

**SANDHILL LAKES MITIGATION BANK
(FITZHUGH CARTER TRACT)
OF
ECONFINA CREEK WILDLIFE MANAGEMENT AREA
ANNUAL REPORT 2014-2015**



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TABLE OF CONTENTS

LIST OF FIGURES.....	2
LIST OF TABLES.....	5
LIST OF APPENDICES.....	6
INTRODUCTION.....	7
HABITAT.....	7
Ecological and Land Cover Classification.....	7
Water Levels.....	9
Photo Plots.....	10
FISH AND WILDLIFE POPULATIONS.....	13
Freshwater Fish.....	14
Fish Population Assessment.....	14
Electrofishing.....	14
Public Fishing.....	19
Wildlife Populations.....	25
White-tailed Deer.....	25
Management Objectives.....	25
Population Trends.....	25
Harvest and Hunting Pressure.....	28
Wild Turkey.....	32
Management Objectives.....	32
Harvest.....	32
Small Game.....	33
Waterfowl.....	34
Harvest.....	34
Wood Duck Nest Boxes.....	36
Avifauna.....	38
Wading Birds.....	38
Passerines.....	41
Bluebird Boxes.....	47
Kestrel Boxes.....	49
Summer Whistle Counts.....	52
Mourning Dove Banding.....	55
Herpetofauna.....	57
Snake Traps.....	57
Additional Activities.....	60
Wild Hog Removal.....	60
Dry Pond Bat Roosts.....	61
LITERATURE CITED.....	65

LIST OF FIGURES

Figure 1. Habitat restoration and land management activities completed by NFWFMD and private contractors from July 2014 - June 2015 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	9
Figure 2. Monthly fluctuations in water levels from July 2012 - July 2015 on major water bodies within the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.	10
Figure 3. Historic and recently added photo plot locations used to document habitat change over time on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	12
Figure 4. View from photo plot 15 illustrating how prescribed fire, hardwood eradication, and longleaf pine and wiregrass plantings, among other land management activities, have influenced habitat change at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.	13
Figure 5. Electroshocking is conducted in the spring and fall annually to assess sportfish abundances on Black, Dry, and Green Ponds of the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	15
Figure 6. CPUE results from fall 2005 - spring 2015 sampling efforts on Black Pond of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.	16
Figure 7. CPUE results from fall 2005 - spring 2015 sampling efforts on Dry Pond of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Also shown are water depths during each sample season.	17
Figure 8. CPUE results from fall 2005 - spring 2015 sampling efforts on Green Ponds of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Also shown are water depths during each sampling season.	18
Figure 9. Total number of hours fished from 2006 - 2015 on all area ponds combined at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	20
Figure 10. Hours fished per month on Dry, Black, Deep Edge, and Green Ponds in 2014-15 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	21
Figure 11. Angler creel trends from 2007 - 2015 on all area ponds of the Carter Tract of Econfina Creek WMA, Washington County, Florida.	22
Figure 12. Angler success rate (# fish caught/hour of fishing effort) from 2008 - 2015 on area ponds of the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Green Ponds were closed to fishing during the 2008 - 09 and 2012 - 13 fishing seasons due to drought conditions.	24

Figure 13. Survey routes and locations of deer observations during the September 2014 line-transect distance sampling conducted on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	26
Figure 14. Trend in White-tailed deer density as estimated using line transect distance sampling at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida, 2007 - 2014.	27
Figure 15. Comparison of hunter participation by quote hunt from 2006 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	28
Figure 16. Overall hunter success rate from 2006 - 2015 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	29
Figure 17. Age structure of bucks harvested over time at Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, FL.*Age was not recorded for the buck harvested in 2006.	31
Figure 18. Turkey harvest success rate from 2007 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	33
Figure 19. Small game hunter participation and harvest success on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2005 - 2015.....	34
Figure 20. Duck hunter participation and harvest from 2006 - 2015 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	35
Figure 21. Duck hunter success rate (ducks harvested/man-day) on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida, 2006 - 2015.....	36
Figure 22. Current wood duck box locations across the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Three boxes (purple dots) were moved from Pine Log Creek to Dykes Mill Pond in January, 2015.....	37
Figure 23. Adult wading birds and chicks observed on Little Deep Edge wading bird colony from 2008 - 2015, Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	40
Figure 24. Wading bird colony along Dykes Mill Pond discovered in January of 2015. Red line denotes great blue heron and anhinga colony, Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	41
Figure 25. Location of point count surveys conducted May and June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	42
Figure 26. Shannon Wiener Diversity Index (H') compared from 2008 - 2015 among habitat types at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	46

Figure 27. Location and use of bluebird nest boxes in 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida..... 48

Figure 28. Location of kestrel nest boxes at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. 51

Figure 29. Mean number of northern bobwhites counted at each summer whistle count survey station in June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. 53

Figure 30. Comparison of average whistles heard per listening station during 2013-2015 surveys on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida..... 54

Figure 31. In conjunction with national long-term banding efforts, the Fitzhugh Carter Tract of Econfina Creek WMA in Washington County, Florida is one of the sites participating in Florida's statewide dove banding program. 55

Figure 32. Mourning doves were trapped (left), banded with U.S. Fish and Wildlife identification bands, and age, sex, and molt sequence (right) were recorded in July 2013 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida (arrow denotes the emergence of new primary feather #06 following on a hatch year mourning dove)..... 56

Figure 33. Location of upland snake traps used for sampling herpetofauna on the Fitzhugh Carter Tract of Econfina Creek WMA, Washinton County, Florida. 58

Figure 34. Snake trap capture results from September - October 2014 and March - April 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida..... 59

Figure 35. One of two roost trees on Dry Pond used by a maternity colony of southeastern myotis (*Myotis austroriparius*) during 2013 (left). The location of both roost trees on Dry Pond is shown at right. 61

Figure 36. A maternity colony of southeastern myotis (*Myotis austroriparius*) was again documented during summer 2013 using two roost trees on Dry Pond at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. 63

LIST OF TABLES

Table 1. Habitat management and restoration activities implemented by NFWMD from July 2014 - June 2015 on the Fitzhugh Cater Tract of Econfina Creek WMA, Washington County, Florida. 8

Table 2. Number of fish caught by species per pond at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2014 - June 2015. 22

Table 3. Fishing success rate (fish caught/hours of fishing effort) on area ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2014 - June 2015..... 23

Table 4. Morphometric parameters of deer harvested during 2014-15 quote hunts on the Carter Tract of Econfina Creek WMA, Washington County, Florida. 29

Table 5. Reproductive success measurements of wood ducks from 2006 - 2015 on Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. 38

Table 6. Bluebird box occupancy, egg success, and nest success during spring 2011 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida..... 49

Table 7. Dove banding results from 2007 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. 56

LIST OF APPENDICES

Appendix I. Fitzhugh Carter Tract of Econfina Creek WMA Regulations Summary and Area Map, July 1, 2014 – June 30, 2015.....	68
Appendix II. 2014 - 2015 Annual Work Plan and Accomplishment Report for the Fitzhugh Carter Tract of Econfina Creek Wildlife Management Area.....	72
Appendix III. Catch-per-unit-effort (CPUE) results for sportfish sampled via electrofishing at Black and Dry Ponds in November 2014 and April 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	80
Appendix IV. Number of fish caught and released per pond from July 2014 - June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	81
Appendix V. Percent nest success, no. of nests, avg. clutch size, and estimated duckling survival/clutch of wood duck (<i>Aix sponsa</i>) nest boxes (2007 - 2015) by water body on the Carter Tract of Econfina Creek WMA, Washington County, Florida.....	82
Appendix VI. Wading bird survey results (2008 - 15) from Little Deep Edge Pond at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.....	84
Appendix VII. Bird species (n=127) documented on the Fitzhugh Carter Tract of Econfina Creek WMA, as of June 2015.....	86
Appendix VIII. Comprehensive list of herpetofaunal species (n=62) documented on the Fitzhugh Carter Tract of Econfina Creek WMA, 2005 - 2015.....	89
Appendix IX. Snake trap array capture results from July 2014 – June 2015 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.....	91

INTRODUCTION

The Sand Hill Lakes Mitigation Bank property (referred to hereafter as the Carter Tract) is a 2,175-acre parcel located in south-central Washington County, approximately five miles north of State Road 20 and one mile west of State Road 77. The Carter Tract was purchased by the Northwest Florida Water Management District (NFWFMD) in October 2003, and established by the Florida Fish and Wildlife Conservation Commission (FWC) as a tract of the Econfina Creek Wildlife Management Area (WMA). A mitigation bank permit from the Florida Department of Environmental Protection (DEP) was issued to the NFWFMD in August 2005 to manage the property. Management objectives identified by the NFWFMD include wetlands restoration, preservation, and management; aquatic habitat preservation; erosion control; and uplands restoration and management. In June 2005, FWC entered into a cost-share agreement with the NFWFMD to develop and implement a comprehensive fisheries and wildlife management program for the Carter Tract. Following nine years of successful partnership, in May 2014 this agreement was renewed for an additional five years through 2019. In support of this cost-share agreement, this annual report is a comprehensive summary of the biological surveys, management activities, public use, and law enforcement monitoring conducted from July 1, 2014 - June 30, 2015.

HABITAT

Ecological and Land Cover Classification

The Carter Tract harbors several distinct ecological communities. A significant portion of the property is upland sandhill habitat (approx. 1,150 acres), which was historically logged for longleaf pine (*Pinus palustris*) and re-planted in pine plantation or left to regenerate with pine (*Pinus* spp.), live oak (*Quercus virginiana*), and scrub oaks (*Quercus* spp.). Interspersed within the uplands are approximately 875 acres of mesic and hydric habitats comprised of Swamp Lakes, Basin Swamps and Marshes, Seepage Streams, isolated Depression Marshes, Mesic Flatwoods, Baygalls, Wet Prairie, and Seepage Slopes. The remaining 150 acres are natural Sinkholes and Sinkhole lakes (isolated, steep-sided karst ponds and shallow, gently-sloping lakes).

NFWFMD has led restoration efforts of the natural communities on Carter Tract that were degraded by timber operations and suppression of natural fire regimes. Restoration management

has included mechanical reduction/herbicide of hardwoods and sand pine (*Pinus clausa*), native groundcover plantings, slash pine (*Pinus elliotii*) plantation thinning, and prescribed burning. Table 1 displays the habitat management that occurred on Carter Tract FY 2014-15. Figure 1 shows the location of restoration/management activities, which transitioned land cover classifications closer to their targeted goals. Because wildlife and habitat are not mutually exclusive, the documentation of annual restoration/management activities is very important, and inclusion of this information in this report underscores the importance of habitat improvements to the enhancement of wildlife populations as evidenced by corresponding wildlife survey data.

Table 1. Habitat management and restoration activities implemented by NFWMD from July 2014 - June 2015 on the Fitzhugh Cater Tract of Econfina Creek WMA, Washington County, Florida.

Management/Restoration Activity	Acreage	Planting Density	Month
Growing season prescribed burning	100	n/a	May 2015
Dormant season prescribed burning	238	n/a	February- March 2015
Butterfly milkweed (<i>Asclepias tuberosa</i>) planting	12	3,250 total plants	June 2015
Bahiagrass (<i>Paspalum notatum</i> Flugge) mechanical reduction/herbicide	37	n/a	June 2015

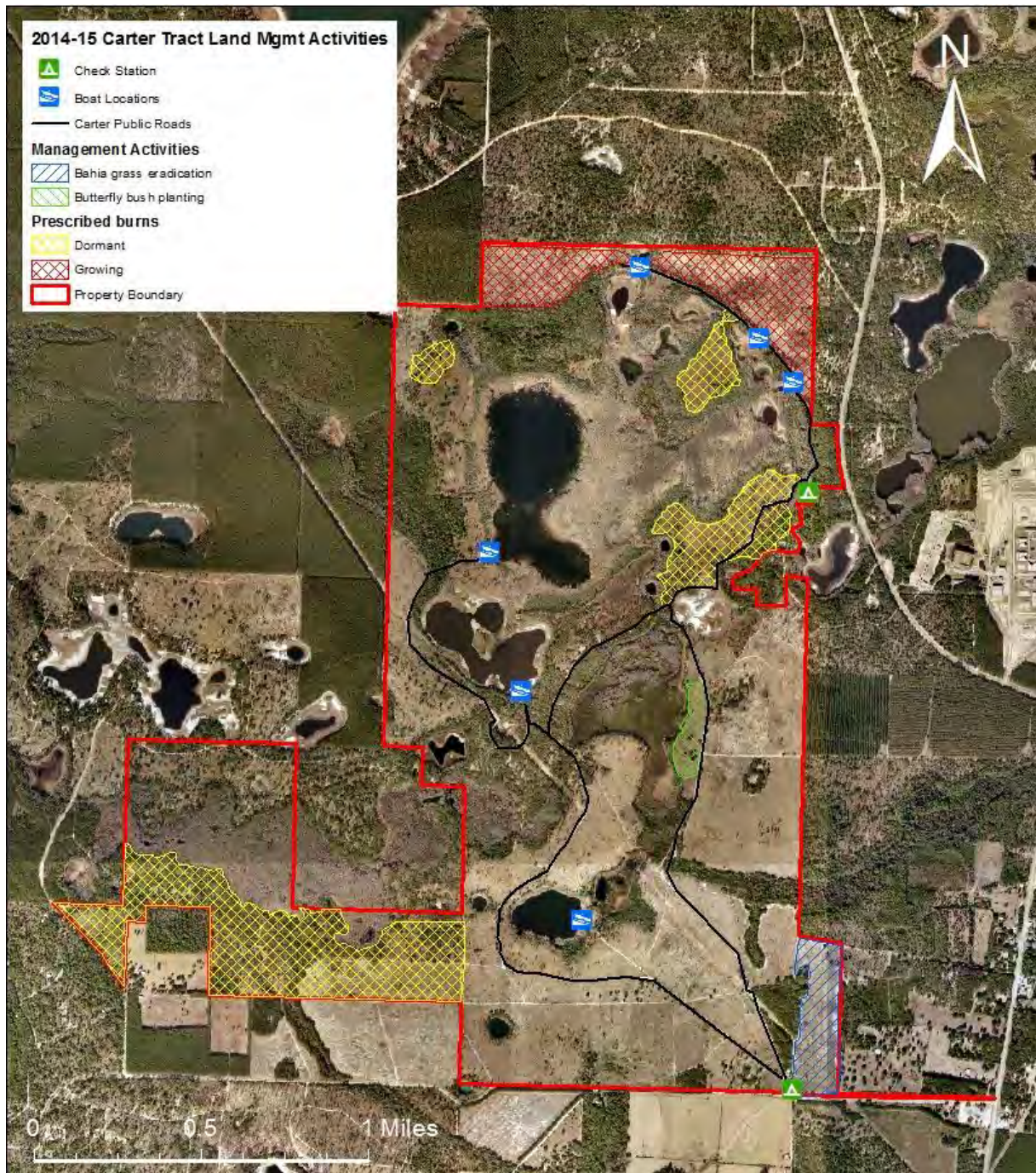


Figure 1. Habitat restoration and land management activities completed by NFWMD and private contractors from July 2014 - June 2015 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Water Levels

Water levels on Carter Tract ponds and creeks have historically fluctuated in cycles lasting several years. Water gauges were installed on the Carter Tract by NFWMD in 2005, and readings have been recorded monthly by FWC field staff since January 2006. Public fishing

opportunities are intricately tied to the water levels on Carter Tract ponds. For example, extremely low water levels forced the closing of Green Ponds to fishing from June 2011 until mid-July 2013 when heavy rains recharged the aquifer and refilled all area ponds. Water levels on Carter Tract have remained relatively stable since the last recharging event and throughout FY 2014-15. Figure 2 graphically illustrates the change in water level of area water bodies over the last three years. The Area Map included within the Fitzhugh Carter Tract Hunting and Fishing Regulations Summary brochure (Appendix I) shows the location of primary water bodies.

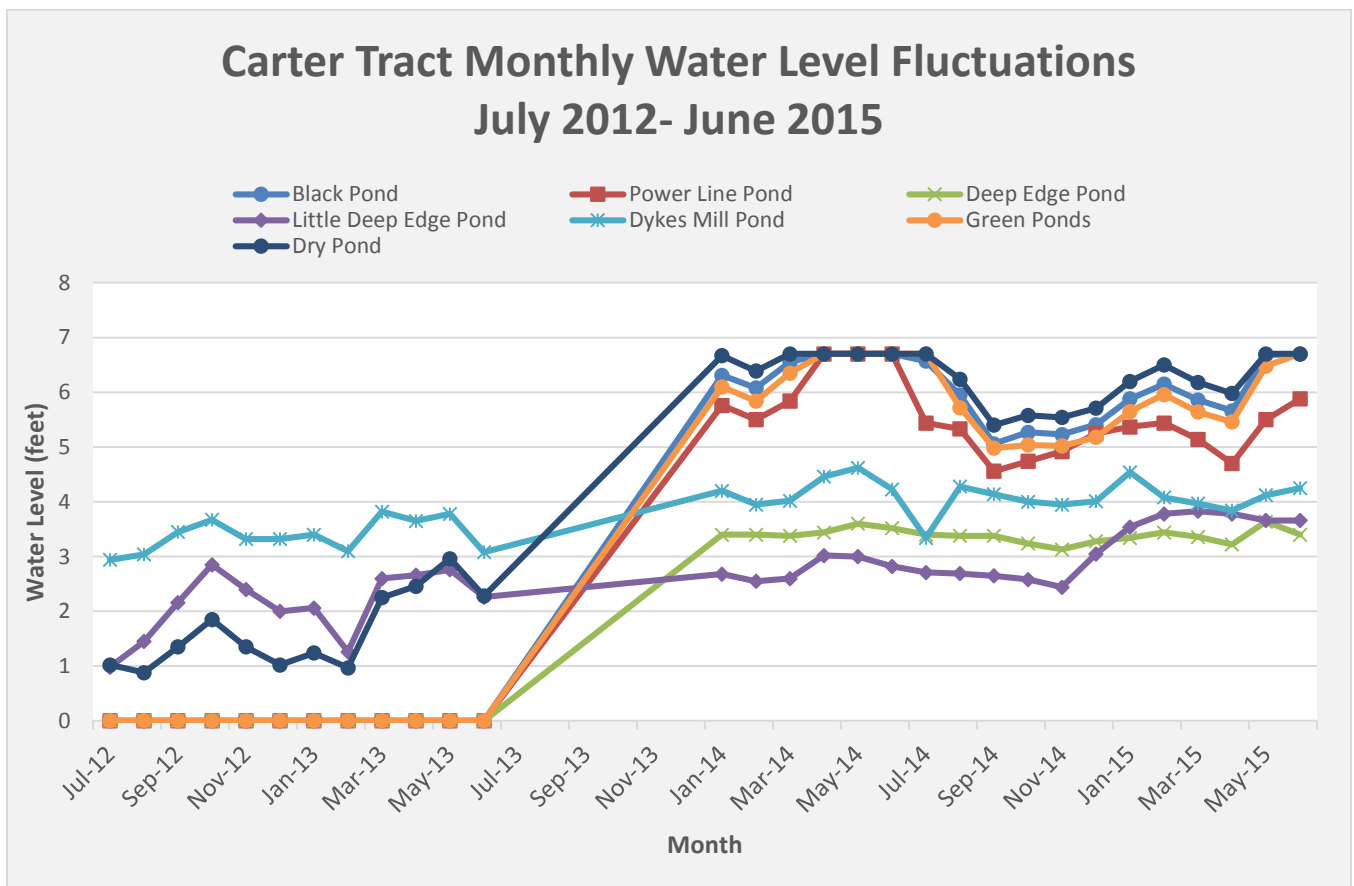


Figure 2. Monthly fluctuations in water levels from July 2012 - July 2015 on major water bodies within the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Photo Plots

In an effort to visually document the progression of natural areas over time, annual photographs are taken at established locations (plots), facing predetermined azimuth bearings. In 2007, 57 photo plots established on the Carter Tract have documented natural community

responses to restoration efforts such as prescribed burning and tree removal, as well as natural events (i.e. drought conditions). FWC staff added six plot locations in 2008 and 12 plot locations in 2013 to document change over time in what were perceived as under-represented areas of the WMA (Figure 3). We feel documenting this progression facilitates a better understanding of wildlife populations and their responses to such change over time.

Infrastructure maintenance and improvements such as road-grading, bridge construction, and facility enhancements are also documented. Figure 4 illustrates how prescribed fire, hardwood eradication, and planting of wiregrass have begun the restoration process to a wet prairie community at this photo plot south of the Green Ponds on the Carter Tract. Photo plot photographs will continue to be taken annually, documenting all habitat types, water bodies, and infrastructure on the area.



Figure 3. Historic and recently added photo plot locations used to document habitat change over time on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.



Figure 4. View from photo plot 15 illustrating how prescribed fire, hardwood eradication, and longleaf pine and wiregrass plantings, among other land management activities, have influenced habitat change at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

FISH AND WILDLIFE POPULATIONS

Working in cooperation with the NFWFMD, the responsibilities of FWC-Division of Habitat and Species Conservation on the Carter Tract are to conduct fish and wildlife population surveys/assessments, collect/analyze biological data, evaluate results, administer public fishing and hunting programs, provide recommendations for adjustments in harvest designed to optimize fish and wildlife populations, and oversee other fish- and wildlife-based recreational opportunities. The following are monitoring and management programs developed to address targeted species and public opportunities. Appendix I presents the 2014-15 Fitzhugh Carter Tract Hunting and Fishing Regulations Summary and Area Map. Appendix II presents the FWC Annual Work Plan and Accomplishment Report for July 1, 2014 – June 30, 2015.

Freshwater Fish

Fish Population Assessment

Given adequate water levels, fish population assessments are conducted twice a year during spring and fall. From fall 2005 – fall 2009, Wegener rings were used to conduct baitfish surveys for gauging recruitment and prey base status (Wegener et al., 1974). Fyke nets (Hubert, 1996) were implemented in 2010 as an alternative method for surveying baitfish populations and young-of-year (YOY) sportfish recruitment. However, low water conditions required continued adjustment of net locations and these wide fluctuations in water levels led to inefficiencies in standardization. As a result, FWC staff discontinued fyke net surveys on the Carter Tract as of spring 2014. Instead, staff will rely on electrofishing for our young-of-year and baitfish assessments. Electrofishing continued during fall 2014 and spring 2015 on Black, Dry, and the Green Ponds to assess sportfish and baitfish populations, measuring catch-per-unit-effort (CPUE). Baitfish and sportfish surveys will continue to be conducted biannually on water bodies with adequate water levels.

Electrofishing

Sportfish abundance on Black, Dry, and the Green Ponds was measured during November 2014 and April 2015. Several bouts of unusually cold weather and scheduling constraints with the Freshwater Fisheries section of FWC in November delayed electrofishing to the end of the month. However, due to colder weather that tended to push the fish into deeper waters, electroshocking was less effective. Upon recommendations from the Freshwater Fisheries staff, this past fall's electro-shocking efforts were discontinued.

In April, 2015, electrofishing was performed using an 18-foot aluminum vessel with Smith-Root® generator-powered pulsator electrofisher and two six-foot shocking booms (Figure 5). Direct current power settings were 120 pulses per second and 680 volts; average amperage generated was between 1-2 amps. Staff using ½-inch mesh dipping nets captured, measured, and weighed all affected fish. Sportfish abundance for each pond was calculated as catch-per-unit-effort (CPUE), or the number of fish sampled per minute. A breakdown of the CPUE for each species captured per pond during spring 2015 is presented in Appendix III. Graphs illustrating sportfish abundance trends from 2005 – 2015 for each pond sampled are presented in Figures 6

through 8 (also illustrated are associated water depths during each sample season). Note that not all seasons were sampled for each pond every year due to water level restrictions.



Figure 5. Electroshocking is conducted in the spring and fall annually to assess sportfish abundances on Black, Dry, and Green Ponds of the Fitzhugh Carter Tract of Econfinia Creek WMA, WashingtonCounty, Florida.

