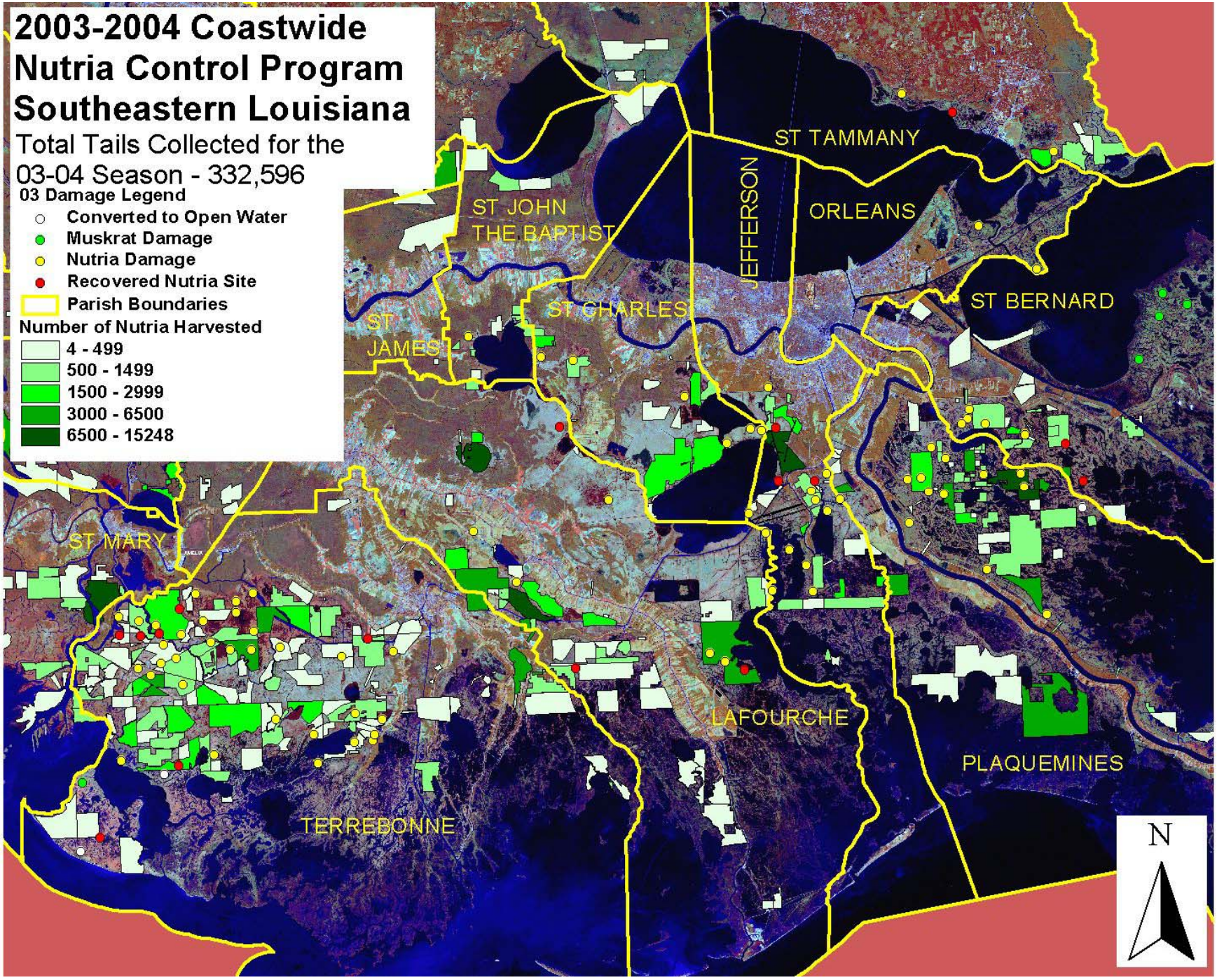
APPENDIX A. 2003 Nutria vegetative damage sites with tails harvested.

