

**SANDHILL LAKES MITIGATION BANK  
(FITZHUGH CARTER TRACT)  
OF  
ECONFINA CREEK WILDLIFE MANAGEMENT AREA  
ANNUAL REPORT 2009-2010**



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## INTRODUCTION

The Sand Hill Lakes Mitigation Bank property (referred to herein as the Carter Tract) is a 2,155-acre parcel located in south-central Washington County, approximately 5 miles north of State Road 20 and 1 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 three years of successful partnership, in July 2008 this agreement was renewed for an additional three years.

## 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 850 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).

Historic communities have been degraded by timber operations and suppression of natural fire regimes. Restoration efforts by NFWFMD, including herbicide application, wiregrass (*Aristida stricta*) and toothache grass (*Ctenium aromaticus*) planting, and prescribed burning (Figure 1) continued at the Carter Tract during 2009-10, transitioning land cover classifications closer to their targeted goals.



**Figure 1. Between October 2009 and March 2010, NFWFMD conducted 770 acres of prescribed burns on the 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 NFWFMD in 2005, and readings were recorded monthly by FWC field staff beginning in January 2006. Following the large rain events that filled up once-dry area ponds during Spring 2009, water levels on all area ponds have remained constant or increased (Figure 2). For example, Deep Edge Pond currently has enough water to register a reading on the water

gauge, which has not been the case since June of 2006. Higher water levels allowed for all ponds to remain open for public fishing, and permitted FWC staff to resume electrofishing survey efforts on Dry, Black, and Green Ponds.

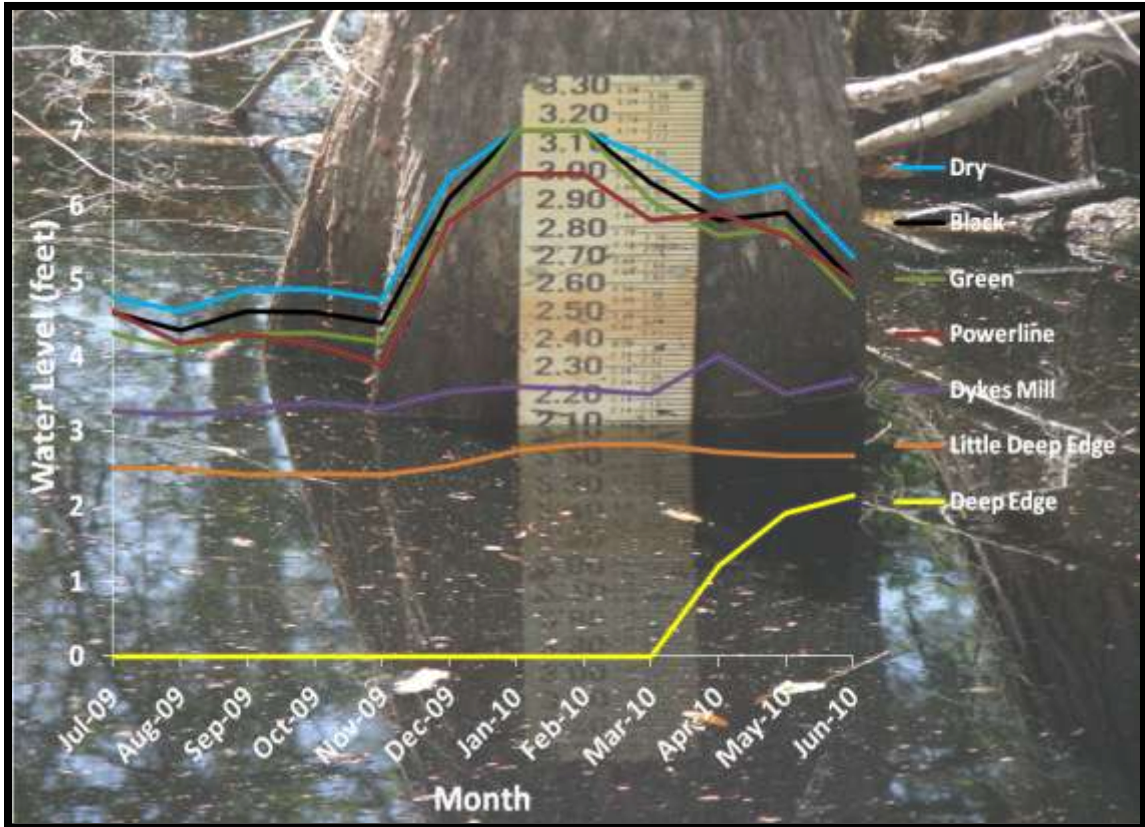


Figure 2. Monthly fluctuations in water levels from July 2009-June 2010 on major waterways located at the Carter Tract of Econfinia Creek WMA, Washington County, Florida.

**Photo Plots**

In an effort to visually document the progression of natural areas over time, annual photographs were taken at established locations (plots), facing predetermined directions/bearings. Sixty-three photo plots on the Carter Tract document natural community responses to restoration efforts such as prescribed burning and tree removal, as well as natural events (i.e. drought conditions). Infrastructure maintenance and improvements such as road-grading, bridge construction, and facility enhancements are



also documented (Figure 3). Photo plot photographs will continue to be taken annually, documenting all habitat types, water bodies, and infrastructure on the area.



**Figure 3. The NFWFMD began construction during July 2010 on an equipment storage shed that will also provide two open bays for storage of boats and ATVs for the area.**

## **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 2009-10 Fitzhugh Carter Tract Hunting Regulations Summary and Area Map. Appendix II provides the rules, regulations, and area map unique to the Special Opportunity Fishing Program at the Carter Tract.

## **FRESHWATER FISH**

### **Fish Population Assessment**

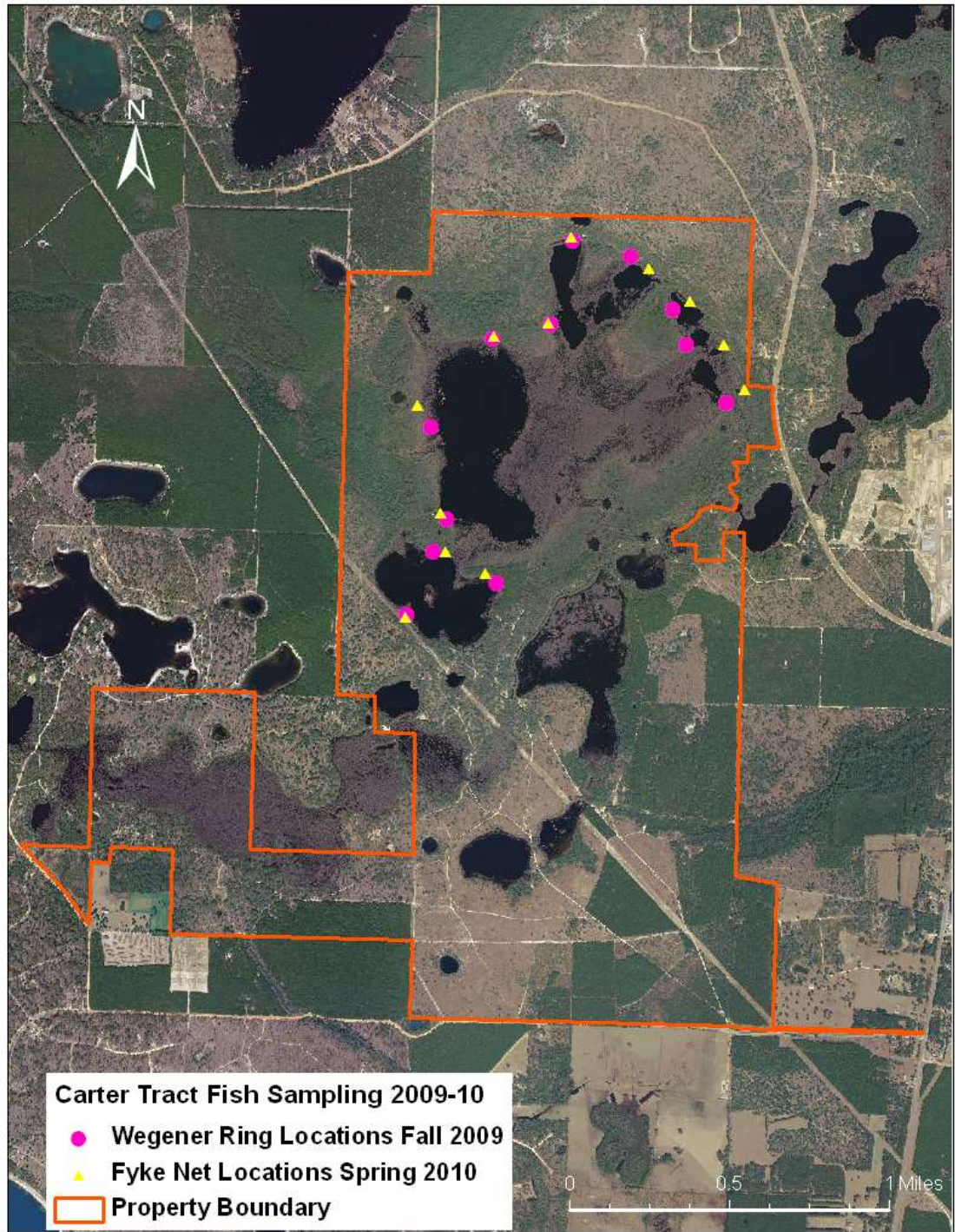
Given adequate water levels, fish population assessments are conducted twice a year during spring and fall. In the past, Wegener rings have been used to conduct baitfish surveys for gauging recruitment and prey base status (Wegener et al., 1974). However, Wegener rings are an ineffective sampling technique when water depths exceed 1m (Bonvechio, 2005). This restriction, coupled with high-water conditions present at the Carter Tract during spring 2010, necessitated the use of fyke nets as an alternative sampling method (Hubert, 1996). Therefore, Wegener rings were used to sample Black, Dry, and Green Ponds during November 2009, while fyke nets were used during May 2010 following heavy late winter rains. Electrofishing was conducted on Black, Dry, and Green Ponds during October/November 2009 and May 2010 to assess mature sportfish populations, measuring catch-per-unit-effort (CPUE). Baitfish and sportfish surveys will continue to be conducted twice each year using the appropriate techniques as dictated by water levels.

### **Wegener Rings**

Wegener rings were used to measure percent occurrence of all fish captured on Black, Dry, and Green Ponds from November 3 – 17, 2009. For each pond, fish were sampled at three random sample locations (Figure 4), with each location sampled at three depth levels: shoreline, 0.5 m, and 1 m. Average percent species occurrence over all depths combined is illustrated in Figure 5 while a detailed table of percent species occurrence at each depth is presented in Appendix III. Overall, Pygmy killifish (*Leptolucania ommata*), mosquitofish (*Gambusia affinis*), pygmy sunfish (*Elassoma* sp.), and swampdarter (*Etheostoma fusiforme*) were the most common species found in all ponds



sampled; 13 total species were documented. These results are consistent with previous years' findings.



**Figure 4. Wegener ring and Fyke net sample locations used during November 2009 and May 2010, respectively, on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**



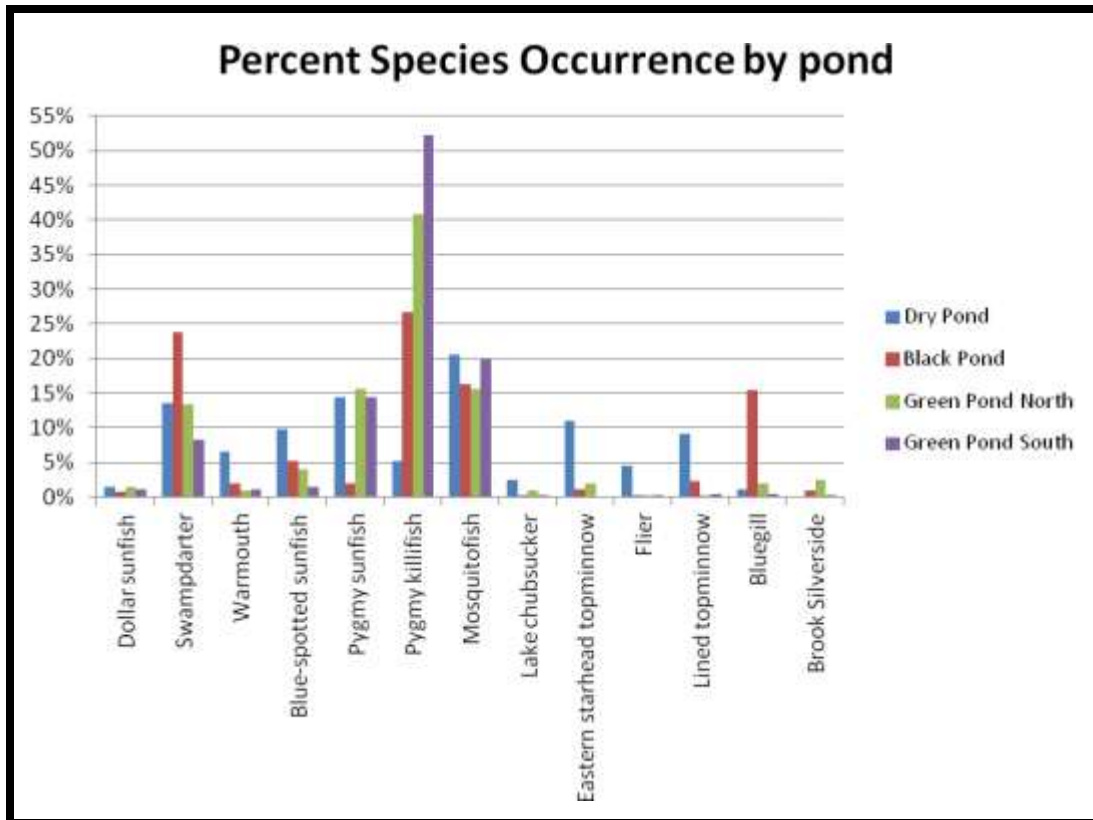


Figure 5. Percent species occurrence (for all depths combined) measured during November 2009 using Wegener rings on Black, Dry, and Green Ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida.

