Coastwide Nutria Control Program 2015-2016

Nutria Harvest and Distribution 2015-2016
and
A Survey of Nutria Herbivory Damage in Coastal Louisiana in 2016

*Funded by Coastal Wetlands, Planning, Protection, and Restoration Act through the Natural Resources Conservation Service and the Coastal Restoration and Protection Authority

Conducted by: Coastal and Nongame Resources
Louisiana Department of Wildlife and Fisheries
As part of the Coastwide Nutria Control Program*
CWPPRA Project (LA-03b)

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Introduction

Since 2001, annual coast wide aerial surveys assessing herbivory in Louisiana have documented approximately 26,744 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 marsh in Louisiana is devastating to the people that depend on the marsh for their livelihood as well as 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.

During the strong market period for nutria pelts, there were no reports of wetland damage caused by nutria. However, before the market developed and after the market declined, reports of marsh vegetation damage from land managers became common. Such complaints began in 1987 and became more frequent during the early 1990's. In response, the Fur and Refuge Division of the Louisiana Department of Wildlife and Fisheries (LDWF) 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 Coastal Protection and Restoration Authority (CPRA) with the LDWF as the lead implementing agency. Task one requires LDWF to conduct an annual aerial survey to evaluate the herbivory damage caused by nutria. Task two of the CPRA 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) count valid nutria tails and present participants with a receipt/voucher; 4) 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.

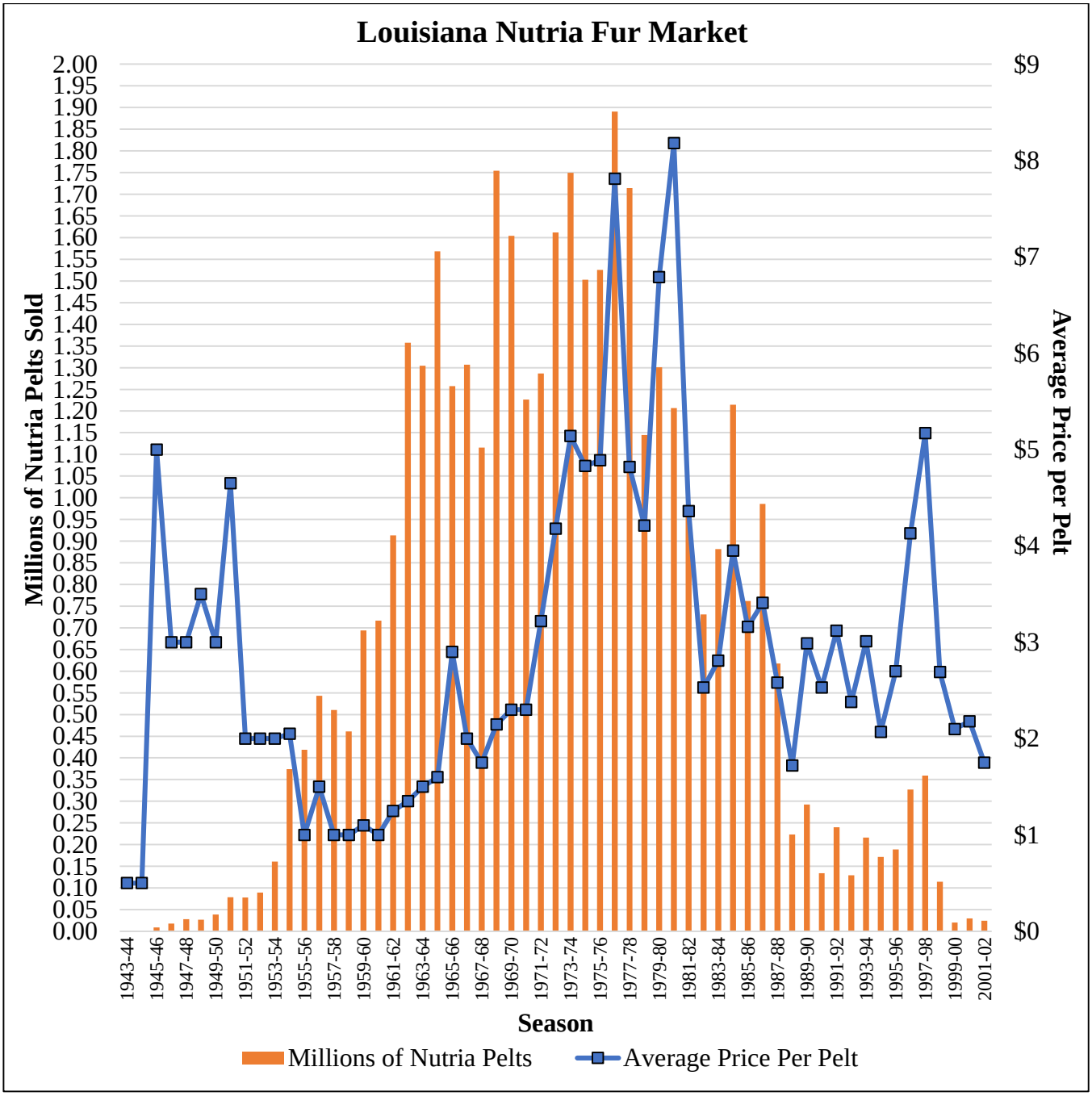


Figure 1. Louisiana fur market 1943 – 2002 (the year prior to CNCP implementation).

This section reports on the Nutria Harvest Distribution for 2015-2016.

Methods

The application for participation in the Coastwide Nutria Control Program (CNCP) was developed in July 2002 but is modified as needed to obtain better information about the location of nutria harvest. It 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 thereafter. CEI's first renewal season was (2007-2008), the second renewal season was (2008-2009), and their third renewal season (2009-2010), and their fifth season (2014-2015) under their second contract, which began in 2010. The current contract with CEI included their sixth season (2015-2016). Tail collection sites were originally established at Rockefeller Refuge, Abbeville, Berwick (Morgan City), Houma, Luling and Slidell. Rockefeller Refuge has since been removed as a collection site due to low numbers of participants utilizing that location and St. Bernard has been added. Collections were made once a week at each site except for Abbeville, which was made by appointment only, due to low numbers of participants in the area.

Louisiana's open trapping season began on November 20, 2015, 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 on a tablet PC for the number of tails delivered, checking to make sure the mailing address of the participant was correct. The participant was asked a wide range of questions including method of take, location of take, and method of disposal (Figure 17). When complete, the voucher was signed using a stylus by the participant who would also indicate on a detailed map of their lease the location or locations where the nutria were harvested. The CEI representative would use a stylus to draw a polygon around the indicated area in a mapping program and save an electronic copy of the completed voucher. A copy of the voucher was printed and given to the participant.

The information on the voucher can then be 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.

The digitized vouchers and maps would go through a rigorous QA/QC process each week which would end with the data being compiled and sent in a weekly report to LDWF detailing each transaction, including digital maps exported from Arc Map GIS 10 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 sends participants checks through the mail for the amount of tails turned in. Louisiana's open trapping season ended on March 31, 2016, and nutria tail collections continued until the second Friday of 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 10 project map with related information.

Results and Discussion

Participant Totals

We had a total of 413 participants registered in the program for the 2015-2016 season. A total of 349,235 nutria tails, worth $1,746,175 in incentive payments, were collected from 274 active participants. The fewest number of tails turned in by a single participant was 5 and the greatest number of tails by a single participant was 14,618. Approximately 40% of active participants turned in 800 or more tails (Figure 2a). Of the 110 participants who turned in 800 or more tails, 21% turned in more than 4,000 tails (Figure 2b).

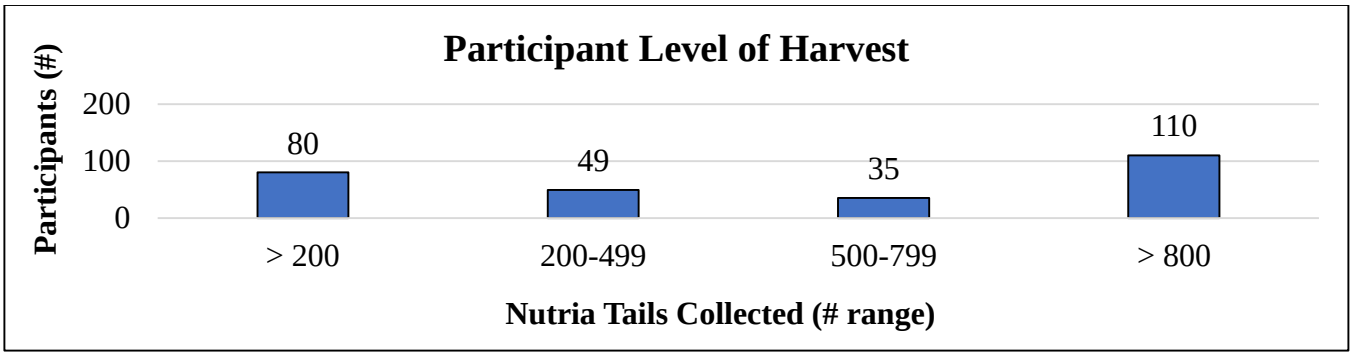


Figure 2a. Participant level of harvest for all 274 active participants.

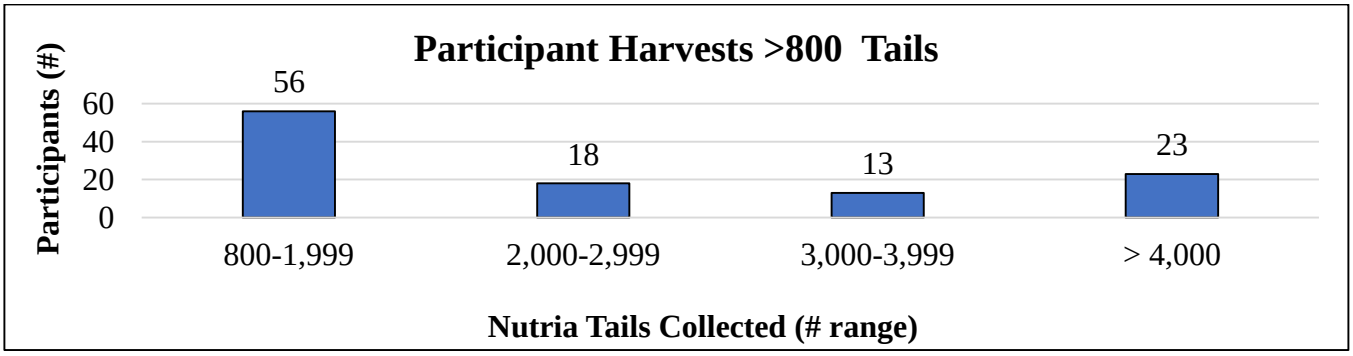


Figure 2b. Participant level of harvest for the 110 participants who harvested more than 800 tails.

Harvest by Month

The 2015-2016 trapping season began November 20th, 2015 and continued through March 31st, 2016. One hundred sixteen thousand and thirty-one (116,031) tails were collected in the month of February making it the most active month of the season (Figure 3.)

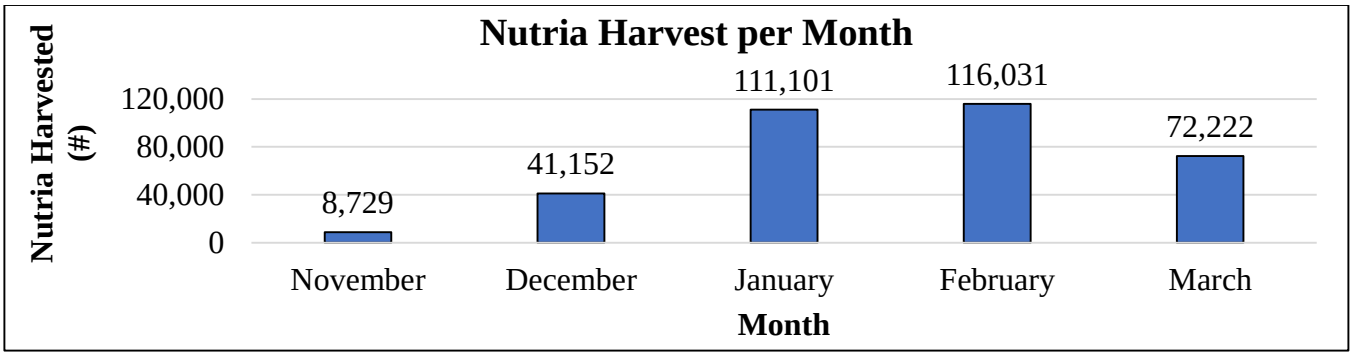


Figure 3. CNCP nutria harvest per month.