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	PARISH	TOWNSHIP AND RANGE	NUTRIA HARVESTED BY SITE
8	F	29.56970	-91.16380	Nutria Damage Site	780	0	Terrebonne	T17SR13E	501
9	F	29.56433	-91.13733	Nutria Damage Site	260	0	Terrebonne	T17SR13E	2,732
10	I	29.35900	-91.12783	Converted to Open Water	0	48	Terrebonne	T20SR13E	0
17	F	29.53970	-91.05040	Nutria Damage Site	604	0	Terrebonne	T18SR14E	1,002
39	F	29.81850	-90.15083	Recovered Nutria Site	5	0	Jefferson	T14SR23E	662
40	I	29.81550	-90.17400	Nutria Damage Site	123	0	St Charles	T14SR23E	0
49	B	29.64969	-90.13397	Nutria Damage Site	200	0	Jefferson	T16SR23E	0
60	I	29.71800	-90.05267	Nutria Damage Site	258	0	Jefferson	T16SR24E	0
92	I	29.70200	-90.07333	Nutria Damage Site	687	0	Jefferson	T16SR24E	0
94	F	29.86470	-90.29470	Nutria Damage Site	308	0	St Charles	T14SR21E	2,604
95	I	29.49350	-90.47650	Recovered Nutria Site	500	0	Lafourche	T18SR20E	641
97	I	29.70120	-90.19650	Nutria Damage Site	151	0	Jefferson	T16SR22E	66
104	F	29.40983	-90.89017	Nutria Damage Site	30	0	Terrebonne	T19SR15E	215
105	I	29.36983	-90.88450	Nutria Damage Site	3070	0	Terrebonne	T19SR15E	48
107	F	29.53050	-90.94200	Nutria Damage Site	25	0	Terrebonne	T18SR15E	50
108	F	29.43117	-90.94967	Nutria Damage Site	50	0	Terrebonne	T19SR15E	476
109	F	29.52817	-90.98634	Nutria Damage Site	100	0	Terrebonne	T18SR14E	5,978
111	I	29.39783	-90.82633	Nutria Damage Site	20	0	Terrebonne	T19SR16E	93
112	I	29.40067	-90.79716	Nutria Damage Site	20	0	Terrebonne	T19SR16E	0
113	F	29.54033	-90.80253	Recovered Nutria Site	25	0	Terrebonne	T18SR16E	539
117	F	29.38460	-91.04790	Nutria Damage Site	572	0	Terrebonne	T19SR14E	931
120	F	29.60583	-91.07284	Nutria Damage Site	1000	0	Terrebonne	T17SR14E	1,455
127	F	29.54855	-91.16078	Recovered Nutria Site	42	0	Terrebonne	T17SR13E	44
138	F	29.58583	-91.09917	Recovered Nutria Site	30	0	Terrebonne	T17SR13E	1,060
139	F	29.55100	-91.09650	Nutria Damage Site	106	0	Terrebonne	T17SR13E	2,732
140	F	29.48183	-91.09566	Nutria Damage Site	461	0	Terrebonne	T18SR13E	967
142	F	29.59490	-91.00900	Nutria Damage Site	301	0	Terrebonne	T17SR14E	0
153	I	29.40883	-90.79500	Nutria Damage Site	50	0	Terrebonne	T19SR16E	121
154	F	29.52184	-90.76283	Nutria Damage Site	294	0	Terrebonne	T18SR17E	1,081
164	I	29.48583	-90.20917	Recovered Nutria Site	100	0	Lafourche	T18SR22E	0

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	PARISH	TOWNSHIP AND RANGE	NUTRIA HARVESTED BY SITE
170	F	29.82733	-90.49300	Recovered Nutria Site	100	0	Lafourche	T14SR19E	0
171	F	29.91920	-90.46960	Nutria Damage Site	634	0	St Charles	T13SR20E	665
177	F	29.74400	-90.09200	Recovered Nutria Site	523	0	Jefferson	T15SR23E	0
178	I	29.71733	-90.09117	Nutria Damage Site	97	0	Jefferson	T16SR23E	600
223	B	29.25370	-91.26130	Converted to Open Water		5	Terrebonne	T21SR12E	
227	B	29.27230	-91.22970	Recovered Nutria Site	26	0	Terrebonne	T21SR12E	113
233	F	29.60630	-90.98210	Nutria Damage Site	357	0	Terrebonne	T17SR14E	0
238	F	29.92470	-90.52030	Nutria Damage Site	105	0	St Charles	T13SR19E	0
242	B	29.59390	-90.16320	Nutria Damage Site	25	0	Lafourche	T17SR23E	334
244	I	29.73080	-90.09700	Nutria Damage Site	54	0	Jefferson	T15SR23E	567
245	F	29.75400	-90.07240	Nutria Damage Site	281	0	Jefferson	T15SR24E	410
248	I	29.72890	-89.76150	Nutria Damage Site	35	0	Plaquemines	T15SR14E	15,248
250	I	29.78660	-89.90640	Nutria Damage Site	1214	0	Plaquemines	T14SR13E	2,693
252	I	29.74550	-89.92383	Nutria Damage Site	100	0	Plaquemines	T15SR13E	1,591
256	I	29.77060	-89.88370	Nutria Damage Site	292	0	Plaquemines	T15SR13E	348
258	I	29.83730	-89.84390	Nutria Damage Site	396	0	St Bernard	T14SR13E	1,072
259	I	29.82450	-89.84700	Nutria Damage Site	149	0	St Bernard	T14SR13E	0
260	I	29.81860	-89.85650	Nutria Damage Site	277	0	St Bernard	T14SR13E	0
264	B	29.69680	-89.67040	Converted to Open Water	21	20	Plaquemines	T16SR15E	
265	B	29.73470	-89.66770	Recovered Nutria Site	5	0	St Bernard	T15SR15E	0
267	B	30.24680	-89.85750	Recovered Nutria Site	75	0	St Tammany	T9SR13E	0
270	F	29.57606	-91.19589	Nutria Damage Site	10	0	Terrebonne	T17SR12E	103
272	F	29.51175	-91.12998	Nutria Damage Site	43	0	Terrebonne	T18SR13E	125
274	F	29.56898	-91.06177	Nutria Damage Site	290	0	Terrebonne	T17SR14E	385
278	F	29.51800	-91.10546	Nutria Damage Site	1068	0	Terrebonne	T18SR13E	613
279	I	29.74581	-90.14887	Recovered Nutria Site	15	0	Jefferson	T15SR23E	0
285	B	30.09050	-89.82100	Nutria Damage Site	326	0	Orleans	T11SR14E	0
286	B	30.18960	-89.69910	Nutria Damage Site	338	0	St Tammany	T10SR15E	1,836
304	F	29.55107	-91.19370	Recovered Nutria Site	95	0	Terrebonne	T17SR12E	389