### Fyke Nets

High water levels during spring 2010 necessitated the use of fyke nets as an alternative method to Wegener rings for measuring percent species occurrence. For each pond, fyke nets were set as close to the Wegener ring sample locations as possible (Figure 4). This was done to minimize spatial variability while attempting to compare the efficacy of fyke nets compared to Wegener rings. Fyke nets were 24-inches square, made of 1/8-inch mesh with two-inch wide throat plates and a two-inch diameter funnel ring. The lead line was 15-feet in length, with lead weights and floats spaced every three- and 12-inches on the bottom and top, respectively (Figure 6). Fyke nets proved to be an effective alternative sampling technique to Wegener rings, capturing a total of 2,505 individual fish representing 14 species compared to 1,345 fish representing 13 species captured using Wegener rings. Further, two previously undocumented snake species, the mud snake (*Farancia abacura*) and Florida green water snake (*Nerodia floridana*) were captured in fyke nets. Average percent occurrence of each species was calculated for

each pond; these data are illustrated graphically in Figure 7 and a table with specific values can be found in Appendix IV. Overall, the dollar sunfish (*Lepomis marginatus*) was the most abundant species, followed by warmouth (*Lepomis gulosus*), bluegill (*Lepomis macrochirus*), and blue-spotted sunfish (*Enneacanthus gloriosus*). Fyke nets were found to be much more effective at capturing young sportfish species (bluegill and warmouth; n = 342) compared to Wegener rings (n = 62). A higher sample size of these species is necessary for future calculation and comparative analysis of young-of-the-year (YOY) sportfish recruitment by pond each year. Therefore, we plan to continue the use of fyke nets in the future for conducting baitfish surveys and to determine YOY recruitment for sportfish.



**Figure 6. Fyke net used to sample percent species occurrence in Black, Dry, and Green Ponds on the Carter Tract of Econfina Creek WMA, Washington County, Florida, May 2010.**

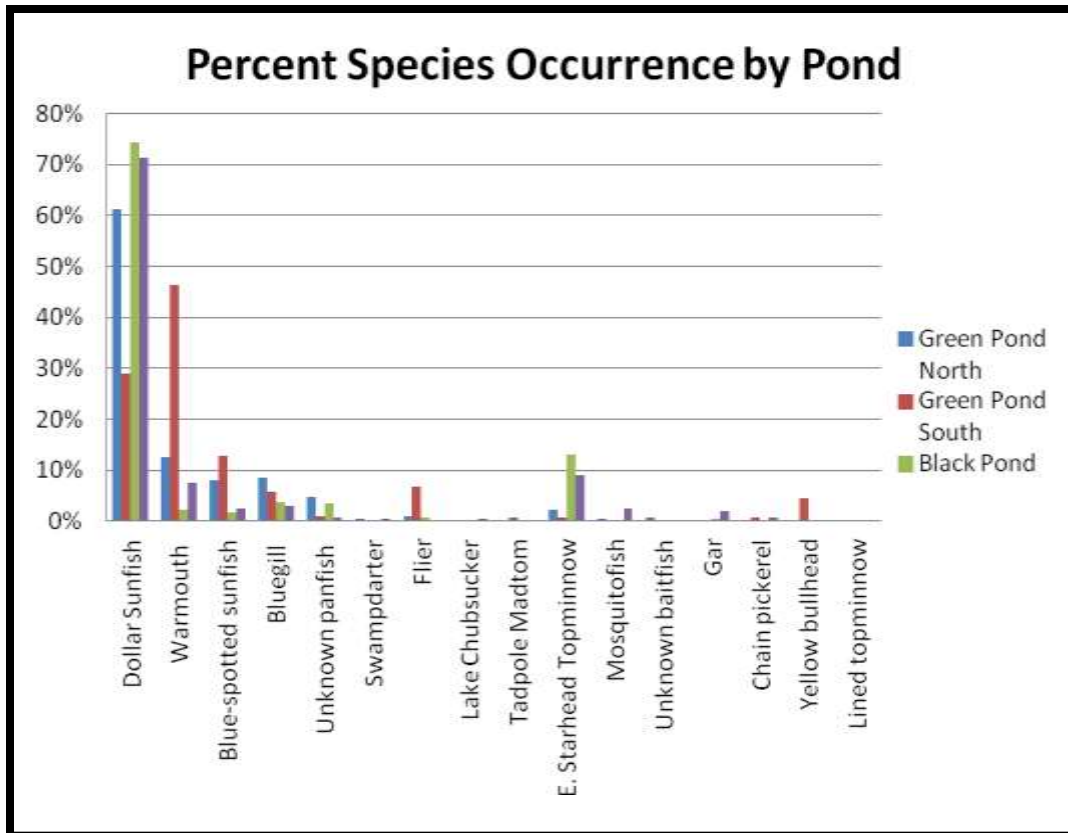


Figure 7. Overall percent species occurrence measured during May 2010 using fyke nets on Black, Dry, and Green Ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida.

### Electrofishing

Sportfish abundance on Black, Dry, and Green Ponds was measured during fall 2009 and spring 2010. An 18-foot aluminum vessel with Smith-Root© generator-powered pulsator electrofisher and two six-foot shocking booms was used (Figure 8). Direct current power settings were set at 120 pulses per second and 680 volts; average amperage generated was between 1-2 amps. Two dippers using ½-inch mesh dipping nets captured, measured, weighed, and released all affected fish. Sportfish abundance for each pond was calculated as catch per unit effort (CPUE), or the number of fish sampled per minute. Black, Dry, and Green Ponds were sampled twice during fall 2009 and once during spring 2010. A breakdown of the CPUE for each species captured at each pond during fall 2009 and spring 2010 is presented in Appendix V. Further, graphs illustrating sportfish abundance trends from 2005 – 2010 for each pond sampled are presented in Figures 9, 10, and 11 (note that not all seasons were sampled for each pond each year due to water level restrictions). Sampling results from Black Pond (Figure 9) over the years

have shown a steady increase in bluegill numbers and a steady decrease in largemouth bass numbers. Similarly, Dry Pond (Figure 10) sampling trends also show a decreasing largemouth bass population. It should be noted that during high water years, flooded cypress along the edges of Black and Dry Ponds likely harbor largemouth bass that are unable to be sampled due to access restrictions presented by the size of the shocking boat necessary for sampling. Therefore, numbers of largemouth bass sampled may be a conservative estimate of the true population size. However, harvest regulations set for Carter Tract ponds are based on our best estimates and are intended to balance out the bluegill/largemouth bass population over time by allowing the harvest of mature (>8 inches) bluegill and restricting the harvest of largemouth bass of any size. Fish population estimates for Green Ponds (Figure 11) generally show a decreasing trend over the years. However, it should be noted that Green Ponds dried completely from winter 2006 – spring 2009, thus precluding sampling during that time. Recovery from a drought of such magnitude can take 3-5 years for a fishery to be restored. Therefore, subsequent years of sampling on Green Ponds should provide a more accurate estimate of mature sportfish populations. Electrofishing on Black, Dry, and Green Ponds will continue to take place twice a year (once in spring and once in fall) given adequate water levels.



**Figure 8. Electrofishing was conducted on Dry, Black, and Green Ponds in November 2009 and May 2010 to sample sportfish populations at the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

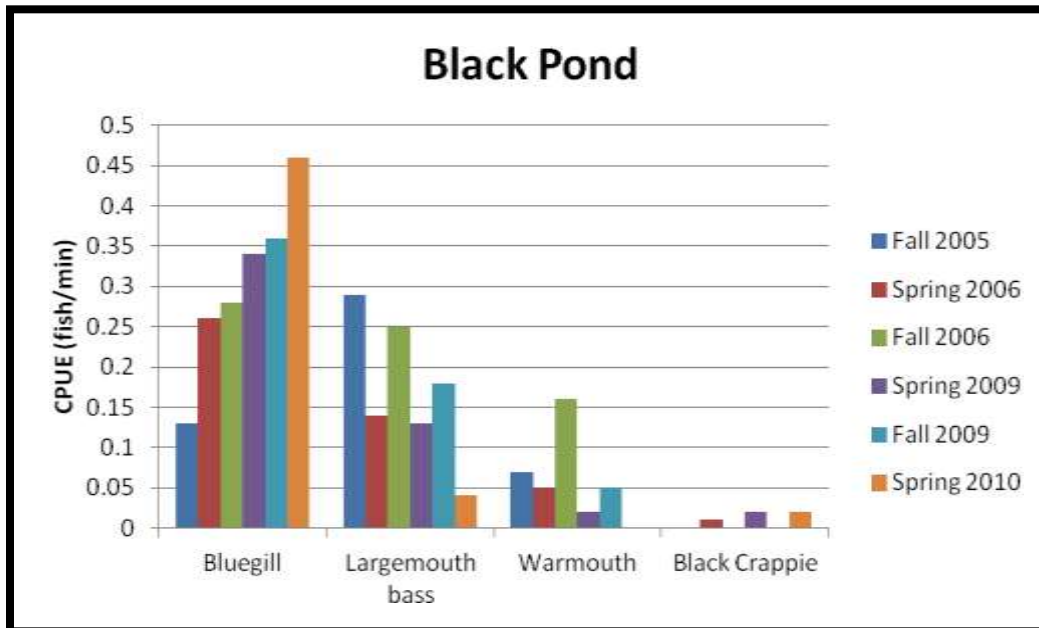


Figure 9. CPUE results from Fall 2005 – Spring 2010 sampling efforts on Black Pond, Carter Tract of Econfina Creek WMA, Washington County, Florida.

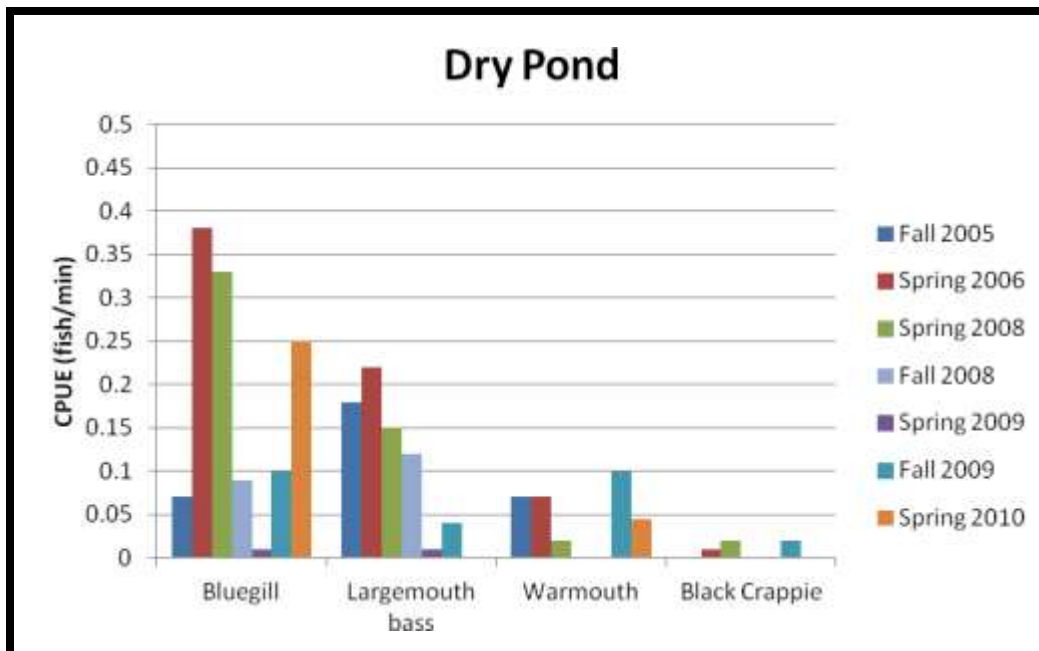


Figure 10. CPUE results from Fall 2005 – Spring 2010 sampling efforts on Dry Pond, Carter Tract of Econfina Creek WMA, Washington County, Florida.