Harvest by Marsh Type

Harvest data were 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. In the 2015-2016 season, 47% of the nutria harvested fell into the "Other" category, followed by 25% being harvested from the "Fresh Marsh" (Figure 4).

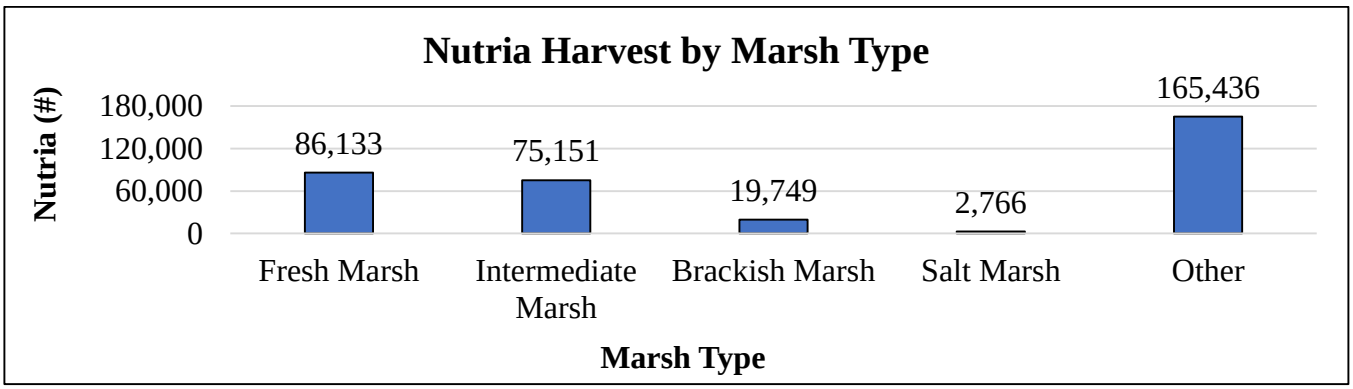


Figure 4. CNCP nutria harvest by marsh type.

Method of Take

During collection transactions, program participants indicated their method of take: trapped, shot with rifle, or shot with shotgun.

The predominant method used in the 2015-2016 season was shooting with a rifle (Figure 5.)

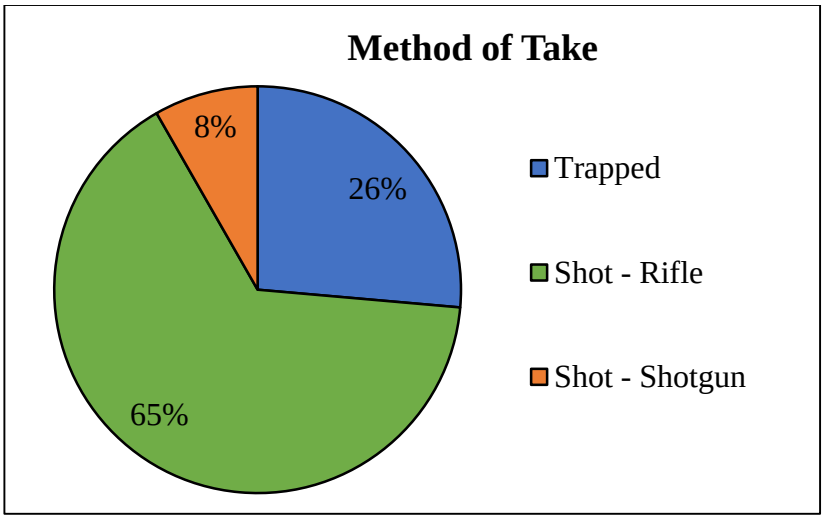


Figure 5. Method of take.

Taking nutria with a rifle is the most common method used in fresh marsh, brackish marsh, and other; however, taking nutria with traps is the most common method used in intermediate marsh and salt marsh. (Figure 6.)

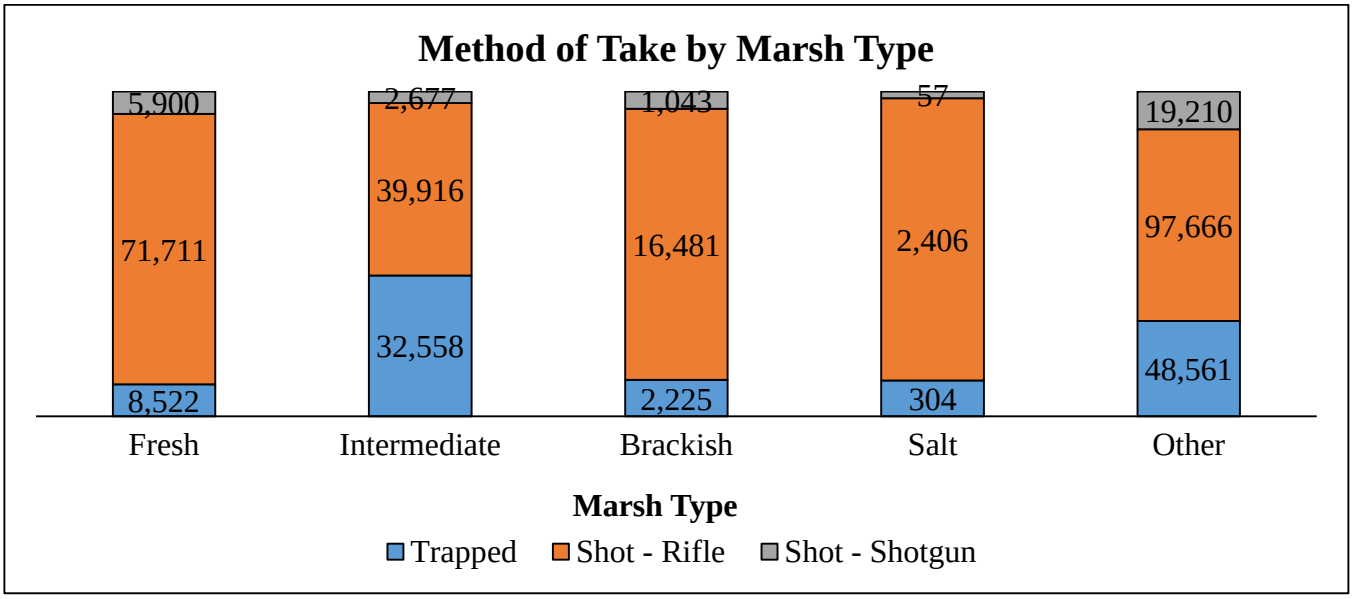


Figure 6. Method of take within each marsh type.

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). Total number within each category was estimated from percentages reported by participants.

Marsh Type	Whole Carcass (meat and fur)	Abandoned - Buried	Abandoned - Vegetation	Abandoned - Waterway
Fresh	0	74,450	9,837	1,846
Intermediate	1,606	55,516	6,299	11,731
Brackish	95	18,597	1,057	0
Salt	0	2,766	0	0
Other	701	146,134	15,362	3,239
Total	**2,402**	**297,463**	**32,556**	**16,816**

Table 1. CNCP nutria carcas use or disposal.

Overall, 0.7% of the nutria harvested was utilized for meat and/or fur. This is up from 0.2% during the 2014-2015 season, but down from 2.9% during the 2013-2014 season. The remaining 99.3% were disposed of by approved methods, categories include: 1) buried carcasses, 2) placed in heavy overhead vegetation, or 3) placed in water (Table 1).
All interested participants were supplied a fur buyer/fur dealer list to encourage the use of animals for the fur and meat.

Harvest by Parish

Nineteen parishes were represented in the 2015-2016 season of the Coastwide Nutria Control Program, with nutria harvests ranging from 341 to 93,301. Terrebonne Parish reported the highest number of tails with 93,301 followed by St. Mary Parish and Plaquemines Parish with 50,202 and 46,672, respectively (Figure 7).

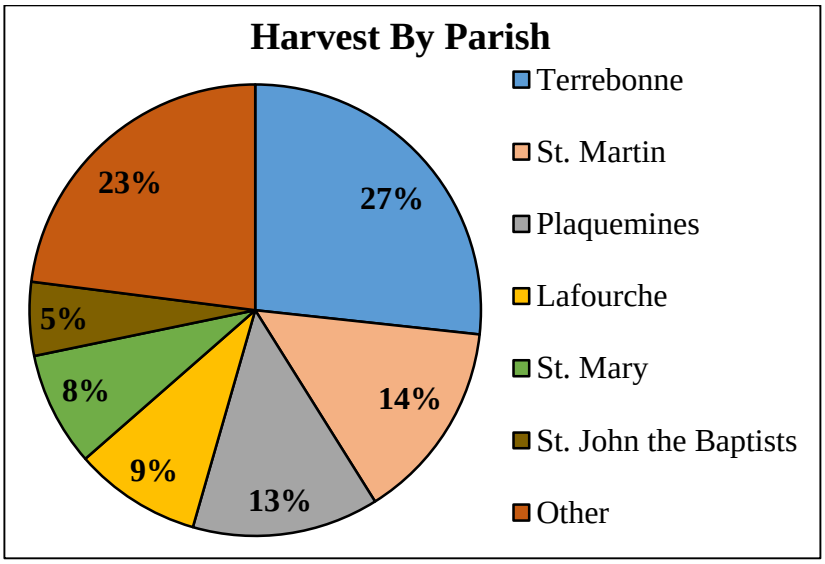


Figure 7. CNCP harvest by parish.

Section 2

A SURVEY OF NUTRIA HERBIVORY DAMAGE IN COASTAL LOUISIANA IN 2016

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. (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.) 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. 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 a dozen 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 been conducted each spring from 2003 to present. Results were analyzed and the numbers of acres impacted or recovered were determined.
This section reports on the 2016 Coastwide Nutria Herbivory Survey.

Methods

The 2016 coast wide nutria herbivory survey was conducted April 13th – April 29th. North-South transects were flown throughout the fresh, intermediate and brackish marshes of coastal Louisiana. Annually, a total of 155 transects (covering 2,354.7 miles) are 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 200-300 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 80 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 line and the other observer recorded all pertinent data.

When vegetative damage was identified, the helicopter landed at the site and 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 696) was utilized to allow for accurate location of damaged sites. The open-source software DNRGPS, provided by the Minnesota Department of Natural Resources was used in conjunction with ArcView 10.2 determine the size of each damage site, by logging polygons using stream digitizing with the GPS equipment.

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

3) The extent of damage to the vegetation was placed in one of the following vegetative damage rating categories: **(0) no vegetative damage; (1) minor vegetative damage** which is defined as a site containing feeding holes, thinning vegetation and some visible soil; **(2) moderate vegetative damage** which is defined as a site that has large areas of exposed soil and covers less than 50% of the site; **(3) severe vegetative damage** which is defined as a site that has more than 50% of the soil exposed; or **(4) converted to open water**.

4) The dominant plant species were identified and recorded for 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: **(0) recovered, (1) old recovering, (2) old not recovering, (3) recent recovering, (4) recent not recovering,** or **(5) current (occurring now)**.

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 2013 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 in Appendix B.

Results and Discussion

There were 11 sites included in the 2016 vegetative damage survey; all of which were previously classified as damaged sites in the 2015 survey. During the 2016 survey 11 sites were listed as old nutria damage, no sites (0) as recovered, and no new sites (0) were identified (Figure 8.)