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	PARISH	TOWNSHIP AND RANGE	NUTRIA HARVESTED BY SITE
306	F	29.53650	-91.12470	Nutria Damage Site	302	0	Terrebonne	T18SR13E	125
307	F	29.49550	-91.14580	Nutria Damage Site	508	0	Terrebonne	T18SR13E	3,954
310	F	29.57950	-91.01000	Nutria Damage Site	146	0	Terrebonne	T17SR14E	0
311	F	29.55360	-90.98250	Nutria Damage Site	1361	0	Terrebonne	T17SR14E	4,171
314	F	29.43830	-90.82470	Nutria Damage Site	19	0	Terrebonne	T19SR16E	982
315	I	29.42850	-90.78240	Nutria Damage Site	95	0	Terrebonne	T19SR16E	96
324	B	30.27420	-89.93850	Nutria Damage Site	22	0	St Tammany	T9SR13E	0
326	F	29.37869	-91.19480	Nutria Damage Site	5	0	Terrebonne	T19SR12E	0
327	F	29.55190	-91.13190	Recovered Nutria Site	73	0	Terrebonne	T17SR13E	1,694
328	F	29.51670	-90.84390	Nutria Damage Site	258	0	Terrebonne	T18SR16E	139
329	B	29.51060	-90.26340	Nutria Damage Site	88	0	Lafourche	T18SR22E	6,269
331	I	29.79960	-90.22870	Nutria Damage Site	25	0	St Charles	T15SR22E	432
332	I	29.81830	-90.19150	Nutria Damage Site	71	0	St Charles	T14SR22E	0
333	I	29.67400	-90.17160	Nutria Damage Site	20	0	Lafourche	T16SR23E	0
334	B	29.59140	-90.09860	Nutria Damage Site	10	0	Jefferson	T17SR23E	0
336	I	29.72520	-89.91260	Nutria Damage Site	5	0	Plaquemines	T15SR13E	1,591
337	I	29.68270	-89.94430	Nutria Damage Site	154	0	Plaquemines	T16SR12E	0
338	I	29.81790	-89.81940	Nutria Damage Site	10	0	St Bernard	T14SR14E	1,072
339	I	29.74700	-89.82390	Nutria Damage Site	5	0	Plaquemines	T15SR14E	0
340	I	29.61630	-89.82390	Nutria Damage Site	30	0	Plaquemines	T16SR14E	0
341	B	29.78570	-89.69310	Recovered Nutria Site	3	0	St Bernard	T14SR15E	133
342	B	29.34810	-91.25640	Muskrat Damage	181	0	Terrebonne	T20SR12E	
343	I	29.37000	-91.10460	Recovered Nutria Site	57	0	Terrebonne	T19SR13E	1,270
344	F	29.52830	-91.02000	Nutria Damage Site	260	0	Terrebonne	T18SR14E	532
345	F	29.61360	-90.56680	Nutria Damage Site	188	0	Lafourche	T17SR19E	0
346	F	29.87470	-90.16170	Nutria Damage Site	34	0	Jefferson	T14SR23E	0
347	B	29.49840	-90.24020	Nutria Damage Site	201	0	Lafourche	T18SR22E	6,269
348	I	29.62790	-90.10780	Nutria Damage Site	33	0	Jefferson	T17SR23E	0
349	B	29.51160	-91.77920	Muskrat Damage	338	0	Iberia	T17SR7E	
350	B	29.50270	-91.82600	Muskrat Damage	463	0	Iberia	T18SR6E	
351	B	29.58410	-91.86310	Muskrat Damage	46	0	Iberia	T17SR6E	

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	PARISH	TOWNSHIP AND RANGE	NUTRIA HARVESTED BY SITE
352	B	29.51070	-91.84700	Muskrat Damage	196	0	Iberia	T18SR6E	
353	B	29.58980	-91.94900	Muskrat Damage	3016	0	Iberia	T17SR5E	
354	I	29.74760	-89.76610	Nutria Damage Site	110	0	Plaquemines	T15SR14E	15,248
355	B	29.80070	-89.75760	Nutria Damage Site	86	0	St Bernard	T14SR14E	100
356	B	30.02860	-89.73070	Nutria Damage Site	636	0	Orleans	T12SR15E	0
357	B	29.89990	-89.57330	Muskrat Damage	883	0	St Bernard	T13SR16E	
358	B	29.95860	-89.53910	Muskrat Damage	1666	0	St Bernard	T13SR17E	
359	B	29.97300	-89.49470	Muskrat Damage	1486	0	St Bernard	T12SR17E	
360	I	29.72160	-89.88820	Nutria Damage Site	74	0	Plaquemines	T15SR13E	3,541
361	I	29.91730	-91.95540	Muskrat Damage	6	0	Iberia	T13SR5E	
362	I	29.91370	-91.97180	Muskrat Damage	103	0	Iberia	T13SR5E	
363	B	29.70180	-92.20080	Muskrat Damage	61	0	Vermilion	T15SR3E	
364	B	29.55990	-92.26100	Nutria Damage Site	50	0	Vermilion	T17SR2E	0
365	B	29.55020	-92.26060	Nutria Damage Site	454	0	Vermilion	T17SR2E	482
366	B	29.54050	-92.26590	Nutria Damage Site	31	0	Vermilion	T17SR2E	624
367	B	29.54150	-92.28630	Nutria Damage Site	351	0	Vermilion	T17SR2E	482
368	B	29.55990	-92.31310	Muskrat Damage	220	0	Vermilion	T17SR1E	
369	B	29.55750	-92.38240	Muskrat Damage	240	0	Vermilion	T17SR1E	
370	I	29.98810	-93.70920	Muskrat Damage	67	0	Cameron	T12SR13W	
371	B	29.97640	-93.75930	Muskrat Damage	325	0	Cameron	T12SR14W	
372	F	29.50520	-91.16600	Nutria Damage Site	3	0	Terrebonne	T18SR13E	0
373	F	29.95500	-90.63440	Nutria Damage Site	20	0	St John	T13SR18E	0
374	F	29.72400	-90.41760	Nutria Damage Site	42	0	Lafourche	T15SR20E	0
375	F	29.68510	-90.63310	Nutria Damage Site	46	0	Lafourche	T16SR18E	0
376	B	29.55130	-89.73090	Nutria Damage Site	88	0	Plaquemines	T17SR15E	0
377	I	29.74290	-89.94520	Nutria Damage Site	413	0	Plaquemines	T15SR12E	1,591
378	B	29.98980	-89.53260	Muskrat Damage	859	0	St Bernard	T12SR17E	