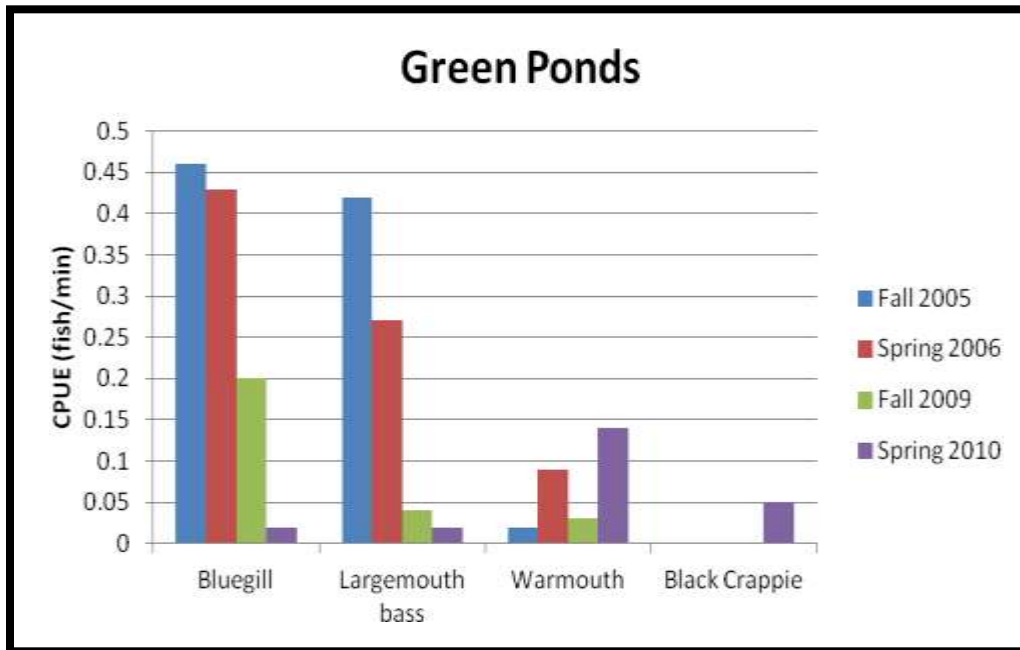
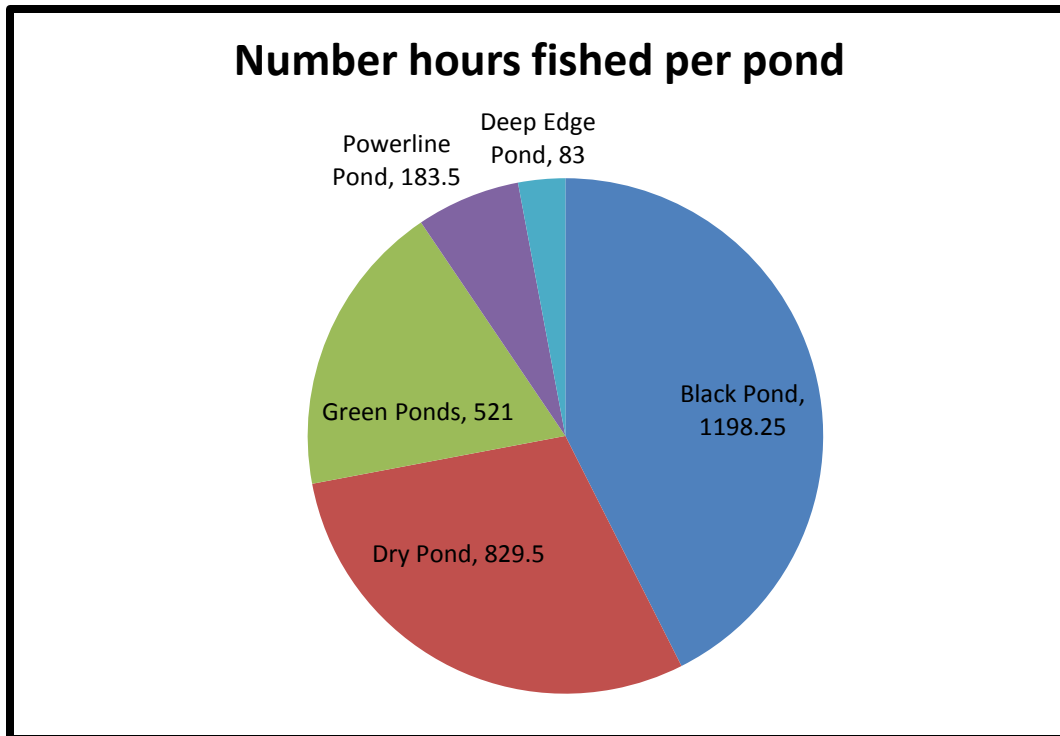


Figure 11. CPUE results from Fall 2005 – Spring 2010 sampling efforts on Green Ponds, Carter Tract of Econfina Creek WMA, Washington County, Florida.

### Public Fishing

The Special Opportunity Public Fishing Program on the Carter Tract continues to provide anglers with the unique opportunity to fish smaller (farm pond style) bodies of water in an area with comparatively low fishing pressure. Angler participation reached its highest level to date during 2009-10, with 772 anglers logging 2,718 fishing hours. This represents a 231% and 260% increase in number of anglers and hours fished during the previous year, respectively. Black pond was the most fished pond, followed by Dry Pond, Green Ponds, Powerline Pond, and Deep Edge Pond (Figure 12). The filling of Green Ponds during May 2009 marked the end of the temporary reduction in the daily angler quota, raising the daily quota of anglers from 16 back up to 20/day. Fishable water levels on all available fishing ponds, as well as the publishing of two articles in a local newspaper touting the Carter Tract Fishing Program likely facilitated the drastic increase in public fishing during 2009-10.





**Figure 12. Hours fished per pond from July 2009 – June 2010 at the 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, 2009 through June 30, 2010. Out of a possible 41,180 fishing hours, anglers fished 2,718 hours, yielding almost 7% usage. Angler participation per month was relatively consistent with past trends, with a lull in activity from December – February due to extended periods of unusually cold weather during those months, as well as temporary closures for hunting seasons (Figure 13). A total of 3,606 sportfish representing six species were caught on Carter Tract ponds during 2009-10. This is a 253% increase compared to 1,423 fish caught during 2008-09. Figure 14 illustrates the number of fish caught per species for each pond. Bluegill made up 75% of fish caught, followed by yellow bullhead and channel catfish (*Ameirus nebulosus* and *Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*), warmouth, and black crappie (*Pomoxis nigromaculatus*) with 11%, 4%, and 4%, respectively. Total number of fish caught and released per pond was calculated based on angler-reported creel data, and is detailed in Appendix VI. Fishing success rate, defined as the number of fish caught per

hour of fishing effort, was calculated for each pond and all water bodies combined, and is presented in Table 1.

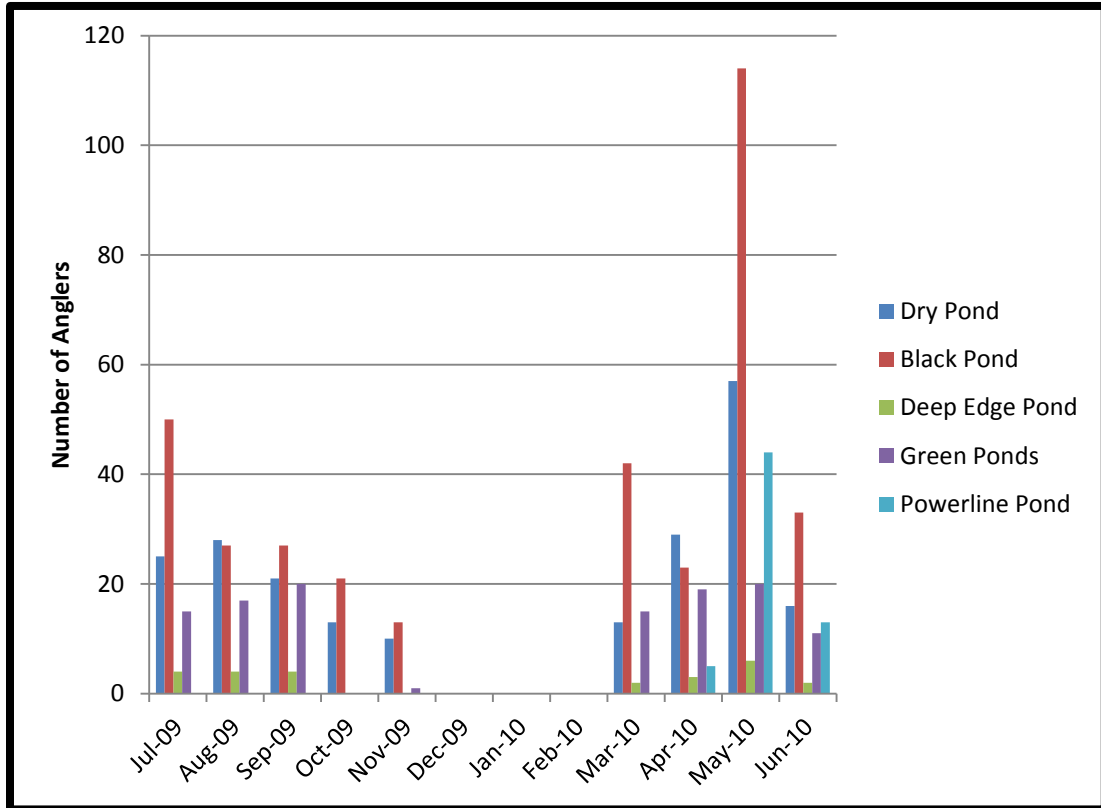
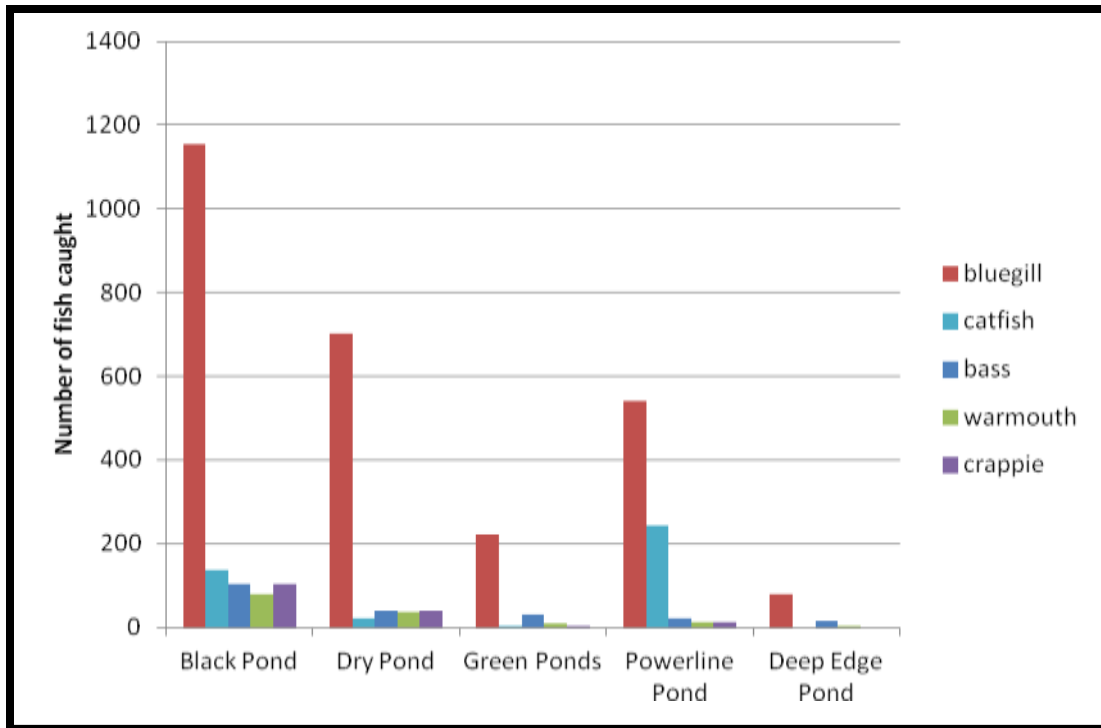


Figure 13. Number of anglers per month utilizing the Special Opportunity Fishing Program on the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2009 – June 2010.





**Figure 14. Number of sportfish caught by species per pond at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 1, 2009-June 30, 2010.**

**Table 1. Fishing success rate (fish caught/hour of fishing effort) on area ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida, July 2009 - June 2010.**

Pond	Fishing success rate (fish/hour)
Black Pond	1.3
Dry Pond	1.0
Green Ponds	0.5
Powerline Pond	4.5
Deep Edge Pond	1.1
All ponds	1.3

# 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/mi<sup>2</sup> (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 when compared to standard spotlight surveys.

LTDS on the Carter Tract was conducted along two routes, one 2.5-miles long and the other 3-miles long, and were replicated six times in September 2009. Surveys began approximately one hour following official sunset, and were driven along the pre-selected transects via pickup truck with two observers in the bed, each equipped with a one-million candlepower Q-beam® spotlight. 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 15

depicts the line transect routes used on the Carter Tract, along with locations of deer observed during 2009 surveys.