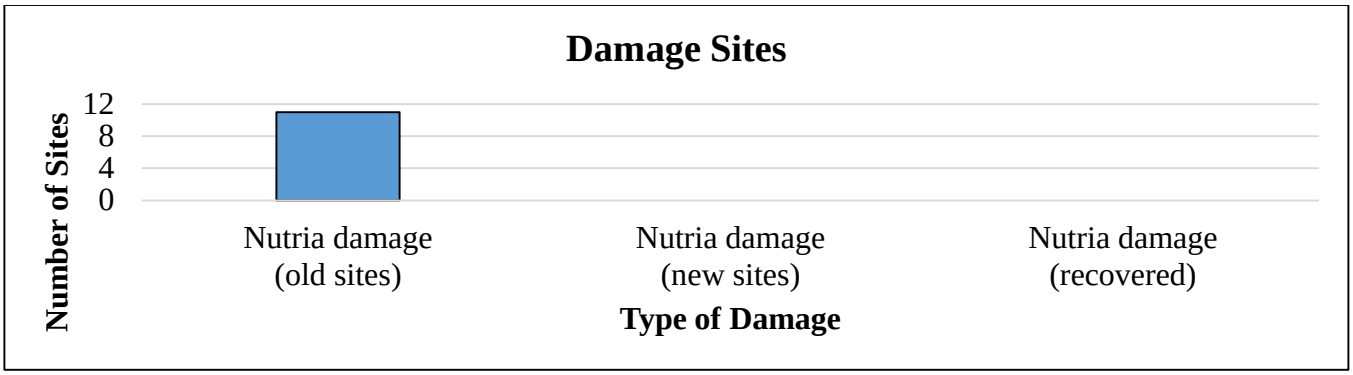


Figure 8. 2016 vegetation survey damage sites located along transect lines.

Nutria Damage

The following discussion details the 11 sites that had nutria damage (Appendix A). A total of 1,732 acres along transects (extrapolated to be 6,496 acres coast wide) in 2016, were impacted by nutria feeding activity. This represents approximately an 8.2% increase in acres impacted by nutria in 2015 (1,602 acres, extrapolated 6,006 acres coast wide.)

Damage by Parish

Only two parishes were observed to have damage in 2016. Terrebonne Parish experienced nearly all of the damaged acres with St. Mary experiencing a small percentage of the damage (Figure 9.).

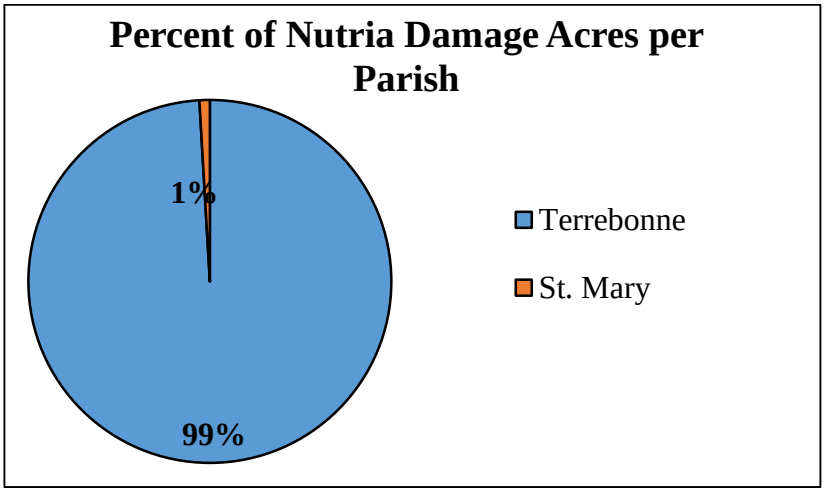


Figure 9. 2016 vegetation survey damaged acres by parish.

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.). All 11 nutria damage sites were within fresh marsh during the 2016 survey.

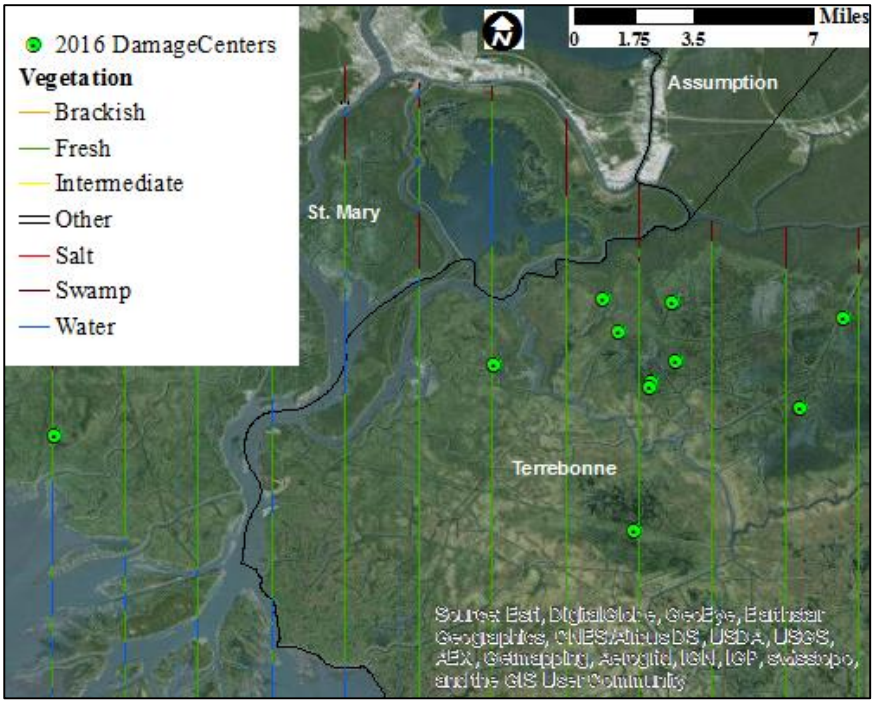


Figure 10. 2016 Vegetation survey damage centers.

Fresh marsh continued to be the most affected by nutria herbivory (~100%). The typical vegetation impacted in fresh marsh was *Eleocharis* spp., *Hydrocotyle* spp, and *Bidens laevis*.

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.)

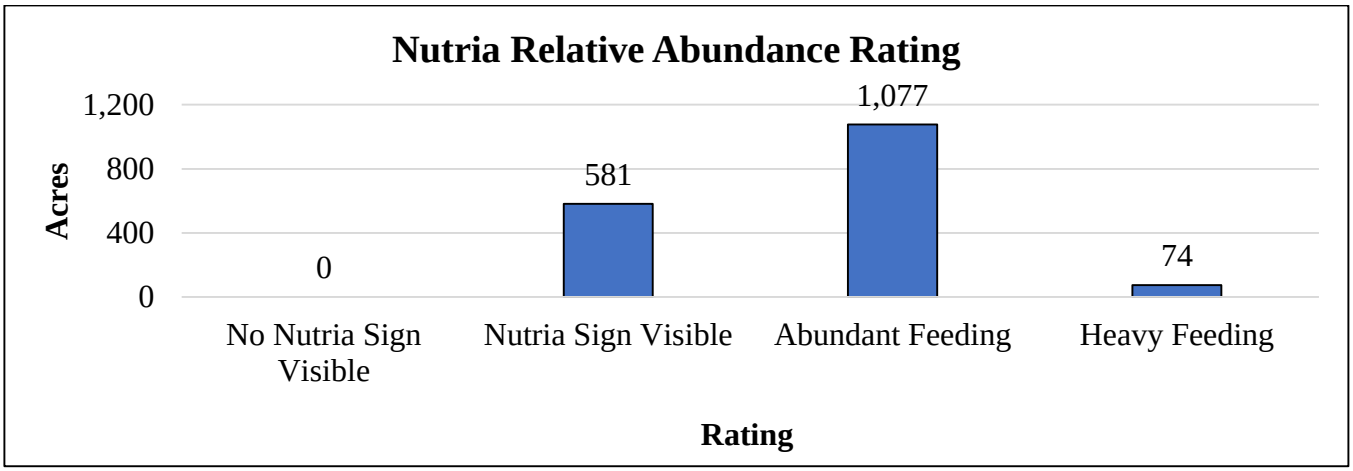


Figure 11. Nutria relative abundance ratings for 2016 nutria damaged sites.

Vegetative Damage Rating

Vegetative damage was also evaluated at each site. A rating system was developed in order to quantify nutria vegetative damage. 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.)

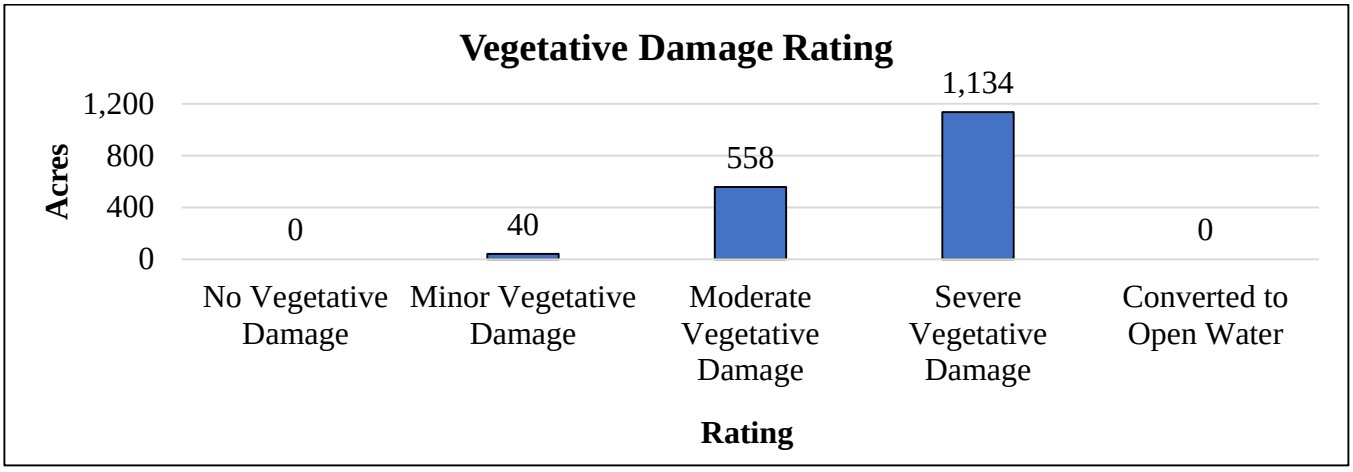


Figure 12. Vegetative damage ratings for 2016 nutria damaged sites.

Age of Damage Rating

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

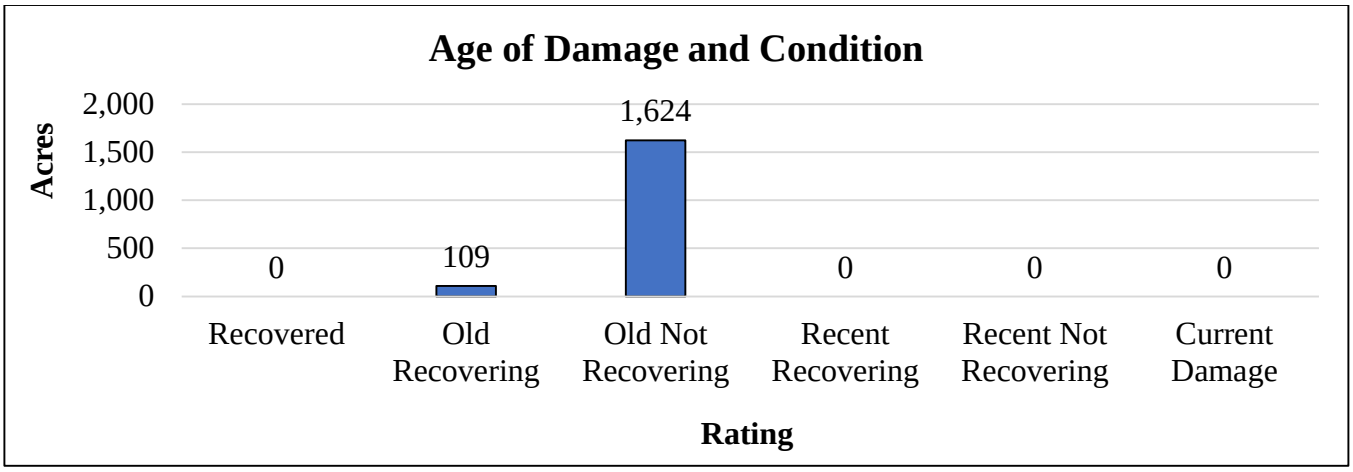


Figure 13. Age of damage and condition of 2016 nutria damaged sites.

Prediction of Recovery

For each site with current damage, the degree of recovery by the end of the 2016 growing season was predicted. These categories include: (1) full recovery, (2) partial recovery, (3) increased damage and (4) no recovery predicated (Figure 14.)