2003-2004 Coastwide
Nutria Control Program
Southeastern Louisiana
Total Tails Collected for the
03-04 Season - 332,596
03 Damage Legend
Converted to Open Water
Muskrat Damage
Nutria Damage
Recovered Nutria Site
Parish Boundaries
Number of Nutria Harvested
4 - 499
500 - 1499
1500 - 2999
3000 - 6500
6500 - 15248
ST TAMMANY
JEFFERSON
ORLEANS
ST JOHN
THE BAPTIST
ST CHARLES
ST BERNARD
ST
JAMES
ST MARY
LAFOURCHE
PLAQUEMINES
TERREBONNE
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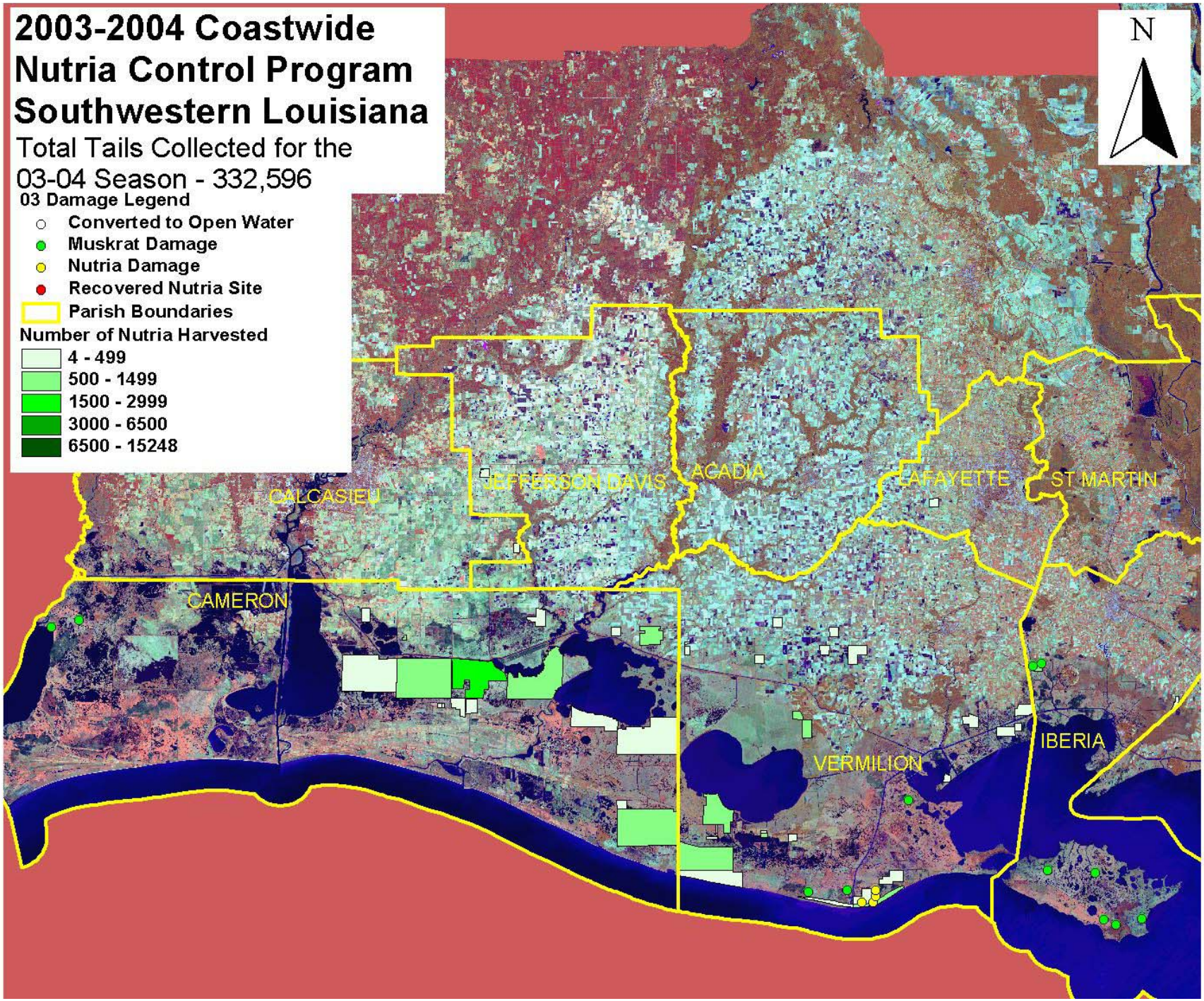
2003-2004 Coastwide
Nutria Control Program
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Muskrat Damage
Nutria Damage
Recovered Nutria Site
Parish Boundaries
Number of Nutria Harvested
4 - 499
500 - 1499
1500 - 2999
3000 - 6500
6500 - 15248
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CALCASIEU
JEFFERSON DAVIS
ACADIA
LAFAYETTE
ST MARTIN
CAMERON
VERMILION
IBERIA

APPENDIX B. Data collected at each damage site during the 2004 vegetative damage survey.