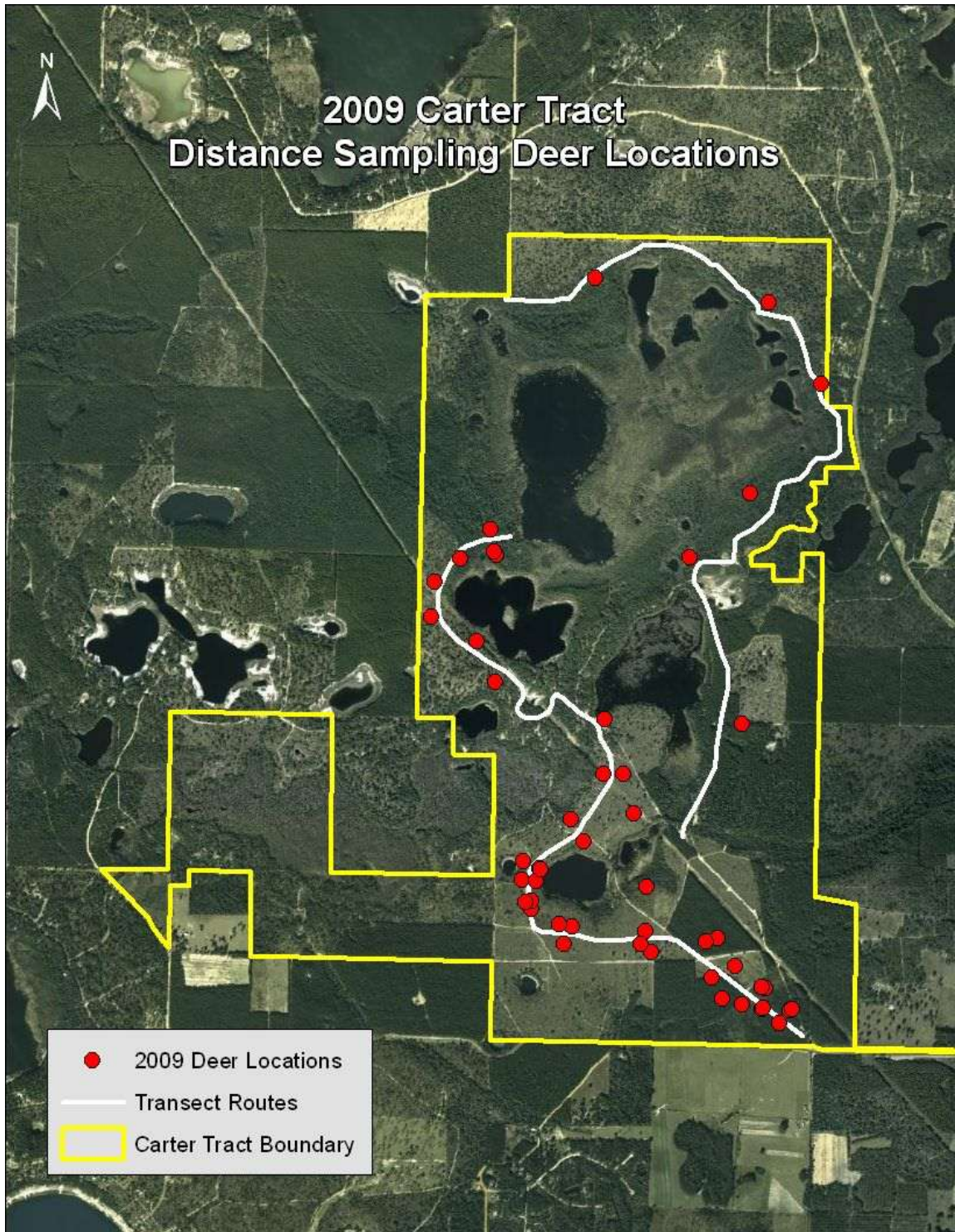
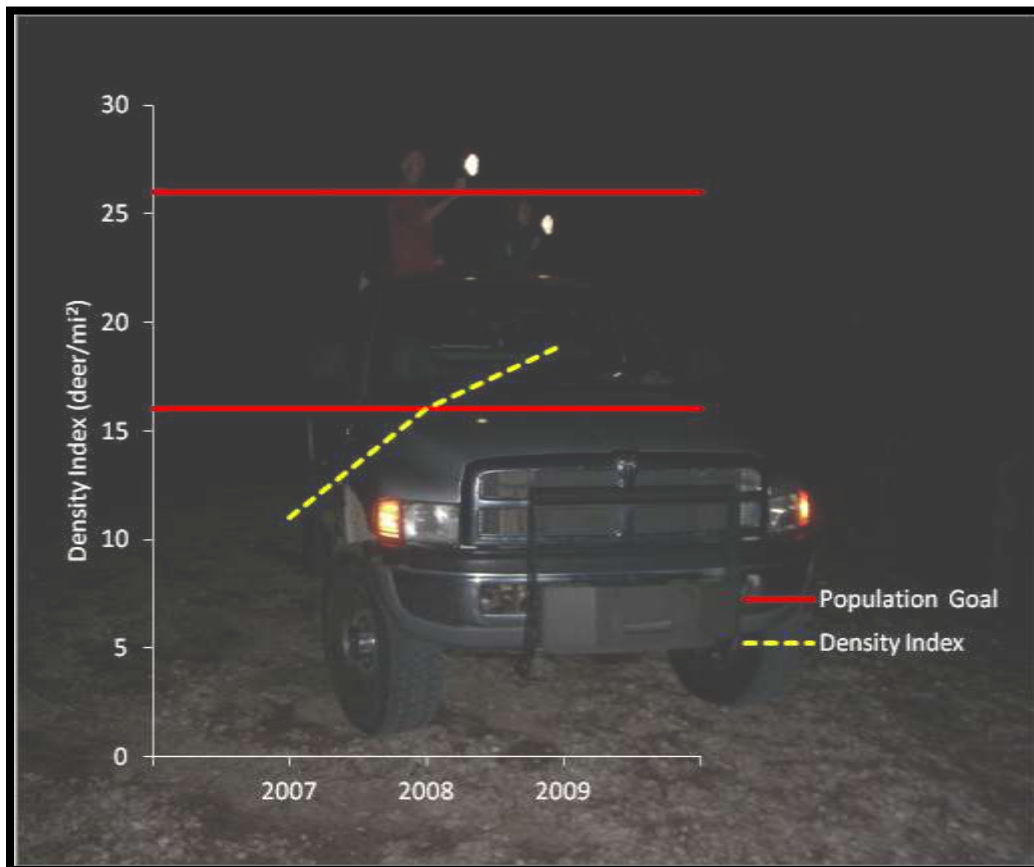


Figure 15. Survey routes and location of deer observations during the September 2009 line-transect distance sampling conducted on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Preseason deer density for 2009 was estimated at 19 deer/mi<sup>2</sup>(95% CI: 2.5, 37.5). Differences in deer observations between the two routes/transects contributed to the wider than expected confidence intervals (CI). This index is an increase from the 16 deer/mi<sup>2</sup> estimated during 2008, and is within our population goal for the area (Figure 16). The steady increase in deer density since 2007 is likely due in part to our conservative harvest format, as well as habitat improvement and restoration efforts implemented by NFWMD. With continued restoration activities, we expect to see the deer population on the Carter Tract to continue to rise. While the continued increase in deer density is encouraging, several subsequent years of surveys will be required to produce a clearer relative abundance, from which stronger inferences of trends in population size can be drawn.



**Figure 16. Trend in White-tailed deer density as estimated using line-transect distance sampling at the Carter Tract of Econfina Creek WMA, Washinton County, Florida, 2007-09.**

**Harvest and Hunting Pressure**

Hunters and their guests logged a total of 174 man-days of hunting during the 2009-10 season. This an increase from the 151 man-days reported during the 2008-09 season. Figure 17 shows the distribution of hunter use during the six quota hunts offered on the Carter Tract from 2007-10. In 2009-10, the second phase archery and third phase general gun hunts yielded the highest participation with 37 and 36 hunters, respectively. Also, there was a marked increase in muzzleloader hunter participation (from five in 2008 to 18 in 2009), while all other hunts remained fairly consistent.

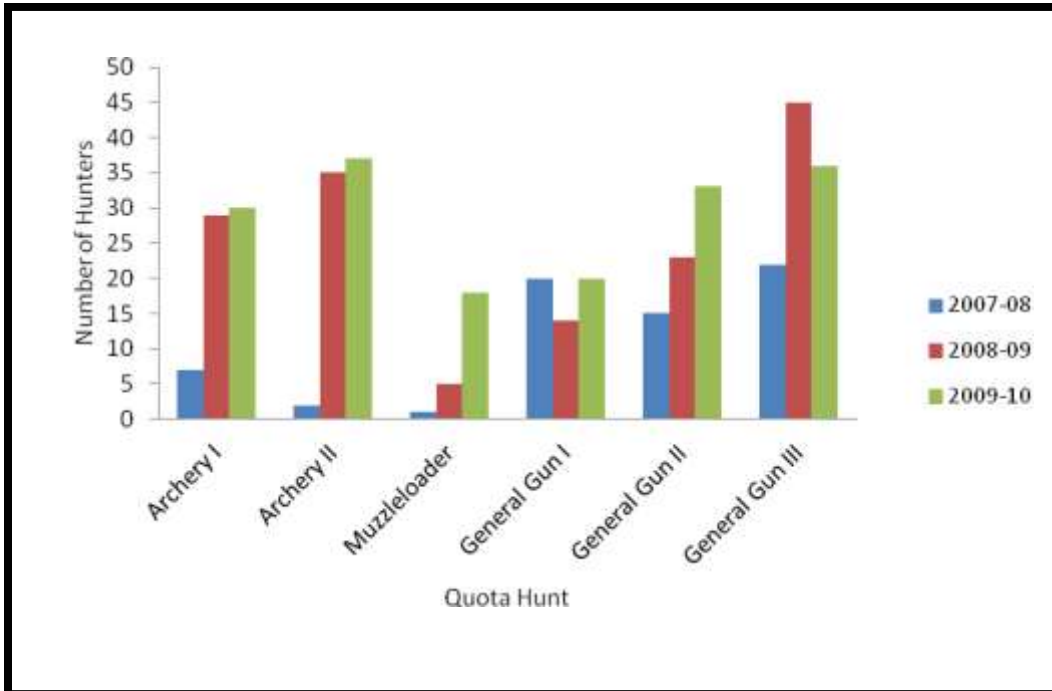


Figure 17. Comparison of hunter participation by quota hunt during the 2007-08 and 2008-09 deer seasons on the Carter Tract of Econfina Creek WMA, Washington County, Florida.

Overall hunter success rate (calculated as the number of deer harvested per man-days hunted) is depicted in Figure 18, and is compared over the last three deer seasons. Overall hunt success (compiling all quota hunts) for the 2009-10 season was estimated at approximately one deer/29 man-days (approximately 3.5%), compared to one deer/13 man-days (approximately 8%) realized in 2008-09.





**Figure 18. Comparison of overall hunter success rate during the 2007-08, 2008-09, and 2009-10 deer seasons at the 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. Six deer (five bucks; one doe) were harvested on the Carter Tract during 2009-10 compared to the 12 deer harvested the previous season. Mean physical parameters of all deer harvested per quota hunt season are presented in Table 2. The largest deer harvested was an 8-point, 3.5-year-old buck weighing 135 pounds (Figure 19).

**Table 2. Morphometric parameters of deer harvested during the 2009-10 quota hunts on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Quota Hunt	Gender	Age (yrs)	Weight (lbs)	Physical Parameters			
				Antler points	Avg. beam length (cm)	Avg. beam circum. (cm)	Inside spread (cm)
Archery II	Doe	4.5	104	-	-	-	-
General Gun II	Buck	3.5	135	8	41	9.13	32.5
General Gun III	Buck	1.5	102	3	17.75	5.5	17.5
	Buck	1.5	110	4	24.5	6.2	15.5
	Buck	1.5	123	5	21.75	6.5	23
	Buck	3.5	132	5	37	8	31



**Figure 19. This 8-point, 135-pound buck was the largest deer harvested during the 2009-10 hunting season on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

We believe the full potential for deer hunting opportunities on the Carter Tract has not been realized, but is expected to continue to improve in conjunction with habitat quality. Considering herd management objectives, additional antlerless harvests are not needed presently to control population levels. A higher density is desirable to meet our population objectives and improve hunter success rates. While preseason deer density estimates for the Carter Tract have increased, 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 will 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.

## **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. Permit holders are afforded one day prior to each hunt for scouting. Twenty-eight hunters participated in the 2010 spring turkey hunts. Two gobblers were harvested, the largest weighing 20-pounds with an 8<sup>1</sup>/<sub>8</sub>-inch beard and 1-inch spurs (Table 3; Figure 20). Turkey hunting success (defined as the number of gobblers harvested/man-days of effort) decreased from 11.8% in 2009 to 7% in 2010. This equates to approximately one gobbler/14 man-days of hunting. Turkey harvesting opportunities on the Carter Tract should continue to improve given the establishment of a three-year burn regime to control scrub oaks and maintain open grassy/herbaceous areas for nesting and bugging.



**Table 3. Gobblers harvested by quota hunt during the 2010 Spring Turkey season on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Quota Hunt	Weight (lbs)	Beard Length (in)	Spur Length (in)	Age Estimate
Turkey I (Mar 20-22)	16	8 <sup>2</sup> / <sub>3</sub>	1 <sup>3</sup> / <sub>16</sub>	3
Turkey II (Apr 2-4)	-	-	-	-
Turkey III (Apr 16-18)	20	8 <sup>1</sup> / <sub>8</sub>	1	3



**Figure 20. This 20-lb gobbler was harvested during Phase III of the 2010 Spring Turkey Hunt on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

## Small Game

The Carter Tract is open annually to small game hunting during a 16-day non-quota season each December. Hunters are encouraged to utilize this non-quota hunt period not only for hunting 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. While the number of small game hunters dropped slightly from 2008 to 2009 on the Carter Tract, hunter participation in this non-quota hunt has remained relatively constant (Figure 21). During the 2009-10 season, 24 hunters harvested a total of 50 gray squirrels.

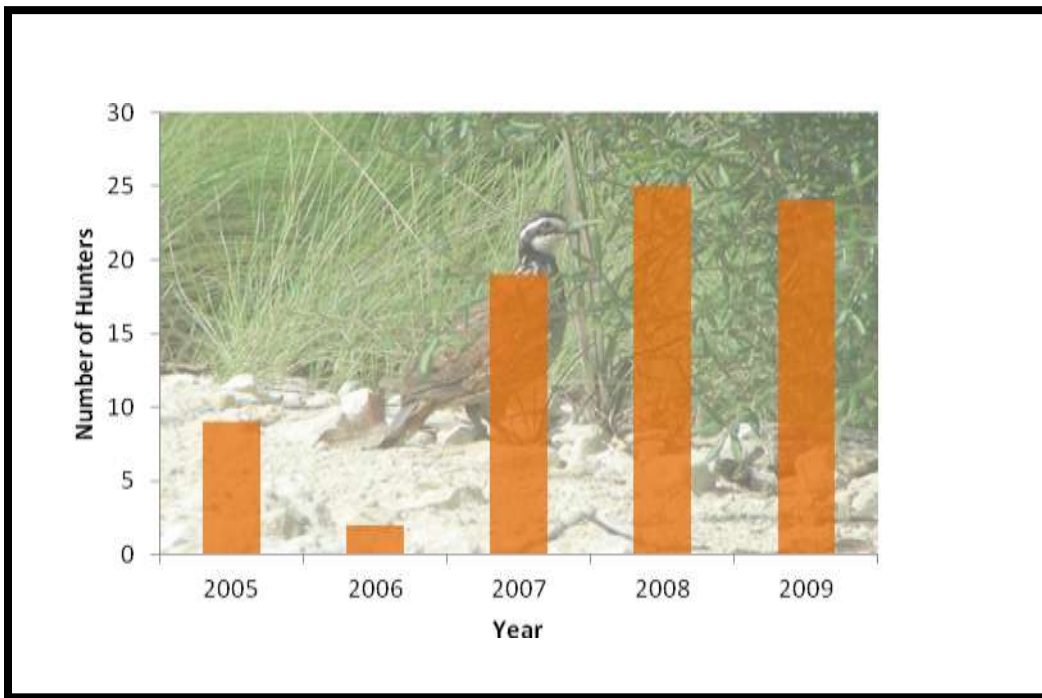


Figure 21. Small game hunter participation on the Carter Tract of Econfinia Creek WMA, Washington County, Florida, 2005-09.