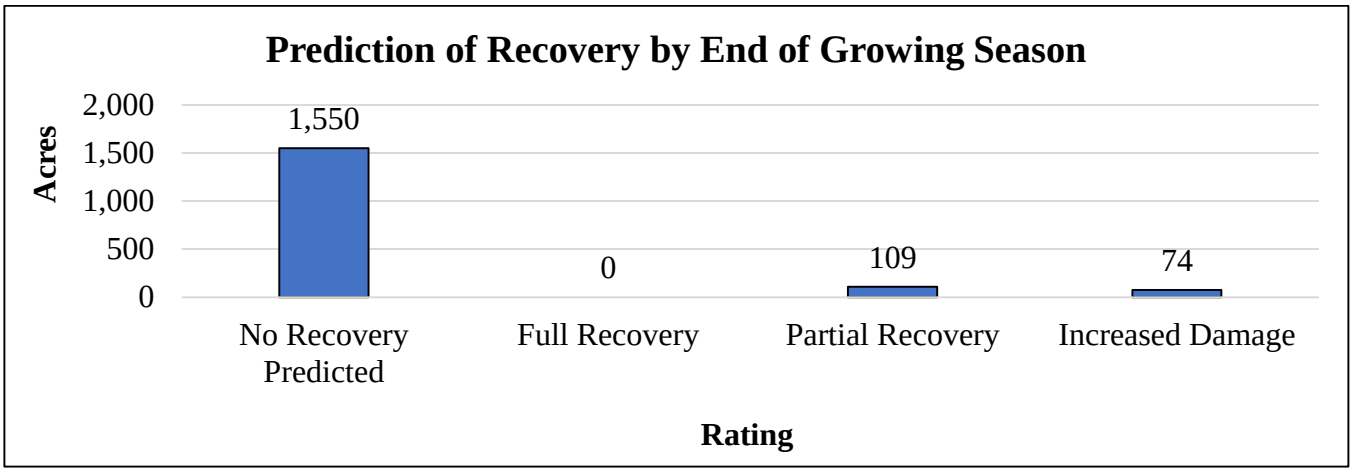


Figure 14. Prediction of recovery by the end of the growing season for the 2016 nutria damaged sites.

Conclusions

The 2016 vegetative damage survey yielded a total of 1,732 acres of nutria damage along transect lines. This figure, when extrapolated, demonstrates that 6,496 acres were impacted coast wide at the time of survey. When compared to 2015 (1,602 acres or 6,006 acres extrapolated coast wide), there was approximately an 8.2% increase in the number of damaged acres.

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 overall downward trend in damaged acres observed over the 13 years of the program is significant.

Section 3

CNCP: Summary of Results (2002-2016) and Adaptive Management

Since implementation of the Coastwide Nutria Control Program, the seasonal harvest of nutria has stabilized and the number acres damaged by nutria herbivory as observed by aerial surveys has trended downwards (Figure 15.)

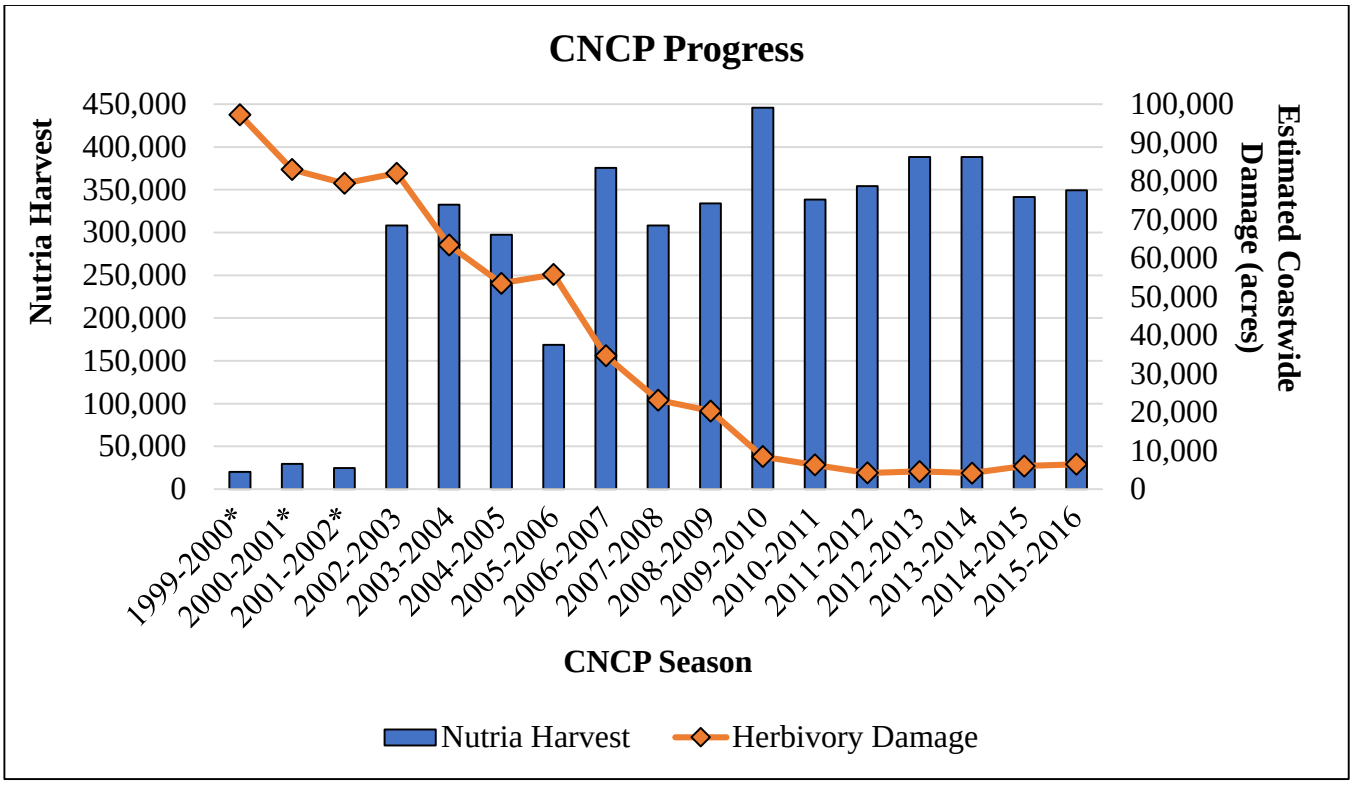


Figure 15. Nutria harvest and coastwide nutria herbivory damage.
* indicates years prior to implementation of the CNCP.

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. Nutria harvest and herbivory damage in years prior to CNCP.

Fourteen 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
2007-2008	308,212	**2008**	23,141
2008-2009	334,038	**2009**	20,333
2009-2010	445,963	**2010**	8,475
2010-2011	338,512	**2011**	6,296
2011-2012	354,354	**2012**	4,233
2012-2013	388,160	**2013**	4,624
2013-2014	388,264	**2014**	4,181
2014-2015	341,708	**2015**	6,008
2015-2016	349,235	**2016**	6,496

Table 3. Nutria harvest and herbivory damage during 14 seasons of the CNCP.

Once again proving the Coastwide Nutria Control Program successful, the 2015-2016 season ended with an above average harvest and 11 sites of nutria damage from prior years. Since beginning the program in 2002-2003, nutria harvest in coastal Louisiana averages 337,947 ± 60,119SD animals per year. Total harvest of nutria over the past fourteen seasons has reached 4,731,263.

As in the past, CNCP applications will be sent to all participants who submitted applications over the last two years. LDWF will also continue the coordination with trappers and fur buyers/dealers to encourage the maximum use of the entire animal, and landowners will be encouraged to trap/hunt the existing damage sites.

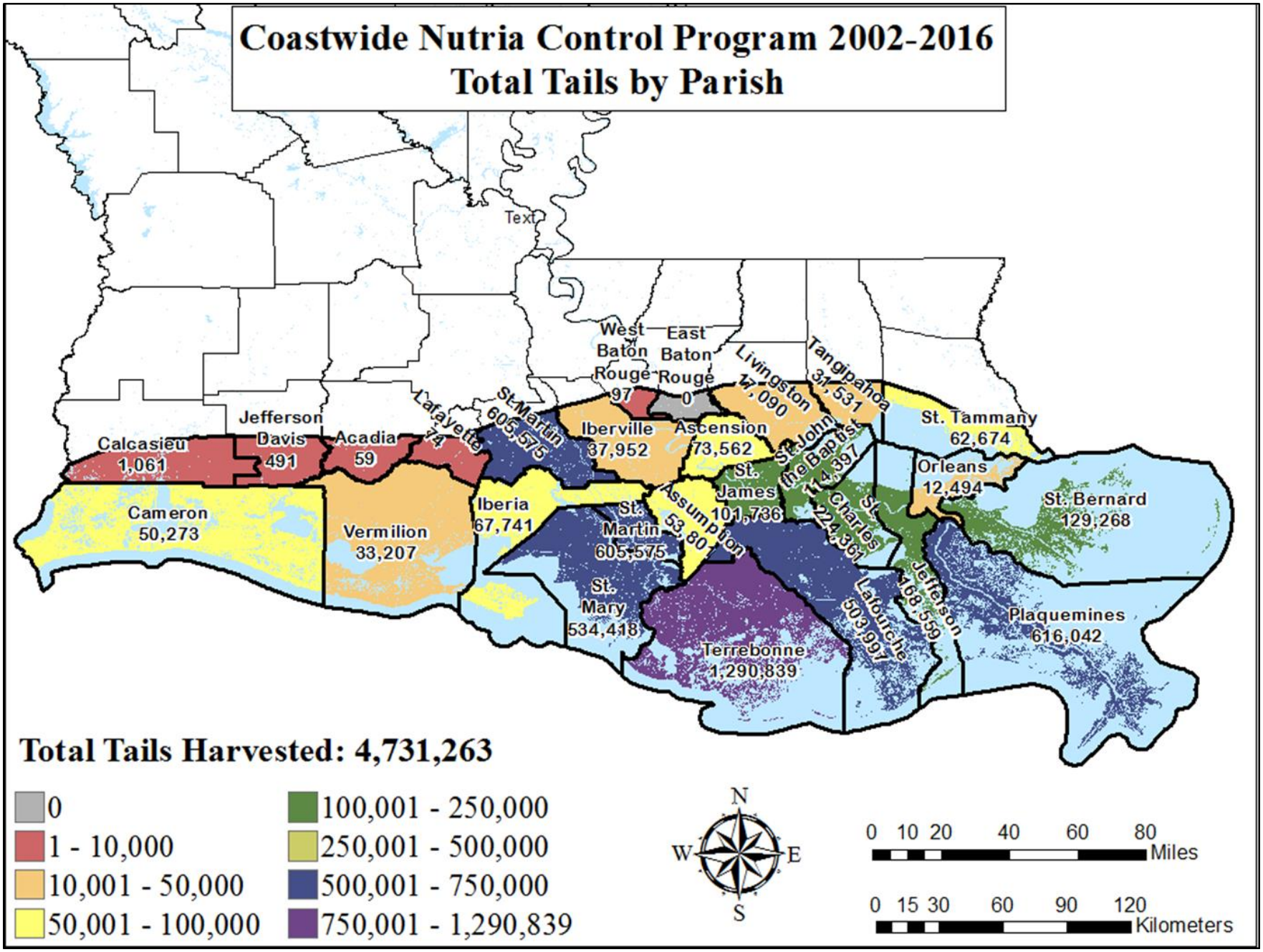


Figure 16. Total nutria harvest during 14 seasons of CNCP.