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE	PREDICTION	PARISH	TOWNSHIP AND RANGE
8	F	29.56970	-91.16380	Nutria	607	0	2	1	1	2	Terrebonne	T17SR13E
9	F	29.57370	-91.12960	Nutria	141	0	2	2	1	2	Terrebonne	T17SR13E
17	F	29.53970	-91.05040	Nutria	273	0	2	1	1	2	Terrebonne	T18SR14E
40	I	29.81550	-90.17400	Nutria	123	0	1	2	1	2	St Charles	T14SR23E
49	B	29.64969	-90.13397	Nutria	200	0	0	1	1	2	Jefferson	T16SR23E
60	I	29.71800	-90.05267	Nutria	258	0	0	2	1	2	Jefferson	T16SR24E
92	I	29.70200	90.07333	Nutria	687	0	0	2	1	2	Jefferson	T16SR24E
94	F	29.86960	-90.28850	Nutria	1187	0	3	2	2	3	St Charles	T14SR21E
97	I	29.70120	-90.19650	Nutria	151	0	1	3	2	0	Jefferson	T16SR22E
104	F	29.41620	-90.89330	Nutria	13	0	1	1	1	1	Terrebonne	T19SR15E
105	I	29.36983	-90.88450	Nutria	3070	0	99	99	0	99	Terrebonne	T19SR15E
107	F	29.53050	-90.94200	Nutria	31	0	2	1	1	2	Terrebonne	T18SR15E
108	F	29.43117	-90.94967	Nutria	50	0	99	99	0	99	Terrebonne	T19SR15E
109	F	29.53280	-90.99290	Nutria	117	0	3	2	1	3	Terrebonne	T18SR14E
111	I	29.39783	-90.82633	Nutria	20	0	0	1	1	1	Terrebonne	T19SR16E
112	I	29.40067	90.79716	Nutria	20	0	99	99	0	99	Terrebonne	T19SR16E
117	F	29.38460	-91.04790	Nutria	572	0	0	2	1	2	Terrebonne	T19SR14E
120	F	29.60060	-91.06480	Nutria	1747	0	2	2	2	3	Terrebonne	T17SR14E
139	F	29.55100	-91.09650	Nutria	106	0	1	1	1	1	Terrebonne	T17SR13E
140	F	29.48500	-91.09830	Nutria	117	0	2	1	1	3	Terrebonne	T18SR13E
142	F	29.59490	-91.00900	Nutria	120	0	2	1	1	2	Terrebonne	T17SR14E
153	I	29.40883	-90.79500	Nutria	50	0	99	99	0	99	Terrebonne	T19SR16E
154	F	29.52184	-90.76283	Nutria	294	0	99	99	0	99	Terrebonne	T18SR17E
171	F	29.91920	-90.46960	Nutria	634	0	1	1	1	2	St Charles	T13SR20E
178	I	29.71733	90.09117	Nutria	97	0	0	3	1	2	Jefferson	T16SR23E
233	F	29.60430	-90.98740	Nutria	242	0	3	2	1	2	Terrebonne	T17SR14E
238	F	29.92470	-90.52030	Nutria	163	0	3	2	5	3	St Charles	T13SR19E
242	B	29.59390	-90.16320	Nutria	25	0	0	1	1	2	Lafourche	T17SR23E
244	I	29.73080	-90.09700	Nutria	5	0	0	2	1	1	Jefferson	T15SR23E
245	F	29.75400	-90.07240	Nutria	281	0	0	3	1	2	Jefferson	T15SR24E
248	I	29.72890	-89.76150	Nutria	35	0	99	99	0	99	Plaquemines	T15SR14E

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE	PREDICTION	PARISH	TOWNSHIP AND RANGE
250	I	29.78660	-89.90640	Nutria	1214	0	1	2	1	2	Plaquemines	T14SR13E
252	I	29.74990	-89.91860	Nutria	342	0	1	2	1	2	Plaquemines	T15SR13E
256	I	29.77060	-89.88370	Nutria	292	0	1	2	1	2	Plaquemines	T15SR13E
258	I	29.83730	-89.84390	Nutria	396	0	1	2	1	2	St Bernard	T14SR13E
259	I	29.82450	-89.84700	Nutria	149	0	1	1	1	2	St Bernard	T14SR13E
260	I	29.81860	-89.85650	Nutria	277	0	1	1	1	2	St Bernard	T14SR13E
270	F	29.57606	-91.19589	Nutria	10	0	99	99	0	99	Terrebonne	T17SR12E
272	F	29.51520	-91.12540	Nutria	201	0	2	1	1	2	Terrebonne	T18SR13E
274	F	29.56898	-91.06177	Nutria	290	0	99	99	0	99	Terrebonne	T17SR14E
278	F	29.50160	-91.09470	Nutria	252	0	2	1	1	2	Terrebonne	T18SR13E
285	B	30.09050	-89.82100	Nutria	326	0	99	99	0	99	Orleans	T11SR14E
286	B	30.18960	-89.69910	Nutria	338	0	99	99	0	99	St Tammany	T10SR15E
306	F	29.53650	-91.12470	Nutria	302	0	2	1	1	2	Terrebonne	T18SR13E
307	F	29.49550	-91.14580	Nutria	508	0	2	1	1	2	Terrebonne	T18SR13E
310	F	29.57950	-91.01000	Nutria	146	0	3	3	2	0	Terrebonne	T17SR14E
311	F	29.55360	-90.98250	Nutria	1361	0	0	1	1	2	Terrebonne	T17SR14E
314	F	29.43830	-90.82470	Nutria	19	0	0	1	1	1	Terrebonne	T19SR16E
315	I	29.42830	-90.78520	Nutria	90	0	1	1	1	1	Terrebonne	T19SR16E
324	B	30.27420	-89.93850	Nutria	22	0	99	99	0	99	St Tammany	T9SR13E
326	F	29.37869	-91.19480	Nutria	5	0	99	99	0	99	Terrebonne	T19SR12E
328	F	29.51670	-90.84390	Nutria	258	0	99	99	0	99	Terrebonne	T18SR16E
329	B	29.51060	-90.26340	Nutria	102	0	1	2	1	2	Lafourche	T18SR22E
331	I	29.79960	-90.22870	Nutria	34	0	0	1	1	1	St Charles	T15SR22E
332	I	29.81830	-90.19150	Nutria	71	0	1	1	1	2	St Charles	T14SR22E
333	I	29.67400	-90.17160	Nutria	0	20	99	4	99	99	Lafourche	T16SR23E
334	B	29.59140	-90.09860	Nutria	10	0	99	99	0	99	Jefferson	T17SR23E
336	I	29.72520	-89.91260	Nutria	5	0	1	1	1	2	Plaquemines	T15SR13E
337	I	29.68270	-89.94430	Nutria	154	0	1	2	1	2	Plaquemines	T16SR12E
338	I	29.81790	-89.81940	Nutria	10	0	0	1	1	1	St Bernard	T14SR14E
339	I	29.74700	-89.82390	Nutria	5	0	99	99	0	99	Plaquemines	T15SR14E
340	I	29.61630	-89.82390	Nutria	30	0	99	99	0	99	Plaquemines	T16SR14E