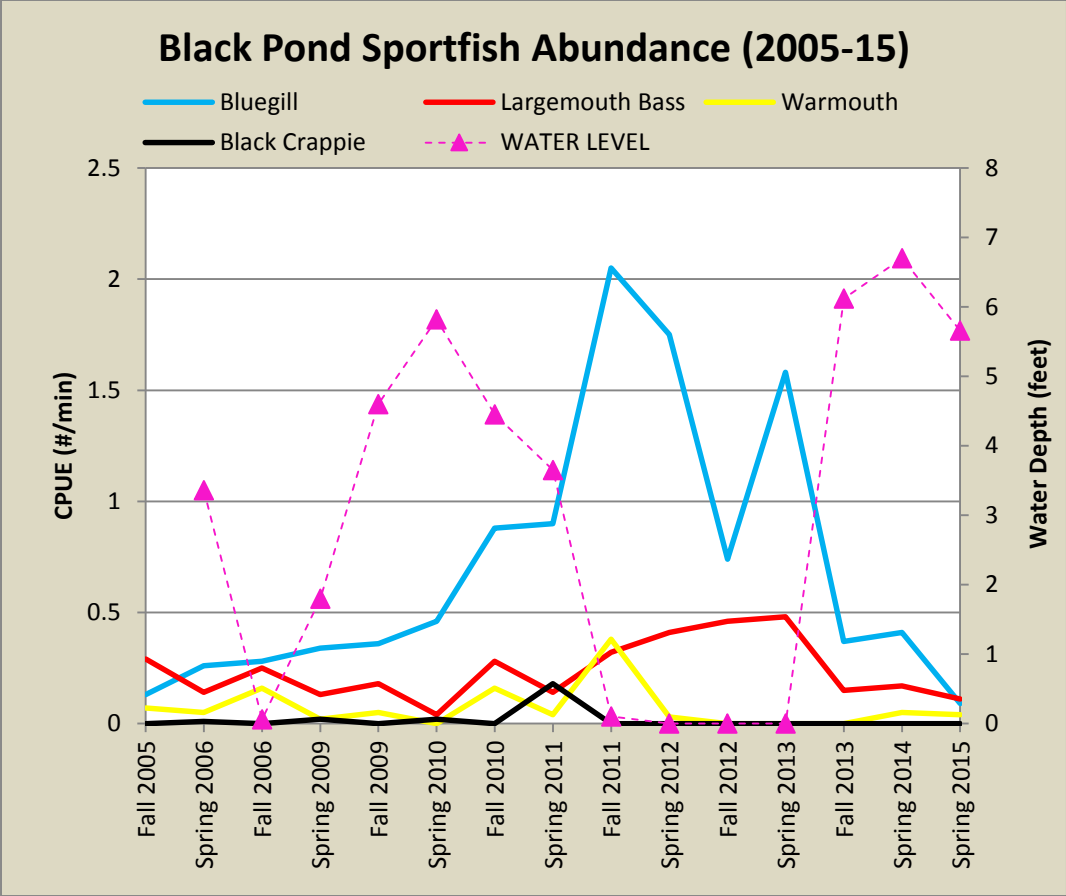


Figure 6. CPUE results from fall 2005 - spring 2015 sampling efforts on Black Pond of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

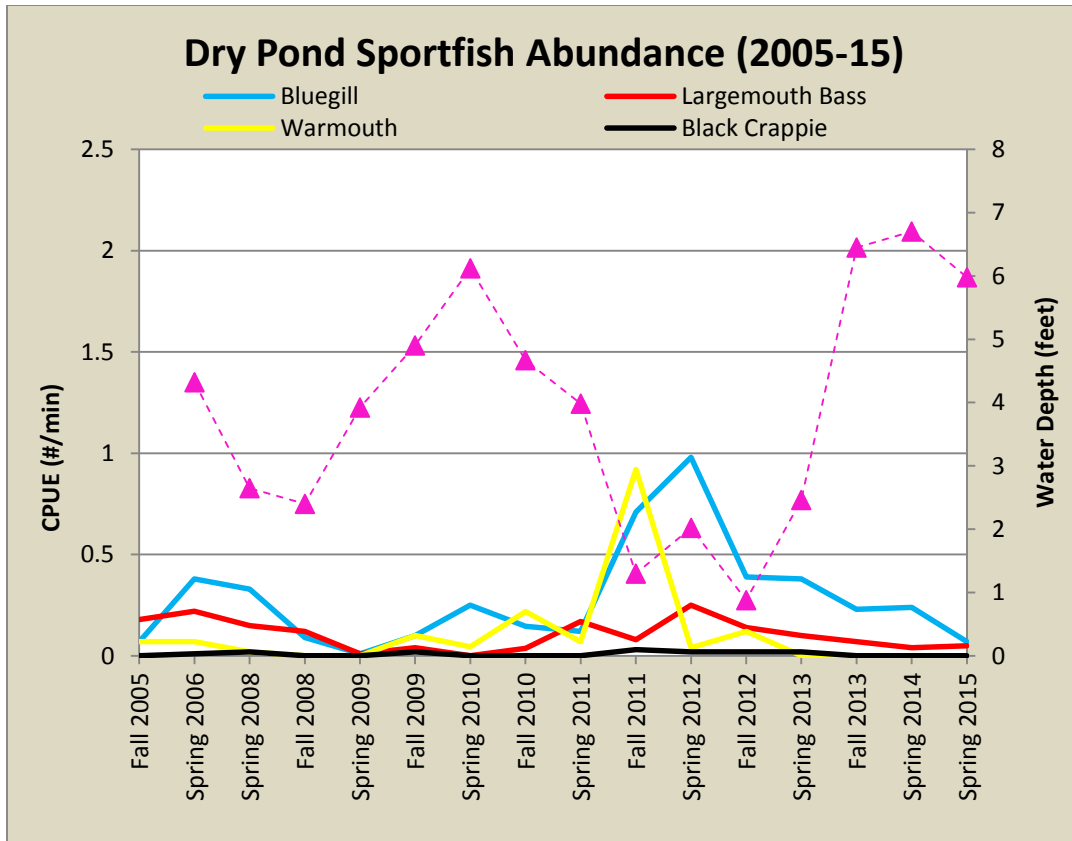


Figure 7. CPUE results from fall 2005 - spring 2015 sampling efforts on Dry Pond of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Also shown are water depths during each sample season.

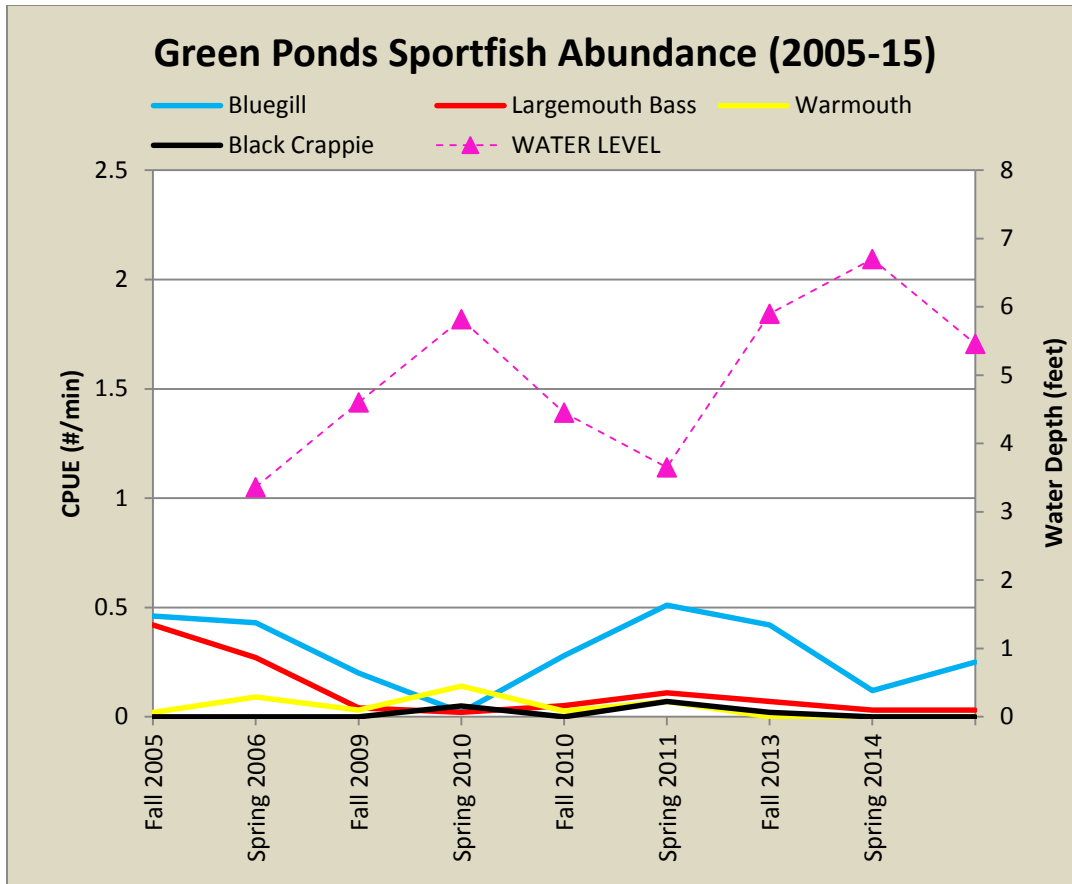


Figure 8. CPUE results from fall 2005 - spring 2015 sampling efforts on Green Ponds of Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Also shown are water depths during each sampling season.

Bluegill and largemouth bass were the two most abundant sportfish captured on all ponds during the spring 2015 sample (Figures 6-8). These figures support previous findings on Carter Tract ponds which suggest there is a negative correlation between water level and CPUE on both ponds, with a higher CPUE associated with low water conditions and a lower CPUE associated with high water conditions. When water levels recede, fish are forced to move out of flooded timber and become more concentrated in areas accessible via shocking boat, thus increasing the likelihood of counting them during electrofishing surveys. This can be seen when comparing the results from the fall 2012/spring 2013 (low water levels) with fall 2013/spring 2014 and spring 2015 (high water levels). CPUE was higher on Black Pond compared to Dry Pond and Green Ponds during the spring sample season. This might suggest that sportfish densities in Black Pond are higher than those in the other ponds. Another plausible explanation has to do with differences in the physical structure of the ponds. Black Pond, even at maximum water level has

a defined shoreline and relatively little area in shallow flooded timber. Because of this, when the water level recedes, fish are concentrated further but the majority of the pond remains deep enough to allow shocking boat access. Conversely, most of the shoreline of Dry Pond and the Green Ponds is not well-defined, but rather a gradual transition from shallow flooded timber to deeper water. Therefore, even when water levels drop significantly, the majority of the shoreline remains in flooded timber and can still be difficult to access using the available shocking vessel.

Another factor to consider in the assessment of electrofishing data collected from the Carter Tract is the conductivity level of area ponds. Electrofishing efforts on Black, Dry, and Green Ponds have revealed that these ponds have a very low conductivity (measurements to date have been between 23-36 microsiemens/cm). Conductivity is affected by the presence of dissolved solids (both anions and cations), water temperature, and the geology of the surrounding area through which water may inflow (via stream/river or ground water) to the water body to be sampled. Inflows from clay-rich areas yield water bodies with high conductivity while inflows from granite bedrock yield lower conductivity. The sandy nature of the soil making up the watershed that surrounds the Carter Tract likely explains the low conductivity of its ponds. This low conductivity results in a reduced effective shocking range of the electrofishing equipment available for sampling Carter Tract ponds. As a result, the density measures of sportfish within these ponds may be an underestimate of actual levels, especially for black crappie (*Pomoxis nigromaculatus*), which tend to stay in deeper water and may be out of the effective shocking range of the electrofishing equipment.

When considering the complexities in the sampling and analysis outlined above, and comparing Black, Dry and the Green Dry Pond CPUE measures over time, we feel that the Carter Tract is sustaining a healthy fishery and that current size/bag limits are appropriate. Electrofishing on Black, Dry, and Green Ponds will continue to take place biannually (spring and fall) given adequate water levels to continue our long-term assessment of the productivity of these ponds.

Public Fishing

The Public Fishing Program on the Carter Tract continues to provide anglers with the unique opportunity to fish smaller (farm pond style) bodies of water with comparatively low fishing pressure. Creel surveys from July 2014- June 2015 resulted in 806 anglers logging 3,599.25 fishing hours (Figure 9). This is an increase in both anglers and hours logged from the 2013-

2014 fishing season. Water levels remained relatively stable at all the fishing ponds throughout the 2014-15 fiscal year, allowing anglers more opportunities to fish than in years past when drought conditions caused the closures of area ponds.

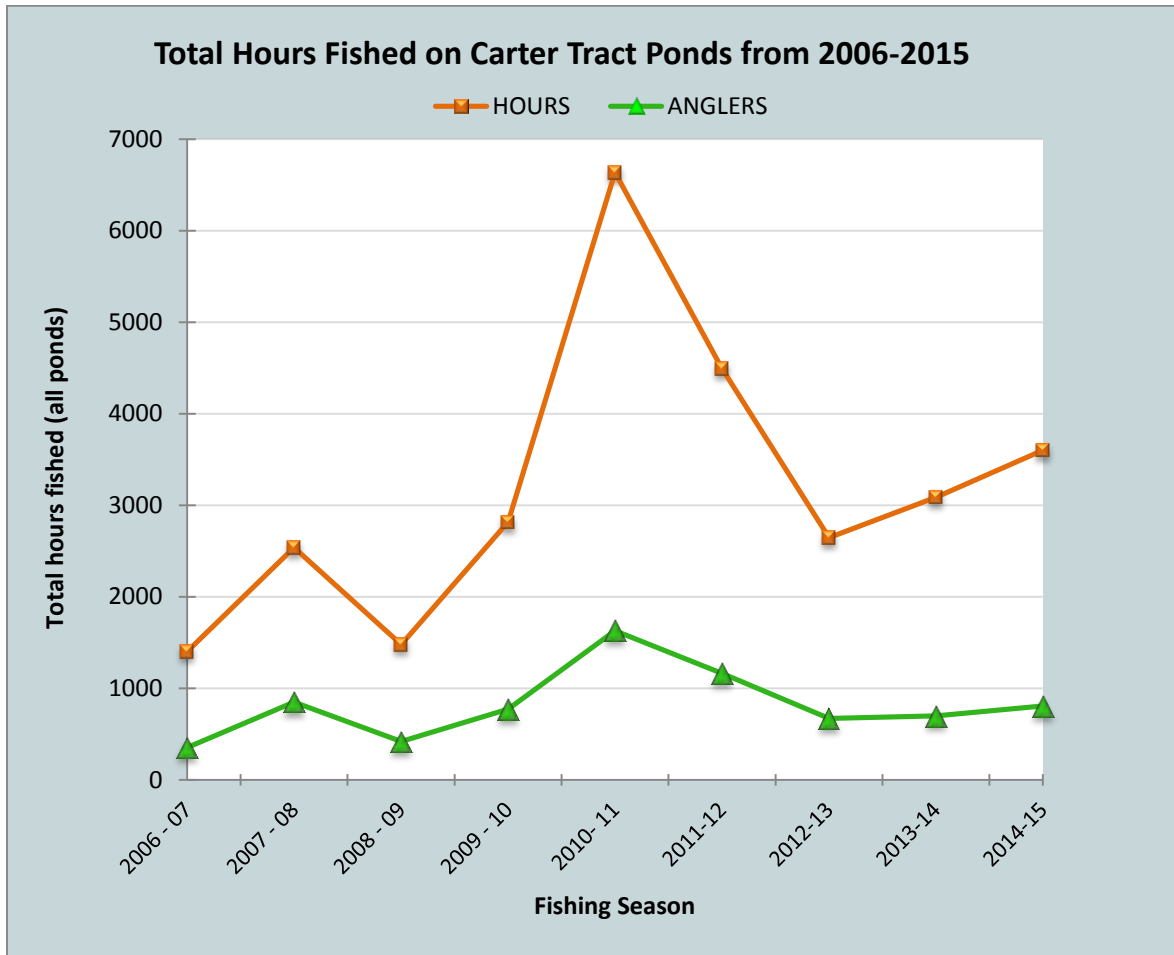


Figure 9. Total number of hours fished from 2006 - 2015 on all area ponds combined at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Fishing pressure on the Carter Tract was calculated based on the total number of possible fishing hours from July 1, 2014 through June 30, 2015. Anglers fished 3,599.25 hours, an increase of 16.6% from the previous fishing season. During 2014 -2015, Dry Pond was the most fished pond (1,450 hours) followed by Black Pond (1,305.25 hours), Green Pond 3 (435.25 hours), Green 2 (153.5 hours), Green 1 (140.5 hours), and Deep Edge Pond (114.75). Angler participation per month remains relatively consistent with past trends. There tends to be a lull in

activity during the winter months due to cold weather and temporary closures for hunting seasons with peaks in spring and early summer (Figure 10).

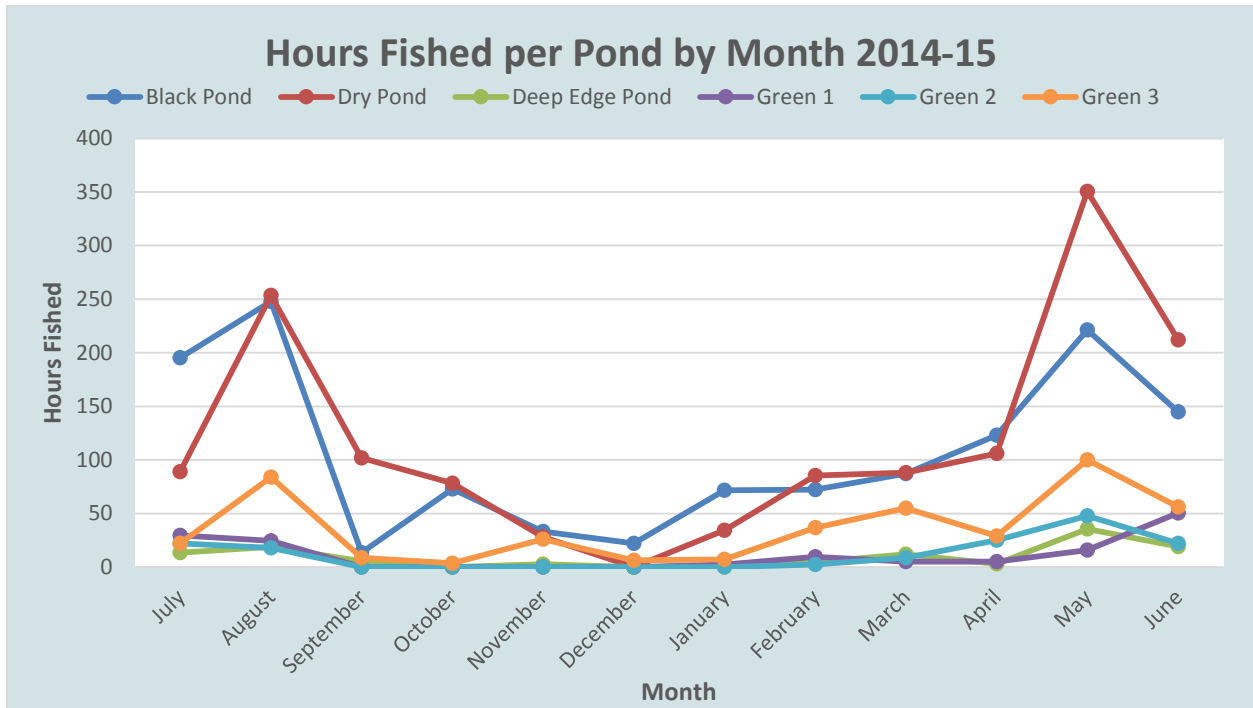


Figure 10. Hours fished per month on Dry, Black, Deep Edge, and Green Ponds in 2014-15 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

A total of 4,093 fish representing ten species were caught on Carter Tract ponds during 2014-15. This is a 22.3% increase compared to 3,347 fish caught during 2013-14. Table 2 illustrates the number of fish caught per species for each pond. Bluegill comprised 71.2% of fish caught, followed by largemouth bass, black crappie, and bullhead catfish (*Ameirus nebulosus* and *Ameirus natalis*) with 11.4%, 10.5%, and 2.4%, respectively. The remaining 3.0% of fish caught were chain pickerel (*Esox niger*), spotted gar (*Lepisosteus oculatus*), redbreast sunfish (*Lepomis auritus*), flier (*Centrarchus macropterus*), and redear sunfish (*Lepomis microlophus*).

Table 2. Number of fish caught by species per pond at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2014 - June 2015.

Species	Dry Pond	Black Pond	Deep Edge Pond	Green 1	Green 2	Green 3
Bluegill	1325	1097	9	50	231	203
Largemouth Bass	129	172	46	21	22	76
Black Crappie	268	99	1	3	9	48
Catfish	25	66	0	1	0	5
Other	28	70	1	7	5	12

Figure 11 illustrates angler creel trends from 2007-15 per water body. The fluctuations in bluegill catch over the years is likely due to drought conditions in 2008-09 and 2011-13 that forced the closure of the Green Ponds to fishing. The recharging of the aquifer in 2013 allowed all area ponds to be reopened to fishing, and relatively stable water levels since have allowed more bluegill, as well as largemouth bass and black crappie catches since 2013. The current size restrictions imply the bluegill population may have reached a more balanced population level. Future surveys will attempt to assess the population levels of largemouth bass and black crappie to determine if area ponds may be able to sustain a harvest of largemouth bass. Total number of fish caught and released per pond was calculated based on angler-reported creel data and a detailed table of these data is presented in Appendix IV.

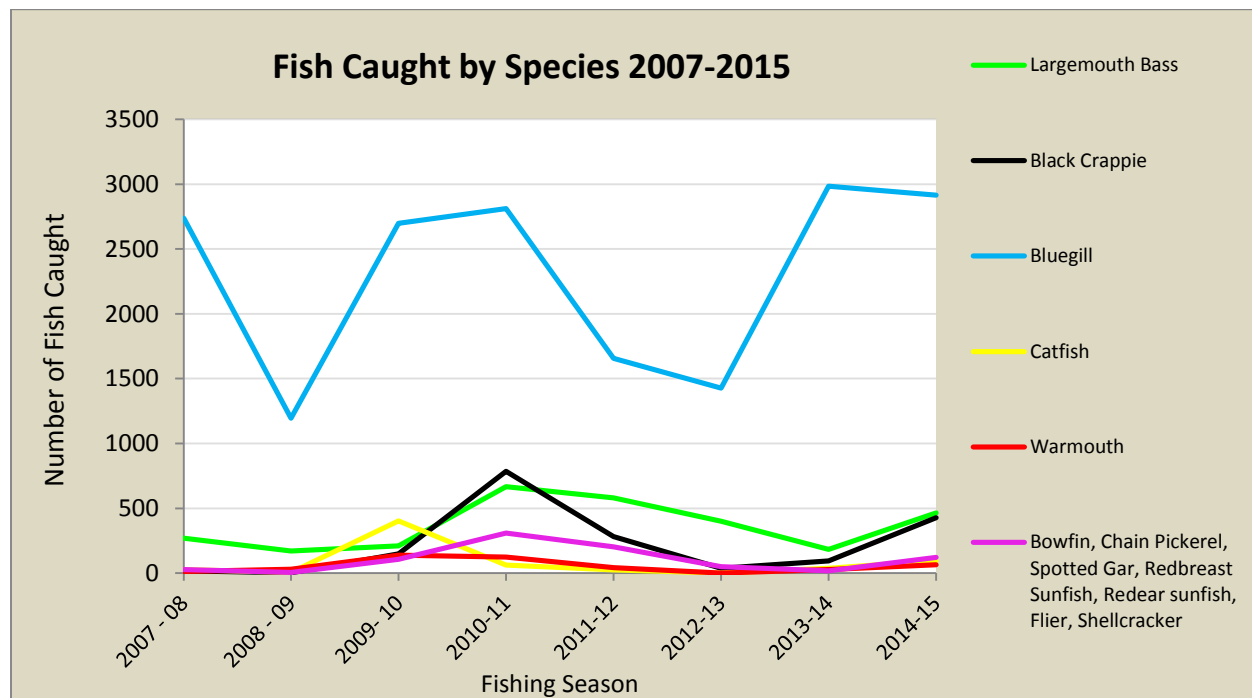


Figure 11. Angler creel trends from 2007 - 2015 on all area ponds of the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Angler success rate, defined as the number of fish caught per hour of fishing effort, was calculated for each pond and all water bodies combined for the 2014-15 fishing season (Table 3). Green Pond was the most productive water body, followed by Black, Dry, and Deep Edge Ponds. Figure 12 shows the trend in angler success rate for area ponds over the last five years. Anglers should use caution when making decisions about the ‘quality’ of a pond based on these data because the effect of variables such as water level and angler skill level can be hard to measure and may skew success rates. Further, low sample sizes (i.e. number of hours fished per pond) during some years for certain ponds may also result in a misrepresentation of the ‘quality’ of a pond based solely on the measured success rate during that particular year. These data will continue to be collected annually as an index of fishing success rates per pond.

Table 3. Fishing success rate (fish caught/hours of fishing effort) on area ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2014 - June 2015.

Pond	Angler success rate (fish/hour)
Dry	1.2
Black	1.2
Deep Edge	0.5
Green 1	0.6
Green 2	1.8
Green 3	0.8
All Ponds	1.14

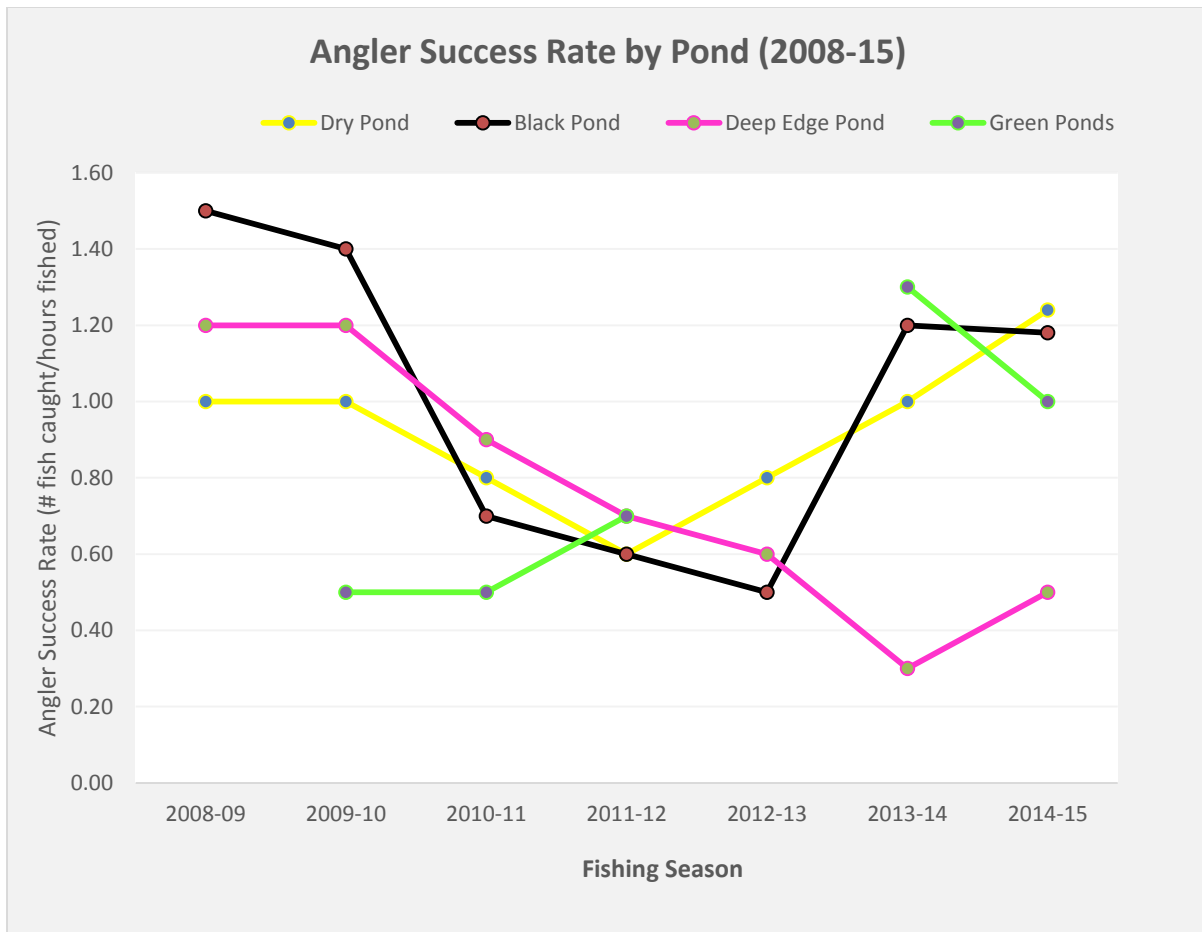


Figure 12. Angler success rate (# fish caught/hour of fishing effort) from 2008 - 2015 on area ponds of the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Green Ponds were closed to fishing during the 2008 - 09 and 2012 - 13 fishing seasons due to drought conditions.