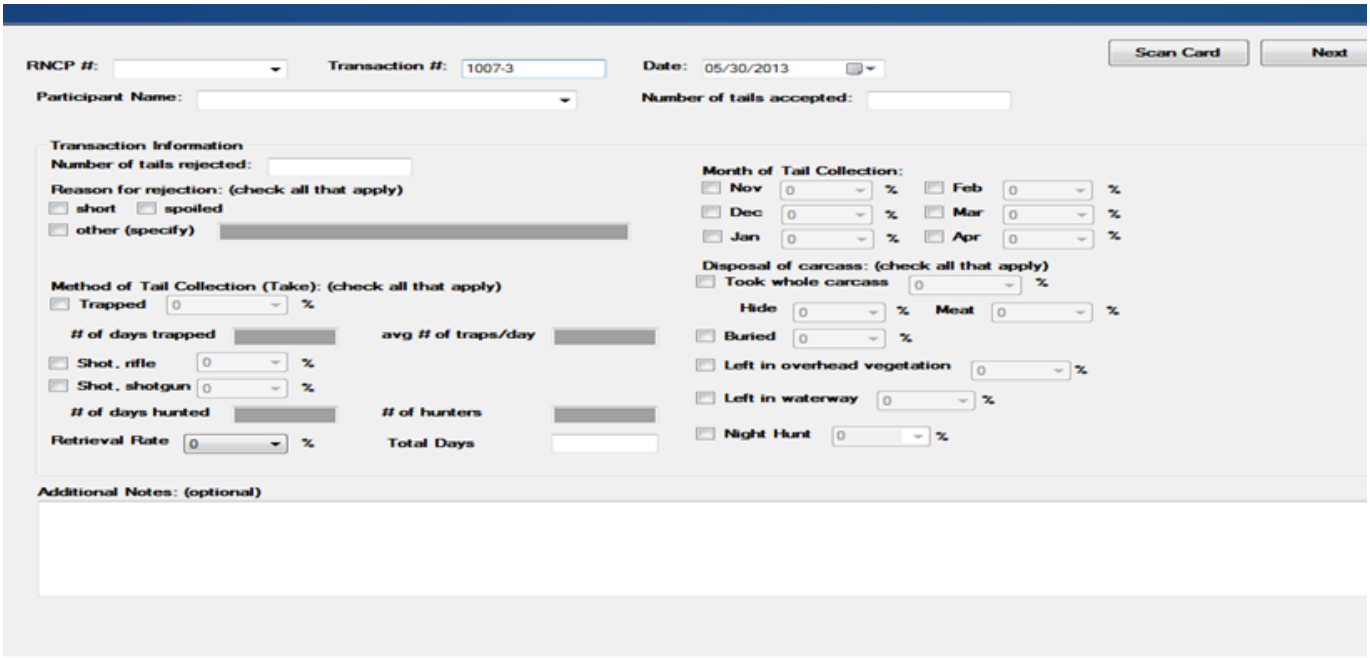


Figure 17. Screenshot of the digital datasheet used by Coastal Environments Inc. during the tail collections.

Appendix A.
A Comparison of Seasons 1-14
(2002-2016)

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
Acadia	0	-	0	-	0	-	0	-	0	-
Ascension	2,710	0.88%	5,474	1.65%	1,855	0.62%	1,678	0.99%	2,226	0.59%
Assumption	3,128	1.02%	814	0.24%	427	0.14%	2,307	1.37%	2,095	0.56%
Calcasieu	143	0.05%	374	0.11%	447	0.15%	58	0.03%	19	0.01%
Cameron	7,851	2.55%	8,701	2.62%	16,592	5.58%	3,744	2.22%	1,725	0.46%
East Baton Rouge	0	-	0	-	0	-	0	-	0	-
Iberia	1,412	0.46%	1,960	0.59%	3,516	1.18%	3,014	1.79%	18,910	5.03%
Iberville	0	-	1,567	0.47%	5,551	1.87%	2,360	1.40%	9,172	2.44%
Jefferson	20,529	6.66%	24,896	7.49%	11,019	3.70%	2,875	1.70%	10,405	2.77%
Jefferson Davis	121	0.04%	85	0.03%	175	0.06%	110	0.07%	0	-
Lafayette	39	0.01%	25	0.01%	10	0.00%	0	-	0	-
Lafourche	28,852	9.36%	51,736	15.56%	32,362	10.88%	24,668	14.61%	28,038	7.46%
Livingston	2,631	0.85%	357	0.11%	910	0.31%	1,921	1.14%	1,250	0.33%
Orleans	597	0.19%	0	-	537	0.18%	0	-	575	0.15%
Plaquemines	63,208	20.51%	86,720	26.07%	38,984	13.10%	1,816	1.08%	5,815	1.55%
St. Bernard	5,769	1.87%	13,344	4.01%	4,337	1.46%	0	-	291	0.08%
St. Charles	11,169	3.62%	12,672	3.81%	15,843	5.32%	13,807	8.18%	18,690	4.97%
St. James	95	0.03%	487	0.15%	2,837	0.95%	4,912	2.91%	7,111	1.89%
St. John the Baptist	18,450	5.99%	6,137	1.85%	8,391	2.82%	6,384	3.78%	15,786	4.20%
St. Martin	11,425	3.71%	15,039	4.52%	31,608	10.62%	15,903	9.42%	113,629	30.25%
St. Mary	26,004	8.44%	16,277	4.89%	20,908	7.03%	21,023	12.45%	34,693	9.23%
St. Tammany	4,638	1.51%	3,756	1.13%	5,167	1.74%	1,423	0.84%	2,067	0.55%
Tangipahoa	1,245	0.40%	745	0.22%	564	0.19%	826	0.49%	1,843	0.49%
Terrebonne	92,831	30.12%	72,846	21.90%	81,012	27.23%	57,756	34.21%	99,433	26.47%
Vermilion	5,313	1.72%	8,584	2.58%	14,481	4.87%	2,258	1.34%	1,813	0.48%
West Baton Rouge	0	-	0	-	0	-	0	-	97	0.03%
Total	**308,160**	**1**	**332,596**	**1**	**297,535**	**1**	**168,843**	**1**	**375,683**	**1**

Table 4. Nutria harvested by parish seasons 1-14, Coastwide Nutria Control Program.

PARISH	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012	
	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage
Acadia	0	-	0	-	0	-	0	-	0	-
Ascension	1,957	0.63%	7,029	2.10%	7,049	1.58%	3,435	1.01%	0	-
Assumption	3,863	1.25%	1,093	0.33%	2,930	0.66%	3,244	0.96%	3,582	1.01%
Calcasieu	19	0.01%	0	-	0	-	0	-	0	-
Cameron	649	0.21%	1,245	0.37%	1,177	0.26%	1,076	0.32%	413	0.12%
East Baton Rouge	0	-	0	-	0	-	0	-	0	-
Iberia	6,119	1.99%	978	0.29%	1,206	0.27%	286	0.08%	1,384	0.39%
Iberville	2,105	0.68%	231	0.07%	6,065	1.36%	886	0.26%	1,688	0.48%
Jefferson	11,299	3.67%	12,515	3.75%	11,506	2.58%	5,945	1.76%	6,178	1.74%
Jefferson Davis	0	-	0	-	0	-	0	-	0	-
Lafayette	0	-	0	-	0	-	0	-	0	-
Lafourche	25,473	8.26%	48,252	14.45%	39,564	8.87%	37,137	10.97%	37,415	10.56%
Livingston	695	0.23%	444	0.13%	2,186	0.49%	738	0.22%	0	-
Orleans	1,333	0.43%	656	0.20%	1,756	0.39%	2,279	0.67%	1,238	0.35%
Plaquemines	41,072	13.33%	42,212	12.64%	69,294	15.54%	80,241	23.70%	71,879	20.28%
St. Bernard	4,150	1.35%	13,965	4.18%	3,543	0.79%	29,278	8.65%	27,053	7.63%
St. Charles	18,271	5.93%	21,215	6.35%	27,221	6.10%	16,069	4.75%	10,830	3.06%
St. James	9,604	3.12%	8,990	2.69%	19,226	4.31%	9,167	2.71%	15,450	4.36%
St. John the Baptist	6,728	2.18%	10,189	3.05%	6,642	1.49%	9,447	2.79%	2,678	0.76%
St. Martin	54,726	17.76%	44,972	13.46%	63,619	14.27%	23,551	6.96%	36,562	10.32%
St. Mary	34,210	11.10%	34,811	10.42%	67,631	15.17%	43,533	12.86%	45,859	12.94%
St. Tammany	4,356	1.41%	5,680	1.70%	8,855	1.99%	6,562	1.94%	6,417	1.81%
Tangipahoa	2,323	0.75%	4,974	1.49%	267	0.06%	448	0.13%	141	0.04%
Terrebonne	78,934	25.61%	74,587	22.33%	106,226	23.82%	65,190	19.26%	85,587	24.15%
Vermilion	326	0.11%	0	-	0	-	0	-	0	-
West Baton Rouge	0	-	0	-	0	-	0	-	0	-
Total	**308,212**	**1**	**334,038**	**1**	**445,963**	**1**	**338,512**	**1**	**354,354**	**1**

Table 4 (Continued). Nutria harvested by parish seasons 1-14, Coastwide Nutria Control Program.

PARISH	2012-2013		2013-2014		2014-2015		2015-2016	
	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage	Nutria Harvested	Percentage
Acadia	59	0.02%	0	-	0	-	0	-
Ascension	0	-	7,889	2.03%	16,013	4.69%	4,693	1.34%
Assumption	6,302	1.62%	7,904	2.04%	7,603	2.22%	3,096	0.89%
Calcasieu	0	-	0	-	0	-	0	-
Cameron	174	0.04%	1,446	0.37%	2,848	0.83%	2,607	0.75%
East Baton Rouge	0	-	0	-	0	-	0	-
Iberia	5,360	1.38%	12,157	3.13%	7,296	2.14%	4,516	1.29%
Iberville	3,062	0.79%	3,046	0.78%	1,076	0.31%	2,930	0.84%
Jefferson	16,152	4.16%	10,244	2.64%	12,855	3.76%	12,239	3.50%
Jefferson Davis	0	-	0	-	0	-	0	-
Lafayette	0	-	0	-	0	-	0	-
Lafourche	47,723	12.29%	42,061	10.83%	29,190	8.54%	31,810	9.11%
Livingston	0	-	3,405	0.88%	1,279	0.37%	0	0.00%
Orleans	1,006	0.26%	929	0.24%	485	0.14%	1,103	0.32%
Plaquemines	22,171	5.71%	21,808	5.62%	23,883	6.99%	46,672	13.36%
St. Bernard	4,073	1.05%	5,201	1.34%	5,410	1.58%	12,939	3.70%
St. Charles	14,347	3.70%	14,164	3.65%	16,355	4.79%	13,685	3.92%
St. James	14,455	3.72%	5,443	1.40%	769	0.23%	7,651	2.19%
St. John the Baptist	6,832	1.76%	3,237	0.83%	3,394	0.99%	18,412	5.27%
St. Martin	40,356	10.40%	54,027	13.92%	50,392	14.75%	50,202	14.37%
St. Mary	64,386	16.59%	58,229	15.00%	40,045	11.72%	28,585	8.19%
St. Tammany	1,217	0.31%	1,485	0.38%	1,481	0.43%	9,562	2.74%
Tangipahoa	1,864	0.48%	4,637	1.19%	6,758	1.98%	4,894	1.40%
Terrebonne	138,305	35.63%	130,952	33.73%	114,373	33.47%	93,301	26.72%
Vermilion	316	0.08%	0	-	203	0.06%	341	0.10%
West Baton Rouge	0	-	0	-	0	-	0	-
Total	**388,160**	**1**	**388,264**	**1**	**341,708**	**1**	**349,235**	**1**

Table 4 (Continued). Nutria harvested by parish seasons 1-14, Coastwide Nutria Control Program.

PARISH	2002-2003			2003-2004			2004-2005			2005-2006		
	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun
Acadia	0	0	0	0	0	0	0	0	0	0	0	0
Ascension	0	2,306	404	0	4,093	1,381	100	1,678	80	470	908	300
Assumption	284	2,786	58	47	767	0	188	106	134	1,454	711	143
Calcasieu	0	143	0	0	374	0	213	24	212	57	1	0
Cameron	3,611	4,210	30	4,974	3,639	89	5,779	8,961	1,877	1,362	583	1,799
Iberia	0	1,353	59	636	1,324	0	1,286	1,310	926	1,215	449	1,350
Iberville	0	0	0	717	850	0	4,348	1,211	0	1,156	622	582
Jefferson	5,869	14,094	566	12,991	11,835	70	6,286	4,307	443	2,234	477	164
Jefferson Davis	121	0	0	82	0	0	158	16	0	109	1	0
Lafayette	19	10	10	0	25	0	0	10	0	0	0	0
Lafourche	11,807	16,826	219	28,516	22,780	440	12,221	18,212	1,977	9,213	11,050	4,598
Livingston	0	2,631	0	0	336	21	0	911	0	0	1,921	0
Orleans	287	219	91	0	0	0	538	0	0	0	0	0
Plaquemines	9,899	52,933	376	34,683	51,302	735	18,121	20,642	280	343	843	630
St. Bernard	2,877	2,892	0	5,412	7,783	149	727	3,617	0	0	0	0
St. Charles	2,099	8,706	364	2,801	9,543	329	1,279	13,958	631	1,863	10,915	1,029
St. James	48	47	0	97	350	40	32	2,752	57	278	4,239	395
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
St. Martin	1,497	9,593	335	5,784	8,790	465	10,684	9,703	11,269	4,137	5,355	6,412
St. Mary	11,073	14,849	82	6,616	9,619	42	9,700	10,798	442	9,266	11,202	554
St. Tammany	3,088	1,529	21	2,687	1,069	0	2,692	2,483	0	533	800	90
Tangipahoa	335	894	16	577	169	0	35	530	0	142	638	46
Terrebonne	46,761	45,317	753	44,419	26,335	2,092	31,730	45,893	3,512	28,132	25,577	4,047
Vermilion	2,370	2,729	214	5,119	3,435	30	5,580	7,900	572	1,075	1,182	0
West Baton Rouge	0	0	0	0	0	0	0	0	0	0	0	0
Total	**103,550**	**195,199**	**9,411**	**158,675**	**166,618**	**7,303**	**114,668**	**159,810**	**23,057**	**65,204**	**80,962**	**22,677**

Table 5. Method of take by parish for seasons 1-14, Coastwide Nutria Control Program. Totals may not be exact due to reporting of percentages.