## Waterfowl

### Harvest

The Carter Tract provides a special five-day early duck season each September. Fifteen hunters took advantage of this hunt during 2009, harvesting 12 wood ducks (*Aix sponsa*) and two green-winged teal (Figure 22). Additionally, the 2009-10 regular waterfowl season coincided with portions of the muzzleloading, general gun, and small

game seasons on the Carter Tract. Waterfowl hunting during this time yielded a total of seven man-days and a harvest of three wood ducks, six ring-necked ducks (*Aythya collaris*), one redhead (*Aythya americana*), and one hooded merganser (*Lophodytes cucullatus*). Duck harvests during the 2009-10 season yielded a hunting index of 1.1 ducks/man-day (Figure 23). This is a slight decrease from the 1.5 ducks/man-day harvested during the 2008-09 season.



Figure 22. A hunter displays a drake and hen wood duck harvested during the 2009-10 season at the Carter Tract of Econfina Creek WMA, Washington County, Florida.

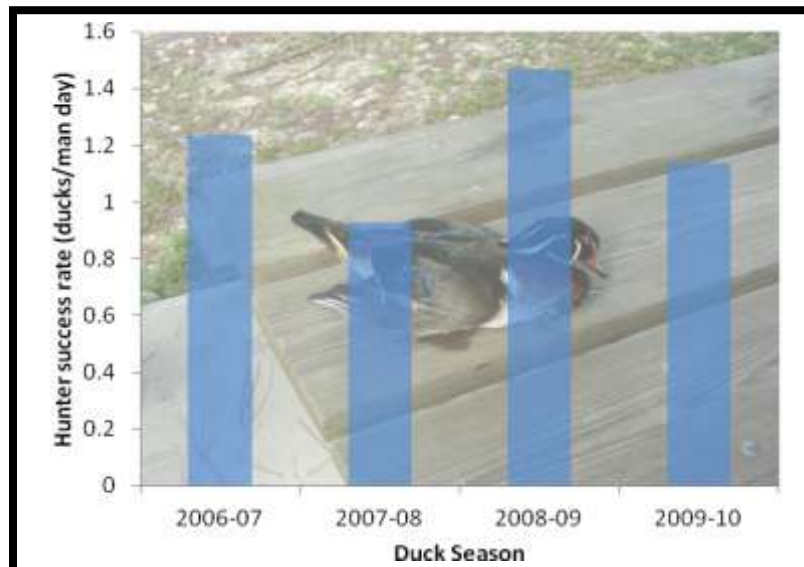


Figure 23. Duck hunter success rate (ducks harvested/man-day) on the Carter Tract of Econfina Creek WMA, Washinton County, Florida, 2006-10.

### **Wood Duck Nest Boxes**

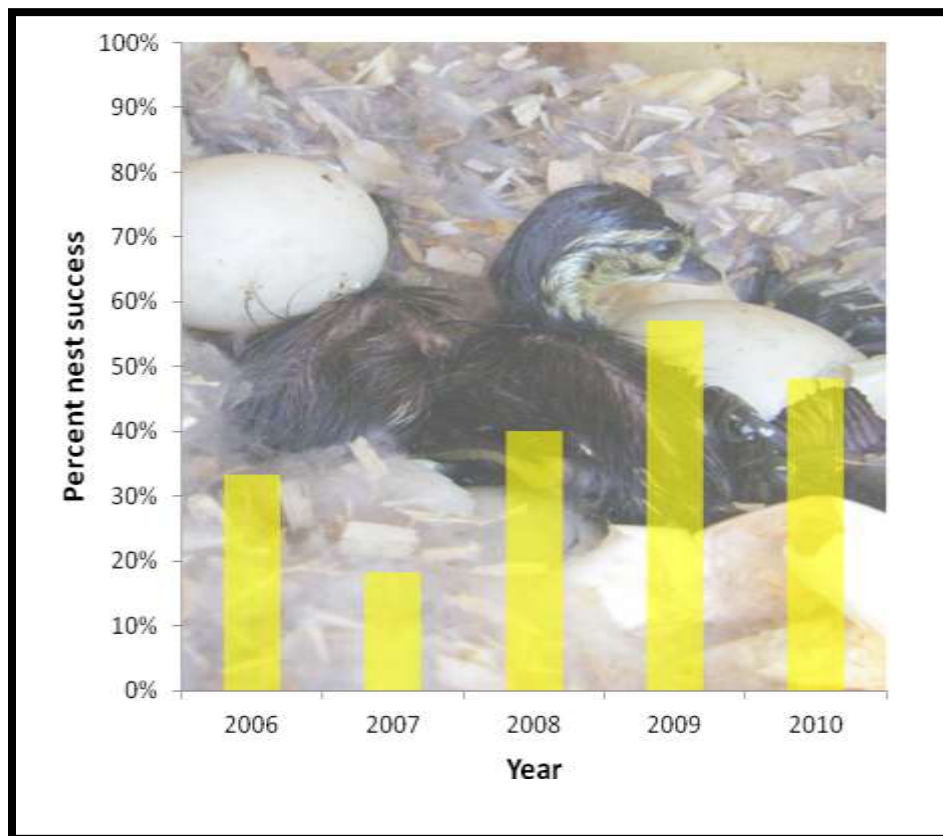
Efforts to monitor and facilitate local breeding populations of wood ducks continued on the Carter Tract, with quarterly monitoring efforts on 50 nest boxes that were erected in winter 2005. Boxes are checked three times throughout the breeding season (March – September) to determine occupancy and nest fate, and yearly winter checks allow boxes to be cleaned and repaired as needed. Following initial implementation, it takes several years for a wood duck nest project to develop. Female wood ducks are philopatric, meaning that they typically return to the same areas from which they were hatched, and once they breed, often return to the same nesting site year after year (Hepp et al., 1987). Table 4 presents data that supports this fact, showing that percent of Carter Tract wood duck boxes reused each year continues to increase, along with the total number of boxes used. With drought conditions persisting throughout the majority of 2007 and part of 2008, occupancy dropped slightly during 2008. Water levels rebounded in spring 2009 and have persisted to the present, facilitating increased use in the years following the drought. Wood duck box use increased from 21 in 2009 to 29 in 2010, and 59% of boxes used during 2010 were used the previous year in 2009.

**Table 4. Wood duck box occupancy and percentage of boxes reused per year on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Year	Total boxes used	New boxes used	Previously used boxes	% boxes reused
2006	6	6	-	-
2007	11	8	3	27%
2008	5	4	1	20%
2009	21	13	8	38%
2010	29	7	22	76%

Percent nest success (number of clutches that produced ducklings/total number of clutches) was calculated per year and is presented in Figure 24. Nest success decreased in 2010 compared to 2009. One possible explanation for this could be the unusually high water levels experienced on area ponds from late winter 2009 to early spring 2010, which resulted in the flooding of 74% of nest box predator guards, providing predators (specifically snakes) the opportunity to access boxes unabated. In the South, rat snakes (*Elaphe* sp.) are prominent nest predators of wood duck nest boxes. Rat snakes are not

only agile climbers, but are also excellent swimmers, and have been found swimming up to one mile from land (Bellrose and Holm, 1994). While conical predator guards are usually an effective snake deterrent, inundation through the winter and into the spring nesting season may have resulted in increased predation, yielding lower nest success numbers. Wood duck boxes that were inundated will be raised approximately three feet during winter 2010 to prevent inundation in future high-water years. Appendix VII presents more detailed data on percent nest success (number of attempted clutches that produced ducklings), average clutch size, and estimated ducklings produced/clutch for each water body by year. Figure 25 shows the location of nest boxes used by wood ducks on the Carter Tract between 2006 and 2009.



**Figure 24. Percent nest success (number of clutches producing ducklings/number of clutches) by year for wood duck (*Aix sponsa*) boxes on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2006-10.**



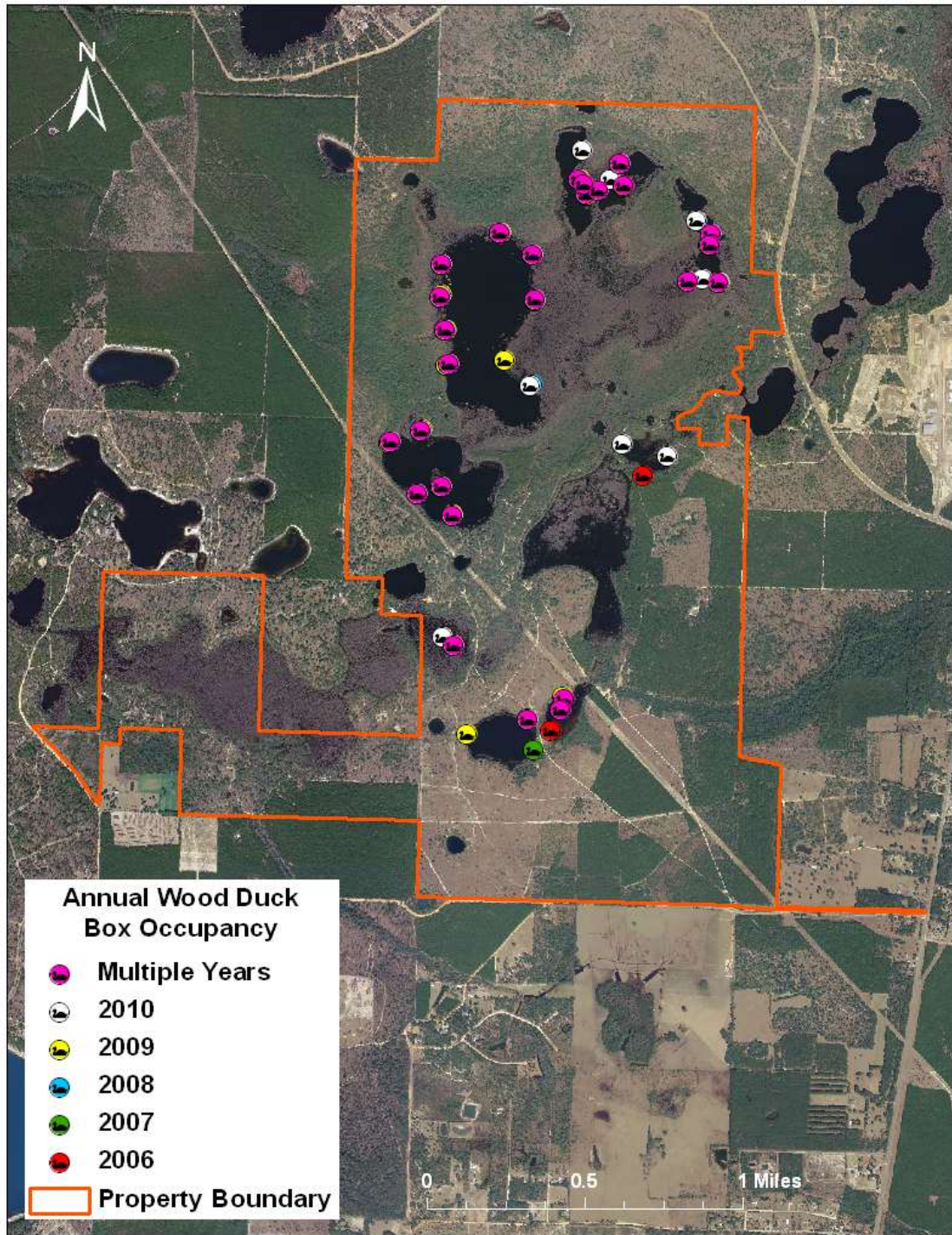


Figure 25. Use of wood duck nest boxes across the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2006-10.

Evidence of nest box use by a variety of non-target wildlife species has also been documented. Great-crested flycatchers (*Myiarchus crinitus*) are a cavity-dwelling species known for incorporating shed snake skins into nest construction (Harrison, 1975). The presence of this type of nest in several wood duck boxes on the Carter Tract suggests this species takes advantage of vacant boxes annually. Other avian species that have been documented in nest boxes on the Carter Tract include chimney swifts (*Chaetura pelagic*), eastern bluebirds (*Sialia sialis*), and eastern screech owls (*Megascops asio*). Two species of mammal have also been documented inside wood duck boxes on the Carter Tract: the southern flying squirrel (*Glaucomys volans*) and southeastern myotis (*Myotis austroriparius*). Again, from fall 2009 to summer 2010, we documented use of wood duck nest boxes by southeastern myotis, eastern bluebirds (Figure 26), great-crested flycatchers, and green anoles.



**Figure 26. Eastern bluebird nest (left) and chick (right) found inside wood duck nest boxes on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

## **Avifauna**

Parcels, like the Carter Tract, that support a mosaic of unique habitat types often harbor large numbers of bird species. To date, 115 species of bird have been documented as occurring on the Carter Tract (Appendix VIII). New species that were documented during 2010 include a male and female Rose-breasted grosbeak (*Pheucticus ludovicianus*), Merlin (*Falco columbarius*), Killdeer (*Charadrius vociferous*), and Redhead duck (*Aythya americana*). Bird species count is expected to increase as the various habitat types on the area continue to be enhanced by restoration efforts and

subsequent prescriptions. We would expect through continued habitat enhancement and active management, recruitment of those bird species that rely on specific habitat characteristics (habitat specialists) should increase, while still providing for the more common generalist species.