WILDLIFE POPULATIONS

White-tailed Deer

Management Objectives

The primary white-tailed deer (*Odocoileus virginianus*) management objective for the Carter Tract is to provide quality hunting opportunities while managing optimal herd health. Specific objectives are to attain a herd density of 16-26 deer/mi² (25-40 acres/deer). With limited hunting dates and a conservative hunt format, our goal is to attain a harvest consisting of antlered deer predominantly in the 3.5+ age classes. In addition to offering a quality buck harvest, we plan to bolster and maintain a high degree of hunter participation with the implementation of limited antlerless deer harvest, dependent upon herd expansion. Achieving these objectives requires active monitoring and management of the population, as well as habitat.

Population Trends

Reliable annual indices of population size are fundamental to successful deer herd management. Indices provide an estimate of relative abundance, rather than true population size. However, because the specific relationship between the index and population density is not known, the real value of population surveys is to evaluate trends over time. Deer density on the Carter Tract is estimated using data collected from line-transect distance sampling (LTDS) surveys, which utilizes modeling to account for deer detectability. Precision seems to be higher using the LTDS method compared to standard spotlight surveys.

LTDS on the Carter Tract was conducted along two routes, one 4.6-km long and the other 4.7-km long, and were replicated six times in September 2014. Surveys began approximately one hour following official sunset, and were driven along the pre-selected routes via pickup truck with two observers in the back, each equipped with a one-million candlepower Q-beam[®] spotlight. Routes were driven at a speed of roughly 5 mph. Deer were detected by eye shine and the following data were recorded: number of deer, distance to deer, direction/bearing from vehicle, age (adult versus fawn), and gender (if determinable). Distance and bearing data were calculated using a Leupold[®] RXB-IV digital rangefinder/binocular. Figure 13 depicts the line transect routes used on the Carter Tract, along with locations of deer observed during 2014 surveys.

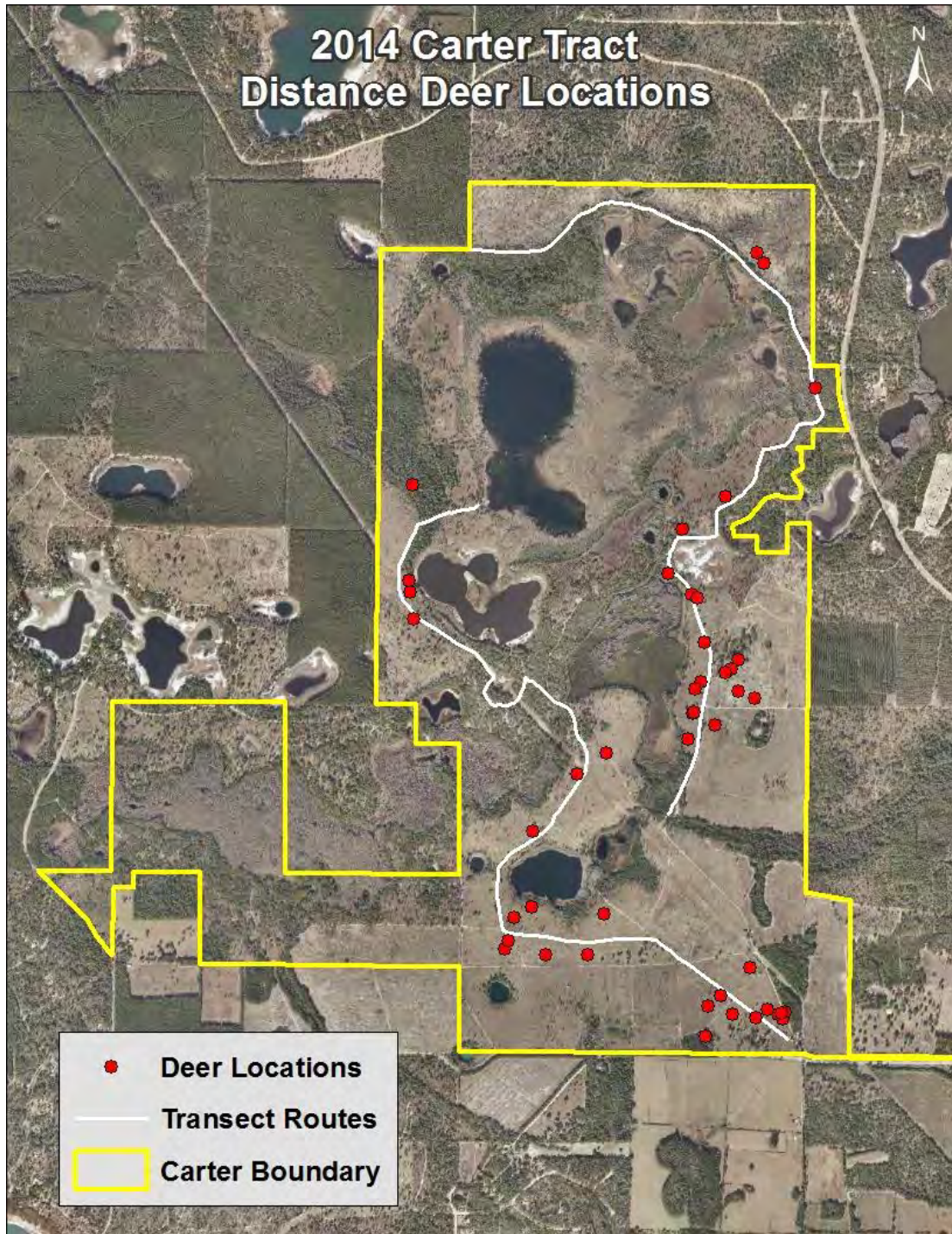


Figure 13. Survey routes and locations of deer observations during the September 2014 line-transect distance sampling conducted on the Fitzhugh Carter Tract of Econfinia Creek WMA, Washington County, Florida.

Preseason deer density for 2014 was estimated at 14 deer/mi² (95% CI: 9.2, 19.8), using the software DISTANCE 5.0 Release 2 (Thomas et al., 2006). The Cramér-von-Mises goodness-of-

fit test performed on these data produced a p -value of .800, which along with the relatively small confidence range, suggests a good model fit. This index was the same as estimated during 2013, and remains below the desired population goal for the Carter Tract (Figure 14). It is important to remember that a number of factors can influence deer detectability during spotlight transect surveys, and may create what appear to be contradictory or confusing population estimates. Typically, variance estimate in DISTANCE has three components: variance due to observers' ability to detect animals along a transect (detection probability); variability between transect lines (encounter rate); and variance due to group size (cluster size). Further, vegetation composition and height, weather variables, recent burning activity, hunting pressure, etc. can all influence deer activity. Although the density estimate varies annually, continued habitat management (prescribed burning, native groundcover restoration, exotics removal) should improve habitat quality for deer in Carter Tract. Several subsequent years of surveys should produce a clearer relative abundance, from which stronger inferences of trends in population size can be drawn.

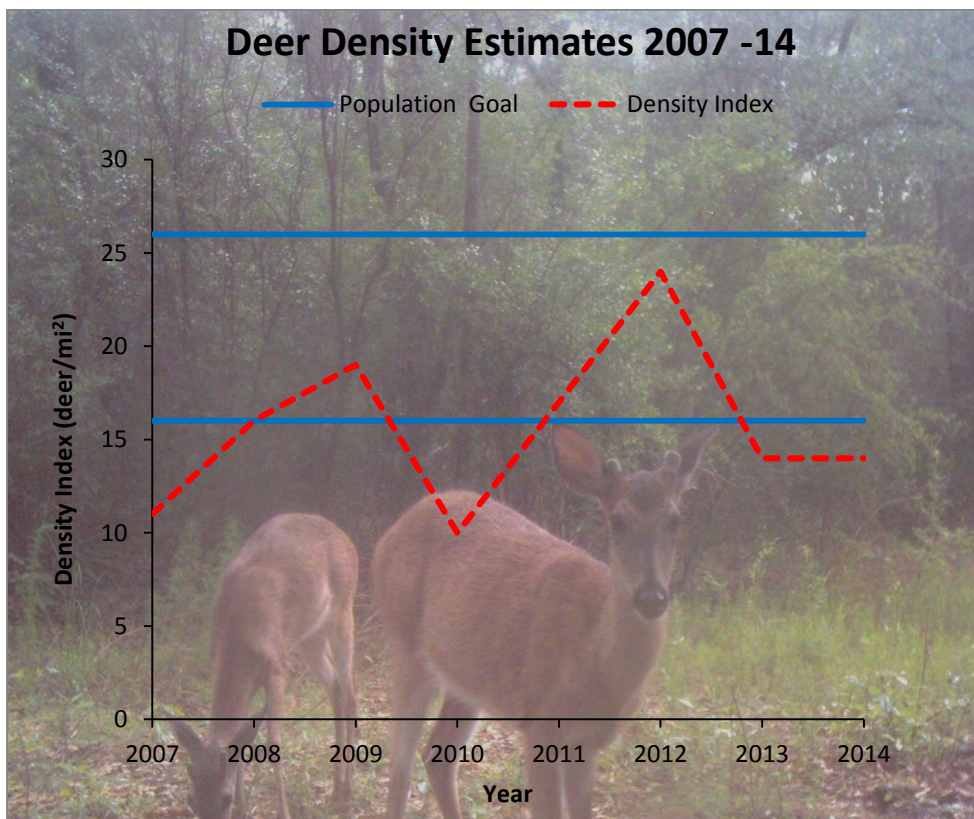


Figure 14. Trend in White-tailed deer density as estimated using line transect distance sampling at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida, 2007 - 2014.

Harvest and Hunting Pressure

Deer hunters and their guests logged a total of 174 man-days of hunting during the 2014-15 season, compared to 176 man-days last year. The first phase of archery yielded the highest participation with 38 hunters, followed by the second phase general gun hunt with 37 hunters. Man-days of hunting pressure seems to be relatively consistent the past several years (Figure 15).

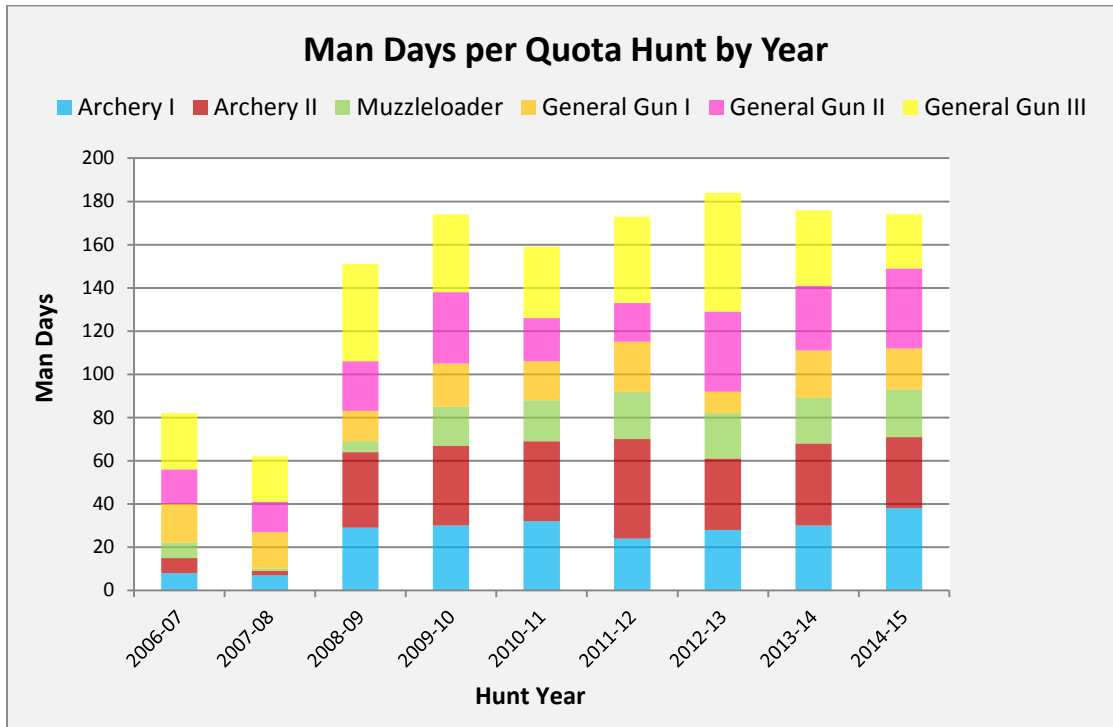


Figure 15. Comparison of hunter participation by quote hunt from 2006 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

All quota permit hunters were required to check-in/out at the Carter Tract check station in order to monitor hunter pressure and collect biological data from harvested deer. Nine deer were harvested on the Carter Tract during 2014-15, yielding a hunter success rate of 5.2% (1 deer/19 man-days of hunting pressure); the highest rate since the 2008-09 season. Overall hunter success rate (calculated as the number of deer harvested per man-days hunted) is depicted in Figure 16, and is compared over the last nine deer seasons

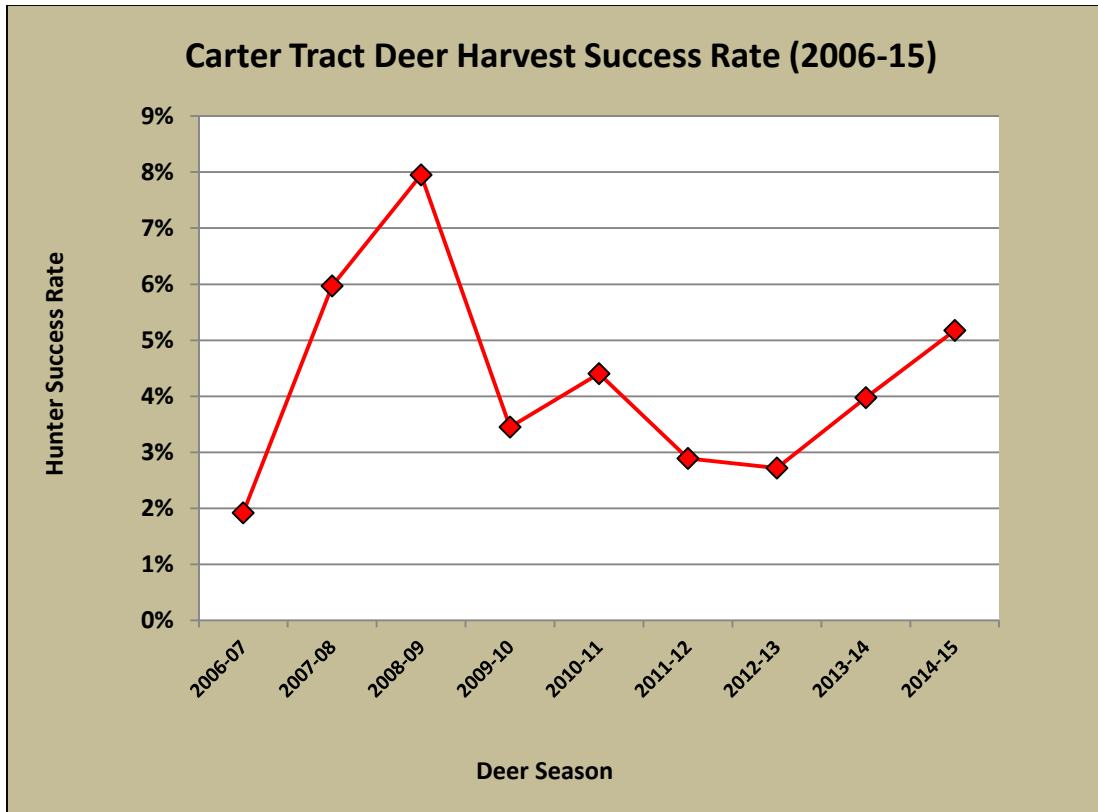


Figure 16. Overall hunter success rate from 2006 - 2015 at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Mean physical parameters of all deer harvested per quota hunt season are presented in Table 4.

Table 4. Morphometric parameters of deer harvested during 2014-15 quote hunts on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Mean Physical Parameters 2014-15							
Quota Hunt	Gender	Age (yrs)	Weight (lbs)	Antler points	Avg beam length (in)	Avg beam circum. (in)	Inside spread (in)
Archery I	Doe	5.5	89	N/A	N/A	N/A	N/A
Archery II	Doe	6.5	105	N/A	N/A	N/A	N/A
Archery II	Doe	2.5	76	N/A	N/A	N/A	N/A
General Gun II	Buck	2.5	132	8	13	3 1/5	9 3/4
General Gun II	Buck	3.5	128	6	11 5/8	2 3/4	10
General Gun II	Buck	3.5	115	8	14 1/8	3	12
General Gun II	Buck	3.5	180	10	17 7/8	4	15
General Gun III	Buck	2.5	104	7	12 1/2	3	11 1/2
General Gun III	Buck	2.5	135	6	11 3/4	2 7/8	12 1/2

The 180 lb. buck harvested during General Gun II is the largest (in terms of weight) buck ever taken off of Carter Tract since the 170 lb. buck harvested during General Gun II in 2007. All the bucks were harvested during General Gun II and III, which occurs annually during the last week and a half of January. This coincides with the primary rutting activity and mean conception dates for southern Washington County (Garrison et al., 2009).

We believe the full potential for deer hunting opportunities on the Carter Tract has yet to be realized, but is expected to continue to improve in conjunction with habitat quality. Considering herd management objectives, additional antlerless harvests are not presently needed to control population levels as a higher density is desirable to meet our population goal and improve hunter success rates. The continued protection of does (outside archery season) is necessary to further bolster recruitment and expedite achievement of herd objectives. Limiting the harvest of does will facilitate increases in herd size and improvements in overall age structure, which should in turn affect improvements in hunter success. Further, physiologic and morphometric indices suggest the population can be maintained at still higher densities before eroding herd health.

FWC implemented new hunting regulations prior to the 2014-15 hunting season that may affect the deer herd structure at the Carter Tract. FWC divided Zone D into two Deer Management Units (DMUs), with Interstate 10 being the dividing line between the two DMUs. The Carter Tract lies in DMU-D1 and the new regulation requires that bucks have a minimum of two points (each point having to be a minimum of 1 inch long) on one side. These regulations are intended to protect most 1.5-year-old bucks from being shot, while allowing the harvest of most 2.5 year-old and older bucks. Although it is premature to make any conclusions based off one year, no 1.5 year-old bucks were harvested from Carter Tract during the 2014-15 season (Figure 17) and 3.5 year-old bucks made up the highest percentage of the harvested since 2008-09. FWC will monitor whether the intended results of these new regulations (more older bucks) will apply to Carter Tract through harvest data collected at the check station and incidental observations in the field.

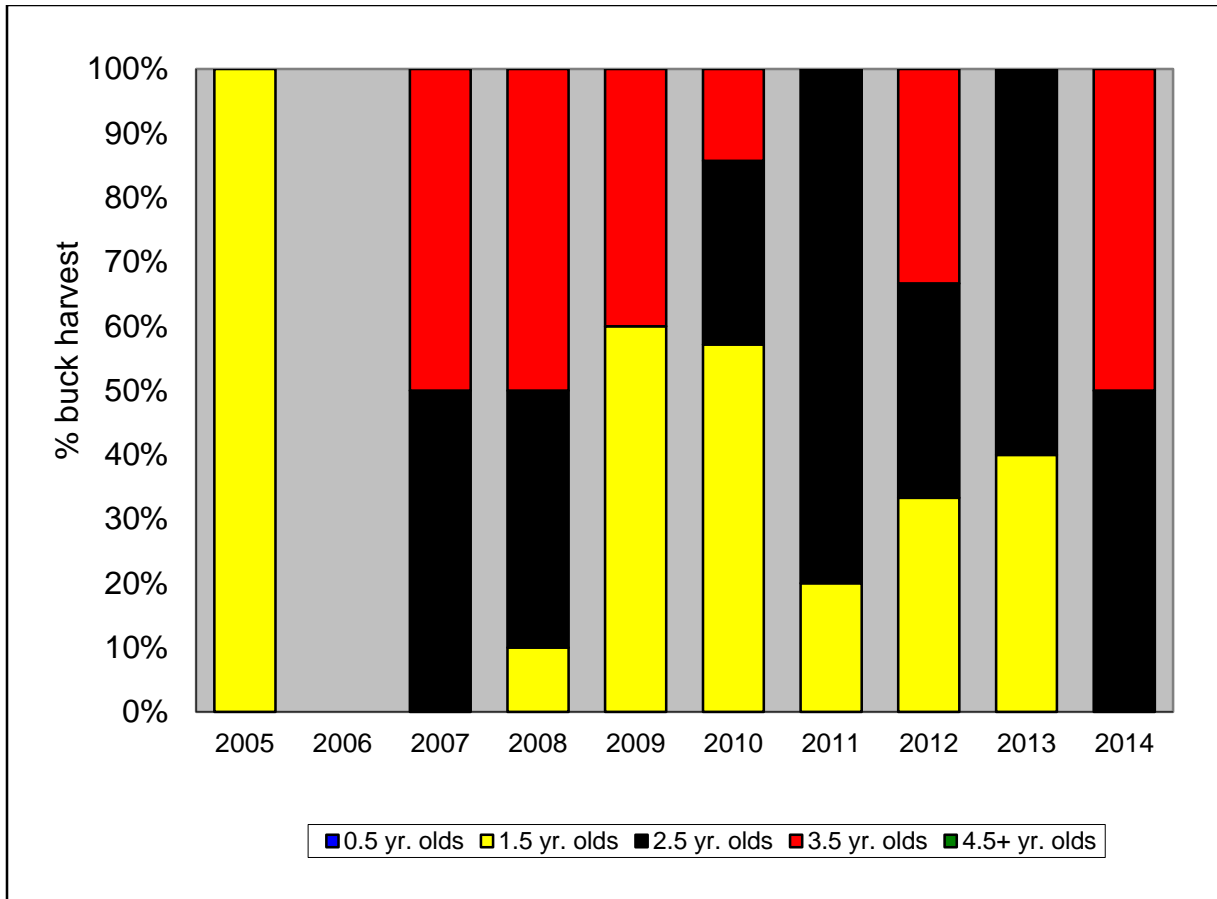


Figure 17. Age structure of bucks harvested over time at Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, FL.*Age was not recorded for the buck harvested in 2006.

Chronic Wasting Disease (CWD) is a contagious neurological disease that has been found in captive and wild mule deer (*Odocoileus hemionus*), white-tailed deer, moose (*Alces alces*), and Rocky Mountain elk (*Cervus elaphus*) within 22 states and two Canadian provinces. The disease causes degeneration of the brains of infected animals, resulting in emaciation, abnormal behavior, loss of bodily functions, and death.

Currently the only practical method for diagnosing CWD is through analysis of brain stem tissue or lymph nodes from dead animals. There is no practical live-animal test. In 2002, the FWC initiated a comprehensive surveillance and monitoring program for CWD. Staff continues to collect and test tissue samples from hunter killed deer from the Carter Tract and surrounding counties as part of this statewide monitoring program. Even low numbers of CWD-positive deer would be cause for concern, so we plan to continue this disease surveillance for the foreseeable future.

In an effort to minimize the risk of the disease spreading, Florida has adopted regulations affecting the transportation of hunter-harvested deer, elk, and moose from CWD-infected areas. Moreover, in September 2013, the FWC enacted prohibition on the importation of live cervids (deer, elk, and moose) into Florida from out-of-state sources. Live cervids cannot be imported into Florida unless they come from a herd certified CWD-free by the Florida Department of Agriculture and Consumer Services. Eighteen other states, including Georgia and Alabama, also prohibit the importation of live cervids.

Wild Turkey

Management Objectives

1. Encourage and maintain a population of wild turkey (*Meleagris gallopavo*), providing a high quality hunting experience to the public.
2. Continue to provide and enhance high quality habitat for wild turkeys by maintaining an open understory and encouraging herbaceous groundcover via habitat improvement activities such as prescribed burning.

Harvest

Spring turkey season on the Carter Tract consists of three quota hunts, each three days in length, and a two-day youth quota hunt. Permit holders for all turkey quota hunts were afforded one day prior to each hunt for scouting. Twenty four hunters participated in the 2015 spring turkey hunts, including two youth. Two turkeys were harvested during the first spring quota hunt in 2015. The turkey harvest success rate (defined as the number of gobblers harvested/man-days of effort) for the Carter Tract from 2007 – 2015 is illustrated in Figure 18. The annual hunter success rate from 2007-15 quota turkey hunts is 1 gobbler/21 man-days of effort.