PARISH	2006-2007			2007-2008			2008-2009			2009-2010		
	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun
Acadia	0	0	0	0	0	0	0	0	0	0	0	0
Ascension	0	2,008	218	0	1,905	52	217	6,751	61	338	6,712	0
Assumption	354	686	1,056	634	2,944	285	85	933	75	546	1,916	469
Calcasieu	19	0	0	19	0	0	0	0	0	0	0	0
Cameron	347	902	477	509	70	70	1,060	128	55	1,174	0	0
Iberia	6,695	4,635	7,580	3,623	1,248	1,247	258	524	196	932	274	0
Iberville	4,907	460	3,860	754	508	843	103	0	128	4,051	1,670	344
Jefferson	4,731	5,568	106	3,901	6,456	943	4,185	8,146	184	3,164	8,202	140
Jefferson Davis	0	0	0	0	0	0	0	0	0	0	0	0
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0
Lafourche	12,260	11,460	4,259	9,701	11,425	4,345	32,373	13,324	2,555	21,796	16,310	1,458
Livingston	0	1,250	0	0	695	0	0	444	0	460	1,726	0
Orleans	575	0	0	1,333	0	0	656	0	0	1,658	71	27
Plaquemines	3,200	2,554	61	30,093	10,609	0	21,394	19,372	1,447	25,379	43,480	436
St. Bernard	146	146	0	4,071	79	370	9,790	4,131	43	3,177	240	126
St. Charles	6,637	9,401	2,652	3,607	13,366	1,298	6,111	14,036	1,068	7,712	18,593	916
St. James	203	6,439	469	425	9,128	51	597	7,862	531	572	17,805	849
St. John the Baptist	4,223	9,215	2,348	2,323	3,834	572	1,490	8,372	327	2,856	3,776	10
St. Martin	39,972	35,737	37,920	27,937	17,123	9,666	21,134	17,512	6,326	43,341	12,952	7,326
St. Mary	12,810	19,997	1,886	10,783	21,304	2,123	13,357	18,480	2,974	13,026	51,170	3,435
St. Tammany	1,452	529	86	1,736	2,216	404	3,377	1,848	456	2,604	4,945	1,307
Tangipahoa	542	1,189	113	563	1,760	0	321	4,530	124	0	267	0
Terrebonne	36,867	51,357	11,209	28,055	45,000	5,879	25,846	46,139	2,602	40,669	62,264	3,292
Vermilion	1,174	494	145	262	65	0	0	0	0	0	0	0
West Baton Rouge	0	97	0	0	0	0	0	0	0	0	0	0
Total	**137,114**	**164,124**	**74,445**	**130,329**	**149,735**	**28,148**	**142,354**	**172,532**	**19,152**	**173,455**	**252,373**	**20,135**

Table 5 (continued). Method of take by parish for seasons 1-14, Coastwide Nutria Control Program. Totals may not be exact due to reporting of percentages.

PARISH	2010-2011			2011-2012			2012-2013			2013-2014		
	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun
Acadia	0	0	0	0	0	0	18	41	0	0	0	0
Ascension	0	3,107	0	0	0	0	0	0	0	368	7,482	39
Assumption	327	2,520	407	1,003	2,449	129	1,249	4,844	210	2,113	5,251	539
Calcasieu	315	0	0	0	0	0	0	0	0	0	0	0
Cameron	0	72	0	413	0	0	174	0	0	1,446	0	0
Iberia	1,103	46	89	222	1,163	0	1,602	2,862	896	5,579	5,906	671
Iberville	150	348	42	404	727	558	1,014	1,680	368	1,546	1,368	132
Jefferson	494	4,059	109	1,655	4,496	27	2,630	11,349	2,173	2,389	7,796	59
Jefferson Davis	1,872	0	0	0	0	0	0	0	0	0	0	0
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0
Lafourche	0	23,326	43	9,573	27,574	267	11,260	33,137	3,326	9,924	31,266	870
Livingston	13,713	738	0	0	0	0	0	0	0	985	2,420	0
Orleans	0	115	0	1,202	36	0	1,006	0	0	929	0	0
Plaquemines	2,162	67,649	557	25,139	46,498	241	8,347	13,641	182	6,265	15,449	95
St. Bernard	12,021	11,489	12	16,226	10,826	0	1,214	1,276	1,584	3,228	1,974	0
St. Charles	17,764	10,155	671	2,425	8,240	165	2,473	9,748	2,125	3,806	9,587	771
St. James	5,225	9,016	115	0	15,417	33	157	13,199	1,099	32	5,410	0
St. John the Baptist	35	5,922	327	1,366	1,312	0	397	6,401	35	510	2,645	82
St. Martin	3,191	11,902	1,548	11,596	17,696	7,269	12,270	19,881	8,205	15,574	33,631	4,822
St. Mary	10,115	36,334	246	7,450	36,295	2,113	13,393	44,951	6,042	6,503	46,810	4,917
St. Tammany	6,928	2,947	899	4,817	1,123	477	579	588	50	1,312	174	0
Tangipahoa	2,711	398	0	0	142	0	0	1,205	659	2,211	2,426	0
Terrebonne	50	31,676	8,499	32,570	45,238	7,782	57,953	64,349	16,002	39,868	82,356	8,728
Vermilion	24,953	0	0	0	0	0	130	186	0	0	0	0
West Baton Rouge	0	0	0	0	0	0	0	0	0	0	0	0
Total	**103,129**	**221,819**	**13,564**	**116,061**	**219,232**	**19,061**	**115,866**	**229,338**	**42,956**	**104,588**	**261,951**	**21,725**

Table 5 (continued). Method of take by parish for seasons 1-14, Coastwide Nutria Control Program. Totals may not be exact due to reporting of percentages.

PARISH	2014-2015			2015-2016		
	Trap	Rifle	Shotgun	Trap	Rifle	Shotgun
Acadia	0	0	0	0	0	0
Ascension	551	15,259	202	257	4,226	209
Assumption	1,088	5,555	959	1,263	1,117	716
Calcasieu	0	0	0	0	0	0
Cameron	2,848	0	0	2,607	0	0
Iberia	3,464	3,148	684	1,321	2,854	341
Iberville	229	809	39	0	2,420	510
Jefferson	2,913	9,481	462	3,228	8,590	421
Jefferson Davis	0	0	0	0	0	0
Lafayette	0	0	0	0	0	0
Lafourche	7,737	21,453	0	7,820	23,783	207
Livingston	0	1,279	0	0	0	0
Orleans	485	0	0	1,045	58	0
Plaquemines	6,570	17,193	120	12,362	33,110	1,200
St. Bernard	4,346	1,064	0	7,828	4,995	116
St. Charles	3,592	12,659	104	2,682	9,047	1,956
St. James	133	635	0	790	6,059	802
St. John the Baptist	1,055	2,226	113	3,794	13,511	1,107
St. Martin	20,118	25,891	4,384	23,973	22,706	3,523
St. Mary	6,003	29,024	5,019	1,363	24,494	2,729
St. Tammany	1,282	69	131	726	8,229	607
Tangipahoa	28	6,731	0	23	4,870	0
Terrebonne	36,381	65,519	12,471	21,032	57,978	14,291
Vermilion	101	101	0	73	268	0
West Baton Rouge	0	0	0	0	0	0
Total	**98,924**	**218,096**	**24,688**	**92,186**	**228,316**	**28,733**

Table 5 (continued). Method of take by parish for seasons 1-14, 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 Sites 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]
2008	23	16	1 (partial site)	6
2009	24	19	1 (partial site)	5[2]
2010	20	11	0	9
2011	11	10	0	1
2012	12	11	0	1
2013	14	12	0	2
2014	13	11	0	2
2015	12	11	0	1
2016	10	10	4 (partial sites)	0

Table 6. Status and number of nutria herbivory sites surveyed from 2002 to 2016.

[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	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	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
Lafourche	8	1,222	7	610	5	381	2	127	0	0
Jefferson	17	3,003	10	1,805	9	1,718	7	1,383	5	874
Plaquemines	10	882	13	2,540	7	2,494	7	1,850	7	1763
St. Charles	6	768	6	1,266	9	2,564	6	4,690	5	3249
Cameron	0	0	0	0	0	0	0	0	1	233
St. Bernard	6	921	5	918	5	1,035	4	882	4	1,004
St. John	0	0	1	20	2	111	2	240	2	241
Iberia	0	0	0	0	0	0	1	158	0	0
St. Tammany	4	752	2	360	0	0	0	0	0	0
Orleans	2	686	2	962	0	0	0	0	0	0
St. Mary	0	0	0	0	0	0	0	0	0	0
Vermilion	0	0	4	886	5	924	2	389	1	76
Jefferson Davis	0	0	0	0	0	0	0	0	1	88
St. John the Baptist	0	0	0	0	0	0	0	0	0	0
Total	**94**	**21,185**[1]	**84**	**21,888**[1]	**69**	**16,906**[1]	**49**	**142,60**[1]	**40**	**14,868**[1,2]

Table 7. Number of nutria damaged sites and acres damaged along transects by parish in coastal Louisiana, 2002 - 2016.

[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.

PARISH	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Terrebonne	12	5,915	12	3,768	10	3,162	10	2,241	9	1,591
Lafourche	2	328	2	338	2	207	1	19	1	88
Jefferson	3	177[3]	2	69	1	29	0	0	0	0
Plaquemines	0	0	1	11	1	9	0	0	0	0
St. Charles	4	2,216[3]	5[3]	2,215[3]	4	1,895	0	0	0	0
Cameron	1	167	0	0	1	120	0	0	0	0
St. Bernard	1	225[3]	0	0	0	0	0	0	0	0
St. John	0	0	0	0	0	0	0	0	0	0
Iberia	0	0	0	0	0	0	0	0	0	0
St. Tammany	0	0	0	0	0	0	0	0	0	0
Orleans	0	0	0	0	0	0	0	0	0	0
St. Mary	0	0	0	0	0	0	0	0	0	0
Vermilion	0	0	0	0	0	0	0	0	0	0
Jefferson Davis	1	81	0	0	0	0	0	0	0	0
St. John the Baptist	1	135	1	70	0	0	0	0	0	0
Total	**25**	**9,244**[1,3]	**23**	**6,471**[1,3]	**19**	**5,422**[1]	**11**	**2,260**[1]	**10**	**16,791**

Table 7 (Continued). Number of nutria damaged sites and acres damaged along transects by parish in coastal Louisiana, 2002 - 2016.

[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.

PARISH	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Terrebonne	10	1033	10	1212	9	1078	10	1586	10	1716
Lafourche	1	96	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0	0	0
Plaquemines	0	0	0	0	0	0	0	0	0	0
St. Charles	0	0	0	0	0	0	0	0	0	0
Cameron	0	0	0	0	0	0	0	0	0	0
St. Bernard	0	0	0	0	0	0	0	0	0	0
St. John	0	0	0	0	0	0	0	0	0	0
Iberia	0	0	0	0	0	0	0	0	0	0
St. Tammany	0	0	0	0	0	0	0	0	0	0
Orleans	0	0	0	0	0	0	0	0	0	0
St. Mary	0	0	2	21	2	37	1	16	1	16
Vermilion	0	0	0	0	0	0	0	0	0	0
Jefferson Davis	0	0	0	0	0	0	0	0	0	0
St. John the Baptist	0	0	0	0	0	0	0	0	0	0
Total	**11**	**1,129**	**12**	**1,233**	**11**	**1,115**	**11**	**1,602**	**11**	**1,732**

Table 7 (Continued). Number of nutria damaged sites and acres damaged along transects by parish in coastal Louisiana, 2002 - 2016.