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE	PREDICTION	PARISH	TOWNSHIP AND RANGE
344	F	29.52830	-91.02000	Nutria	260	0	2	2	2	2	Terrebonne	T18SR14E
345	F	29.61360	-90.56680	Nutria	188	0	2	1	1	2	Lafourche	T17SR19E
346	F	29.87470	-90.16170	Nutria	34	0	2	2	1	2	Jefferson	T14SR23E
347	B	29.49840	-90.24020	Nutria	201	0	99	99	0	99	Lafourche	T18SR22E
348	I	29.62790	-90.10780	Nutria	33	0	99	99	0	99	Jefferson	T17SR23E
349	B	29.50400	-91.79000	Muskrat/ Storm	1375	0	99	3	2	0	Iberia	T17SR7E
350	B	29.50270	-91.82600	Muskrat/ Storm	463	0	99	4	99	99	Iberia	T18SR6E
351	B	29.58410	-91.86310	Muskrat	46	0	99	99	0	99	Iberia	T17SR6E
352	B	29.51070	-91.84700	Muskrat/ Storm	196	0	4	99	0	99	Iberia	T18SR6E
353	B	29.58980	-91.94900	Muskrat	3016	0	99	4	0	99	Iberia	T17SR5E
354	I	29.74760	-89.76610	Nutria	110	0	99	99	0	99	Plaquemines	T15SR14E
355	B	29.80070	-89.75760	Nutria	86	0	99	99	0	99	St Bernard	T14SR14E
356	B	30.02860	-89.73070	Nutria	636	0	99	99	0	99	Orleans	T12SR15E
357	B	29.89430	-89.56860	Muskrat	184	0	99	1	1	2	St Bernard	T13SR16E
358	B	29.96710	-89.53350	Muskrat	327	0	99	2	1	2	St Bernard	T13SR17E
359	B	29.97300	-89.49470	Muskrat	1486	0	99	4	0	99	St Bernard	T12SR17E
360	I	29.72160	-89.88820	Nutria	74	0	1	1	1	2	Plaquemines	T15SR13E
361	I	29.91730	-91.95540	Muskrat	6	0	99	99	0	99	Iberia	T13SR5E
362	I	29.91370	-91.97180	Muskrat	158	0	99	3	2	2	Iberia	T13SR5E
363	B	29.70180	-92.20080	Muskrat	61	0	99	1	1	2	Vermilion	T15SR3E
364	B	29.55990	-92.26100	Nutria	50	0	1	2	1	2	Vermilion	T17SR2E
365	B	29.55020	-92.26060	Nutria	454	0	1	2	1	2	Vermilion	T17SR2E
366	B	29.54050	-92.26590	Nutria	31	0	1	2	1	2	Vermilion	T17SR2E
367	B	29.54150	-92.28630	Nutria	351	0	1	1	1	2	Vermilion	T17SR2E
368	B	29.55900	-92.32610	Muskrat	1986	0	99	3	5	3	Vermilion	T17SR1E
369	B	29.55750	-92.38240	Muskrat	240	0	99	2	1	2	Vermilion	T17SR1E
370	I	29.98810	-93.70920	Muskrat	67	0	99	1	1	2	Cameron	T12SR13W
371	B	29.97640	-93.75930	Muskrat	325	0	99	1	1	0	Cameron	T12SR14W
372	F	29.50520	-91.16600	Nutria	3	0	1	1	1	1	Terrebonne	T18SR13E