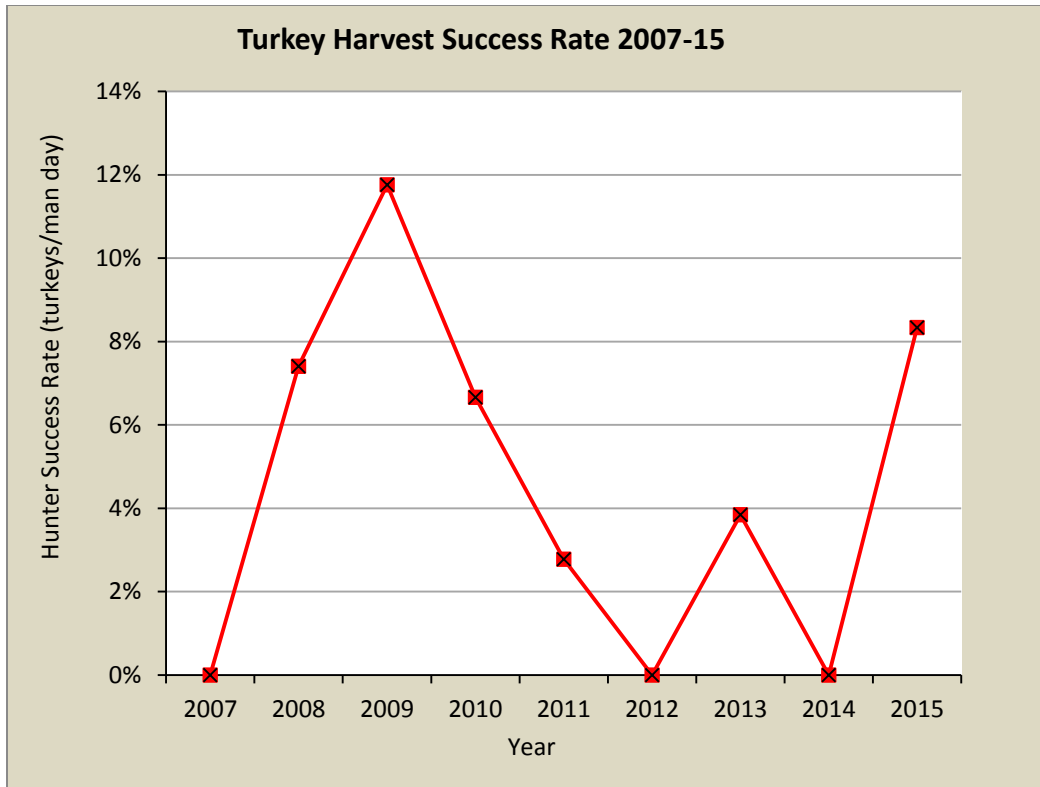


Figure 18. Turkey harvest success rate from 2007 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Weather conditions, experience level of hunters, and hunting pressure on surrounding/adjacent properties can all affect harvest success rates. Turkey harvesting opportunities on the Carter Tract should continue to improve as a more frequent burn regime is maintained for controlling scrub oaks and producing open grassy/herbaceous areas for nesting. Further, more frequent mowing of powerline right-of-ways at strategic times of the year (just post nest-hatching) can provide better bugging conditions for poults. Turkey poults have a high protein demand during the first four weeks of life (Hurst, 1992), and are incapable of flight until approximately ten days old (Williams, Jr. and Austin, 1988). During this flightless period poults are extremely vulnerable to predation. Increasing the amount of protein available (in the form of insect abundance) should help achieve maximum poult growth and improve survival.

Small Game

The Carter Tract is open annually to small game hunting during a 16-day non-quota season each December. Small game can also be hunted by permit holders during deer quota hunts, provided there is season overlap between the game being hunted and deer quota hunt dates.

Hunters are encouraged not only to hunt popular small game such as gray squirrel (*Sciurus carolinensis*), rabbit (*Sylvilagus* spp.), and northern bobwhite (*Colinus virginiana*), but also for taking wild hogs (*Sus scrofa*), which are occasionally encountered on the property. Check station operators record how many hunters pursue each type of game for the duration of the small game season. Small game hunters devoted 46 days to squirrel hunting, 25 days to quail hunting, and 10 days to hog hunting during the 2014-15 small game season. This is by far the highest participation since small game hunting initiated on the property in 2005 (Figure 19). Hunters harvested 34 gray squirrels, a decrease from the 41 squirrels harvested during 2013-14. Twenty bobwhites were harvested, an increase from the twelve harvested during the 2013-14 season. Finally, the first two hogs taken from Carter Tract (a 200 lb. sow and 30 lb. boar) were harvested during the 2014-15 season.

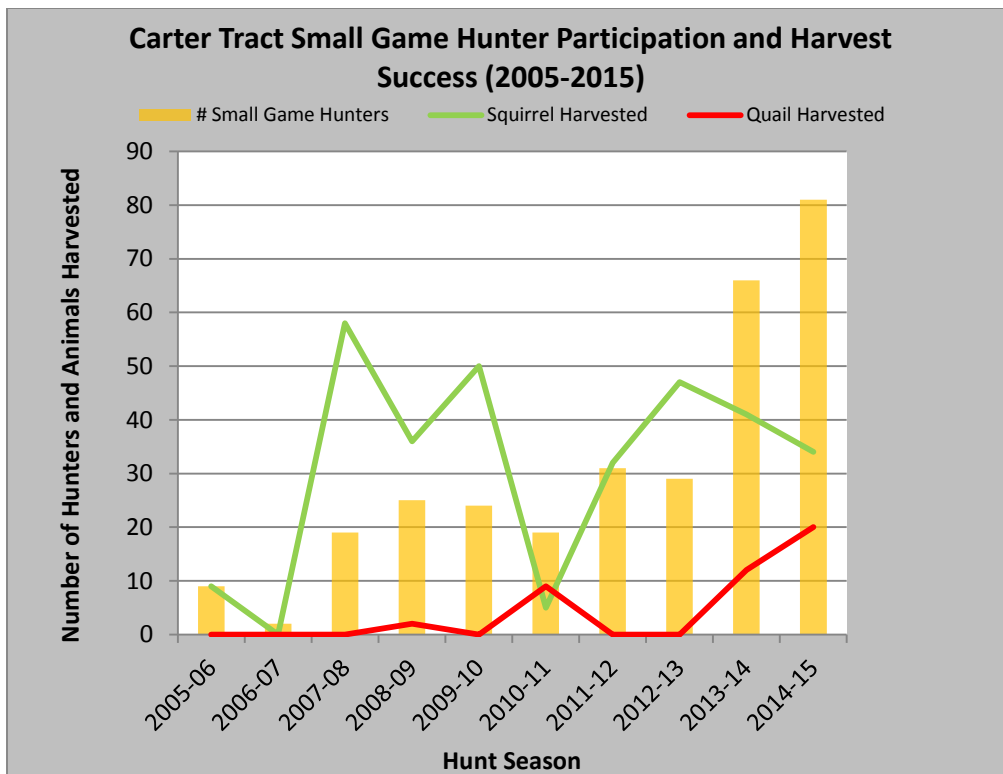


Figure 19. Small game hunter participation and harvest success on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2005 - 2015.

Waterfowl

Harvest

The Carter Tract provides duck hunting opportunities during a special five-day early duck season each September. Portions of the general gun and small game seasons coinciding with the

phase I and II waterfowl seasons as determined by the U.S. Fish & Wildlife Service (USFWS) are also open to duck hunting. For the 2014-15 season duck hunters spent 76 man-days hunting and harvested a total of 67 ducks, representing four species. Seventeen wood ducks (*Aix sponsa*) and five teal (*Anas spp.*) were harvested during the September early duck season. Thirteen wood ducks, thirty one ring-necked ducks (*Aythya collaris*), and one ruddy duck (*Oxyura jamaicensis*) were harvested during the general gun quota hunts and small game season. Duck hunter participation and harvest trends from 2006-15 on the Carter Tract are represented in Figure 20. Hunter participation was slightly lower than the record-setting 2013-14 waterfowl season. Figure 21 depicts harvest success (number of ducks harvested/man-days of hunting effort) on the Carter Tract from 2006-15. Duck hunters realized a harvest rate of 0.9 ducks/man-day during the 2014-15 hunting season. Although hunters did not have as much success as in years past waterfowl hunting on Carter Tract, the high man-days is encouraging that Carter Tract is gaining popularity as a waterfowl area.

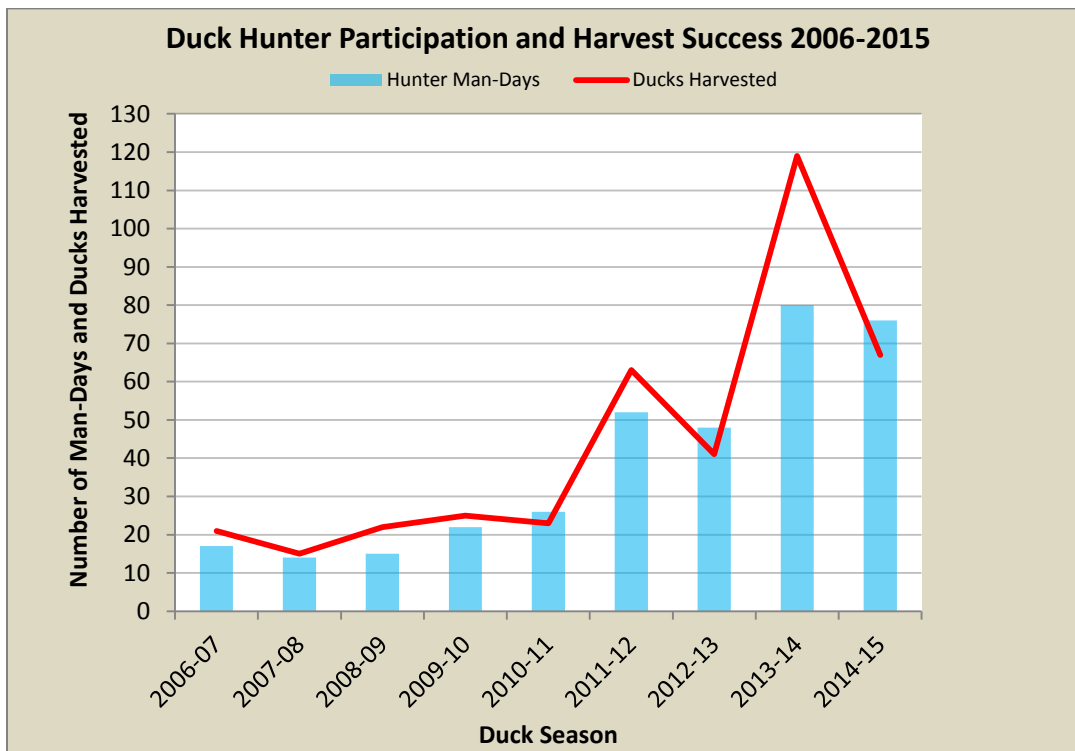


Figure 20. Duck hunter participation and harvest from 2006 - 2015 at the Fitzhugh Carter Tract of Econfinia Creek WMA, Washington County, Florida.

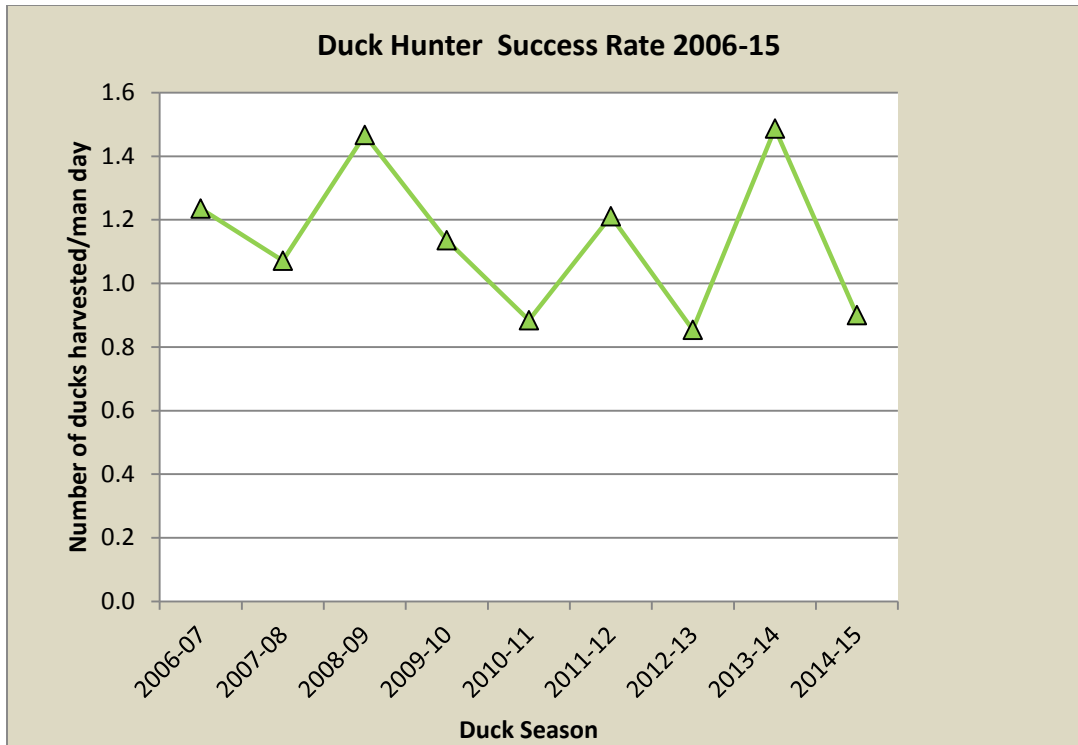


Figure 21. Duck hunter success rate (ducks harvested/man-day) on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida, 2006 - 2015.

Wood Duck Nest Boxes

Efforts to facilitate local breeding populations of wood ducks continued on the Carter Tract, with maintenance and monitoring efforts of 50 nest boxes that were erected in winter 2005. Boxes are checked twice during the breeding season (March – July) to determine occupancy and nest fate, and yearly winter checks allow boxes to be cleaned and repaired as needed. Three boxes that were continually having flooding issues were moved from Pine Log creek to Dykes Mill Pond and several other boxes had pole extensions attached during the winter 2015. Figure 22 shows the current location of nest boxes on Carter Tract.



Figure 22. Current wood duck box locations across the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida. Three boxes (purple dots) were moved from Pine Log Creek to Dykes Mill Pond in January, 2015.

Twenty one wood duck boxes produced clutches during the 2015 nesting season. Measures of reproductive success including average number eggs/clutch, total number of productive nests, overall nesting success, total ducklings, and estimated ducklings/clutch were calculated; Table 5 presents these data relative to previous years. The 2015 nesting season saw 52% nesting success,

with 21 clutches producing an estimated 60 ducklings. Wood ducks on Carter Tract appear to have rebounded somewhat in 2015 from a down 2014 breeding season. Water levels were more consistent on the ponds in 2015 than years past, and the pole extensions and boxes moved to Dykes Mill kept at risk boxes out of the water. Hopefully, due to the philopatric nature of wood ducks (Hepp et al., 1987) box use will continue to increase on Carter Tract. Detailed data on number of nests, percent nest success, average clutch size, and estimated ducklings produced/clutch for each water body by year is available in Appendix V.

Table 5. Reproductive success measurements of wood ducks from 2006 - 2015 on Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Measurement	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
total number clutches	6	11	5	21	29	26	22	23	16	21
average number eggs/clutch	8.2	3.1	7.8	8.1	7.8	7.4	8.4	6.4	4.7	6.9
number productive nests	2	2	2	12	14	16	20	17	4	11
nesting success	33%	18%	40%	57%	48%	62%	91%	74%	25%	52%
total estimated ducklings	6	5	25	64	79	88	109	85	14	60
estimated ducklings/clutch	1.0	0.5	4.2	2.7	2.7	3.4	5.0	3.7	0.9	2.9

*Nests considered productive if \geq one membrane found following spring nesting season

†Nesting success measured as number of productive nests/total number of clutches

Avifauna

The Carter Tract supports a mosaic of unique habitat types that tend to harbor a diversity of bird species. As such, multiple survey types designed to document this diversity are conducted annually. For example, surveys of Little Deep Edge Pond and Dykes Mill Pond document use as wading bird colonies. Passerine point counts note species change over time in relation to habitat restoration and bluebird boxes provide an index of the success of secondary cavity-nesting songbirds. Kestrel boxes are used to determine possible residency status of the southeastern American kestrel (*Falco sparverius paulus*). Gamebird populations are monitored using summer whistle counts for northern bobwhite and mourning doves (*Zenaida macroura*) are banded each summer as part of a national banding program.

Wading Birds

Most wading birds nest semi-colonially along the edges of lakes or creeks, or in trees and shrubs growing out of water bodies. Little Deep Edge Pond on the Carter Tract has supported a

wading bird colony each summer since surveys began in 2007 and a new colony was found on Dykes Mill Pond in 2015. Great egrets (*Ardea alba*), cattle egrets (*Bubulcus ibis*), and little blue herons (*Egretta caerulea*) have historically been the most common species documented, with tricolored herons (*Egretta tricolor*), snowy egrets (*Egretta thula*), great blue herons (*Ardea herodias*) and anhinga (*Anhinga anhinga*) also observed. Egrets and herons belong to the family Ardeidae, members of which are locally affected by wetland drainage resulting from urbanization and agricultural expansion. In Florida specifically, loss of suitable foraging and breeding habitat, native and exotic predators, and habitat are the key threats to Florida's wading birds (FWC 2013). Alteration of habitat remains the greatest threat to most Ardeids today, highlighting the importance of the conservation of unspoiled wetland habitat such as that found on the Carter Tract.

Wading bird surveys are conducted annually from April – July on the Carter Tract. Adult birds and nest contents are observed at a distance using binoculars and a spotting scope to avoid disturbing the nests. Nesting areas had been approached in previous years, but we feel that the potential risk of eggs or nestlings falling out of the nests outweighs counting every egg. Checks are completed every three weeks, during which time, nestlings get large enough to accurately be counted using two observers. Nest locations are drawn on a map to follow the same nest throughout the breeding season.

At the Little Deep Edge colony, 6 great egret nests produced 6 chicks. Four little blue heron nests produced three chicks. Twenty-seven cattle egret nests produced twenty three chicks. No anhinga nests were observed in 2015. No tricolored herons or snowy egrets have been observed at the wading bird colony since the 2011 nesting season. Figure 23 illustrates adult bird use and chick production of wading birds at Little Deep Edge Pond from 2008-15. All three species had a decline in the number of nests and chicks produced in 2015. However, cattle egrets remained the dominant species at the Little Deep Edge colony. A detailed summary of species observed from 2008-2014 using the Little Deep Edge Pond wading bird colony can be found in Appendix VI.

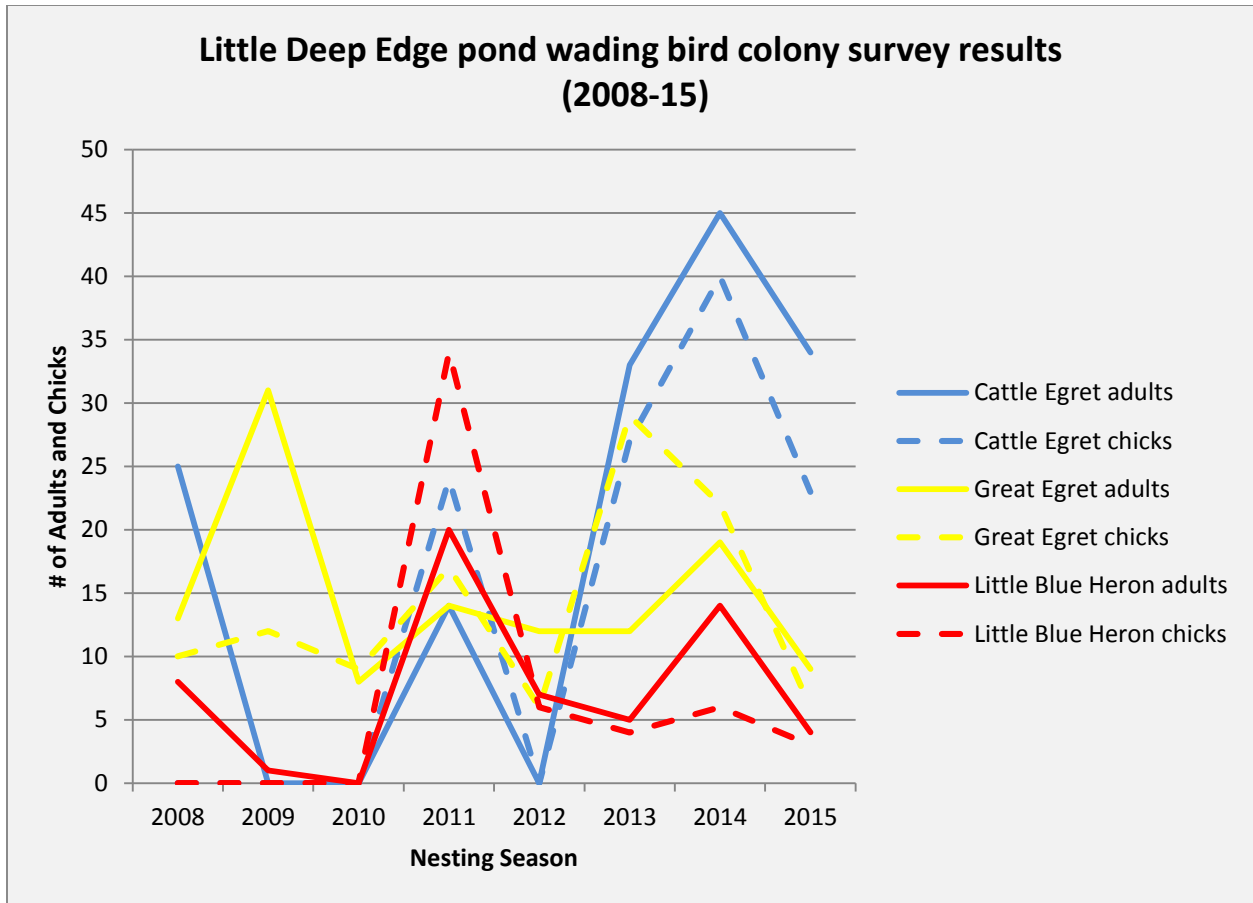


Figure 23. Adult wading birds and chicks observed on Little Deep Edge wading bird colony from 2008 - 2015, Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

The Dykes Mill pond colony was first discovered in January 2015 while out scouting for potential wood duck box nest sites. During the 2015 breeding season, 10 great blue heron nests produced 27 chicks and 6 anhinga nests produced 7 chicks. This colony is on the southern edge of a cypress dome in the western portion of Dykes Mill Pond (Figure 24). FWC will continue to monitor this colony annually to track nesting success and species composition.



Figure 24. Wading bird colony along Dykes Mill Pond discovered in January of 2015. Red line denotes great blue heron and anhinga colony, Fitzhugh Carter Tract of Econfinia Creek WMA, Washington County, Florida.

Passerines

Breeding bird point count surveys are conducted on the Carter Tract annually. Point counts document bird species presence and can be used to calculate relative abundance among habitat types (Bibby et al., 1992). Point count surveys are most effective during the breeding season when calling activity is at its peak (Hamel et al., 1996). Six points (points 9 – 14) were added before the 2015 survey season in an effort to survey more of the habitat on Carter Tract. Point count locations are distributed among the different habitat types as follows: sandhill habitat (Points 2, 6, 7 and 14), wetland/wading bird colony (Point 1 and 13), lake edge (Point 8 and 12), wet prairie (Point 4 and 11), mixed-hardwood forest (Point 3 and 10), and early successional grassland habitat (Point 5 and 9; Figure 25). Except for Points 3 and 10, all locations have undergone significant habitat enhancement and restoration efforts.



Figure 25. Location of point count surveys conducted May and June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Point counts were conducted in May and June, 2015. Protocol closely followed procedures outlined in Hamel et al. (1996). Instead of conducting four surveys in consecutive days as in years past, we conducted three surveys spread out every other week. This allowed us to account for changes in species' composition throughout the breeding season versus the snapshot approach of years past and have a more accurate representation of the avian population on Carter Tract. Surveys were conducted in the early morning, when bird activity is typically highest (Hostetler and Martin, 2001). Counts began at dawn and ended by 0830. The order in which each point count location was surveyed was alternated among the four survey days. This was

done to ensure that counts were conducted in early-, mid-, and late-morning periods for each location, thus accounting for any bias from birds potentially calling more frequently at certain hours during the count period (Hostetler and Martin, 2001). Following arrival at each count location, observers refrained from movement or sound for two minutes prior to the start of the count. Count duration was ten minutes, during which time all birds seen and/or heard within a 75-meter radius were recorded. Birds observed/heard outside of the 75-meter plot were also noted.

The four sandhill point count locations chosen were spatially distinct to represent the entire area of the Carter Tract and were similar in vegetative composition (tree stem density and plant species). Twenty-nine bird species were documented within the 75-meter radius in sandhill habitats. The most common species identified were the eastern towhee (*Pipilo erythrophthalmus*), northern mockingbird (*Mimus polyglottos*), great-crested flycatcher (*Myiarchus crinitus*), and the blue-gray gnatcatcher (*Polioptila*). Species relative use of this habitat type was similar to that seen in previous years. Brown-headed nuthatches (*Sitta pusilla*) and eastern bluebirds (*Sialia sialis*) were documented in mature pines while northern bobwhite (*Colinus virginianus*) and mourning doves (*Zenaida macroura*) were found on or near the ground. Species count trends within sandhill habitats suggest that management activities designed to control hardwoods, promote herbaceous groundcover (i.e. herbicide and prescribed burning), and encourage longleaf pine growth have created a vegetative structure and composition that attract a diverse assemblage of bird species.

The two wetland point counts contain a mixture of open water and freshwater marsh, with a transition zone of emergent aquatic vegetation and shrubs merging with a steep-sloped hardwood hammock adjacent to sandhill uplands. Twenty-two species were documented utilizing this habitat type. Cattle egret was the most common species documented at this plot nesting in the rookery located near point count 1. Great egrets (*Ardea alba*), anhinga (*Anhinga anhinga*), and great blue herons (*Ardea herodias*) were also commonly found at the nearby Little Deep Edge and Dykes Mill rookeries. Common grackles (*Quiscalus quiscula*) and red-winged blackbirds (*Agelaius phoeniceus*) were the most common species documented in the marsh. Wood ducks and purple gallinule (*Porphyryula martinica*) were found foraging along the aquatic vegetation floating in the ponds.

The lake edge point counts location is made up of a large body of open water (Dry and Black

Ponds), and shrubby transition zone leading to hydric pine on one side and mixed wetland hardwoods on the other. This count therefore yields species found in both aquatic and pine flatwoods habitat types. Twenty-three species were documented at the lake edge point count station in 2015. The most common species identified in mature pine trees were the great-crested flycatcher, northern parula (*Parula americana*), and mourning dove. Eastern kingbirds (*Tyrannus tyrannus*), eastern towhees (*Pipilo erythrophthalmus*), and common grackles were common in the shrubby transition between lake edge and pine flatwoods. Species diversity was similar to past seasons for this habitat type.

The wet prairie point count locations are adjacent to the cypress swamp connecting Dry and Green Ponds and the wet prairie next to Joiner Canal Bridge (Figure 25). These sites are comprised of semi-flooded shrub swamp with pond cypress (*Taxodium ascendens*) overstory and mesic grassland prairie with mature pine making up the overstory. Twenty species were documented at this point count, an increase over the sixteen species documented in 2014. The most common species identified were the yellow-throated warbler (*Dendroica dominica*), blue-gray gnatcatcher, northern parula, and orchard oriole (*Icterus spurius*).