[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	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	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
Intermediate	39	7,416	31	8,086	25	5,128	19	3,789	16	3,421
Brackish	14	2,176	17	2,931	7	1,213	4	660	1	174
Total	**94**	**21,185**	**84**	**21,888**	**69**	**16,906**	**49**	**14,260**	**40**	**14,868**

Table 8. Number of nutria damaged sites and acres damaged, by marsh type along transects in coastal Louisiana during 2002 to 2016; numbers include sites converted to open water.
[1] Total includes sites that were partially converted to open water.

MARSH TYPE	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Fresh	21	8,842	21	6,127	17	5,384	11	2,260	10	1,679
Intermediate	3	298	2	44	2	38	0	0	0	0
Brackish	1	104	0	0	0	0	0	0	0	0
Total	**25**[1]	**9,244**[1]	**23**	**6,471**[1]	**19**	**5,422**	**11**	**2,260**	**10**	**1,679**

Table 8 (Continued). Number of nutria damaged sites and acres damaged, by marsh type along transects in coastal Louisiana during 2002 to 2016; numbers include sites converted to open water.
[1] Total includes sites that were partially converted to open water.

MARSH TYPE	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Fresh	11	1,129	12	1,233	11	1,115	11	1,602	11	1716
Intermediate	0	0	0	0	0	0	0	0	0	0
Brackish	0	0	0	0	0	0	0	0	0	0
Total	**11**	**1,129**	**12**	**1,233**	**11**	**1,115**	**11**	**1,602**	**11**	**1,716**

Table 8 (Continued). Number of nutria damaged sites and acres damaged, by marsh type along transects in coastal Louisiana during 2002 to 2016; numbers include 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	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No nutria sign visible	21	5,990	23	5,972	13	3,569	12	2,992	4	519
Nutria sign visible	31	4,379	26	3,562	29	6,040	28	6,748	26	11,223
Abundant feeding	17	4,198	19	6,682	19	5,251	4	4,113	1	573
Heavy feeding	17	5,568	14	5,599	7	2,026	1	273	0	0
Total	**86**	**20,135**	**81**	**21,815**	**69**	**16,886**	**47**	**14,126**	**31**	**12,315**

Table 9. Number of nutria damage sites and acres damaged by revised nutria relative abundance rating in coastal Louisiana during 2002 to 2016; numbers do not include sites converted to open water.

NUTRIA RELATIVE ABUNDANCE RATING	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No nutria sign visible	2	73	0	0	0	0	0	0	0	0
Nutria sign visible	12	3,402	13	2,234	6	517	0	0	1	139
Abundant feeding	5	1,495	8	3,522	8	1,169	7	640	9	1,540
Heavy feeding	4	3,658	2	415	5	3,736	4	1,620	0	0
Total	**23**	**8,628**	**23**	**6,171**	**19**	**5,422**	**11**	**2,260**	**10**	**1,679**

Table 9 (Continued). Number of nutria damage sites and acres damaged by revised nutria relative abundance rating in coastal Louisiana during 2002 to 2016; numbers do not include sites converted to open water.

NUTRIA RELATIVE ABUNDANCE RATING	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No nutria sign visible	0	0	0	0	0	0	0	0	0	0
Nutria sign visible	3	117	6	198	2	22	3	59	7	581
Abundant feeding	8	1,012	6	1,035	9	1,093	7	741	6	1,077
Heavy feeding	0	0	0	0	0	0	1	802	1	74
Total	**11**	**1,129**	**12**	**1,233**	**11**	**1,115**	**11**	**1,602**	**3193**	**1,732**

Table 9 (Continued). Number of nutria damage sites and acres damaged by revised nutria relative abundance rating in coastal Louisiana during 2002 to 2016; numbers do not include sites converted to open water.

VEGETATIVE DAMAGE RATING	2002		2003		2004		2005		2006	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No vegetative damage	1	30	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
Moderate vegetative damage	44	13,156	41	9,221	29	9,536	12	5,905	9	4,581
Severe vegetative damage	13	3,451	14	3,862	4	675	1	151	1	113
Converted to open water	8	1,050	3	73	1	20	2	134	9	2,553
TOTAL	**94**	**21,185**	**84**	**21,888**	**69**	**16,906**	**49**	**14,260**	**40**	**14,868**

Table 10. Number of nutria damage sites and number of acres by the vegetative damage rating in coastal Louisiana 2002 to 2016.
[1] Total includes sites that were partially converted to open water.

VEGETATIVE DAMAGE RATING	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No vegetative damage	0	0	0	0	0	0	0	0	0	0
Minor vegetative damage	17	4,021	17	5,402	15	5,102	11	2,260	10	1,679
Moderate vegetative damage	6	4,607	5	640	4	320	0	0	0	0
Severe vegetative damage	0	0	1	129	0	0	0	0	0	0
Converted to open water	31	6161	11	300	11	90	0	0	0	0
TOTAL	**261**	**92,441**	**241**	**64,711**	**20**	**5,512**	**11**	**2,260**	**10**	**1,679**

Table 10 (Continued). Number of nutria damage sites and number of acres by the vegetative damage rating in coastal Louisiana 2002 to 2016.
[1] Total includes sites that were partially converted to open water.

VEGETATIVE DAMAGE RATING	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
No vegetative damage	0	0	0	0	0	0	0	0	0	0
Minor vegetative damage	11	1,129	7	285	8	898	9	772	2	40
Moderate vegetative damage	0	0	3	726	3	217	2	830	6	558
Severe vegetative damage	0	0	2	222	0	0	0	0	3	1134
Converted to open water	0	0	0	0	0	0	0	0	0	0
TOTAL	11	1,129	12	1,233	11	1,115	11	1,602	11	1,732

Table 10 (Continued). Number of nutria damage sites and number of acres by the vegetative damage rating in coastal Louisiana 2002 to 2016.

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

AGE OF DAMAGE AND CONDITON RATING	2002		2003		2004		2005		2006	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Recovered	12	1,119	16	1,674	24	6,049	29	4,169	131	13,411
Old Recovering	51	7,694	51	14,382	53	12,338	39	10,878	21	9,429
Old Not Recovering	31	11,449	17	5,375	5	2,898	2	656	4	1,519
Recent Recovering	0	0	0	0	1	35	1	10	0	0
Recent Not Recovering	0	0	0	0	0	0	0	0	1	285
Current Damage	4	992	13	2,058	9	1,615	5	2,582	5	1,082
Total	**98**	**21,254**	**97**	**23,489**	**92**	**22,935**	**76**	**18,295**	**441**	**136,561**

Table 11. Number of nutria damage sites by age of damage and condition rating in coastal Louisiana in 2002 to 2014.
[1] Total includes sites that were partially recovered.

AGE OF DAMAGE AND CONDITON RATING	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Recovered	111	17,831	6	736	51	6731	9	1,914	1	62
Old Recovering	14	5,011	15	3,852	16	5,321	10	2,198	5	1,270
Old Not Recovering	5	2,874	3	1,914	2	57	0	0	4	224
Recent Recovering	0	0	0	0	0	0	0	0	0	0
Recent Not Recovering	0	0	0	0	0	0	0	0	0	0
Current Damage	4	743	5	405	1	44	1	62	1	185
Total	**341**	**104,111**	**29**	**6,907**	**23**	**6,095**	**20**	**4,174**	**11**	**1,741**

Table 11 (Continued). Number of nutria damage sites by age of damage and condition rating in coastal Louisiana in 2002 to 2014.
[1] Total includes sites that were partially recovered.

AGE OF DAMAGE AND CONDITON RATING	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Recovered	1	36	2	96	2	34	1	23	0	0
Old Recovering	8	1,033	1	29	7	259	3	60	3	109
Old Not Recovering	1	53	8	1,168	3	833	7	1,481	8	1,624
Recent Recovering	0	0	0	0	0	0	0	0	0	0
Recent Not Recovering	0	0	0	0	0	0	0	0	0	0
Current Damage	2	43	3	36	1	23	1	61	0	0
Total	**12**	**11,651**	**141**	**13,291**	**131**	**11,491**	**12**	**16,251**	**11**	**1,732**

Table 11 (Continued). Number of nutria damage sites by age of damage and condition rating in coastal Louisiana in 2002 to 2016.
[1] Total includes sites that were partially recovered.

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

Table 12. Number of nutria damage sites and acres damaged, by prediction of recovery rating in coastal Louisiana in 2002 to 2016.

PREDICTION OF RECOVERY BY END OF GROWING SEASON	2007		2008		2009		2010		2011	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Full Recovery	2	350	1	80	2	1,588	2	84	0	0
Partial Recovery	21	8,278	22	6,091	16	3,543	9	2,176	10	1,679
Increased Damage	0	0	0	0	1	291	0	0	0	0
No Recovery Predicated	0	0	0	0	0	0	0	0	0	0
TOTAL	**23**	**8,628**	**23**	**6,171**	**19**	**5,422**	**11**	**2,260**	**10**	**1,679**

Table 12 (Continued). Number of nutria damage sites and acres damaged, by prediction of recovery rating in coastal Louisiana in 2002 to 2016.

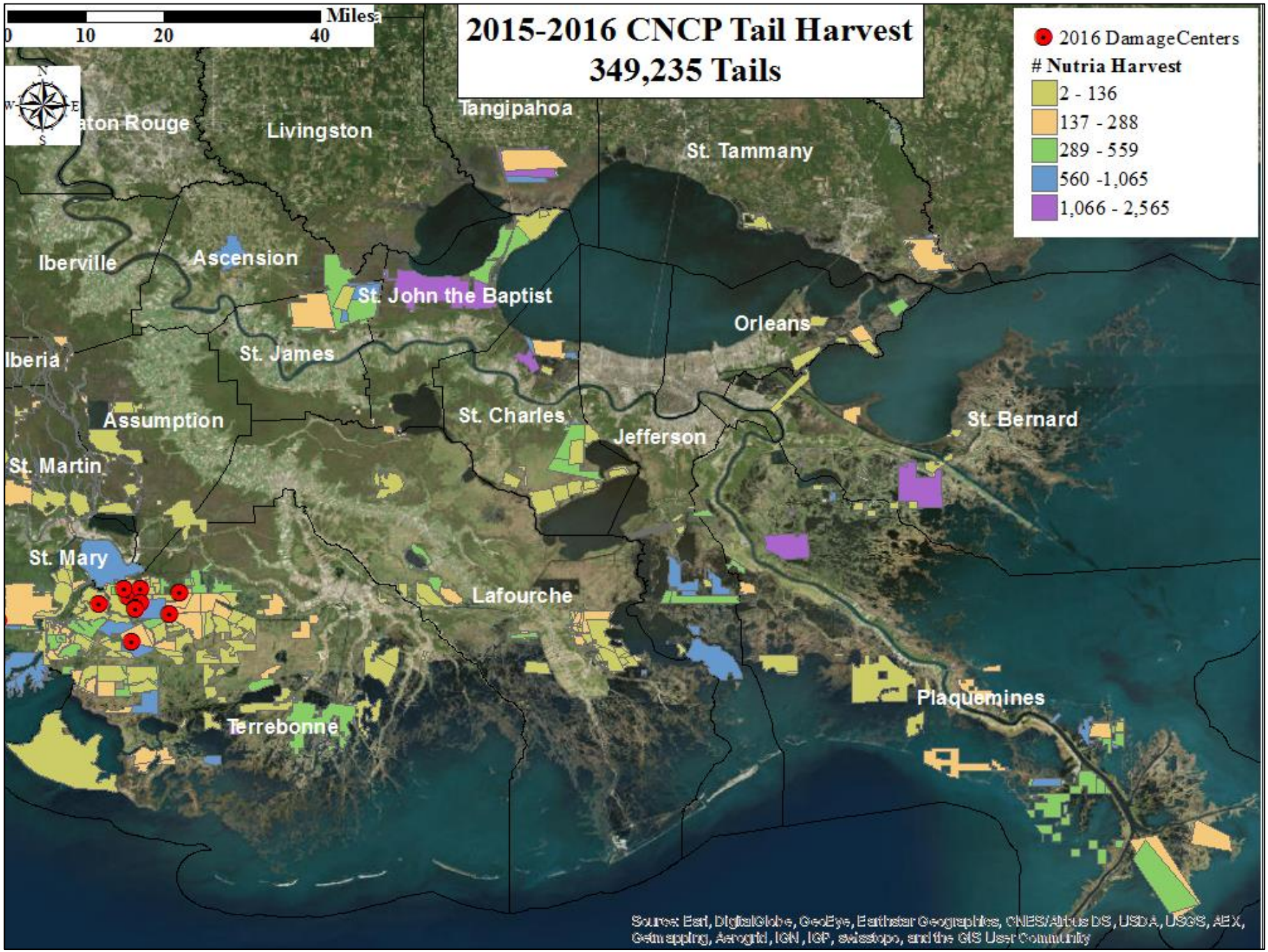
PREDICTION OF RECOVERY BY END OF GROWING	2012		2013		2014		2015		2016	
	NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF		NUMBER OF	
	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES	SITES	ACRES
Full Recovery	0	0	0	0	0	0	1	16	7	1,550
Partial Recovery	11	1,129	3	665	2	22	3	61	0	0
Increased Damage	0	0	9	568	9	1,093	7	1,525	3	109
No Recovery Predicated	0	0	0	0	0	0	0	0	1	74
TOTAL	11	1,129	12	1,233	11	1,115	11	1,602	11	1,732