**Wading Birds**

Most wading birds nest semi-colonially in rookeries, often found 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 is one such rookery that has been documented as supporting up to 117 individuals representing six species. Two species of special concern (SSC) that have been documented on the rookery in previous years are the tricolored heron (*Egretta tricolor*) and little blue heron (*Egretta caerulea*). While both of these species were observed on the rookery in 2008, only a single little blue heron was seen flying over the rookery in 2009, and none were observed during 2010. Drought conditions during 2007 dried up Little Deep Edge Pond, resulting in the abandonment of the rookery during that year. Since then, water levels have remained relatively stable, allowing for the continued use of this important rookery by a variety of wading bird species. Historically, the great egret (*Ardea alba*) has been the most common species observed, as well as the most reproductively successful. The 2010 survey results were consistent with this trend, documenting eight great egrets utilizing the rookery, six of which were nesting. Nest fate of great egrets (number of fledged chicks/eggs layed) was calculated at 75% (Table 5). Additional species observed included anhinga (*Anhinga anhinga*), great-blue heron (*Ardea herodias*), and green heron (*Butorides virescens*). A table depicting number of wading birds observed by year at the Little Deep Edge Pond rookery can be found in Appendix IX.

**Table 5. Success of great egret (*Ardea alba*) nests at Little Deep Edge Pond rookery, Carter Tract of Econfina Creek WMA, Washington County, Florida, April-July 2010.**

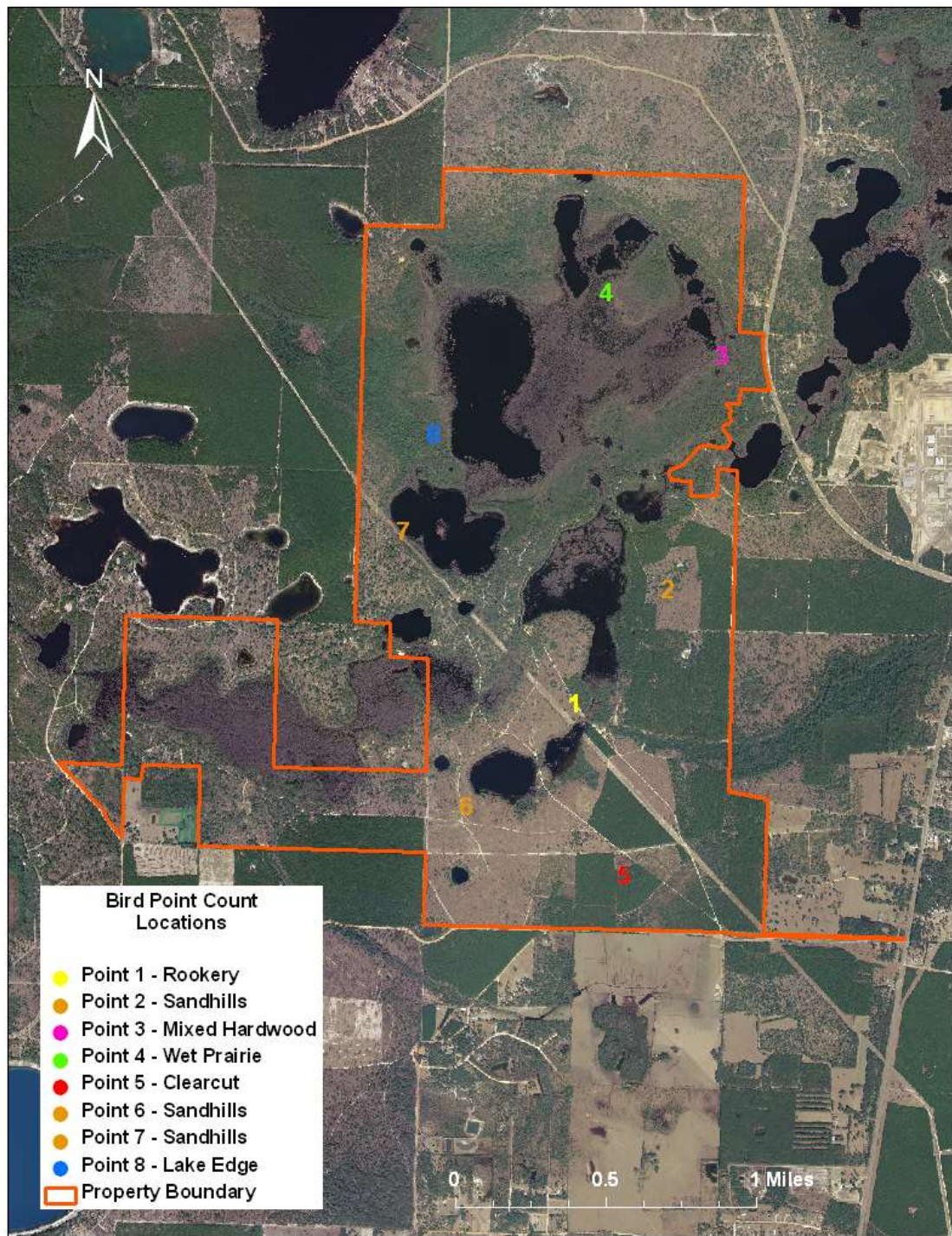
Nest #	Eggs	Chicks	Fledgling success rate
1	3	2	67%
2	3	3	100%
3	3	2	67%
4	3	2	67%
Total	12	9	75%



### *Passerines*

Annual point count surveys are conducted on the Carter Tract to document bird species utilizing the area. Point count surveys document bird species presence, and can be utilized for calculating 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).

For comparing species composition across habitat types on the Carter Tract, point count surveys are utilized. Survey locations are distributed among the different habitat types as follows: sandhill habitat (Points 2, 6 and 7), wetland/wading bird rookery (Point 1), lake edge (point 8), wet prairie (Point 4), mixed-hardwood forest (Point 3), and early successional grassland habitat (Point 5) that was clearcut in 2007 (Figure 22). Except for Point 3, all locations have undergone significant habitat enhancement and restoration efforts. Point count surveys will continue annually to identify changes in species composition as a result of these habitat improvements. Point counts were conducted from May 11-14, 2010. Protocol followed was consistent with those used in previous years, and closely follow procedures outlined in Hamel et al. (1996). Surveys were conducted in the early morning, when bird activity is typically highest (Hostetler and Martin, 2001), with counts beginning at dawn and ending by 0830. The order in which each count location was visited 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. Only birds positively identified were listed by species; other birds seen and/or heard were marked as “unknown”, with distinct plumage characteristics or call patterns noted for later identification.



**Figure 27. Location of point count surveys conducted during May 2010 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

The three sandhill point count locations chosen were spatially distinct to represent the entire area of the Carter Tract (Figure 27), and were similar in vegetative composition (tree stem density). The most common species identified were the eastern kingbird (*Tyrannus tyrannus*), blue-gray gnatcatcher (*Polioptila caerulea*), mourning dove (*Zenaida macroura*), eastern towhee (*Pipilo erythrophthalmus*), great-crested flycatcher, and pine warbler (*Dendroica pinus*) (Figure 28).

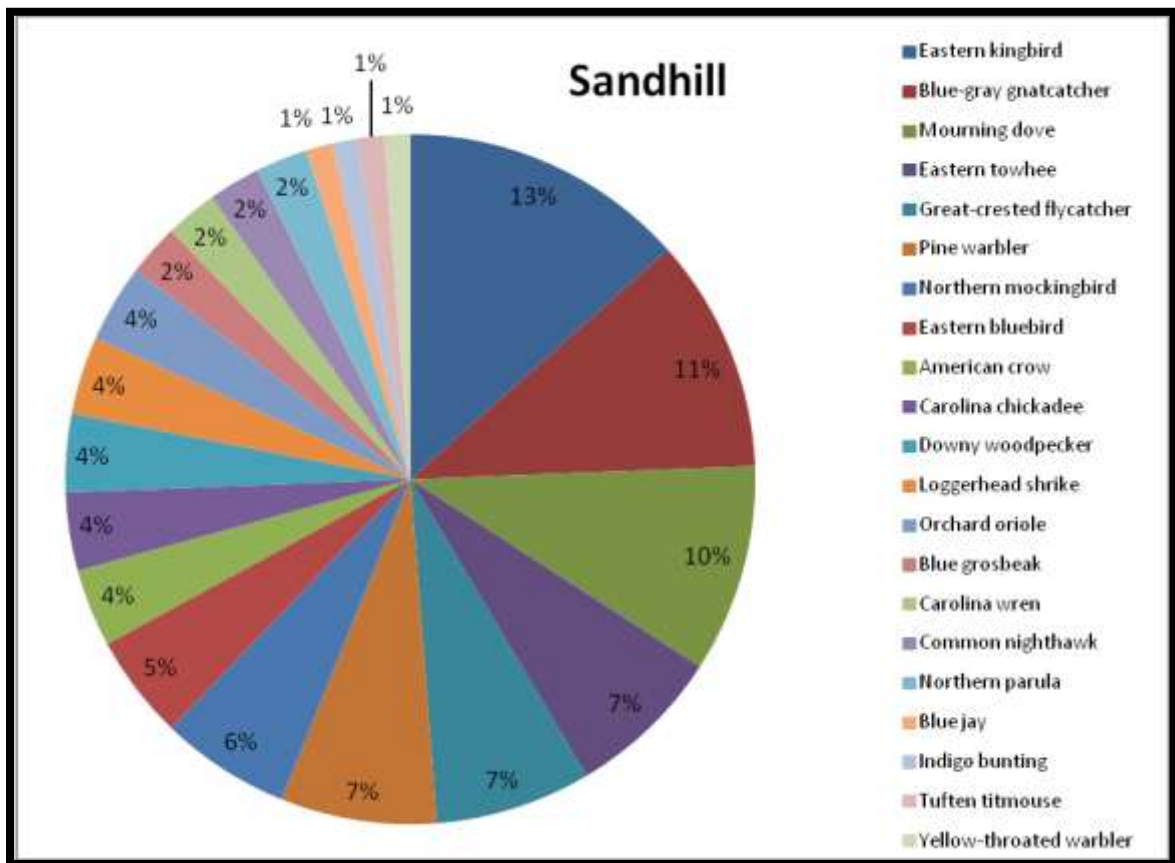


Figure 28. Percent detection for bird species identified in sandhill habitats during point counts on the Carter Tract of Econfina Creek WMA, May 2010.

The wetland point count location contains 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. The wading bird rookery on Little Deep Edge Pond is within this point count. The great egret (*Ardea alba*) was the most documented species at this location, with common grackles (*Quiscalus quiscula*) and red-winged blackbirds (*Agelaius phoeniceus*) fairly common (Figure 29). Northern parulas (*Parula americana*), yellow-billed cuckoos (*Coccyzus americanus*), and white-eyed vireos (*Vireo griseus*) were documented utilizing the hardwood hammock transition zone.

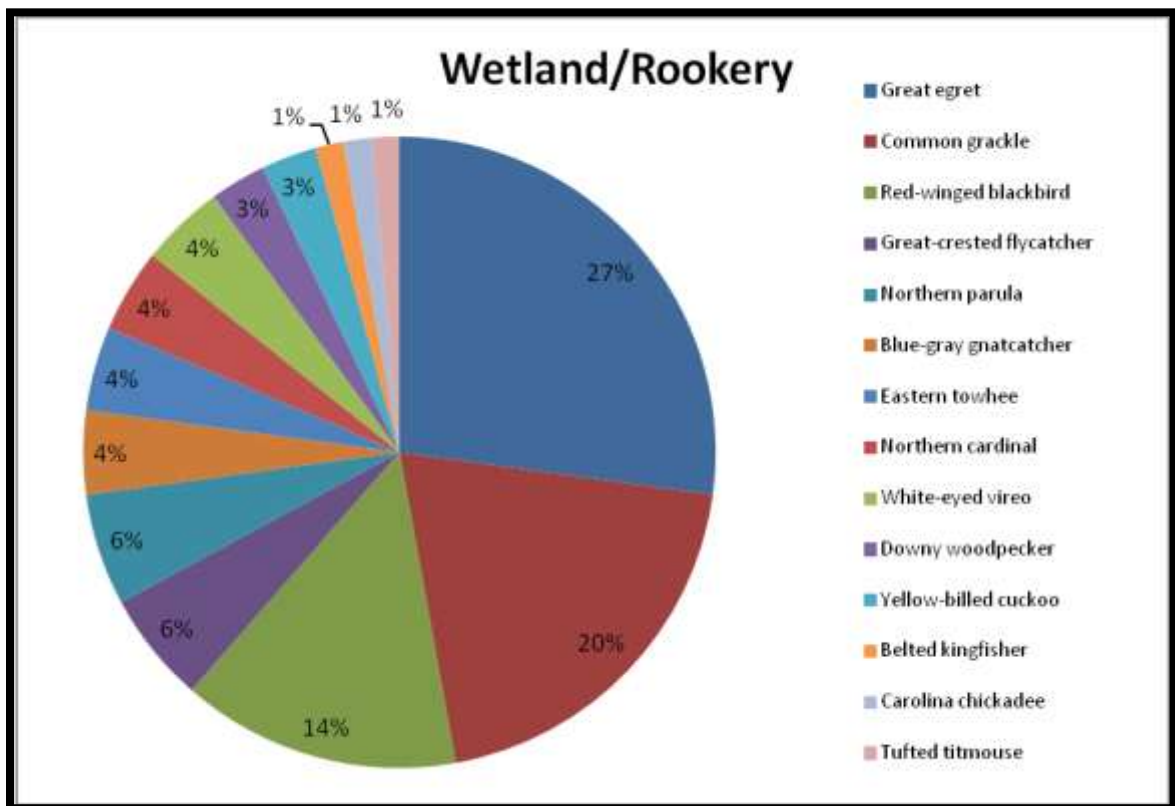


Figure 29. Percent detection for bird species identified in wetland/rookery habitat during point counts on the Carter Tract of Econfinia Creek WMA, May 2010.