The mixed hardwood point counts are dominated by live oaks, bays, and holly trees that provide a closed canopy. Seventeen species were documented in this habitat type in 2015. This is the greatest species richness for the mixed hardwoods point counts since the survey's inception in 2008. Northern parula, northern cardinal (*Cardinalis cardinalis*), blue-gray gnatcatcher, Carolina wren, and yellow-billed cuckoos (*Coccyzus americanus*) were the most common species documented. Since this habitat type has had little previous management, we consistently find a similar suite of species using this habitat type over the years.

The grassland point count locations are former pine plantations that were clearcut in 2007 (Figure 25, points 5 and 9). Current vegetative composition in this area is typical of early successional habitat types, consisting primarily of *Hypericum* sp., beardtongue (*Penstemon* sp.), *Lespedeza* sp., wiregrass, broomsedge (*Andropogon virginicus*), and persimmon (*Diospyros virginiana*). Significant sand pine regeneration had also occurred within this point count location at the time surveys were conducted. Fifteen species were documented in this habitat type; the northern mockingbird, blue grosbeak (*Guiraca caerulea*), eastern meadowlark (*Sturnella magna*), and northern bobwhite being the most abundant within the plot. This was the greatest species richness observed over the years at the clearcut point counts. Furthermore, it is likely

that the bird community at this grassland site will continue to evolve in subsequent years as native groundcover becomes established with frequent prescribed fire and longleaf pine seedlings emerge from the grass stage and begin to mature. Control of sand pine and hardwood regeneration via mechanical reduction/herbicide in combination with prescribed fire will aid and hasten the groundcover restoration process at this location.

Landscapes comprised of a mosaic of habitat types yield higher species diversity than landscapes dominated by a single habitat type. The Carter Tract is a unique combination of freshwater ponds, marshland, uplands, and transitional hardwood hammocks. The inherent habitat diversity of the Carter Tract, combined with the intensive habitat restoration efforts of the NFWFMD, have resulted in a piece of property representing multiple habitat types, each of which contribute to the overall high diversity of avian life which utilizes the property. To date, 127 species of bird have been documented as occurring on the Carter Tract (Appendix VII), purple gallinule (*Porphyryla martinica*) and Bachman's sparrow (*Aimophila aestivalis*) were new species found on the tract in 2015.

Point count data over the last seven years was used to calculate bird species diversity within the six habitat types represented during annual surveys. Simply counting the number of species observed during a given survey yields species richness. Species richness does not equate to species diversity because it does not take into account species evenness (how many individuals of each species are counted). The Shannon-Weiner Diversity Index is one of the most common methods of incorporating species evenness as well as richness into a comparable diversity measure (Zar, 2010). The mathematical formula for calculating the Shannon-Weiner Diversity Index (H') is below, where P_i is the proportion of individuals belonging to the i th species in the dataset of interest, and k is the number of species (Shannon, 1948).

$$H = - \sum_{i=1}^k p_i \log p_i$$

Microsoft Excel® was used to calculate H' from 2008 – 2015 for the six habitat types sampled to determine which habitat types harbor the highest diversity and how they may have changed over the years in response to habitat restoration improvements. The results are graphically depicted in Figure 26. Of the six habitat types surveyed during the spring 2015 point counts, the sandhill, lake edge, and mixed hardwood point counts yielded the highest species

diversity. The sandhill point counts have supported the highest diversity of bird species in seven of the eight years point count surveys have been completed. The six point counts that were added prior to the 2015 survey increased the point counts for each habitat type and provided a more complete survey of the habitat types on Carter Tract. All habitat types saw an increase in species diversity except for wetland and wet prairie sites, and wet prairie only had a slight decrease. The large flocks of nesting wading birds (cattle and great egrets, great blue herons) led to an unevenness in the relation to the number of individuals of other species observed decreased the overall species diversity. We suspect that this will continue to be the case as long as wading bird rookeries remain near the wetland point counts.

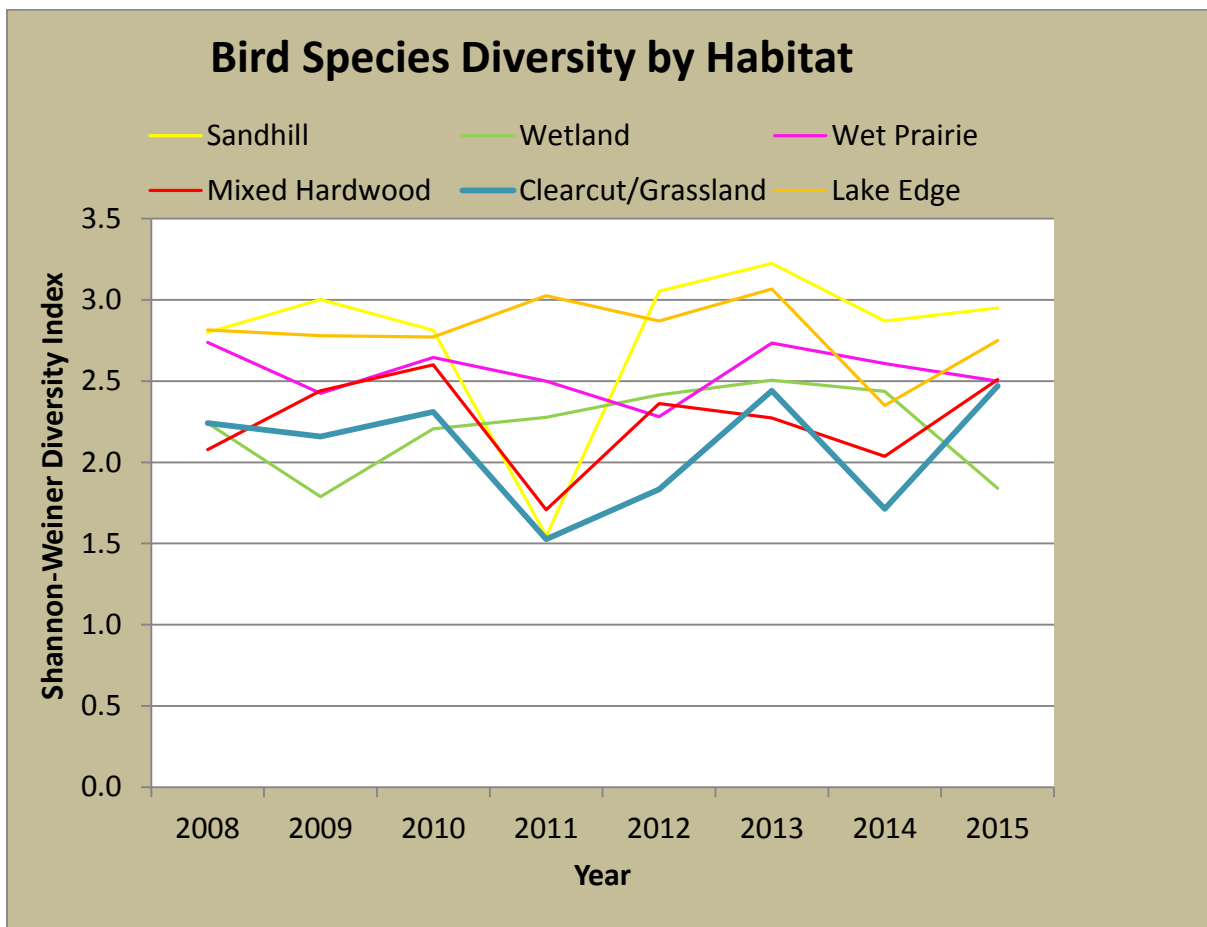


Figure 26. Shannon Wiener Diversity Index (H') compared from 2008 - 2015 among habitat types at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

In addition to formal annual spring point counts, incidental observations are also made throughout the year to document bird species utilizing the Carter Tract. Immature and mature bald eagles (*Haliaeetus leucocephalus*), the federally threatened wood stork (*Mycteria*

americana), merlins (*Falco columbarius*) and American kestrels (*Falco sparverius*) have all been documented using the Carter Tract. Bird species count should further increase as the various habitat types on the area continue to be enhanced by restoration efforts and subsequent prescriptions.

Bluebird Boxes

Worldwide bird species diversity continues to decline each year due to habitat fragmentation, development, and degradation. For secondary cavity nesters like the eastern bluebird, this regression has typically been attributed to a decline in available nesting cavities. Further, changing agricultural and silvicultural practices have led to snag removal and replacement of wood fence posts by treated wood or steel posts (Conner, 1974). Since bluebirds are secondary cavity nesters, they rely on primary excavators (i.e. woodpeckers) and natural forces to create suitable cavities for nesting. Competition for cavities has also increased due to growing populations of introduced species such as the European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*). When natural cavities become scarce, nest boxes become important supplementary nesting sites.

During January 2011, efforts were launched to monitor local breeding populations of eastern bluebirds on the Carter Tract. Eighteen nest boxes were fastened to existing fence or sign posts roughly 3.5 – 5 feet off the ground and were oriented on a south/southeast bearing. Boxes were installed throughout the property in locations with open grassy habitat and were located a minimum of 100 yards from the next closest box (Figure 27). Several boxes were moved due to high vulnerability for predation. Bluebird nest boxes were checked every 7-10 days throughout the breeding season (April – July) to determine occupancy and nest fate. Box construction, installation, and monitoring followed protocol outlined by the U.S. Geologic Survey (USGS) online resources (2006).

Eastern bluebirds, tufted titmice, and great crested flycatchers utilized 14 out of 18 nest boxes during the 2015 spring nesting season. Bluebirds constructed 25 nests, laid an average of 4 eggs/clutch, and fledged 58 chicks (Table 6). Tufted titmice built one nests, laid six eggs, and fledged all six chicks. Great crested flycatchers built one nest with five eggs that fledged zero chicks. Egg success rate (number of fledged chicks/total number of eggs produced) was 57.4%, 100%, and 0% for bluebirds, titmice, and great crested flycatchers, respectively. Bluebird and tufted titmice production increased, while great crested flycatcher production remained zero

during the 2015 nesting season. Ten bluebird nests appeared to have been predated during the 2015 nesting season, a decrease from the 19 nests predated in 2014. Although this number appears high, it is well within the 55 – 84% range documented in Radunzel et al. (1997).



Figure 27. Location and use of bluebird nest boxes in 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Predator guards were not used so boxes could be installed directly on existing fence/sign posts, which is a common method of mounting/installation. Brawn (1985, 1987) found similar predation rates between unprotected western bluebird (*Sialia mexicana*) boxes and natural cavities. The decreased predation rate is likely due to boxes being moved prior to the breeding season; FWC staff have documented snakes and other predator species repeatedly visiting the

same bluebird boxes during the breeding season. Bluebird boxes will continue to be moved as warranted in the future.

Table 6. Bluebird box occupancy, egg success, and nest success during spring 2011 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Year	Species	Total nests	Total eggs	Avg. clutch size	Nests with young	Total chicks	Fledged chicks	Egg success (fledged chicks/# eggs)	Nest success (nests with young/total nests)
2011	Carolina chickadee	5	21	4.2	3	12	6	28.6%	60.0%
	Eastern bluebird	18	78	4.3	8	22	15	19.2%	44.4%
2012	Carolina chickadee	4	19	4.8	1	5	5	26.3%	25.0%
	Eastern bluebird	24	106	4.4	15	59	48	45.3%	62.5%
2013	Carolina chickadee	1	2	2.0	0	0	0	0.0%	0.0%
	Eastern bluebird	24	100	4.2	17	59	51	51.0%	62.5%
	Tufted titmouse	2	11	5.5	2	9	9	81.8%	100.0%
2014	Carolina chickadee	4	6	1.5	0	0	0	0.0%	0.0%
	Eastern bluebird	28	96	3.4	7	27	22	22.9%	25.0%
	Great crested flycatcher	1	5	5.0	1	4	0	0.0%	0.0%
	Tufted titmouse	2	7	3.5	0	0	0	0.0%	0.0%
2015	Eastern bluebird	25	101	4	18	69	58	57.4%	60.0%
	Great crested flycatcher	1	5	5	0	0	0	0.0%	0.0%
	Tufted titmouse	1	6	6	1	6	6	100.0%	100.0%

Kestrel Boxes

The southeastern American kestrel (*Falco sparverius paulus*) is a subspecies of the American kestrel found in open pine habitats, woodland edges, prairies, and pastures, with a preference for sandhill habitats. The smallest falcon in the U.S., and a threatened species in the state of Florida, the southeastern American kestrel relies on suitable cavity trees as a key habitat feature necessary for breeding (Rodgers, Jr. et al., 1996). However, because kestrels are secondary

cavity nesters, suitable nest sites is thought to be the most limiting factor and a major contributor to declining populations in Florida (Hoffman and Collopy, 1988). The decline of natural nesting and foraging habitats in recent years has prompted the use of nest-box programs to help augment populations. Kestrel boxes can also provide important winter cover for other avian species, such as the eastern screech owl (Hipes et al., 2001; U.S. Department of Agriculture, 1999).

FWC staff consistently observes kestrels at the Carter Tract during winter and early spring annually. However, it is unknown whether the birds are migratory/wintering American kestrels or resident southeastern American kestrels. Although southeastern American kestrels are slightly smaller than American kestrels, the two species cannot be reliably distinguished in the field. Because the southeastern American kestrel is the only subspecies of kestrel that breeds in Florida, erecting nest boxes is one method of determining which species is present on the Carter Tract. Therefore, in February 2011 eight nest boxes were installed throughout the Carter Tract following protocol outlined by the U.S. Department of Agriculture (USDA) (1999). In 2013, one kestrel box was removed because of continued use by southern flying squirrels; in 2015, kestrel box 75 was moved from the wet prairie south of the Green Ponds to the sandhill west of Black Pond (Figure 28).



Figure 28. Location of kestrel nest boxes at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Nest boxes were installed on mature longleaf pine trees, approximately 15 ft from the ground facing a southeast orientation. Trees chosen were those in open areas, far enough away from surrounding trees to discourage squirrels from accessing nest boxes. Boxes were located at least 0.5 miles from the next nearest nest box. Boxes were filled with cedar shavings as nesting material. Aluminum flashing was wrapped around the base of trees to discourage rat snake

predation. Nest box monitoring followed protocol outlined by FWC's Fish and Wildlife Research Institute.

No kestrel nests were recorded during spring 2015. Boxes 77 and 78 were used during the winter months by American kestrels (*Falco sparverius*), but were abandoned prior to the start of breeding season (Figure 28). Non-target species documented using kestrel boxes included great-crested flycatchers and tufted titmice (*Baeolophus bicolor*). A similar kestrel box project on Blackwater WMA documented breeding kestrels one year following box installation, and the 2014 nesting season resulted in southeastern kestrels nesting in seven out of 20 boxes (Barbara Almario, pers. comm.). Because Blackwater WMA is located just 75 miles west of the Carter Tract, we feel there is a good chance southeastern kestrels will utilize nest boxes in the future. Therefore, kestrel boxes will continue to be monitored again during the 2016 nesting season (February – June).

Summer Whistle Counts

Conducting summer whistle counts for the northern bobwhite is a common method of obtaining a population index for this popular game species. It has been shown that there is a strong positive relationship between the number of bobwhites whistling in the summer and the number of coveys established the following fall (Rosene, 1984; Terhune et al., 2009). We therefore chose to conduct summer whistle counts for northern bobwhites in order to analyze this data and subsequent harvest success of bobwhites on the Carter Tract.

Whistle count surveys were conducted from June 5 - 25, 2015. Most surveys fell within the June 15-July 10 calling peak suggested by Rosene (1984) and the mid-June to late-July peak suggested by Terhune et al. (2009). It was important to conduct surveys during peak whistling dates as intensity of whistling is thought to correspond closely with nesting and hatching activity (Terhune et al., 2009), and thus should be a more robust indicator of overall population estimates. Rosene (1984) and Terhune et al. (2009) also suggested that the best time to conduct whistle counts is during the 'calling optimum' that takes place during the two hours following sunrise. We followed this protocol, beginning surveys promptly at sunrise and completing all surveys within the two hours following official sunrise. Surveys lasted for five minutes per station and 12 total stations were chosen that maintained adequate spatial coverage of the upland habitats of the Carter Tract (Figure 29). One-half mile buffers were maintained between stations to decrease the possibility of double-counting birds. Surveys were not conducted when cloud

cover was >50%, wind speed exceeded 12 mph, or under rainy conditions.

Figure 30 illustrates the mean number of bobwhites detected for each listening station from 2013-2015. Bobwhites were detected at all 12 listening stations during 2015 surveys. Listening stations 1-3, 11, and 12 had the highest bobwhite counts during the survey, similar to results from 2013 and 2014. The habitat surrounding these listening stations has received the most management (prescribed fire, sand pine/hardwood removal, wiregrass/longleaf pine planting) and the higher bobwhite whistle count is a testament to these management activities. Listening stations 6 and 8 increased in bobwhite detections in 2015 as late winter/early spring 2015 prescribed fires reduced hardwoods and promoted wiregrass and other herbaceous groundcover growth.

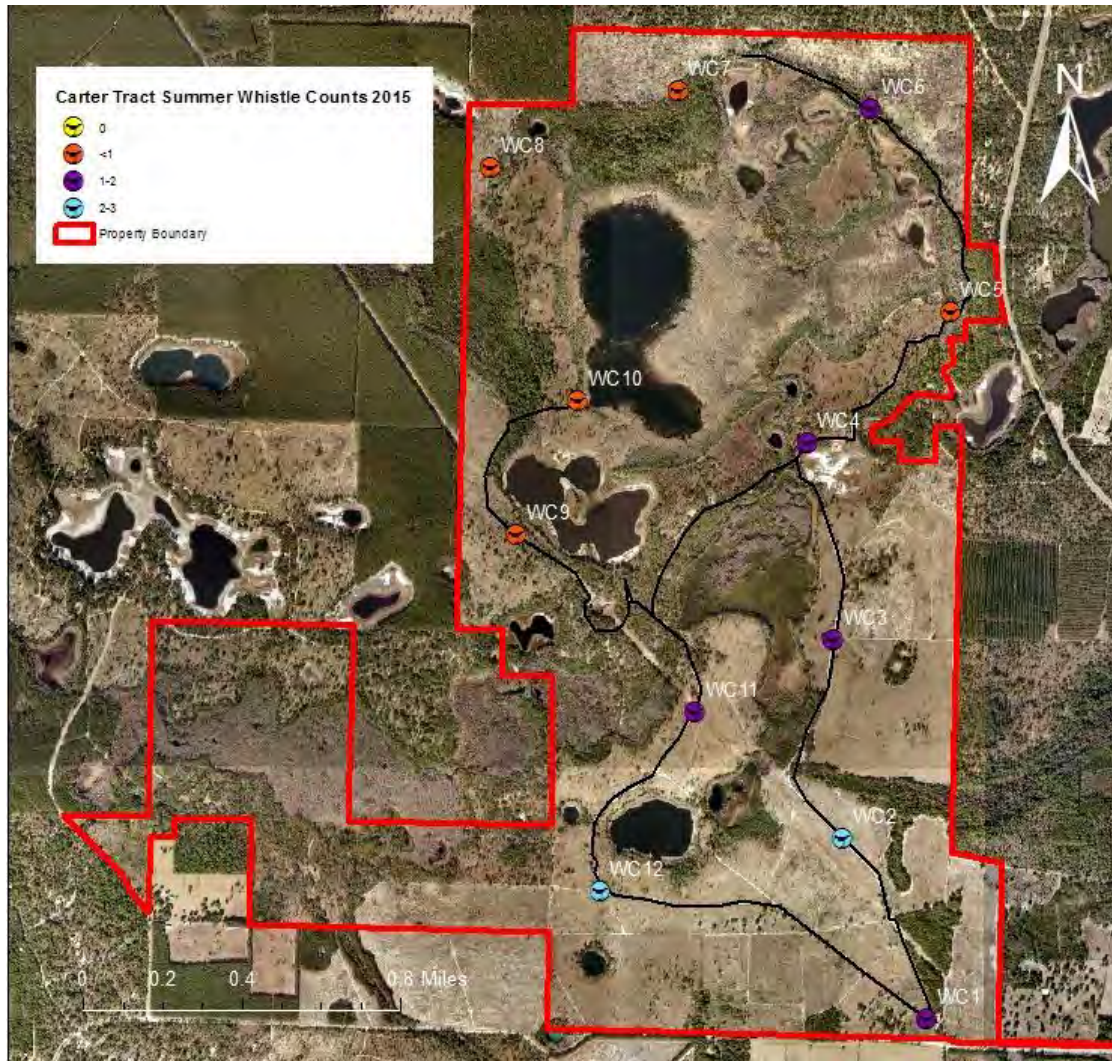


Figure 29. Mean number of northern bobwhites counted at each summer whistle count survey station in June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

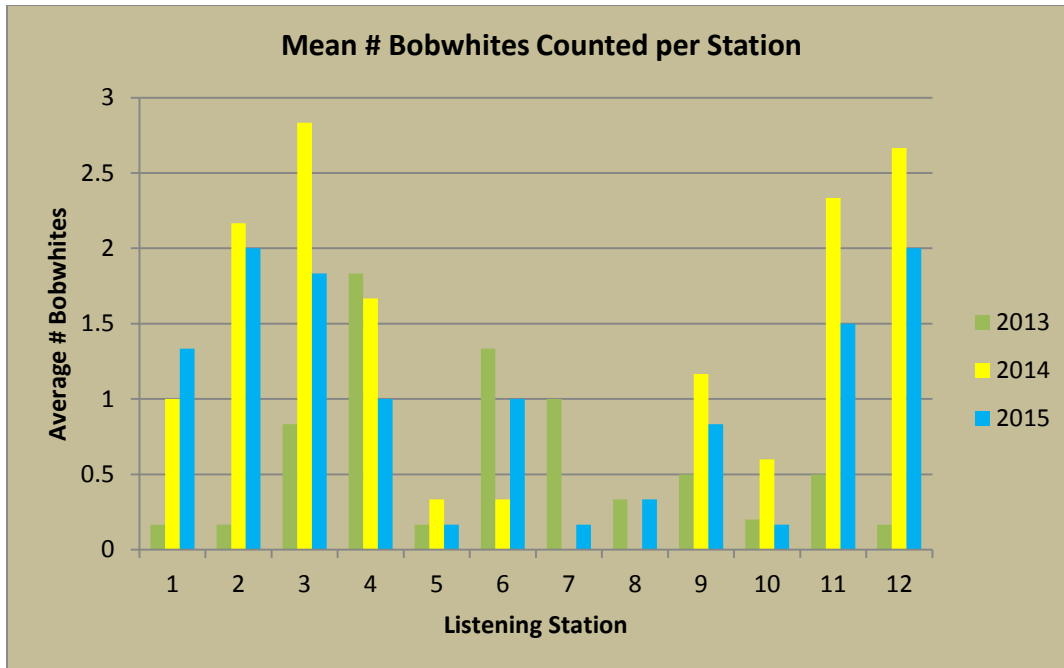


Figure 30. Comparison of average whistles heard per listening station during 2013-2015 surveys on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Because of the relationship to the number of calling birds, total calls per station were also recorded. By recording calls, an attempt is made to avoid observer errors in distinguishing the number of individual calling birds as this number increased. Ellis et al. (1972) and Snyder (1978) both noted that the relationship between the numbers of calls and calling quail deteriorated rapidly when more than 7 birds per station were heard. It was more difficult for observers to distinguish between individual quail at higher densities. Curtis et al. (1989) and Robinette (1991) observed increased variability in calling when the mean exceeded 4 birds per station. On the Carter Tract, the mean number of different quail heard per station didn't exceed four birds regularly. When this level is surpassed more frequently, it may be appropriate to use mean number of calls rather than the number of whistling bobwhites as the count index. Moreover, Snyder (1978) also noted 3 replicates were needed to project within 20% of the actual mean 80% of the time, when the call rate averaged 1 quail per station. When the index rate averaged 4 quail per station, 7 replicates were needed. It appears that the 6 replicated on the Carter Tract should be adequate for now.

We are encouraged to see more widespread use of the entire Carter Tract property by northern bobwhites and feel that maintaining an aggressive burning regime is the most important management activity NFWMD can do to continue to improve the northern bobwhite

population on the Carter Tract. Simply put, to manage for northern bobwhite populations, one is essentially managing for the integrity of the forest system that supports this bird; specifically the sandhills longleaf-turkey oak-wiregrass association with its dendritic pattern of watersheds.

Mourning Dove Banding

As part of a national long-term mourning dove banding program, FWC’s Small Game Management Program solicited WMAs throughout the state to participate in this banding work. Since 2007, Carter Tract staff have participated and contributed to Florida’s statewide dove-banding project in cooperation with the U.S. Fish and Wildlife Services and Bird Banding Lab (Figure 31). These efforts are integral components in the development and implementation of a long term national harvest management strategy for mourning doves. Hunters play an important role in the success of the program and are encouraged to report leg bands at 1-800-327-BAND, or online at www.pwrc.usgs.gov (select “Birds”, then “Bird Banding Lab”). Interestingly, according to 2014 mourning dove band returns (n=26), 73% of doves harvested in Florida originated in Florida (Andrew Fanning, FWC, pers. comm.).

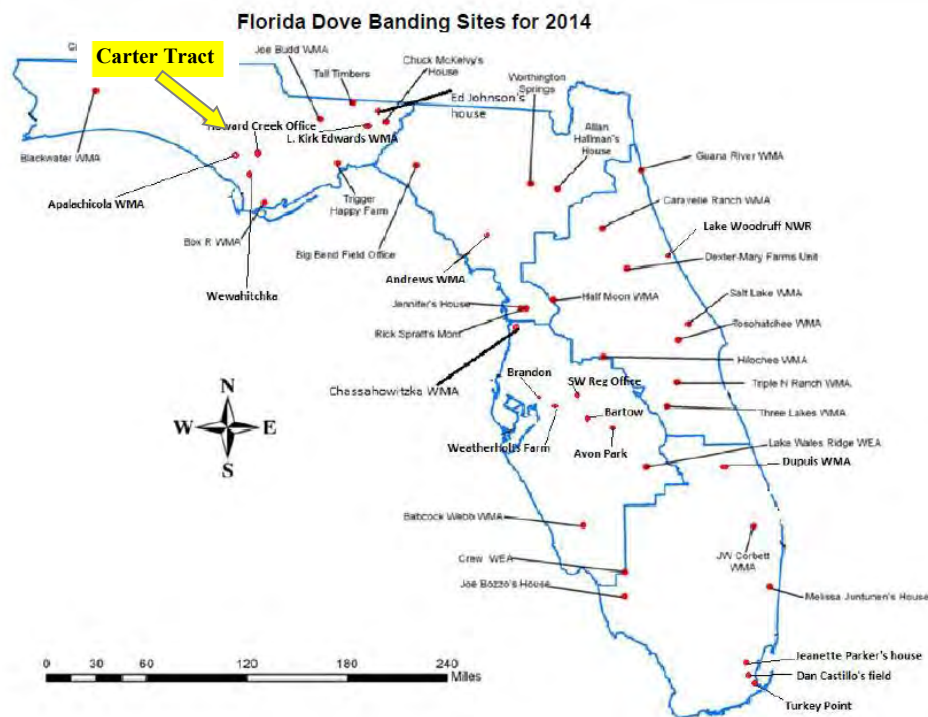


Figure 31. In conjunction with national long-term banding efforts, the Fitzhugh Carter Tract of Econfina Creek WMA in Washington County, Florida is one of the sites participating in Florida’s statewide dove banding program.