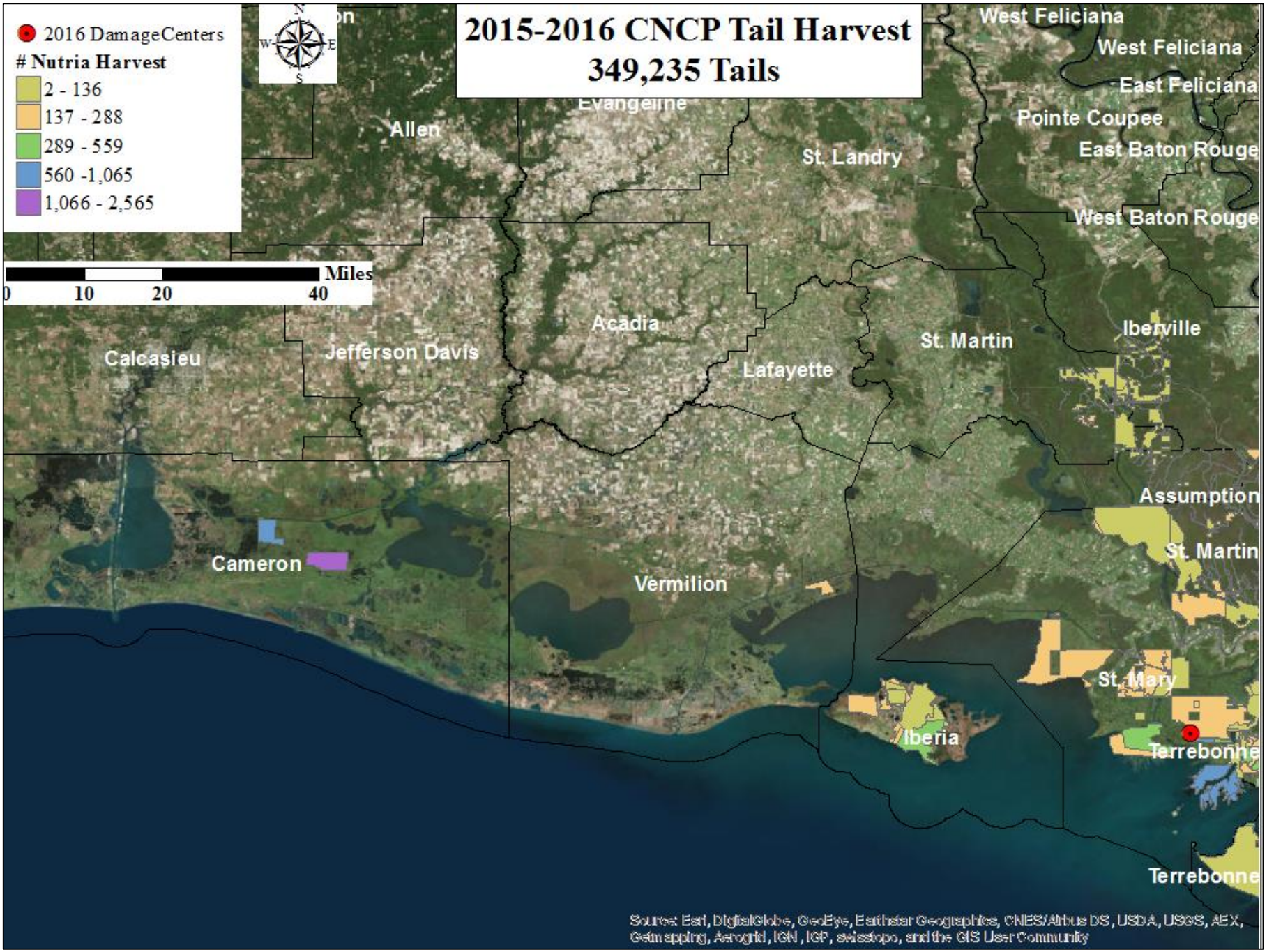
Table 12 (Continued). Number of nutria damage sites and acres damaged, by prediction of recovery rating in coastal Louisiana in 2002 to 2016.

APPENDIX B.
2016 Nutria Vegetative Damage Sites

SITE	MARSH TYPE	LATITUDE	LONGITUDE	DAMAGE TYPE	SECONDARY DAMAGE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE AND CONDITION	PREDICTION
8	F	29.57	-91.17	Nutria	Hog	16	0	2	1	1	2
9	F	29.59	-91.12	Nutria	Hog	28	0	2	2	1	2
17	F	29.54	-91.04	Nutria		207	0	2	1	2	0
120	F	29.60	-91.08	Nutria	Hog	802	0	3	2	2	0
274	F	29.57	-91.09	Nutria		203	0	2	1	2	0
400	F	29.58	-91.11	Nutria		209	0	2	1	2	0
418	F	29.58	-91.02	Nutria		17	0	2	1	2	2
425	F	29.56	-91.10	Nutria		17	0	1	1	2	0
433	F	29.53	-91.35	Nutria		16	0	1	1	1	1
434	F	29.49	-91.10	Nutria		26	0	1	1	2	0
435	F	29.52	-91.35			23	0			0	
436	F	29.56	-91.10	Nutria		61	0	2	1	5	0

Table 13. 2015 Nutria Vegetative Damage Sites. Nutria relative abundance rating (NRAR): (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. Vegetative damage rating (VDR): (0) no vegetative damage, (1) minor vegetative damage, (2) moderate vegetative damage, (3) severe vegetative damage, (4) converted to open water. Age of damage and condition: (0) recovered (1) Old recovering (2) old not recovering (3) recent recovering (4) recent not recovering (5) current (occurring now). Prediction: (0) no recovery predicted (1) full recovery (2) partial recovery (3) increased damage. * indicates a null value in this category. **Site 435 was marked as recovered.**


2015-2016 CNCP Tail Harvest
349,235 Tails
Miles
0 10 20 40
2016 DamageCenters
Nutria Harvest
2 - 136
137 - 288
289 - 559
560 -1,065
1,066 - 2,565
Livingston
Tangipahoa
St. Tammany
Iberville
Ascension
St. John the Baptist
Orleans
Iberia
St. James
Assumption
St. Charles
Jefferson
St. Bernard
St. Martin
St. Mary
Lafourche
Plaquemines
Terrebonne
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


2015-2016 CNCP Tail Harvest
349,235 Tails
2016 DamageCenters
Nutria Harvest
2 - 136
137 - 288
289 - 559
560 -1,065
1,066 - 2,565
Miles
0 10 20 40
N
W
E
S
Allen
Evangeline
St. Landry
West Feliciana
West Feliciana
East Feliciana
Pointe Coupee
East Baton Rouge
West Baton Rouge
Acadia
Calcasieu
Jefferson Davis
Lafayette
St. Martin
Iberville
Assumption
St. Martin
Cameron
Vermilion
St. Mary
Iberia
Terrebonne
Terrebonne
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX C.
Data collected at each damage site during the 2016 vegetative damage survey.

SITE NUMBER	MARSH TYPE	LATITUDE	LONGITUDE	SITE	DAMAGE TYPE	SECONDARY DAMAGE	DAMAGED ACRES	ACRES TO OPEN WATER	NRAR	VDR	AGE OF DAMAGE & CONDITION	PREDICTION
8	Fresh	29.56	-91.17	8	Nutria		23.96	0.0	1	1	1	2
9	Fresh	29.59	-91.12	9	Nutria		20.73	5.1	1	2	2	0
17	Fresh	29.55	-91.04	17	Nutria		235.76	0.0	1	2	2	0
120	Fresh	29.61	-91.06	120	Nutria	Hog	897.11	0.0	2	3	2	0
274	Fresh	29.57	-91.09	274	Nutria		73.63	81.2	3	3	2	3
400	Fresh	29.58	-91.11	400	Nutria		163.72	38.3	2	3	2	0
418	Fresh	29.58	-91.02	418	Nutria		18.40	0.0	1	2	2	0
425	Fresh	29.56	-91.10	425	Nutria		16.63	1.0	2	2	2	0
433	Fresh	29.53	-91.35	433	Nutria		15.97	0.0	1	1	1	2
434	Fresh	29.50	-91.11	434	Nutria		197.72	0.0	1	2	2	0
436	Fresh	29.56	-91.10	436	Nutria		68.73	0.0	1	2	1	2

Table 14. 2016 Nutria Vegetative Damage Sites. Nutria relative abundance rating (NRAR): (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. Vegetative damage rating (VDR): (0) no vegetative damage, (1) minor vegetative damage, (2) moderate vegetative damage, (3) severe vegetative damage, (4) converted to open water. Age of damage and condition: (0) recovered (1) Old recovering (2) old not recovering (3) recent recovering (4) recent not recovering (5) current (occurring now). Prediction: (0) no recovery predicted (1) full recovery (2) partial recovery (3) increased damage. * indicates a null value in this category.

2016 NUTRIA VEGETATIVE DAMAGE SURVEY

DATE:_____

TRANSECT#_____ **PHOTOGRAPHY**

MARSH TYPE_____ FRAME#_____

LAT:_____ TIME start:_____

LON:_____ TIME finish:_____

NOTES:

LOCATION DESCRIPTION

ON TRANSECT # _____
EAST OF TRANSECT _____
WEST OF TRANSECT_____

SITE#_____
NEW SITE ___Y ___N

DAMAGE TYPE

___DAMAGE NOT RELATED TO NUTRIA FEEDING
___DAMAGE – STORM
___DAMAGE – MUSKRAT
___DAMAGE – NUTRIA
___DAMAGE – OTHER_____
___DAMAGED AREA SUBJECT TO TIDAL ACTION: ___Y ___N

ESTIMATED SIZE OF AREA (ACRES)_____

NUTRIA VISIBLE IN AREA

NUTRIA SIGHTED ___Y ___N

NUTRIA SIGHTED_____

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)

PLANT SPECIES	IMPACTED	RECOVERING	PLANT SPECIES	IMPACTED	RECOVERING
Alternanthera philoxeroides			Juncus spp.		
Aster spp.			Ludwigia spp.		
Bacopa spp.			Lythrum lineare		
Bidens laevis			Panicum hemitomon		
Cephalanthus occidentalis			Pluchea spp.		
Colocasia esculenta			Sagittaria spp.		
Decodon spp.			Scirpus spp.		
Distichlis spicata			Spartina alterniflora		
Eichhornia crassipes			Spartina patens		
Eleocharis cellulose			Typha spp.		
Eleocharis parvula					
Hydrocotyle spp.					
Iris virginica					

AGE OF DAMAGE AND CONDITION

___RECOVERED	(0)
___OLD RECOVERING	(1)
___OLD NOT RECOVERING	(2)
___RECENT RECOVERING	(3)
___RECENT NOT RECOVERING	(4)
___CURRENT (OCCURING NOW)	(5)

PREDICTION OF RECOVERY BY END OF 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 2016 Growing Season

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