The lake edge point count location is made up of a large body of open water (Dry Pond), and a 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 upland habitat types. The most common species identified was the common grackle, followed by the yellow-throated warbler (*Dendroica dominica*), great-crested flycatcher, northern parula, and red-winged blackbird (Figure 30). Less common species of special note that were observed at this location include the little blue heron (SSC), and a pair of killdeer (*Charadrius vociferus*) that were thought to be nesting. Brown-headed nuthatches (*Sitta pusilla*) were also documented, foraging on the mature pines within this point count location. Because of its restricted overall range, dependence on mature pine-savannah habitats, and declining population trend in Florida since 1966 (Sauer et. al., 2008), the brown-headed nuthatch is a species of high conservation importance (U.S. Fish and Wildlife Service, 2008).

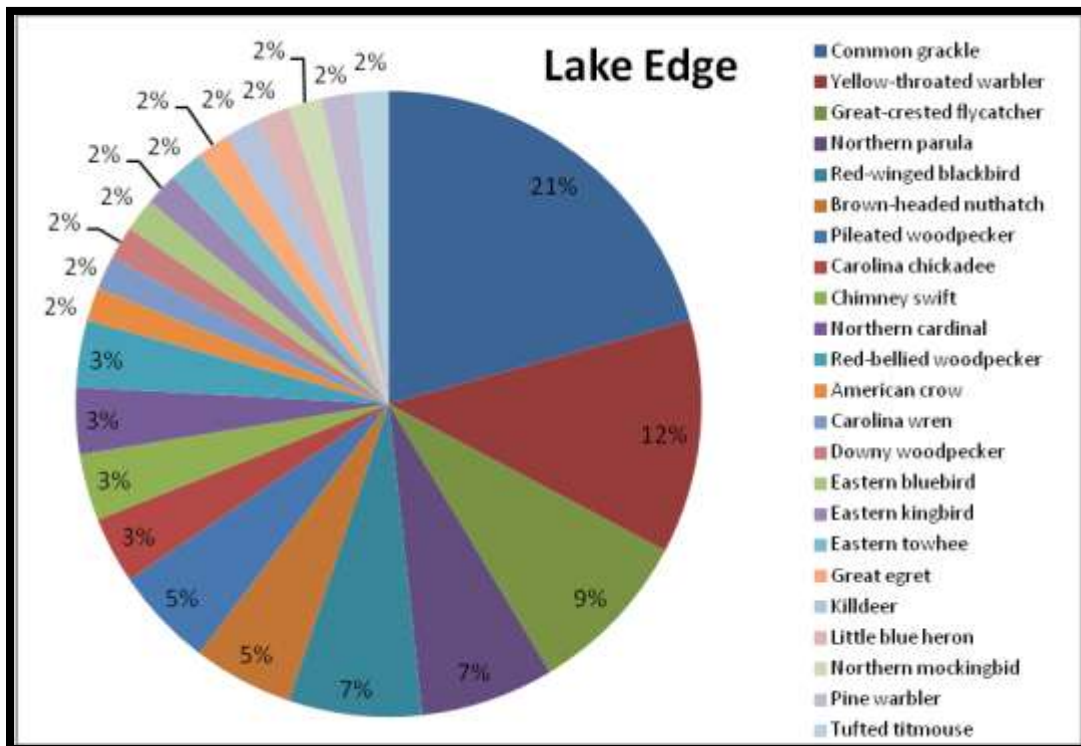


Figure 30. Percent detection for bird species identified in lake edge habitat during point counts on the Carter Tract of Econfina Creek WMA, May 2010.

The wet prairie point count location is located adjacent to a cypress swamp. The most common species identified were the northern parula, Carolina wren (*Thryothorus ludovicianus*), common grackle, eastern towhee, and blue-gray gnatcatcher (Figure 31). Other species of interest that were documented less frequently were the indigo bunting (*Passerina cyanea*), blue grosbeak (*Passerina caerulea*), and loggerhead shrike (*Lanius ludovicianus*).

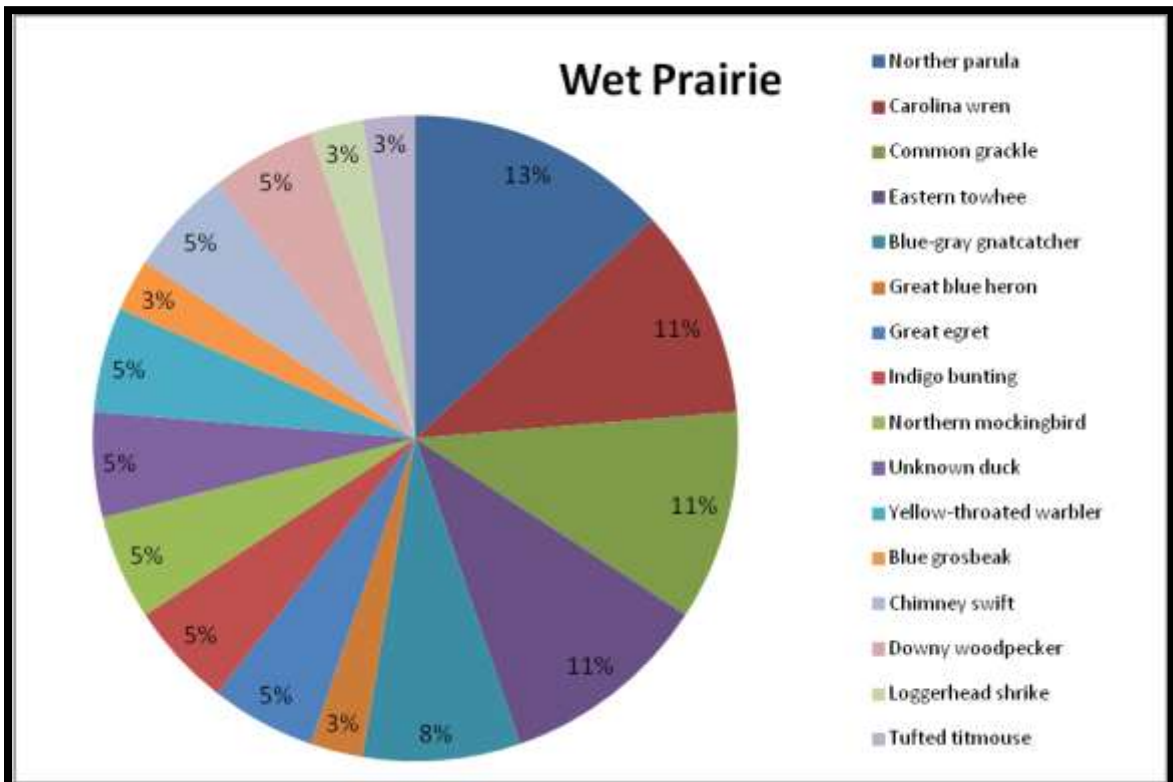


Figure 31. Percent detection for bird species identified in wet prairie habitat during point counts on the Carter Tract of Econfina Creek WMA, May 2010.



The mixed hardwood point count location is dominated by live oaks, bays, and holly trees that provide a mostly closed canopy. Carolina wren, blue-gray gnatcatcher, eastern towhee, northern parula, red-eyed vireo (*Vireo olivaceus*), and white-eyed vireo, were the most common species documented at this location (Figure 32). Four of the six most common species documented at this location did not change between 2009 and 2010 surveys. This is likely because the habitat has not been altered in the way that the other point count locations throughout the property have. The Prothonotary warbler (*Prothonotaria citrea*), a secretive songbird that nests in cavities over water, was documented in a stretch of swamp that falls within this point count. Further, a red-shouldered hawk (*Buteo lineatus*) that had been identified throughout the year utilizing surrounding habitat and suspected of nesting nearby was also documented.

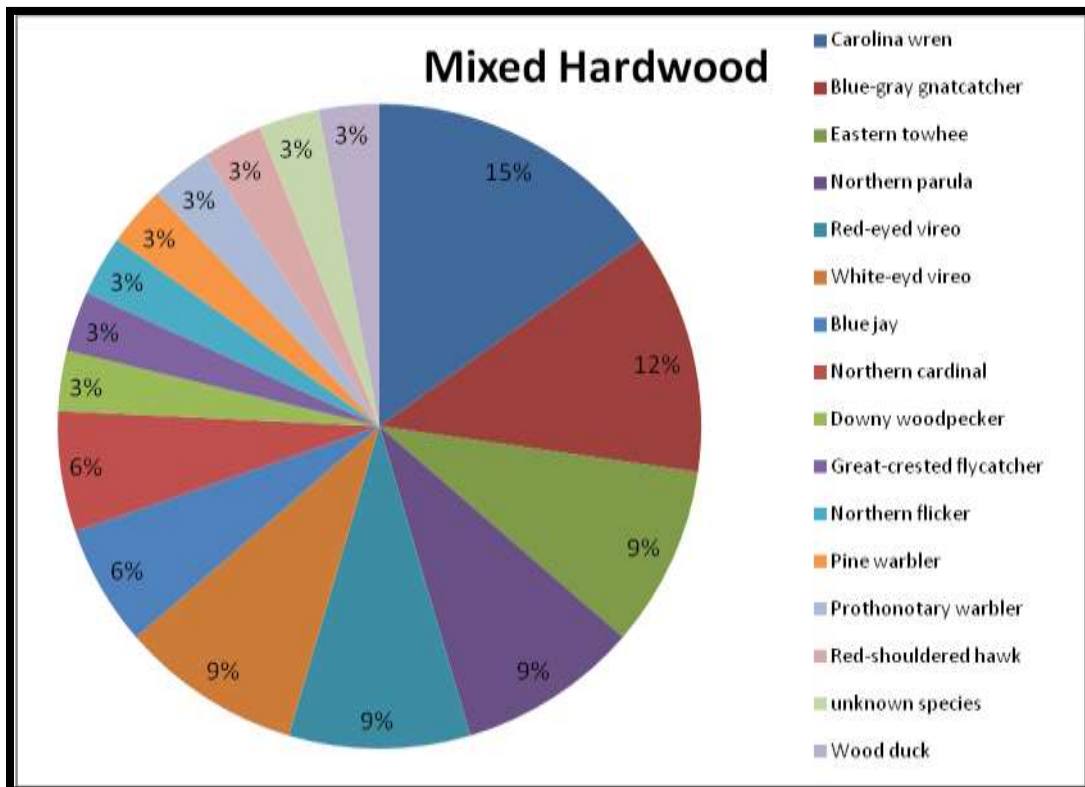


Figure 32. Percent detection for bird species identified in mixed hardwood forest habitat during point counts on the Carter Tract of Econfina Creek WMA, May 2010.

The grassland point count location is a former pine plantation that was clearcut in 2007. Current vegetative composition in this area is typical of early successional habitat types, consisting primarily of *Hypericum* sp., foxglove beardtongue (*Penstemon digitalis*), *Lespedeza* sp., wiregrass, broomsedge (*Andropogon virginicus*), and persimmon (*Diospyros virginiana*). The northern mockingbird (*Mimus polyglottos*) was the most common species counted at this location, followed by mourning dove, red-bellied woodpecker (*Melanerpes carolinus*), and loggerhead shrike (Figure 33). The bird community at this location should continue to evolve in subsequent years as native groundcover returns through prescribed burning and longleaf pine seedlings mature. Frequent prescribed fire will help keep this habitat grassy/herbaceous by top-killing young scrub oaks and promoting wiregrass and longleaf pine recruitment.

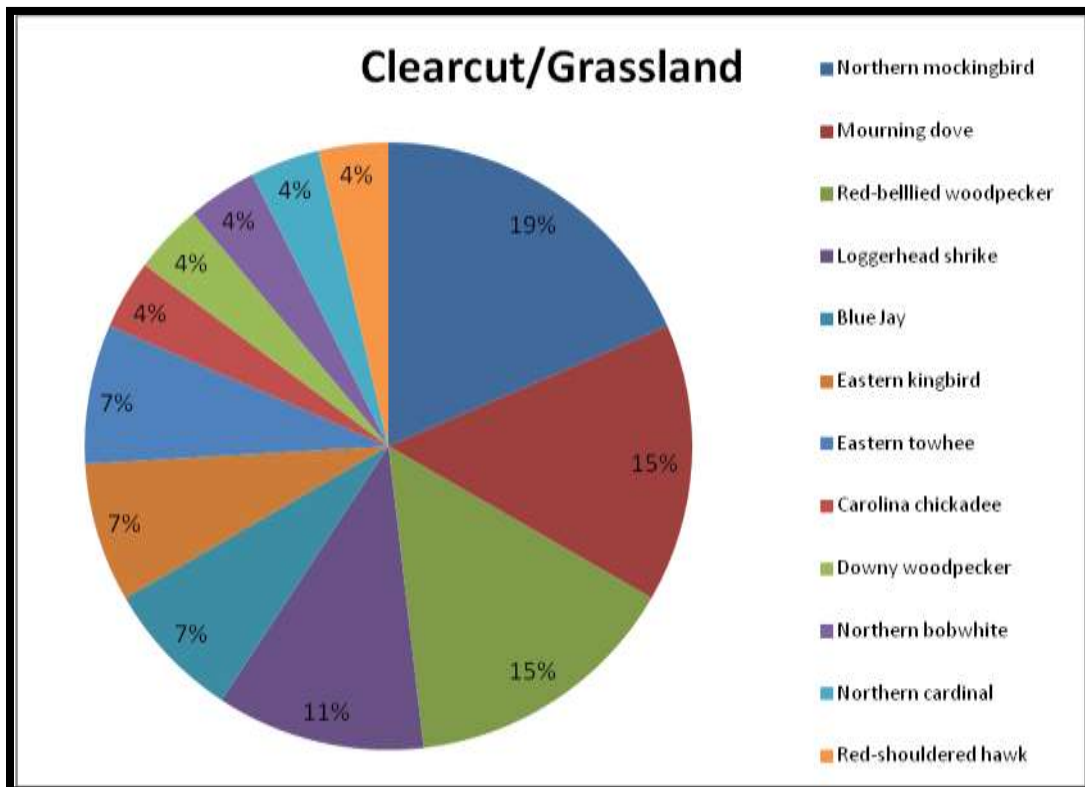


Figure 33. Percent detection for bird species identified in clearcut/grassland habitat during point counts on the Carter Tract of Econfina Creek WMA, May 2010.