Two sites on the Carter Tract were prebaited with white millet seed in June 2014, prior to trapping. Trapping was conducted beginning July 1, 2013 with traps set in the early morning. Traps were checked after 1-2 hours, depending on weather conditions. Doves were banded using USFWS metal identification bands, and age (HY = hatch year; AHY= after hatch year), sex, and molt sequence data were collected for each bird (Figure 32). Forty-six mourning doves (34 HY; 12 AHY) were successfully banded during the 2013 capture/banding effort, and there were no recaptures of birds banded in previous years (Table 7).



Figure 32. Mourning doves were trapped (left), banded with U.S. Fish and Wildlife identification bands, and age, sex, and molt sequence (right) were recorded in July 2013 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida (arrow denotes the emergence of new primary feather #06 following on a hatch year mourning dove).

Table 7. Dove banding results from 2007 - 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Year	# HY (hatch year) birds banded	# AHY (after hatch year) birds banded	# unknown age birds banded	Total # birds banded
2007	29	7	2	38
2008	40	9	1	50
2009	10	9	1	20
2010	11	13	1	25
2011	11	9	0	20
2012	12	14	0	26
2013	14	11	0	25
2014	34	12	0	46

Herpetofauna

FWC staff employ several methods for surveying and monitoring the herpetofauna population at the Carter Tract. Methods used include: box-style snake traps, pitfall traps, and incidental observations. A comprehensive list of all herpetofauna species (n=61) identified on the Carter Tract from 2005 to present has been compiled (Appendix VIII). Sandhill and scrub habitats, as well as seasonal isolated wetlands and small ponds are among the most important and imperiled habitats for southeastern herpetofauna. Most amphibians that rely on seasonal wetlands or ponds for reproduction also require upland habitats (Bailey et al., 2006). The Carter Tract is an example of a good mix of both permanent (e.g. Dry Pond) and intermediate (e.g. Pine Log Creek and Garrett Pond) aquatic habitats interspersed with adjacent upland sandhills. The presence of the gopher tortoise (*Gopherus polyphemus*) in the sandhill habitat of the property is significant not only because it is a state Threatened species, but also because their burrows are beneficial to a host of commensalistic species that utilize them (both active and abandoned) for shelter and foraging (Jackson and Miltrey, 1989). Specifically, the federally Threatened eastern indigo snake (*Drymarchon coureais couperi*), in addition to the gopher frog (*Rana capito*) and Florida pine snake, both imperiled species, are known to use gopher tortoise burrows (Moler, 1992; Ashton and Ashton, 2008). As in previous years, a detailed report on the *Annual Survey and Monitoring of the Gopher Tortoise on the Carter Tract* will be submitted separate from this comprehensive annual report.

Snake Traps

Because of their size, large terrestrial snakes such as black racers, rat snakes, coachwhips, Florida pine snakes, and the eastern indigo snake (Threatened) can be difficult to capture using traditional survey methods. Use of traps specifically designed to capture these large terrestrial species is the most effective method for documenting their numbers on the Carter Tract. Three spatially distinct upland sandhill habitats were chosen based on their vegetative composition and structure, as well as proximity to mesic habitats (Figure 33). Snake traps were implemented during FY 2008-09, and the 2014-15 surveys followed the methods outlined in McElhone (2014).

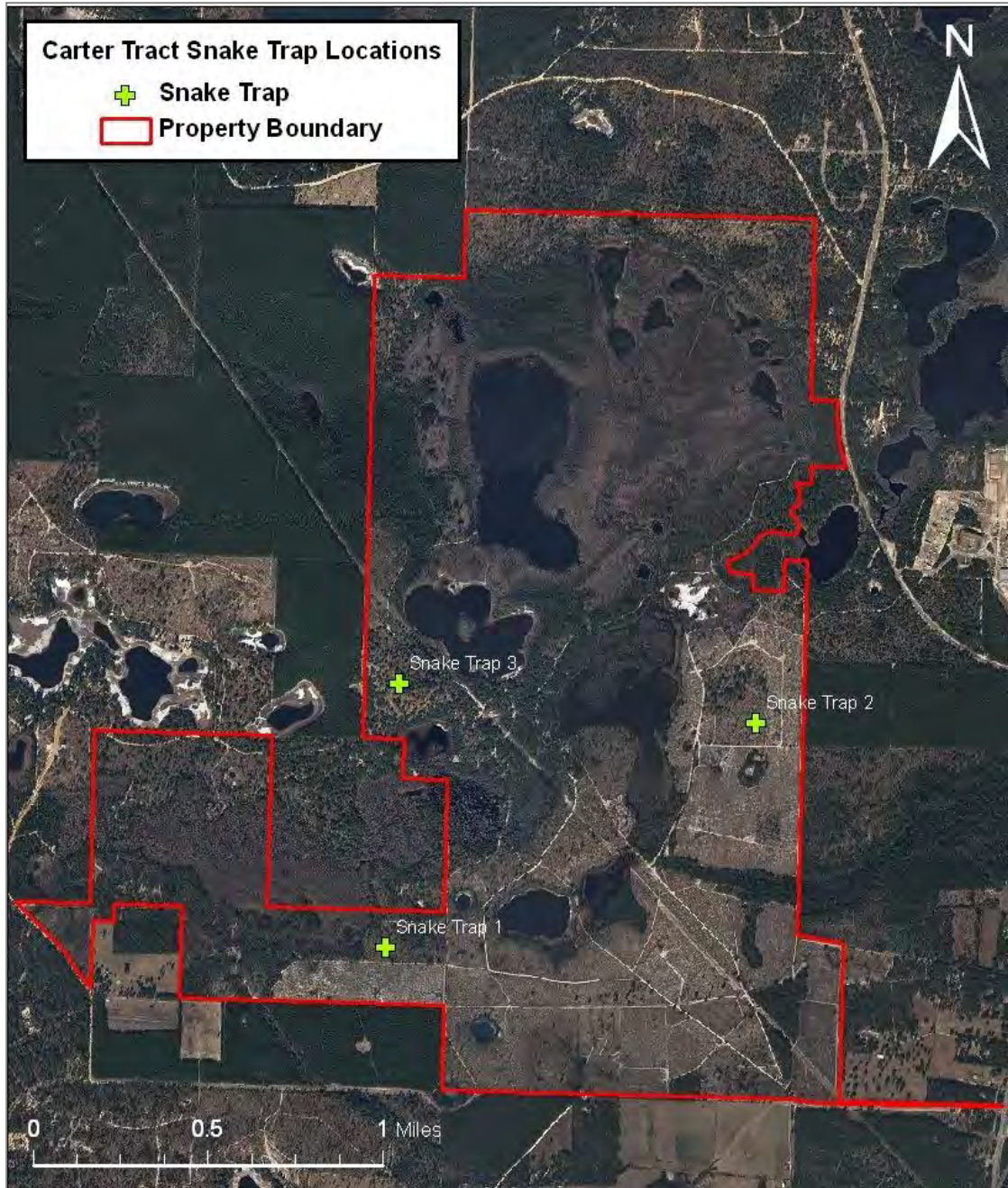


Figure 33. Location of upland snake traps used for sampling herpetofauna on the Fitzhugh Carter Tract of Econfinia Creek WMA, Washinton County, Florida.

Across 191 trap nights, 300 individual animals representing 26 species were captured from September-October 2014 and March-April 2015 (Figure 34). Sixty five percent of animals were captured in buckets while the remaining 35% were captured in box traps. Amphibians were the most captured taxa group with 208 captures, followed by lizards, snakes, and small mammals, with 46, 24, and 20 captures, respectively. Eastern spadefoot toads (*Scaphiopus holbrookii*)

were the most captured amphibian, accounting for 52% of the captures. Eastern fence lizards made up 63% of the lizards captured,. Southern black racer (*Coluber constrictor priapus*) was the most captured snake and oldfield mice (*Peromyscus polionotus*) were the most captured mammal. A juvenile and adult Florida pine snake (*Pituophis melanoleucas*) were captured on consecutive days in April at snake trap 2 (Figure 34). These are only the second and third captures of this Florida imperiled species in the six years of snake trap surveys, and indicates that Florida pine snakes are breeding on or near Carter Tract. Also, two Florida pine snakes were observed in the West Arm area and one in the sandhill northwest of the check station during gopher tortoise surveys in May. Appendix IX details the number of individuals of each species captured in snake trap arrays.

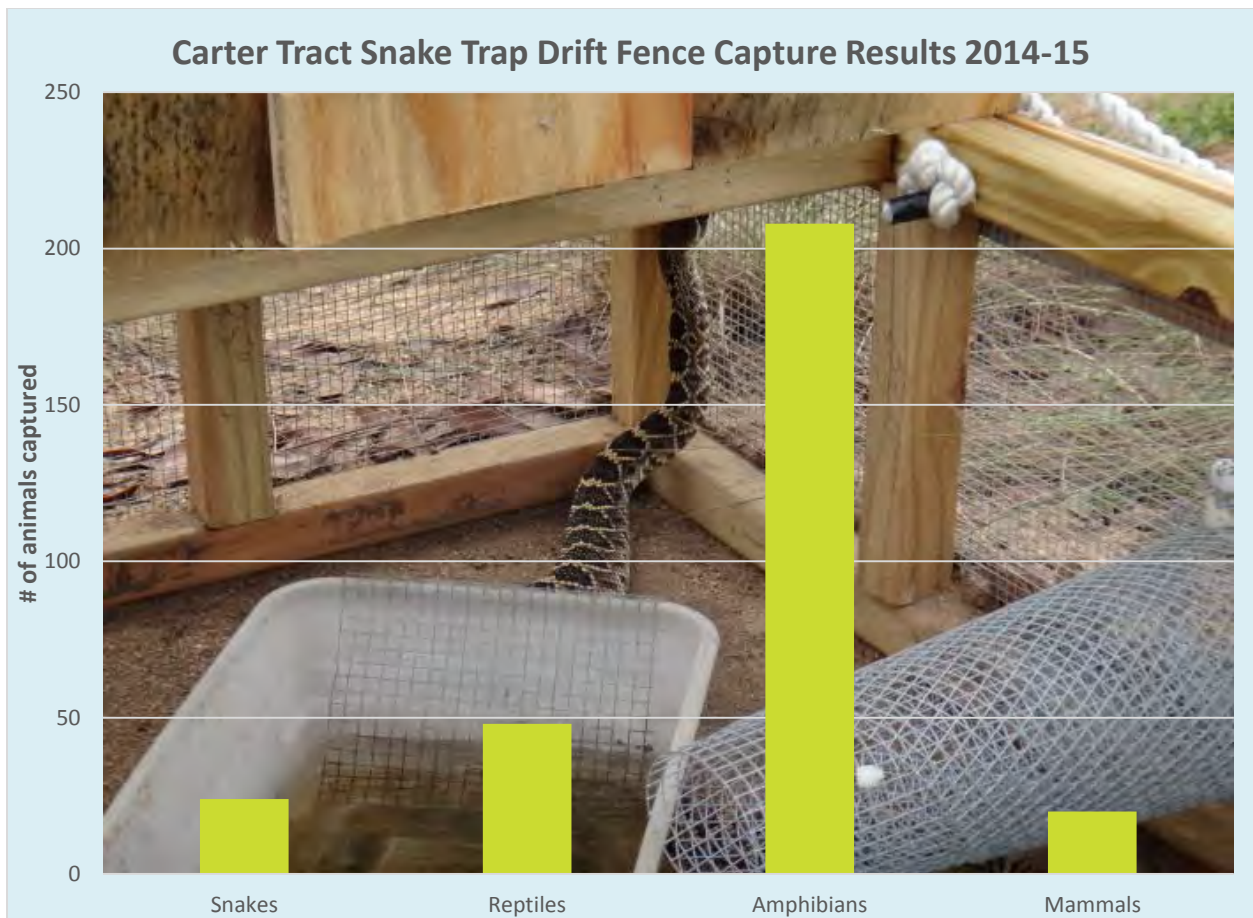


Figure 34. Snake trap capture results from September - October 2014 and March - April 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Based on data collected to date and observed capture trends, opening traps in spring during March and April should maximize the capture of snakes emerging from winter hibernacula in

search of mates. Fall trapping during September and October should capture the majority of snakes dispersing across the landscape (including YOY born during late summer) before cooler weather forces them underground for the winter. Staff will continue to deploy snake traps on this schedule, adjusting trapping efforts as dictated by weather patterns (i.e. drought conditions, ambient temperature, etc.) and incidental snake activity observations.

ADDITIONAL ACTIVITIES

Wild Hog Removal

At the request of NFWFMD, FWC staff began assisting with trapping wild hogs (*Sus scrofa*) on Carter Tract in the summer of 2014. Hogs have occasionally been documented on Carter Tract in the past (Robinette, pers. comm.), but not until recently have they had much impact on the understory vegetation that is undergoing restoration management and impacting the mitigation bank of NFWFMD. Trapping efforts were conducted from June through September. Public hunting opportunities run from September through April each year on Carter Tract (Appendix I). Two box traps were deployed in 2014; one on an access road north of Green Pond 3, and the other in the flatwoods west of Dry Pond. Staff deployed two box traps again in 2015 west of Dry Pond and constructed two corrals that allow for more hogs to be captured at once than the traditional box trap. Corral 1 was deployed to the west of Dry Pond, corral 2 was deployed in the flatwoods between Black and Dry Pond. Our efforts yielded a capture of 8 hogs, as well as 2 hogs harvested during hunting for a total of 10 hogs removed from Carter Tract in 2014.

The main point of access for hogs onto Carter Tract appears to be the wet flatwoods section west of Dry Pond where the vegetation inhibits adequate fence installation. Completing this section of fencing and repairing areas where the soil has eroded holes underneath the fence elsewhere could prove the most effective method to keep hogs from accessing the Carter Tract. Secondly, consideration for a hog-dog hunting season during the summer months may be prudent as well. Pressuring wild hogs during the growing season has the potential to keep hogs from frequenting wetlands if the hunting pressure is there, whether harvest occurs or not during that time. Trapping efforts will continue into our FY 2015-16, during breaks in the hunting season. Trapping efforts will continue in our FY 2016-17, with results of FY2015-16 removal provided subsequently.

Dry Pond Bat Roosts

In April 2012 FWC staff identified two hollow cypress trees on Dry Pond that were being utilized by two bat species (Figure 35). A large number of Brazilian free-tailed bats (*Tadarida brasiliensis cynocephala*) and southeastern myotis were observed roosting together in each tree.

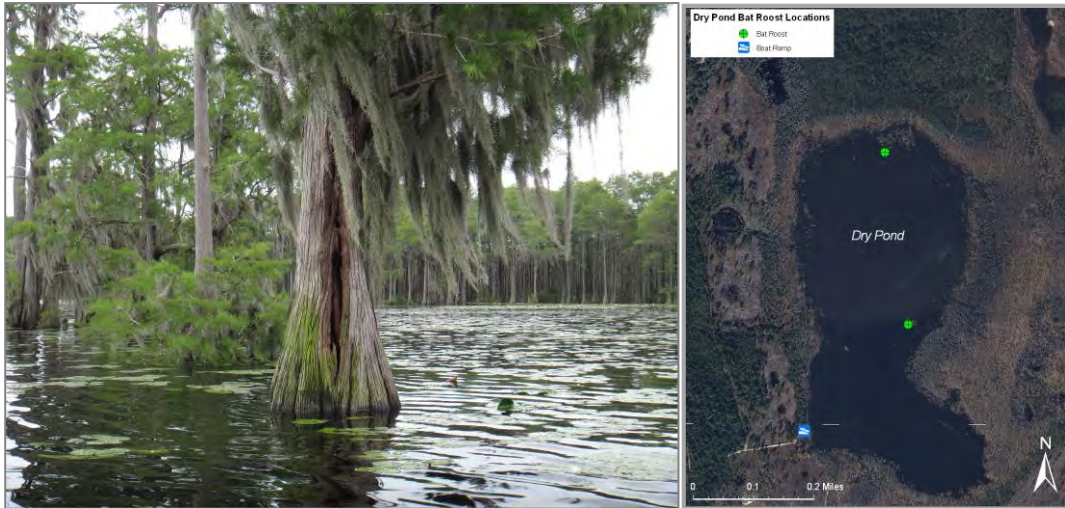


Figure 35. One of two roost trees on Dry Pond used by a maternity colony of southeastern myotis (*Myotis austroriparius*) during 2013 (left). The location of both roost trees on Dry Pond is shown at right.

Brazilian free-tailed bats have not been studied extensively in Florida, therefore overall population trends within the state are unknown. These bats almost exclusively roost in buildings in Florida, and their abundance appears to be limited by availability of roost sites (Humphrey, 1992). This species is occasionally found roosting in trees, but this behavior is considered uncommon (Jeff Gore and Melissa Tucker, FWC, pers. comm.). Brazilian free-tailed bats rely solely on insects for food, and are thus susceptible to pesticide poisoning. Further, because this species occurs in human habitations in Florida, they are particularly vulnerable to intentional eviction, roost destruction, vandalism, harassment, and large-scale colony destruction. Therefore attempts should be made to preserve known roost sites (Humphrey, 1992).

Southeastern myotis primarily roost in caves in Florida (Humphrey, 1992), so finding many individuals roosting in a single tree is uncommon (Jeff Gore and Melissa Tucker, FWC, pers. comm.). This species prefers to forage over water, feeding on small beetles, moths, mosquitoes, and other aquatic insects. Concentration of large numbers of these bats at just a handful of caves

throughout the panhandle make this species vulnerable to natural disturbances (i.e. flooding), as well as land-use conversion and recreation (i.e. spelunking, etc.; Humphrey, 1992).

Given the vulnerability of these two bat species to potential population declines in the panhandle, FWC monitored these roost sites periodically during 2012-13 to assess their use. Jeff Gore, a terrestrial mammal researcher with FWC, confirmed that the large group of bats was a maternity colony of an estimated 1,000+ southeastern myotis (Figure 36). Both adult and recently weaned pups were observed roosting in the trees. Confirmation of the trees as productive maternity roosts for such a large number of bats underscores the importance of this habitat feature within the Carter Tract to local bat populations. A large colony of southeastern myotis were documented using the roosts in summer 2013, however, no Brazilian free-tailed bats were found. No bat species were found roosting in the trees in 2014-15. The bat roosts will continue to be monitored annually to assess use, and temperature data loggers may be installed within the trees to determine how daily and seasonal temperature changes may affect their use. Furthermore, FWC will be installing four bat houses at two locations near Garrett Pond and between Dry and Black Ponds in the fall of 2015. Two houses will be mounted on each side of a steel pole, and can hold ~400 bats per house. This will allow FWC to monitor the bat species found on Carter Tract, and signage will provide a good educational opportunity for the public.



Figure 36. A maternity colony of southeastern myotis (*Myotis austroriparius*) was again documented during summer 2013 using two roost trees on Dry Pond at the Fitzhugh Carter Tract of Econfinia Creek WMA, Washington County, Florida.

LAW ENFORCEMENT ACTIVITIES



FWC Law Enforcement Activities Lieutenant Warren Walsingham

Florida Fish and Wildlife Conservation Commission Officers patrol the Fitzhugh Carter Tract of the Econfina Wildlife Management Area providing policing to include wildlife, fisheries, and general law enforcement. This FY 2014-2015 officers provided approximately 126 hours of patrol directed to the Carter Tract. There were approximately 68 user contacts for the area with 8 citations and written warnings issued.

Officers conducted foot patrol and all-terrain vehicle patrols of the interior roads and perimeter of the Carter Tract throughout the year. Officers targeted illegal hunting, trespassing, baiting violations, and night hunting during the hunting season. They focused on possession of alcohol, licensing, bag limit and size limit violations during the allowed fishing season.

Officers responded to and worked several complaints in reference to possession of alcohol, tree stands being placed on boundary lines, damage to exterior fencing, illegal entry and illegal hunting.

This year officers checked several successful sportsmen with ducks, deer, turkey and fish.

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Appendix I. Fitzhugh Carter Tract of Econfina Creek WMA Regulations Summary and Area Map, July 1, 2014 – June 30, 2015.



Fitzhugh Carter Tract Econfina Creek Wildlife Management Area

Regulations Summary and Area Map
July 1, 2014 - June 30, 2015



A cooperative public wildlife and recreational area

Northwest Florida Water
Management District

Florida Fish and Wildlife
Conservation Commission
MyFWC.com



This brochure is designed to provide the public with information and a summary of regulations pertaining to hunting, fishing and other recreational use on the Fitzhugh Carter Tract of Econfina Creek Wildlife Management Area. **Regulations that are new or differ substantially from last year are shown in bold print.** Area users should familiarize themselves with all regulations. For exact wording of the wildlife laws and regulations, see the Florida Fish and Wildlife Conservation Commission's wildlife code, on file with the Secretary of State and state libraries. This brochure, the Florida Hunting Regulations handbook, and quota permit worksheets should provide the information necessary for you to plan your hunting and fishing activities. These publications are available from any Commission office, county tax collector and at MyFWC.com.

Persons using wildlife management areas are required to have appropriate licenses, permits and stamps. The following persons are exempt from all license and permit requirements (except for quota permits when listed as "no exemptions", recreational use permits, antlerless deer permits and the Migratory Bird Hunting and Conservation Stamp [federal duck stamp]): Florida residents who are 65 years of age or older; residents who possess a Florida Resident Disabled Person Hunting and Fishing Certificate; residents in the U.S. Armed Forces, not stationed in Florida, while home on leave for 30 days or less, upon submission of orders; and children under 16 years of age. Children under 16 years of age are exempt from the duck stamp. Anyone born on or after June 1, 1975 and 16 years of age or older must have passed a Commission-approved hunter-safety course prior to being issued a hunting license, except the Hunter Safety Mentoring exemption allows anyone to purchase a hunting license and hunt under the supervision of a licensed hunter, 21 years of age or older.

Licenses and permits may be purchased from county tax collectors, license agents, at MyFWC.com/license or by telephone at 888-486-8356 (hunting) or 888-347-4356 (fishing). A no-cost Migratory Bird Permit is available when purchasing a hunting license. Any waterfowl hunter 16 years of age or older must possess a federal duck stamp, available where hunting licenses are sold, at most post offices or at www.duckstamp.com.

Quota Permit Information:

Archery - 15, no-cost, quota permits (no exemptions) for each of 2 hunts.
General Gun - 15, no-cost, quota permits (no exemptions) for each of 3 hunts.
Muzzleloading Gun - 15, no-cost, quota permits (no exemptions).
Youth Turkey - 3, no-cost, quota permits (no exemptions).
Spring Turkey - 5, no-cost, quota permits (no exemptions) for each of 3 hunts.

Daily Fishing Permits: 20 anglers are allowed on the area per day. 10 daily permits are available first-come, first-serve at the check station; 10 daily permits can be reserved in advance by calling 850-773-2631. If reserved permits are not filled by 11 a.m., they will become available at the check station first-come, first-serve. Permits are issued with specific lake designations, and anglers are allowed to fish only at the lake for which the permit is issued and must have the permit in their possession at all times.

Permit applications: Hunters must submit electronic applications for quota and special-opportunity permits through the Commission's Recreational License Issuance Services (RLIS). Worksheets listing hunts, application periods, deadlines and instructions are available at county tax collector's offices, FWC offices or MyFWC.com. Quota application periods occur throughout the year beginning April 1; please refer to the hunting handbook or MyFWC.com for specific dates. Worksheets will be available about 2 weeks prior to each application period.

Guest hunters: For each non-transferable archery, muzzleloading gun, general gun, wild hog, spring turkey and mobility-impaired quota permit issued through the Commission's RLIS, a quota permit holder (host) may take a guest hunter by obtaining a guest permit. Guest hunters are not allowed during youth turkey hunts. A guest hunter must possess a completed guest permit while hunting except the following persons may be a guest hunter without a guest permit: a youth under 16 years of age, a youth supervisor, a mentor license holder or a mentor license supervisor. A host may only bring 1 guest hunter at a time and may only use 1 guest permit per day. The following persons are not considered to be guest hunters: other quota permit holders, non-hunters and exempt hunters (on areas and during seasons that allow exemptions). The host must share the bag limit with the guest hunter and the host is responsible for violations that exceed the bag limit. The guest hunter and host must enter and exit the area together and must share a street-legal vehicle while hunting on the area. The guest hunter may hunt only while the host is on the area. Refer to the quota hunt worksheets for additional information.

Youth and mentor license holders: A youth hunter (less than 16 years of age) must be supervised by a person at least 18 years of age. A mentor license holder must be supervised by a licensed hunter at least 21 years of age. Unless exempt, only those supervisors with proper licenses and permits may hunt. If the supervisor is hunting during any hunt for which quota permits are issued, at least 1 person in the party must be in possession of a quota permit. A non-hunting supervisor is allowed to accompany a youth or mentor license holder during any hunt.

Transfer of permits: Quota and guest permits are not transferable. A positive form of identification is required when using a non-transferable permit, except for youth under 16 years of age. The sale or purchase of any quota permit or guest permit is prohibited.

General Area Regulations:

All general laws and regulations relating to wildlife and fish shall apply unless specifically exempted for this area. Hunting or the taking of wildlife or fish on this area shall be allowed only during the open seasons and in accordance with the following regulations:

1. Any person hunting deer or accompanying another person hunting deer shall wear at least 500 square inches of daylight fluorescent-orange material as an outer garment, above the waistline. These provisions are not required when hunting with a bow and arrow during archery season.
2. Taking of spotted fawn, swimming deer or roosted turkey is prohibited. Species legal to hunt are listed under each season.