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE	PREDICTION	PARISH	TOWNSHIP AND RANGE
373	F	29.95500	-90.63440	Nutria	20	0	99	99	0	99	St John	T13SR18E
374	F	29.72400	-90.41760	Nutria	42	0	99	99	0	99	Lafourche	T15SR20E
375	F	29.68510	-90.63310	Nutria	46	0	2	1	1	2	Lafourche	T16SR18E
376	B	29.55130	-89.73090	Nutria	88	0	99	99	0	99	Plaquemines	T17SR15E
377	I	29.74290	-89.94520	Nutria	413	0	1	2	1	2	Plaquemines	T15SR12E
378	B	29.98980	-89.53260	Muskrat	859	0	99	2	1	2	St Bernard	T12SR17E
379	F	29.85340	-91.94550	Muskrat	94	0	99	1	1	1	Iberia	T14SR15E
380	I	29.59770	-92.21080	Nutria	38	0	1	2	1	1	Vermilion	T16SR2E
381	I	29.35660	-91.26060	Muskrat	10	0	99	1	1	2	Terrebonne	T20SR12E
382	F	29.48790	-91.12010	Nutria	104	0	1	1	5	2	Terrebonne	T18SR13E
383	F	29.58500	-91.07360	Nutria	135	0	2	2	5	2	Terrebonne	T17SR14E
384	F	29.57000	-91.07630	Nutria	157	0	1	1	5	2	Terrebonne	T17SR14E
385	F	29.57170	-90.91640	Nutria	35	0	2	1	3	2	Terrebonne	T17SR15E
386	F	29.94600	-90.63610	Nutria	73	0	3	2	5	3	St John	T13SR18E
387	F	29.95900	-90.60380	Nutria	38	0	1	1	5	2	St John	T13SR18E
388	F	29.95380	-90.51110	Nutria	210	0	2	1	5	2	St Charles	T13SR19E
389	F	29.92080	-90.45260	Nutria	691	0	3	2	5	2	St Charles	T13SR20E
390	F	29.88350	-90.45170	Nutria	44	0	2	1	5	2	St Charles	T14SR20E
391	I	29.72380	-90.09470	Nutria	5	0	1	2	1	2	Jefferson	T16SR23E
392	F	29.73800	-90.07740	Muskrat	82	0	99	2	1	2	Jefferson	T15SR24E
393	I	29.82970	-89.81380	Nutria	203	0	1	2	1	2	St Bernard	T14SR14E