3. It is illegal to hunt over bait or place any bait or other food for wildlife on this area.
4. Driving a metal object into any tree, or hunting from a tree into which a metal object has been driven, is prohibited.
5. No person shall cut, damage or remove any natural, man-made or cultural resource without written authorization of the landowner or primary land manager.
6. Taking or attempting to take any game with the aid of live decoys, recorded game calls or sounds, set guns, artificial light, net, trap, snare, drug or poison is prohibited. Recorded calls and sounds can be used to hunt furbearers, wild hog and crows.
7. The wanton and willful waste of wildlife is prohibited.
8. Hunting, fishing or trapping is prohibited on any portion of the area posted as closed to those activities.
9. People, dogs, vehicles and other recreational equipment are prohibited in areas posted as "Closed to Public Access" by FWC administrative action.
10. Taking or herding wildlife from any motorized vehicle, aircraft or boat, which is under power is prohibited until power, and movement from that power, has ceased.
11. Most game may be hunted from ½ hour before sunrise until ½ hour after sunset (see exceptions for each season).
12. The release of any animal is prohibited, without written authorization of the landowner or primary land manager.
13. The head and evidence of sex may not be removed from the carcass of any deer or turkey on the area.
14. The planting or introduction of any non-native plant is prohibited, without written authorization of the landowner or primary land manager.
15. Wild hog may not be transported alive.
16. A hunting license is not required for the take of wild hog.
17. Littering is prohibited.
18. It is unlawful to set fire to any forest, grass or woodlands.
19. A Fish and Wildlife Conservation Commission Law Enforcement Officer may search any camp, vehicle or boat in accordance with law.
20. Falconers may hunt during the statewide falconry season anytime a management area is open for public access. Falconers are not exempt from quota permits during hunts requiring them.
21. The possession or consumption of intoxicating beverages is prohibited.

Public Access and Vehicles:

1. Open to public recreational access year round. During periods when the area is closed to hunting and fishing, public access other than by foot is prohibited.
2. All persons shall enter and exit at the designated entrance (see map).
3. Parked vehicles may not obstruct a road, gate or firelane.
4. No motor vehicle shall be operated on any part of any wildlife management area that has been designated as closed to vehicular traffic.
5. Vehicles may be operated only on named or numbered roads.
6. Horses and the use of all-terrain vehicles and bicycles are prohibited.

Hunters and Check Stations:

1. Hunters must check in at the check station when entering and check out when leaving the area and check all game harvested.
2. Hunting equipment may not be taken onto the WMA until after 8 a.m. the day before the opening of a season and shall be removed by 6 p.m. 1 day after the end of the season.
3. On hunt days, the check station hours are 4:30 a.m. to 6 p.m. Refer to the Fishing And Frogging section for check station hours on days open to fishing.

Guns:

1. Hunting at night with a gun is prohibited.
2. Muzzleloading guns used for taking deer must be .40 caliber or larger if firing a single bullet, or be 20 gauge or larger if firing 2 or more balls.
3. Hunting deer with rimfire or non-expanding, full metal jacket (military ball) ammunition is prohibited.
4. Air guns may be used to hunt gray squirrel and rabbits during any season when these species are legal to hunt, except archery and muzzleloading gun.
5. Children under the age of 16 hunting with a firearm or air gun must be in the presence of a supervising adult.
6. No person shall discharge a firearm or have a loaded firearm in hand while under the influence of alcohol or drugs.
7. For hunting non-migratory game, only shotguns, rifles, pistols, bows, crossbows or falconry may be used.
8. For hunting migratory game, only shotguns, bows, crossbows or falconry may be used. Shotguns shall not be larger than 10 gauge and shall be incapable of holding more than 3 shells in the magazine and chamber combined.
9. Hunting with full automatic or silencer-equipped firearms, centerfire semi-automatic rifles having a magazine capable of holding more than 5 rounds, explosive or drug-injecting devices and set guns is prohibited.

10. The discharge of a firearm outside of periods open to hunting or in areas closed to hunting is prohibited per s. 790.15 FS.

Dogs:

1. Hunting with dogs, other than bird dogs or retrievers, is prohibited.
2. No person shall allow any dog to pursue or molest any wildlife during any period in which the taking of wildlife by the use of dogs is prohibited.
3. Dogs on leashes may be used for trailing wounded game.
4. For purposes other than hunting, dogs are allowed, but must be kept under physical restraint at all times.

Camping: Prohibited.

Bag and Possession Limits: A guest hunter must share the host's bag limit. No person shall exceed statewide bag limits.

1. Deer - Daily limit 2, possession limit 4 (see legal to take for each season).
2. Wild hog - No size or bag limit.
3. Turkey - Daily limit 1, except the youth turkey limit is 1 per quota permit; season limit 2, possession limit 2.
4. Gray squirrel, quail and rabbit - Daily limit 12, possession limit 24 for each.
5. Raccoon, opossum, armadillo, beaver, coyote, skunk and nutria - No bag limits.
6. Migratory birds - See Migratory Bird Hunting Regulations pamphlet.

Archery Season:

October 25-31 and November 1-9.

Permit, Stamp and License Requirements - Quota permit, hunting license, management area permit, archery permit, deer permit (if hunting deer), wild turkey permit (if hunting wild turkey) and migratory bird permit (if hunting migratory birds).

Legal to Hunt - Deer with at least 1 antler having 2 or more points (each point 1-inch or more in length) and having at least 1 antler 5-inches or more in length, antlerless deer (which includes does and bucks with antlers less than 5 inches in length, but not spotted fawn), wild hog, turkey of either sex, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season.

Regulations Unique to Archery Season -

1. **Youth 15 years of age and under may harvest antlered deer with at least 1 antler 5 inches or more in length.**
2. Hunting with guns or crossbows (except by disabled crossbow permit) is prohibited, except that centerfire shotguns are allowed for hunting migratory birds when 1 or more species are legal to hunt (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet).

General Gun Season:

November 27-30, January 24-27 and January 28 through February 1.

Permit, Stamp and License Requirements - Quota permit, hunting license, management area permit, deer permit (if hunting deer), migratory bird permit (if hunting migratory birds), and state waterfowl permit and federal duck stamp (if hunting waterfowl).

Legal to Hunt - Deer with at least 1 antler having 2 or more points (each point 1-inch or more in length) and having at least 1 antler 5-inches or more in length, wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season.

Regulations Unique to General Gun Season - **Youth 15 years of age and under may harvest antlered deer with at least 1 antler 5 inches or more in length.**

Muzzleloading Gun Season:

December 6-8.

Permit, Stamp and License Requirements - Quota permit, hunting license, management area permit, muzzleloading gun permit, deer permit (if hunting deer), migratory bird permit (if hunting migratory birds), and state waterfowl permit and federal duck stamp (if hunting waterfowl).

Legal to Hunt - Deer with at least 1 antler having 2 or more points (each point 1-inch or more in length) and having at least 1 antler 5-inches or more in length, wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season.

Regulations Unique to Muzzleloading Gun Season -

1. **Youth 15 years of age and under may harvest antlered deer with at least 1 antler 5 inches or more in length.**
2. Hunting with archery equipment or guns, other than muzzleloading guns, is prohibited, except that centerfire shotguns are allowed for hunting migratory birds when 1 or more species are legal to hunt (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet).

Small Game Season:

December 13-28.

Permit, Stamp and License Requirements - Hunting license, management area permit, migratory bird permit (if hunting migratory birds) and state waterfowl permit and federal duck stamp (if hunting waterfowl).

Legal to Hunt - Wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season.

Regulations Unique to Small Game Season - Hunting with centerfire rifles is prohibited.

Spring Turkey Season:

Youth Turkey: March 14-15.

Spring Turkey: March 21-23, April 3-5 and 17-19.

Permit, Stamp and License Requirements - Quota permit, hunting license, management area permit and wild turkey permit.

Legal to Hunt - Bearded turkey or gobbler.

Regulations Unique to Spring Turkey Season -

1. Legal shooting hours are ½ hour before sunrise until 1 p.m.
2. Hunting other animals is prohibited.
3. Only bows, crossbows and shotguns using a #2 or smaller shot size may be used for hunting.
4. During the youth turkey hunt, only youth under 16 years of age may hunt and must be under the supervision and in the presence of an adult not younger than 18 years of age. Adults with required licenses and permits for taking wild turkeys may participate when in the presence of a youth, but may not harvest a wild turkey.

Trapping: Prohibited.

Migratory Bird Seasons:

Rails, common moorhen, mourning dove, white-winged dove, snipe, ducks, geese, coot, woodcock and crows may be hunted during seasons established by the Commission for these species that coincide with the archery, muzzleloading gun, general gun or small game seasons. Ducks may also be hunted during special September duck season.

Permit, Stamp and License Requirements - Quota permit (if hunting during any quota period), hunting license, management area permit, migratory bird permit and state waterfowl permit and federal duck stamp (if hunting waterfowl).

Legal to Hunt - See Migratory Bird Hunting Regulations pamphlet.

Regulations Unique to Migratory Bird Seasons - All Migratory Bird Regulations shall apply.

1. Hunting ducks, geese and coot with lead shot is prohibited.
2. Centerfire shotguns are allowed for hunting during established area seasons when 1 or more migratory birds are legal to take.

Fishing and Frogging:

Allowed Friday through Monday (except during periods open to hunting) by permit only.

Permit, Stamp and License Requirements - Daily fishing permit and fishing license (not required when frogging).

Legal to Take - All legal fish (except as provided below) and frogs. See Florida Freshwater Fishing Regulations Summary.

Regulations Unique to Fishing and Frogging - All General Freshwater Fishing Regulations shall apply.

1. Anglers shall check in and out at the check station when entering and exiting the area and shall check all fish taken.
2. Fishing is allowed starting at 6 a.m. Entrance gates close at 8 p.m. during the summer period (March - October) and at 5 p.m. during the winter period (November - February).
3. Fishing is allowed in designated lakes and water bodies only. All other lakes, water bodies and restricted areas are closed to public fishing.
4. Boats are provided for use on each lake; these boats must be kept at the lake on which they are placed. No outside boats are allowed into the area. All state boating regulations, including the use of personal flotation devices (PFDs), apply.
5. Fish may be taken only by hook and line or rod and reel. The use or possession of nets, seines, fish traps, trotlines, set lines or bush hooks, spears, gigs, snatch hooks, crossbow, or bow and arrow is prohibited. Landing nets may be used for fish legally caught from a boat.
6. No person shall take more than 20 panfish in the aggregate per day. Any bluegill or redear sunfish less than 8 inches in total length must be released immediately. No person shall take more than 10 black crappie per day. Any black crappie less than 10 inches in total length must be released immediately. All largemouth bass are catch and release only.
7. Fish may not be filleted, nor the head or tail fin removed, until the angler has checked out at the check station.
8. Anglers will be given a creel kit and are expected to accurately complete the information sheet and return it to the check station upon check out.

9. Shooting frogs is allowed only during the listed open hunting seasons and only with the legal methods of take during each particular season.

General Information:

1. Other recreational uses, including canoeing, kayaking, hiking and bird watching, are allowed on the area and are subject to all area rules and regulations.
2. Information for persons with disabilities can be found at MyFWC.com/ADA.
3. If you have any questions about this material, please call the Fish and Wildlife Conservation Commission at 850-265-3676 (TDD 800-955-8771).
4. The FWC is not responsible for protection of personal property and will not be liable for theft of or damage to personal property.
5. Please report the location of any sick or extremely skinny deer to the Chronic Wasting Disease hotline, toll free at 866-293-9282.

Northwest Florida WMD Rules and Information:

1. This land was acquired by the Northwest Florida Water Management District (District) to protect public water resources. The purpose of the District's land acquisition and management program is to conserve and protect unique and irreplaceable land and water resources, restore areas to their original condition as much as possible and allow controlled multiple recreational and educational uses consistent with this purpose.
2. The District's land management activities for this area may include prescribed burning and timber harvesting during most months of the year. For personal safety reasons, area users should be aware of activities in the area and contact the District's Land Management office at 850-539-5999 with any questions. The District has no responsibility or obligation to identify and/or protect personal property while undertaking its land management activities.

Cooperation Requested:

If you see law violators or suspicious activities, contact your nearest Commission regional office or call 888-404-FWCC. You may qualify for a cash reward from the Wildlife Alert Reward Association.

The U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex or disability. If you believe that you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to: The Office for Human Resources, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. The project described in this publication is part of a program funded by federal dollars under the Wildlife Restoration Act. Federal funds pay 20 percent of the cost of the program.

Wildlife Alert Reward Program
Report fishing, boating or hunting law violations,
you may qualify for a cash reward.

888-404-FWCC (3922)
*FWC or #FWC on cellular phones
TIP@MyFWC.com by text message

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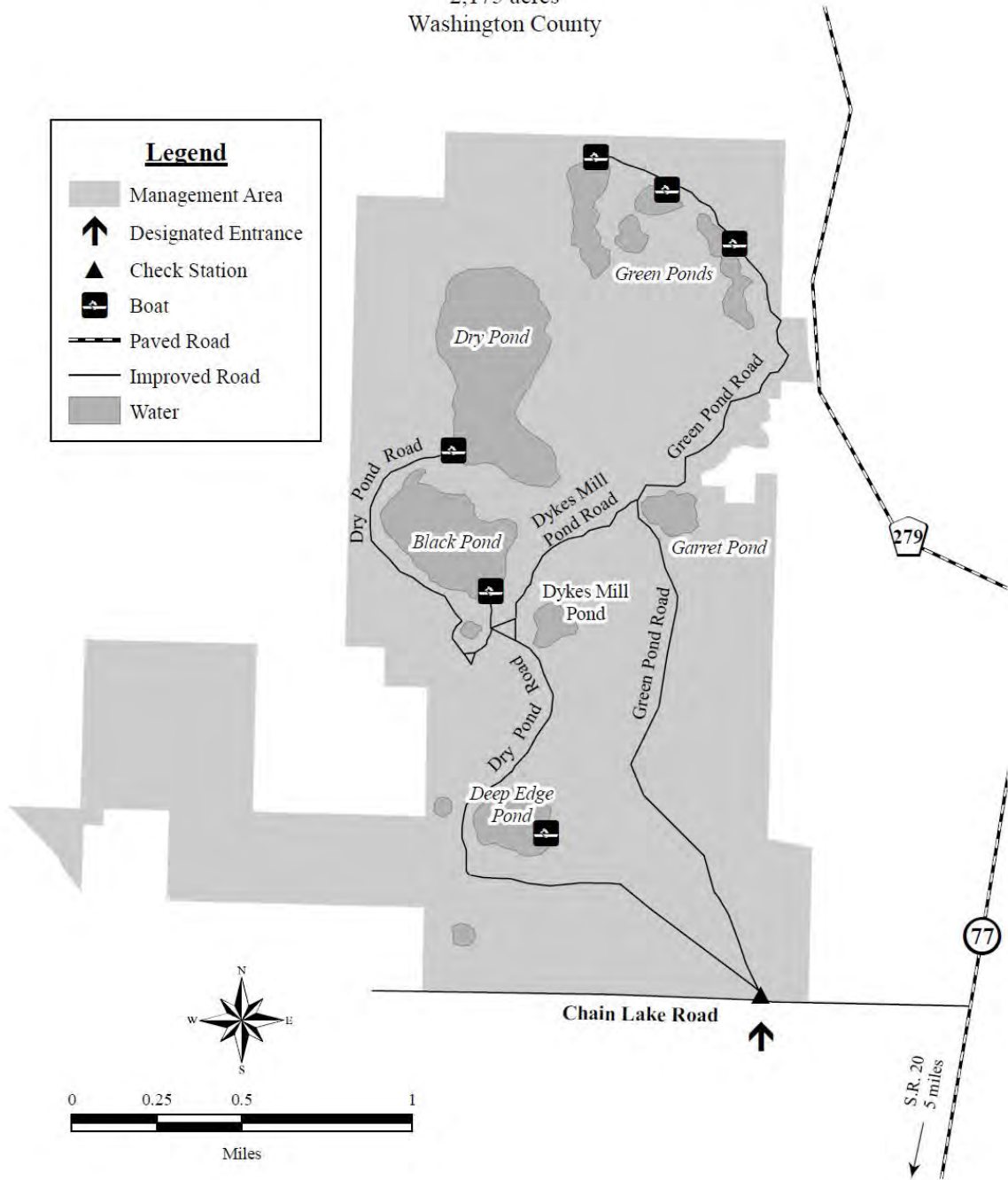
**888-HUNT-FLORIDA (486-8356) OR
888-FISH-FLORIDA (347-4356)**

(\$4.25+ 2.5% surcharge of total sale will be added.)

FITZHUGH CARTER TRACT

ECONFINA CREEK WILDLIFE MANAGEMENT AREA

2,175 acres
Washington County



Appendix II. 2014-2015 Annual Work Plan and Accomplishment Report for the Fitzhugh Carter Tract of Econfina Creek Wildlife Management Area.

FY 2014-15

Project 7281 - NW FLORIDA WATER MANAGEMENT DISTRICT LANDS

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
Species 9100 - All freshwater fish							
Activity - 221	Animal surveys						
	2.87	\$699.73	\$35.14	\$120.73	\$855.60	0	Conducted sampling of fish populations in area ponds via electroshocking and fyke nets. NFA*.
Activity - 250	Monitoring and assessments						
	1.05	\$87.65	\$15.61	\$144.29	\$247.55	0	Monitored area fish population and developed a comprehensive sportfish population assessment. NFA*.
Activity - 342	Public use administration (non-hunting)						
	5.21	\$1,361.93	\$2,209.20	\$19,192.64	\$22,763.77	0	Administered public fishing program via check station. Salary for OPS fishing check station operators included here. NFA*.
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Species 9100 Total	9.13	\$2,149.31	\$2,259.95	\$19,457.66	\$23,866.92		
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Species 9200 - All wildlife							
Activity - 100	Administration						
	0.25	\$48.23	\$2.19	\$220.86	\$271.28	0	General clerical and administrative support to Wildlife Management Area staff.
Activity - 101	Project inspection						
	11.50	\$3,446.63	\$153.62	\$694.25	\$4,294.50		Inspected area projects and activities. Field orientation of land

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							boundaries, features and habitats.
Activity - 103	Meetings 22.70	\$4,796.10	\$263.31	\$786.04	\$5,845.45		Attended landowner, cooperators, scientific and agency meetings. Attended training workshops and seminars.
Activity - 140	Report writing/editing/manuscript preparation 16.83	\$3,714.06	\$148.24	\$648.96	\$4,511.26		Prepared and reviewed annual wildlife reports and completed annual accomplishment report.
Activity - 150	Personnel management 14.65	\$4,297.40	\$150.85	\$1,370.39	\$5,818.64		Supervised volunteer activities. Recruited, hired, and supervised OPS personnel. Attended training workshops and seminars.
Activity - 182	Data management 26.16	\$8,219.98	\$377.34	\$2,204.15	\$10,801.47	0	Incorporated all data collected into GIS database. Analyzed and summarized WMA databases and pertinent information.
Activity - 200	Resource Management 12.17	\$3,393.14	\$229.96	\$5,176.20	\$8,799.30	0	Routine planning, paperwork, purchases and correspondences dealing with daily operations of the WMA.
Activity - 204	Resource planning 66.10	\$18,506.35	\$1,204.79	\$14,740.04	\$34,451.18	0	Coordinated work projects related to management activities. Purchased supplies, materials and equipment for

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							performing routine WMA operations.
Activity - 221	Animal surveys 0.00	\$0.00	\$0.00	\$480.05	\$480.05	0	Purchased supplies to assist Northwest Florida Water Management District with hog control. NFA*.
Activity - 312	Informational signs 0.62	\$215.07	\$5.48	\$0.00	\$220.55		Developed and maintained information signs at kiosk and display boards.
Activity - 320	Outreach and education 6.04	\$1,420.46	\$168.24	\$1,410.48	\$2,999.18	0	Participated in wildlife management presentations to area school groups. Participated as a Steering Committee member and wildlife facilitator for the Emerald Coast Regional Envirothon. NFA*.
Activity - 920	FEM -- buildings/structures 8.12	\$1,984.17	\$71.84	\$2,579.86	\$4,635.87		Maintained and repaired area office and buildings as needed, including electrical and phone service.
Activity - 923	FEM -- vehicles/equipment 0.49	\$124.31	\$4.38	\$4,198.76	\$4,327.45		Repaired and maintained vehicles, boats, ATVs and associated equipment, including services-parts and labor.
Activity - 926	FEM -- roads/bridges 4.79	\$1,306.81	\$42.24	\$0.00	\$1,349.05		Made minor repairs and maintained

	Man Days	Salary	FuelCost	Other	Total	Units Accomplishments
						access roads and bridges as needed.
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Species 9200 Total	190.42	\$51,472.71	\$2,822.48	\$34,510.04	\$88,805.23	
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Species 9210 - Game wildlife						
Activity - 221	Animal surveys					
	1.12	\$537.05	\$9.88	\$1,490.10	\$2,037.03	0 Developed and purchased supplies for wildlife camera survey.
Activity - 285	Nest structures					
	0.00	\$0.00	\$0.00	\$20.15	\$20.15	Maintained and monitored wood duck nest boxes on area waterways.
Activity - 341	Public use administration (hunting)					
	3.54	\$1,354.79	\$1,327.38	\$10,335.59	\$13,017.76	0 Administered and managed public hunts. Compiled weekly harvest and hunter pressure reports. Salary for OPS check station operators included here.
<hr/>						
Species 9210 Total	4.66	\$1,891.84	\$1,337.26	\$11,845.84	\$15,074.94	
<hr/>						
Species 9211 - White-tailed deer						
Activity - 182	Data management					
	0.50	\$132.32	\$7.11	\$33.69	\$173.12	Summarized and analyzed survey, biological, harvest and hunter pressure data.
Activity - 221	Animal surveys					
	7.16	\$1,608.12	\$82.37	\$357.83	\$2,048.32	0 Conducted deer spotlight surveys employing line transect distance sampling methodology.

	Man Days	Salary	FuelCost	Other	Total	Units Accomplishments
Species 9211 Total	7.66	\$1,740.44	\$89.48	\$391.52	\$2,221.44	
<hr/>						
Species 9218 - Quail						
Activity - 182	Data management					
	0.68	\$178.52	\$6.03	\$13.41	\$197.96	Summarized and analyzed survey, biological, harvest and hunter pressure data.
Activity - 221	Animal surveys					
	0.81	\$277.17	\$7.13	\$53.64	\$337.94	Conducted northern bobwhite calling surveys.
<hr/>						
Species 9218 Total	1.49	\$455.69	\$13.16	\$67.05	\$535.90	
<hr/>						
Species 9222 - Wood duck						
Activity - 182	Data management					
	0.00	\$37.70	\$17.83	\$217.94	\$273.47	Analyzed and summarized wood duck nest box monitoring data.
Activity - 285	Nest structures					
	7.67	\$2,035.53	\$122.18	\$666.73	\$2,824.44	50 Maintained and monitored 50 wood duck nest boxes on area waterways.
<hr/>						
Species 9222 Total	7.67	\$2,073.23	\$140.01	\$884.67	\$3,097.91	
<hr/>						
Species 9226 - Mourning and white-winged doves (migratory and non-migratory)						
Activity - 221	Animal surveys					
	0.49	\$312.49	\$19.74	\$325.21	\$657.44	Trapped and banded area doves as part of a statewide project and nationwide effort.
<hr/>						
Species 9226 Total	0.49	\$312.49	\$19.74	\$325.21	\$657.44	
<hr/>						
Species 9240 - Nongame wildlife						

	Man Days	Salary	FuelCost	Other	Total	Units Accomplishments
Activity - 221	Animal surveys					
	13.83	\$3,087.88	\$368.92	\$3,837.98	\$7,294.78	0 Conducted various herpetofauna surveys with emphasis on imperiled salamanders and anurans. NFA*.
<hr/>						
Species 9240 Total	13.83	\$3,087.88	\$368.92	\$3,837.98	\$7,294.78	
<hr/>						
Species 9251 - Songbirds (passerines)						
Activity - 285	Nest structures					
	1.78	\$507.78	\$15.87	\$0.00	\$523.65	18 Maintained and monitored eighteen Eastern bluebird nest boxes.
<hr/>						
Species 9251 Total	1.78	\$507.78	\$15.87	\$0.00	\$523.65	
<hr/>						
Species 9252 - Wading birds						
Activity - 182	Data management					
	0.37	\$119.62	\$4.37	\$20.03	\$144.02	0 Analyzed and summarized wading bird rookery data.
Activity - 221	Animal surveys					
	1.25	\$357.41	\$19.72	\$134.16	\$511.29	Monitored wading bird rookery.
<hr/>						
Species 9252 Total	1.62	\$477.03	\$24.09	\$154.19	\$655.31	
<hr/>						
Species 9254 - Breeding birds						
Activity - 182	Data management					
	1.36	\$406.49	\$12.07	\$0.00	\$418.56	Analyzed and summarized breeding bird point count data.
Activity - 221	Animal surveys					
	1.12	\$264.06	\$19.75	\$120.70	\$404.51	Conducted breeding bird point count surveys.
<hr/>						
Species 9254 Total	2.48	\$670.55	\$31.82	\$120.70	\$823.07	

	Man Days	Salary	FuelCost	Other	Total	Units Accomplishments
Species 9258 - Southeastern kestrel						
Activity - 182	Data management					
	0.00	\$0.00	\$3.82	\$46.99	\$50.81	Analyzed and summarized southeastern kestrel monitoring data.
Activity - 285	Nest structures					
	1.73	\$443.67	\$27.39	\$147.62	\$618.68	8 Maintained and monitored eight kestrel nest boxes.
<hr/>						
Species 9258 Total	1.73	\$443.67	\$31.21	\$194.61	\$669.49	
<hr/>						
Species 9272 - Frogs						
Activity - 182	Data management					
	0.00	\$0.00	\$1.09	\$13.52	\$14.61	0 Analyzed and summarized frog monitoring data. NFA*
Activity - 221	Animal surveys					
	0.00	\$0.00	\$23.61	\$288.60	\$312.21	0 Conducted frog monitoring surveys. NFA*.
<hr/>						
Species 9272 Total	0.00	\$0.00	\$24.70	\$302.12	\$326.82	
<hr/>						
Species 9278 - Gopher tortoise						
Activity - 140	Report writing/editing/manuscript preparation					
	0.37	\$103.45	\$99.94	\$1,180.21	\$1,383.60	0 Prepared annual progress report on gopher tortoise surveying and monitoring efforts. NFA*.
Activity - 182	Data management					
	0.00	\$0.00	\$38.68	\$540.07	\$578.75	0 Analyzed and summarized gopher tortoise survey data. NFA*.
Activity - 221	Animal surveys					

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
	3.74	\$1,097.29	\$384.70	\$5,148.47	\$6,630.46	0	Coordinated and conducted gopher tortoise surveys. NFA*.
Activity - 295	Biological data collection, analysis, and reporting						
	0.00	\$0.00	\$0.00	\$192.00	\$192.00	0	Collected and analyzed gopher tortoise survey data. NFA*.
<hr/>							
Species 9278 Total	4.11	\$1,200.74	\$523.32	\$7,060.75	\$8,784.81		
<hr/>							
Species 9280 - All threatened and endangered wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	0.12	\$37.09	\$1.09	\$0.00	\$38.18	0	Prepared and reviewed reports on threatened and endangered herpetofauna. NFA*.
Activity - 221	Animal surveys						
	0.81	\$317.68	\$7.14	\$0.00	\$324.82	0	Conducted surveys for threatened and endangered herpetofauna. NFA*.
<hr/>							
Species 9280 Total	0.93	\$354.77	\$8.23	\$0.00	\$363.00		
<hr/>							
Project 7281 Total	248.00 ¹	\$66,838.13	\$7,710.24	\$79,152.34	\$153,700.71		

¹Man-days for OPS Fish & Wildlife Technician for a year (210 man-days) and OPS Hunting & Fishing Check Station Operators (~380 man-days) not included. However, salary for such is included in "Other" expenses category. Also does not include man-days staff from across the region spent assisting on Carter Tract projects.

Appendix III. Catch-per-unit-effort (CPUE) results for sportfish sampled via electrofishing at Black and Dry Ponds in November 2014 and April 2015 on the Fitzhugh Carter Tract of Econfinia Creek WMA, Washington County, Florida.

	Black Pond		Dry Pond		Green Pond	
Spring 2015	<i>n</i> ^a	CPUE ^b	<i>n</i> ^a	CPUE ^b	<i>n</i> ^a	CPUE ^b
Bluegill	4	0.09	4	0.07	10	0.25
Largemouth bass	5	0.11	3	0.05	1	0.03
Warmouth	2	0.04	0	0	0	0
Black Crappie	2	0	1	0	0	0
TOTALS	13	0.29	8	0.15	11	0.28

^a Number of fish sampled

^b Catch per unit effort (CPUE) measured in number of fish/minute

Appendix IV. Number of fish caught and released per pond from July 2014 - June 2015 on the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Species	Pond						
	Dry	Black	Deep Edge	Green 1	Green 2	Green 3	All Ponds
Bluegill (<i>Lepomis macrochirus</i>)							
Kept	725	249	1	20	61	64	1120
Released	600	848	8	30	170	139	1795
Total caught	1325	1097	9	50	231	203	2915
Black Crappie (<i>Pomoxis nigromaculatus</i>)							
Kept	165	30	1	1	6	14	217
Released	103	69	0	2	3	34	211
Total caught	268	99	1	3	9	48	428
Largemouth Bass[†] (<i>Micropterus salmoides</i>)							
Total caught	129	172	46	21	22	76	466
Warmouth (<i>Lepomis gulosus</i>)							
Kept	13	9	0	1	1	1	25
Released	11	23	0	1	2	2	39
Total caught	24	32	0	2	3	3	64
Catfish (<i>Ameirus nebulosus</i> and <i>Ameirus natalis</i>)							
Kept	25	44	0	0	0	5	74
Released	0	22	0	1	0	0	23
Total caught	25	66	0	1	0	5	97
Other (Chain pickerel, Spotted Gar, Bowfin, Redbreast Sunfish,, Redear Sunfish, Flier)							
Kept	14	21	1	0	0	0	36
Released	14	49	0	7	5	12	87
Total caught	28	70	1	7	5	12	123

[†]Largemouth Bass are catch-and-release only on Carter Tract ponds

Appendix V. Percent nest success, no. of nests, avg. clutch size, and estimated duckling survival/clutch of wood duck (*Aix sponsa*) nest boxes (2007 - 2015) by water body on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Year	Water Body											
	Green 1&2	Green 3	Deep Edge	Black	LDE	Dry	Garrett	Warmouth	PLC	Dykes Mill	All Water Bodies	
2007												
	% nest success	33%	0%	0%	0%	50%	0%	0%	0%	0%	n/a	18%
	# nests	3	2	2	1	2	1	0	0	0	n/a	8
	average eggs/clutch	0.7	0.0	4.5	0.0	6.0	11.0	0.0	0.0	0.0	n/a	6.8
	hatched ducklings/clutch	0.7	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	n/a	1.0
2008												
	% nest success	0%	0%	0%	0%	0%	100%	0%	0%	0%	n/a	40%
	# nests	1	1	0	0	0	3	0	0	0	n/a	4
	average eggs/clutch	0.0	6.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	n/a	9.4
	hatched ducklings/clutch	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	n/a	5.0
2009												
	% nest success	25%	33%	0%	50%	0%	78%	0%	0%	0%	n/a	57%
	# nests	4	3	1	5	1	7	0	0	0	n/a	17
	average eggs/clutch	6.5	6.3	6.0	6.8	12.0	10.0	0.0	0.0	0.0	n/a	8.4
	hatched ducklings/clutch	1.5	0.3	0.0	2.7	0.0	4.6	0.0	0.0	0.0	n/a	2.7
2010												
	% nest success	33%	40%	100%	40%	0%	50%	100%	0%	50%	n/a	48%
	# nests	6	5	1	5	0	8	2	0	2	n/a	23
	average eggs/clutch	7.5	7.2	8.0	6.6	0.0	8.9	9.0	0.0	8.0	n/a	7.8
	hatched ducklings/clutch	1.7	3.0	6.0	2.0	0.0	2.1	7.0	0.0	3.5	n/a	2.7
2011												
	% nest success	60%	50%	100%	80%	50%	43%	100%	0%	0%	n/a	62%
	# nests	5	4	3	5	2	7	1	0	0	n/a	22
	average eggs/clutch	7.2	5.5	5.5	11	10	5.6	9	0	0	n/a	7.4
	hatched ducklings/clutch	3.6	2.75	4	6.4	1.5	1.57	9.00	0.00	0.00	n/a	3.40
2012												
	% nest success	100%	75%	100%	100%	100%	100%	0%	100%	50%	n/a	86%
	# nests	4	4	2	3	3	3	0	1	2	n/a	22
	average eggs/clutch	8.3	11	10	11	5	8.3	0.0	9	3	n/a	8.4
	hatched ducklings/clutch	6.0	6.0	8.5	6.7	1.0	4.7	0.0	5.0	1.0	n/a	4.9
2013												
	% nest success	100%	33%	50%	50%	100%	83%	100%	0%	0%	n/a	74%
	# nests	4	3	2	4	3	6	1	0	0	n/a	23
	average eggs/clutch	9	4	8.5	4.5	4.3	6.7	12	0.0	0.0	n/a	6.4
	hatched ducklings/clutch	7.5	0.67	2.5	0.75	2	4.5	12	0.0	0.0	n/a	3.7

Year	Green 1&2	Green 3	Deep Edge	Black	LDE	Dry	Garrett	Warmouth	PLC	Dykes Mill	All Water Bodies
2014											
% nest success	50%	0%	0%	0%	100%	0%	100%	0%	0%	n/a	25%
# nests	2	4	2	1	2	3	1	1	0	n/a	16
average eggs/clutch	6.5	5.75	4.5	4	2.5	4.7	2	5	0	n/a	4.7
hatched ducklings/clutch	3.5	0	0	0	2.5	0	2	0	0	n/a	0.9
2015											
% nest success	50%	100%	0%	67%	50%	33%	100%	0%	50%	0%	52%
# nests	4	2	0	3	2	3	1	0	4	2	21
Average eggs/clutch	6.8	6	0	7.3	5	8.3	7	0	5.8	9	6.9
Hatched ducklings/clutch	2.8	5	0	4	3	2.3	2	0	3	0.5	2.9

LDE = Little Deep Edge Pond, PLC = Pine Log Creek

Appendix VI. Wading bird survey results (2008 - 15) from Little Deep Edge Pond at the Fitzhugh Carter Tract of Econfina Creek WMA, Washington County, Florida.

Species	Number of Birds Observed			
	Year	Adults	Active Nests	Chicks
<i>Anhinga (Anhinga anhinga)</i>	2008	6	3	0
	2009	3	unknown	3
	2010	2	0	0
	2011	2	0	0
	2012	0	0	0
	2013	11	2	3
	2014	14	4	9
	2015	3	0	0
<i>Cattle Egret (Bubulcus ibis)</i>	2008	25	18	0
	2009	0	0	0
	2010	0	0	0
	2011	14	12	24
	2012	0	0	0
	2013	33	20	27
	2014	45	46	40
	2015	34	27	23
<i>Great Egret (Ardea alba)</i>	2008	13	10	10
	2009	31	8	12
	2010	8	6	9
	2011	14	11	17
	2012	12	6	6
	2013	12	19	29
	2014	19	14	22
	2015	9	6	6
<i>Little Blue Heron (Egretta caerulea)</i>	2008	8	3	0
	2009	1	0	0
	2010	0	0	0
	2011	20	14	34
	2012	7	4	6
	2013	5	3	4
	2014	14	6	6
	2015	4	4	3
<i>Tricolored Heron (Egretta tricolor)</i>	2008	2	unknown	0
	2009	0	0	0
	2010	0	0	0

	2011	1	1	1
	2012	0	0	0
	2013	0	0	0
	2014	0	0	0
	2015	0	0	0
<hr/>				
Snowy Egret (<i>Egretta thula</i>)	2008	0	0	0
	2009	3	0	0
	2010	0	0	0
	2011	2	2	5
	2012	0	0	0
	2013	0	0	0
	2014	0	0	0
	2015	0	0	0
<hr/>				
Green Heron (<i>Butorides virescens</i>)	2008	1	0	1
	2009	2	unknown	1
	2010	1	0	0
	2011	0	0	0
	2012	0	0	0
	2013	0	0	0
	2014	0	0	0
	2015	0	0	0
<hr/>				
Great Blue Heron (<i>Ardea herodias</i>)	2008	0	0	0
	2009	0	0	0
	2010	1	0	0
	2011	0	0	0
	2012	0	0	0
	2013	0	0	0
	2014	0	0	0
	2015	0	0	0

Appendix VII. Bird species (n=127) documented on the Fitzhugh Carter Tract of Econfina Creek WMA, as of June 2015.

PODICIPEDIFORMES

Podicipedidae (Grebes)

- Pied-billed Grebe *Podilymbus podiceps*

PELICANIFORMES

Phalacrocoracidae (Cormorants)

- Double-crested Cormorant *Phalacrocorax auritus*

Anhinga (Darters/Anhinga)

- Anhinga *Anhinga anhinga*

CICONIIFORMES

Ardeidae (Herons, Egrets, and Bitterns)

- Great Blue Heron *Ardea herodias*
- Great Egret *Ardea alba*
- Snowy Egret *Egretta thula*
- Little Blue Heron *Egretta caerulea*
- Tricolored Heron *Egretta tricolor*
- Cattle Egret *Bubulcus ibis*
- Green Heron *Butorides virescens*

Threskiornithidae (Ibises and Spoonbills)

- White Ibis *Eudocimus albus*
- Roseate Spoonbill *Platalea ajaja*

Ciconiidae (Storks)

- Wood Stork *Mycteria americana*

Cathartidae (New World Vultures)

- Black Vulture *Coragyps atratus*
- Turkey Vulture *Cathartes aura*

ANSERIFORMES

Anatidae (Ducks, Geese, and Swans)

- Snow Goose *Chen caerulescens*
- Wood Duck *Aix sponsa*
- Blue-winged Teal *Anas discors*
- Green-winged Teal *Anas crecca*
- Canvasback *Aythya valisineria*
- Redhead *Aythya americana*
- Ring-necked Duck *Aythya collaris*
- Bufflehead *Bucephala albeola*
- Hooded Merganser *Lophodytes cucullatus*
- Ruddy Duck *Oxyura jamaicensis*

FALCONIFORMES

Accipitridae (Hawks and Allies)

CHARADRIIFORMES

Charadriidae (Plovers and Lapwings)

- Killdeer *Charadrius vociferous*

Scolopacidae (Sandpipers, Phalaropes, and Allies)

- Greater Yellowlegs *Tringa melanoleuca*
- Lesser Yellowlegs *Tringa flavipes*
- Solitary Sandpiper *Tringa solitaria*
- Least Sandpiper *Calidris minutilla*
- Common Snipe *Gallinago gallinago*
- American woodcock *Scolopax minor*

Laridae (Gulls, Terns, and Allies)

- Least Tern *Sterna antillarum*
- Forster's Tern *Sterna forsteri*

COLUMBIFORMES

Columbidae (Pigeons and Doves)

- Mourning Dove *Zenaidura macroura*
- Common Ground Dove *Columbina passerina*

CUCULIFORMES

Cuculidae (Cuckoos, Roadrunners, and Anis)

- Yellow-billed Cuckoo *Coccyzus americanus*

STRIGIFORMES

Strigidae (Typical Owls)

- Eastern Screech Owl *Megascops asio*
- Great Horned Owl *Bubo virginianus*
- Barred Owl *Strix varia*

CAPRIMULGIFORMES

Caprimulgidae (Nighthawks and Nightjars)

- Common Nighthawk *Chordeiles minor*
- Chuck-will's-widow *Caprimulgus carolinensis*

APODIFORMES

Apodidae (Swifts)

- Chimney Swift *Chaetura pelagica*

Trochilidae (Hummingbirds)

- Ruby-throated Hummingbird *Archilochus colubris*

CORACIIFORMES

Alcedinidae (Kingfishers)

- Belted Kingfisher *Ceryle alcyon*

PICIFORMES

Picidae (Woodpeckers and Allies)

- Osprey *Pandion haliaetus*
- Swallow-tailed Kite *Elanoides forficatus*
- Bald Eagle *Haliaeetus leucocephalus*
- Northern Harrier *Circus cyaneus*
- Sharp-shinned Hawk *Accipiter striatus*
- Cooper's Hawk *Accipiter cooperii*
- Red-shouldered Hawk *Buteo lineatus*
- Red-tailed Hawk *Buteo jamaicensis*

Falconidae (Falcons and Caracaras)

- American Kestrel *Falco sparverius*
- Merlin *Falco columbarius*

GALLIFORMES

Phasianidae (Grouse, Turkeys, and Allies)

- Wild Turkey *Meleagris gallopavo*

Odontophoridae (New World Quail)

- Northern Bobwhite *Colinus virginianus*

GRUIFORMES

Rallidae (Rails, Gallinules, and Coots)

- Purple Gallinule *Porphyrio martinicus*
- Common Moorhen *Gallinula chloropus*
- American Coot *Fulica Americana*

Gruidae (Cranes)

- Sandhill Crane *Grus Canadensis*

PASSERIFORMES (continued)

Hyrundinidae (Swallows and Martins)

- Purple Martin *Progne subis*
- Tree Swallow *Tachycineta bicolor*
- Northern Rough-winged Swallow *Stelgidopteryx serripennis*
- Barn Swallow *Hirundo rustica*

Paridae (Chickadees and Titmice)

- Carolina Chickadee *Poecile carolinensis*
- Tufted Titmouse *Baeolophus bicolor*

Sittidae (Nuthatches)

- Brown-headed Nuthatch *Sitta pusilla*

Troglodytidae (Wrens)

- Carolina Wren *Thryothorus ludovicianus*
- Marsh Wren *Cistothorus palustris*

Regulidae (Kinglets)

- Red-headed Woodpecker *Melanerpes erythrocephalus*
- Red-bellied Woodpecker *Melanerpes carolinus*
- Yellow-bellied Sapsucker *Sphyrapicus varius*
- Downy Woodpecker *Picoides pubescens*
- Hairy Woodpecker *Picoides villosus*
- Northern Flicker *Colaptes auratus*
- Pileated Woodpecker *Dryocopus pileatus*

PASSERIFORMES

Tyrannidae (Tyrant Flycatchers)

- Eastern Phoebe *Sayornis phoebe*
- Vermilion Flycatcher *Pyrocephalus rubinus*
- Great Crested Flycatcher *Myiarchus crinitus*
- Eastern Kingbird *Tyrannus tyrannus*

Laniidae (Shrikes)

- Loggerhead Shrike *Lanius ludovicianus*

Vireonidae (Vireos)

- White-eyed Vireo *Vireo griseus*
- Red-eyed Vireo *Vireo olivaceus*

Corvidae (Crows and Jays)

- Blue Jay *Cyanocitta cristata*
- American Crow *Corvus brachyrhynchos*
- Fish Crow *Corvus ossifragus*

Cardinalidae (Cardinals and Allies)

- Northern Cardinal *Cardinalis cardinalis*
- Rose-breasted Grosbeak *Pheucticus ludovicianus*
- Blue Grosbeak *Passerina caerulea*
- Indigo Bunting *Passerina cyanea*

Icteridae (Blackbirds, Orioles, and Allies)

- Red-winged Blackbird *Agelaius phoeniceus*
- Eastern Meadowlark *Sturnella magna*
- Common Grackle *Quiscalus quiscula*
- Brown-headed Cowbird *Molothrus ater*
- Orchard Oriole *Icterus spurius*

Golden-crowned Kinglet *Regulus satrapa*

Ruby-crowned Kinglet *Regulus calendula*

Sylviidae (Old World Warblers and Gnatcatchers)

Blue-gray Gnatcatcher *Poliophtila caerulea*

Turdidae (Thrushes)

Eastern Bluebird *Sialia sialis*

Hermit Thrush *Catharus guttatus*

Wood Thrush *Hylocichla mustelina*

American Robin *Turdus migratorius*

Mimidae (Mockingbirds and Thrashers)

Gray Catbird *Dumetella carolinensis*

Northern Mockingbird *Mimus polyglottos*

Brown Thrasher *Toxostoma rufum*

Bombycillidae (Waxwings)

Cedar Waxwing *Bombycilla cedrorum*

Parulidae (Wood-Warblers)

Orange-crowned Warbler *Vermivora celata*

Northern Parula *Parula Americana*

Yellow-rumped Warbler *Dendroica coronata*

Yellow-throated Warbler *Dendroica dominica*

Pine Warbler *Dendroica pinus*

Prairie Warbler *Dendroica discolor*

Palm Warbler *Dendroica palmarum*

Black-and-white Warbler *Mniotilta varia*

Prothonotary Warbler *Protonotaria citrea*

Common Yellowthroat *Geothlypis trichas*

Hooded Warbler *Wilsonia citrine*

Thraupidae (Tanagers)

Summer Tanager *Piranga rubra*

Scarlet Tanager *Piranga olivacea*

Emberizidae (New World Sparrows)

Eastern Towhee *Pipilo erythrophthalmus*

Bachman's Sparrow *Peucaea aestivalis*

Chipping Sparrow *Spizella passerine*

Field Sparrow *Spizella pusilla*

White-throated Sparrow *Zonotrichia albicollis*

White-crowned Sparrow *Zonotrichia leucophrys*

Dark-eyed Junco *Junco hyemalis*

Appendix VIII. Comprehensive list of herpetofaunal species (n=62) documented on the Fitzhugh Carter Tract of Econfina Creek WMA, 2005 -2015.

CROCODILIA (Crocodilians)

Alligatoridae (Alligator and Caiman)

- American alligator *Alligator mississippiensis*

TESTUDINES (Turtles)

Kinosternidae (Musk and Mud Turtles)

- Common Musk Turtle *Sternotherus odoratus*
- Eastern Mud Turtle *Kinosternon subrubrum*

Emydidae (Box and Water Turtles)

- Florida Box Turtle *Terrapene carolina bauri*
- Gulf Coast Box Turtle *Terrapene carolina major*
- Three-Toed Box Turtle *Terrapene carolina triunguis*
- Yellow-bellied Slider *Trachemys scripta*
- Florida Cooter *Pseudemys floridana floridana*
- Eastern Chicken Turtle *Deirochelys reticularia reticularia*

Testudinidae (Gopher Tortoises)

- Gopher Tortoise *Gopherus polyphemus*

Trionychidae (Softshell Turtles)

- Florida Softshell *Apalone ferox*

SQUAMATA (Lizards and Snakes)

Lacertilia (Lizards)

Polychridae (Anoles)

- Green Anole *Anolis carolinensis*

Phrynosomatidae (Earless, spiny, side-blotched, and horned lizards)

- Southern Fence Lizard *Sceloporus undulatus undulatus*

Teiidae (Whiptails)

- Six-lined Racerunner *Cnemidophorus sexlineatus sexlineatus*

Scincidae (Skinks)

- Ground Skink *Scincella lateralis*
- Five-lined Skink *Eumeces fasciatus*
- Broadhead Skink *Eumeces laticeps*
- Southeastern Five-lined skink *Eumeces inexpectatus*
- Northern Mole Skink *Eumeces egregius similis*

Serpentes (Snakes)

Colubridae (Colubrid Snakes)

- Florida Green Water Snake *Nerodia floridana*
- Banded Water Snake *Nerodia fasciata fasciata*
- Eastern Garter Snake *Thamnophis sirtalis sirtalis*
- Eastern Ribbon Snake *Thamnophis sauritus sauritus*
- Smooth Earth Snake *Virginia valeriae*
- Eastern Hognose Snake *Heterodon platirhinos*
- Mud Snake *Farancia abacura*
- Southern Black Racer *Coluber constrictor priapus*
- Eastern Coachwhip *Masticophis flagellum*
- Rough Green Snake *Opheodrys aestivus*

Appendix VIII. (continued)

- Corn Snake *Elaphe guttata guttata*
- Gray Rat Snake *Elaphe obsoleta spiloides*
- Florida Pine Snake *Pituophis melanoleucus*
- Scarlet Snake *Cemophora coccinea*
- Black Swamp Snake *Seminatrix pygaea*

Elapidae (Coral Snakes)

- Eastern Coral Snake *Micrurus fulvius*

Viperidae (Vipers)

Crotalinae (Pit Vipers)

- Florida Cottonmouth *Agkistrodon piscivorous conanti*
- Dusky Pigmy Rattlesnake *Sistrurus miliarius barbouri*
- Eastern Diamondback Rattlesnake *Crotalus adamanteus*

CAUDATA (Salamanders)

Amphiumidae (Amphiumas)

- Two-toed Amphiuma *Amphiuma means*

Sirenidae (Sirens)

- Greater Siren *Siren lacertina*
- Eastern Lesser Siren *Siren intermedia intermedia*
- Slender Dwarf salamander *Eurycea quadridigitata*

Ambystomadidae (Mole Salamanders)

- Mole Salamander *Ambystoma talpoideum*

Salamandridae (Newts)

- Central Newt *Notophthalmus viridescens louisianensis*

Plethodontidae (Lungless Salamanders)

- Southeastern Slimy Salamander *Plethodon grobmani*

ANURA (Frogs and Toads)

Pelobatidae (Spadefoots)

- Eastern Spadefoot Toad *Scaphiopus holbrooki*

Bufonidae (Toads)

- Southern Toad *Bufo terrestris*
- Oak Toad *Bufo quercicus*

Hylidae (Treefrogs and Their Allies)

- Florida Cricket Frog *Acris gryllus dorsalis*
- Green Treefrog *Hyla cinerea*
- Barking Treefrog *Hyla gratiosa*
- Pine Woods Treefrog *Hyla femoralis*
- Squirrel Treefrog *Hyla squirella*
- Bird-voiced Treefrog *Hyla avivoca*
- Southern Chorus Frog *Pseudacris nigrata nigrata*
- Ornate Chorus Frog *Pseudacris ornata*

Microhylidae (Narrowmouth Toads)

- Eastern narrowmouth Toad *Gastrophryne carolinensis*

Ranidae (True Frogs)

- Bullfrog *Rana catesbeiana*
- River Frog *Lithobates heckscheri*
- Pig Frog *Rana grylio*
- Southern Leopard Frog *Rana sphenoccephala*
- Bronze Frog *Rana clamitansclamitans*

Appendix IX. Snake trap array capture results from July 2014 – June 2015 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Reptiles	Number captured
Six-lined racerunner (<i>Cnemidophorus sexlineatus</i>)	11
Eastern fence lizard (<i>Sceloporus undulates</i>)	29
Southeastern five-lined skink (<i>Eumeces inexpectatus</i>)	2
Ground skink (<i>Scincella lateralis</i>)	3
Unknown Lizard	1
Eastern hognose snake (<i>Heterodon platyrhinos</i>)	2
Eastern coachwhip (<i>Masticophis flagellum</i>)	5
Dusky pygmy rattlesnake (<i>Sistrurus miliarius barbouri</i>)	3
Southern black racer (<i>Coluber constrictor priapus</i>)	8
Eastern diamondback rattlesnake (<i>Crotalus adamanteus</i>)	2
Common garter snake (<i>Thamnophis sirtalis</i>)	2
Florida pine snake (<i>Pituophis melanoleucas</i>)	2
Chicken turtle (<i>Deirochelys reticularia</i>)	1
Florida cooter (<i>Pseudmys floridana</i>)	1
TOTAL REPTILES	72
NUMBER OF REPTILE SPECIES	14
Amphibians	Number captured
Southern toad (<i>Bufo terrestris</i>)	45
Eastern narrowmouth toad (<i>Gastrophryne carolinensis</i>)	28
Oak toad (<i>Bufo quercicus</i>)	1
Florida Cricket Frog (<i>Acris gryllus dorsalis</i>)	2
Bullfrog (<i>Rana catesbiana</i>)	6
Bronze frog (<i>Rana clamitans clamitans</i>)	2
Southern Leopard Frog (<i>Rana sphenoccephala</i>)	12
Eastern spadefoot toad (<i>Scaphiopus holbrookii</i>)	108
Unknown frog species	6
TOTAL AMPHIBIANS	208
NUMBER OF AMPHIBIAN SPECIES	8
Mammals	Number captured
Oldfield mouse (<i>Peromyscus polionotus</i>)	16
Cotton mouse (<i>Peromyscus gossypinus</i>)	1
Eastern woodrat (<i>Neotoma floridana</i>)	2
Virginia opossum (<i>Didelphis virginiana</i>)	1
TOTAL MAMMALS	20
NUMBER OF MAMMAL SPECIES	4