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

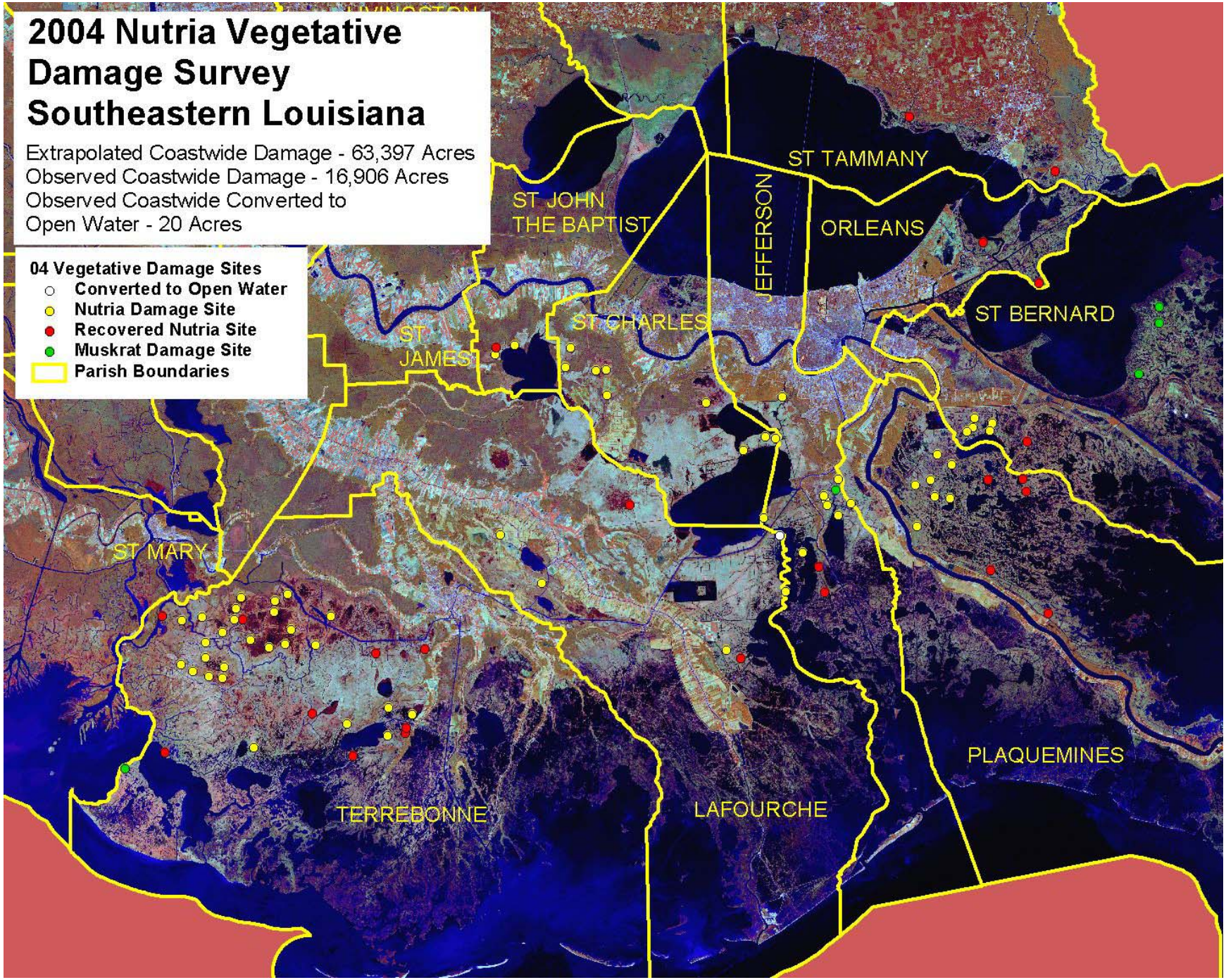
[4]Age of Damage and Condition

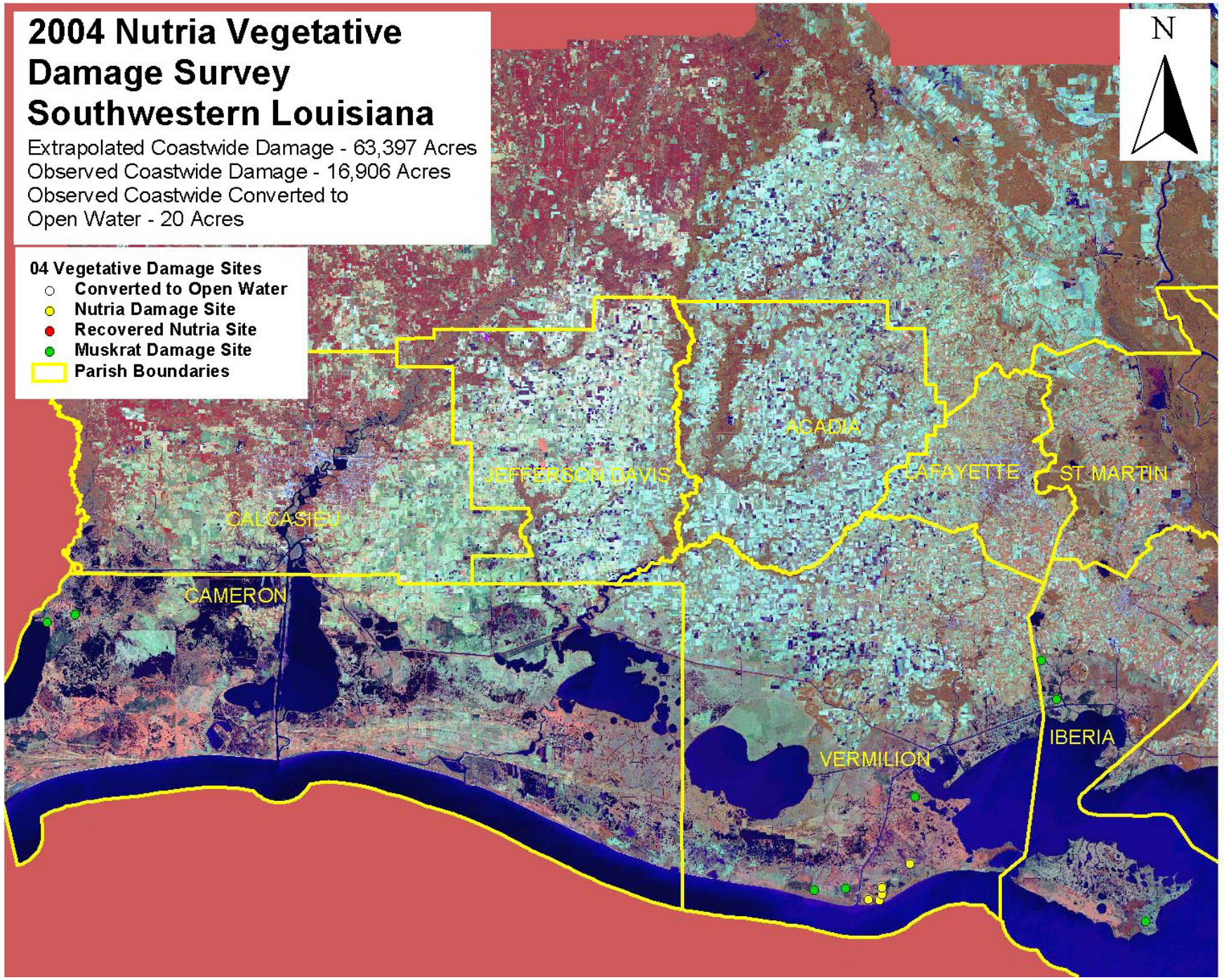
Recovered	0
Old Recovering	1
Old Not Recovering	2
Recent Recovering	3
Recent Not Recovering	4
Current (Occurring Now)	5

[5]Prediction of Recovery by End of 2004 Growing Season

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

99 – Entry does not apply to this site.


2004 Nutria Vegetative Damage Survey Southeastern Louisiana
Extrapolated Coastwide Damage - 63,397 Acres
Observed Coastwide Damage - 16,906 Acres
Observed Coastwide Converted to Open Water - 20 Acres
04 Vegetative Damage Sites
Converted to Open Water
Nutria Damage Site
Recovered Nutria Site
Muskrat Damage Site
Parish Boundaries
ST JOHN THE BAPTIST
ST TAMMANY
JEFFERSON
ORLEANS
ST BERNARD
ST CHARLES
ST JAMES
ST MARY
TERREBONNE
LAFOURCHE
PLAQUEMINES


2004 Nutria Vegetative Damage Survey Southwestern Louisiana
Extrapolated Coastwide Damage - 63,397 Acres
Observed Coastwide Damage - 16,906 Acres
Observed Coastwide Converted to Open Water - 20 Acres
04 Vegetative Damage Sites
Converted to Open Water
Nutria Damage Site
Recovered Nutria Site
Muskrat Damage Site
Parish Boundaries
N
CALCASIEU
CAMERON
JEFFERSON DAVIS
ACADIA
LAFAYETTE
ST MARTIN
VERMILION
IBERIA