During 2009 point count surveys, generalist species such as the great-crested flycatcher, eastern towhee, northern cardinal, and mourning dove dominated most habitat types on the Carter Tract. However, 2010 surveys began to show more complex species composition. At point counts where open water was a major habitat component (lake edge, wetland/rookery), common grackles and red-winged blackbirds were among the most common species. In the sandhills and clearcut/grassland locations, eastern kingbirds and loggerhead shrikes accompanied great-crested flycatchers and mourning doves as the most documented species. As restoration efforts and scheduled management activities continue, further species diversification is expected as additional habitat specialists utilize preferred habitat types.

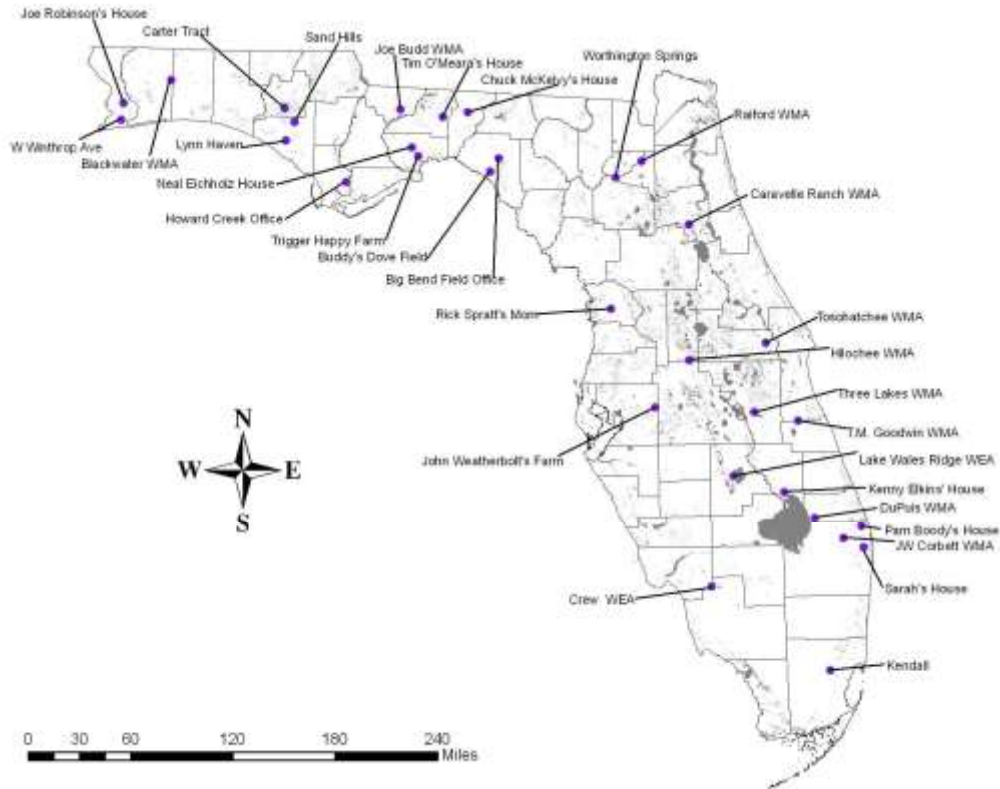
### **Mourning Dove Banding**

Contemporary and statistically reliable estimates of harvest rates, survival rates, and geographical distribution and derivation of harvest throughout the United States are necessary to improve science-based harvest management of mourning doves. A three year national pilot banding program was initiated in 2003 to produce data for estimation of these demographic parameters. This cooperative effort between state wildlife agencies, the U.S. Fish and Wildlife Service (USFWS), and the U.S. Geological Survey Bird Banding Laboratory (BBL) resulted in much needed information for improvement of dove harvest management. The pilot study represented the only source of contemporary information available on a large-scale basis (26 states), as the last comprehensive banding program occurred from 1965-1975. Goals and objectives of this study included:

- Estimate age-specific harvest rates and band reporting rates in a representative set of sub-regions in each of the three national dove harvest management units
- Estimate band reporting rates with the same subregions
- Establish protocols, training, and cost estimates for a future coordinated nationwide banding program designed to monitor harvest and survival rates
- Provide information on geographical distribution and derivation of harvest

- Provide initial estimates of annual survival and breeding site fidelity of subregion breeding populations

The field protocols and sampling designs used and tested by the cooperating state agency field staffs, and the resultant parameter estimates generated from this pilot study, were critical in the design of a cooperative state and federal long-term operational banding program. As part of this national long-term banding program, FWC's Small Game Management Program solicited WMAs throughout the state to participate in this banding work. FWC on the Carter Tract has chosen to participate and contribute to Florida's statewide dove-banding project in cooperation with the USFWS and BBL (Figure 34). 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](http://www.pwrc.usgs.gov) (select "Birds", then "Bird Banding Lab"). Interestingly, according to 2003-2010 mourning dove band returns (n=301), 85% of doves harvested in Florida originated in Florida (Kurt Hodges, FWC, pers. comm.).



**Figure 34. In conjunction with national long-term banding efforts, the 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 2009, prior to trapping. Trapping was conducted from July 7-9, 2009, with traps placed in the early morning and late afternoon. Traps were checked after 1-2 hours, depending on weather conditions. Doves were banded using U.S. Fish and Wildlife Service metal identification bands, and age (AHY= after hatch year; HY = hatch year), sex, and molt sequence data were collected for each bird (Figure 35). Twenty mourning doves (9 AHY; 10 HY; 1 unknown) were successfully banded during the 2009 capture/banding effort, and there were no recaptures of birds banded in previous years.



**Figure 35. Mourning doves were trapped, banded with U.S. Fish and Wildlife identification tags, and age, sex, and molt sequence were recorded in July 2009 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

## **Herpetofauna**

A comprehensive list of all herpetofauna species (n=49) identified on the Carter Tract from 2005 to present can be found in Appendix X. Since July 2009, 12 previously unconfirmed herpetofauna species have been identified as occurring on the Carter Tract. One species of particular note that was documented during 2010 was the Florida pine snake (*Pituophis melanoleucus mugitus*; SSC), with one large adult captured north of Green Ponds (Figure 36). Sandhill and scrub habitats, as well as seasonal isolated wetlands and small ponds are among the most important and imperiled habitats for southeastern herpetofauna. Additionally, 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 Warmouth Pond) aquatic habitats interspersed with adjacent upland sandhills. The presence of the gopher tortoise (*Gopherus polyphemus*) in the sandhill areas of the tract is significant not only because it is a 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 Milstrey, 1989). Specifically, the federally and state Threatened eastern indigo snake (*Drymarchon coureus couperi*), in addition to the gopher frog (*Rana capito*) and Florida pine snake, both SSC, 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 report.



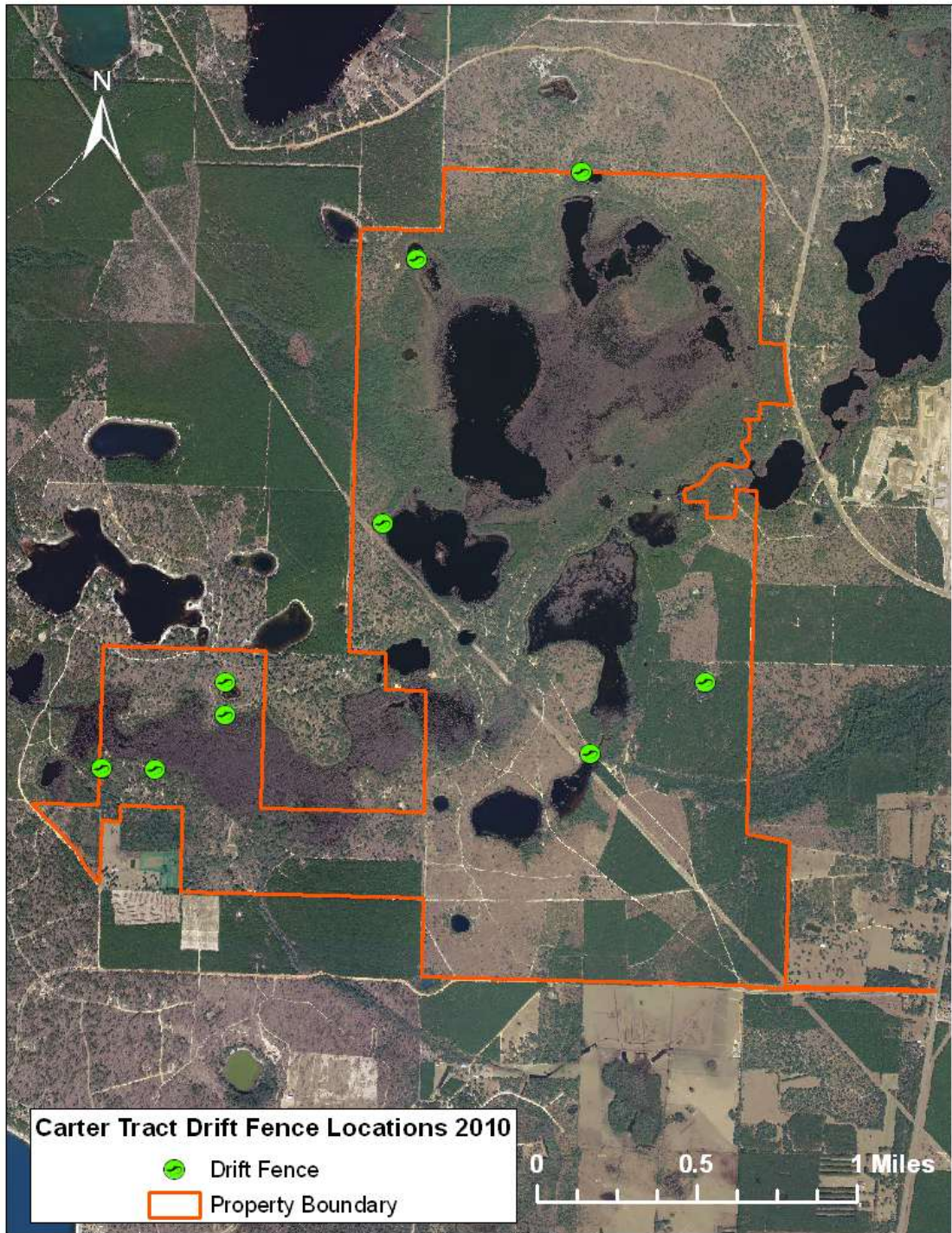
**Figure 36. Adult Florida pine snake (SSC) captured in early April 2010 north of Green Ponds on the Carter Tract of Econfinia Creek WMA, Washington County, Florida.**

### **Drift Fences**

In the past, herpetofauna surveys on the Carter Tract were conducted using two common sampling methods: drift fences and aquatic funnel traps. Drift fences were constructed of 100ft x 3ft silt fencing, supported by wooden stakes and attached with heavy duty staples. The bottom edge of the fence material was buried approximately 6-inches below ground to prevent herpetofauna from burrowing underneath. Drift fences were used in conjunction with funnel traps placed at each end and in the middle of both the inside and outside of the fence, for a total of six funnel traps per fence (Figure 37). Funnel traps were constructed from window screening and size and design was modeled after that of Enge (1997). Nine drift fences were installed parallel to pond margins to intercept adult amphibians and reptiles entering and exiting ponds and wetlands (Figure 38).



**Figure 37. Drift fence (left) with funnel trap (right) used for sampling herpetofaunal communities on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**



**Figure 38. Location of drift fences for herpetofaunal surveys on the Carter Tract of Econfina Creek WMA, Washington County, Florida, 2010.**



Herpetofauna movements (especially amphibians) are often correlated with rain events (Bury and Corn, 1987). Therefore, drift fence surveys were conducted according to local weather conditions, with traps opened prior to and during rain events when herpetofauna were expected to be moving. Soil ramps were constructed at the mouth of the mesh funnels to act as a natural surface leading into the trap (Figure 37). Nearby vegetation was used to shade funnel traps from direct sun exposure, and moistened sponges were placed inside traps to decrease the threat of desiccation. Traps were checked in the early morning to minimize trap-induced mortality. Twenty-eight individual animals representing five species (four amphibian; 1 reptile) were captured from January – April 2010 (Table 6). The Florida (*Acris gryllus dorsalis*) and northern cricket frogs (*Acris crepitans*), two closely related species, made up the majority (79%) of captures.

**Table 6. Herpetofauna species captured using drift fences on the Carter Tract of Econfina Creek WMA, Washington County, Florida, January – April 2010.**

Species	Number of Captures
Mole salamander ( <i>Ambystoma talpoideum</i> )	2
Florida cricket frog ( <i>Acris gryllus dorsalis</i> )	13
Northern cricket frog ( <i>Acris crepitans</i> )	9
Ground skink ( <i>Scincella lateralis</i> )	3
Ornate chorus frog ( <i>Pseudacris ornata</i> )	1
Total Captures	28

### **Minnow Traps**

Use of aquatic funnel traps, or minnow traps, was initiated in 2009, and was continued on a larger scale during 2010. Sixteen additional traps were used during spring 2010 (n = 24) compared to 2009 (n = 8) in an effort to attain better coverage of all water bodies throughout the property (Figure 39). Minnow traps are particularly successful at capturing adult aquatic salamanders and frogs, as well as salamander larvae and tadpoles. However, aquatic snakes, small turtles, fish, and crayfish are also common captures. Minnow traps were placed partially submerged in shallow water at the edges of ponds and wetlands February – April 2010 (Figure 40).

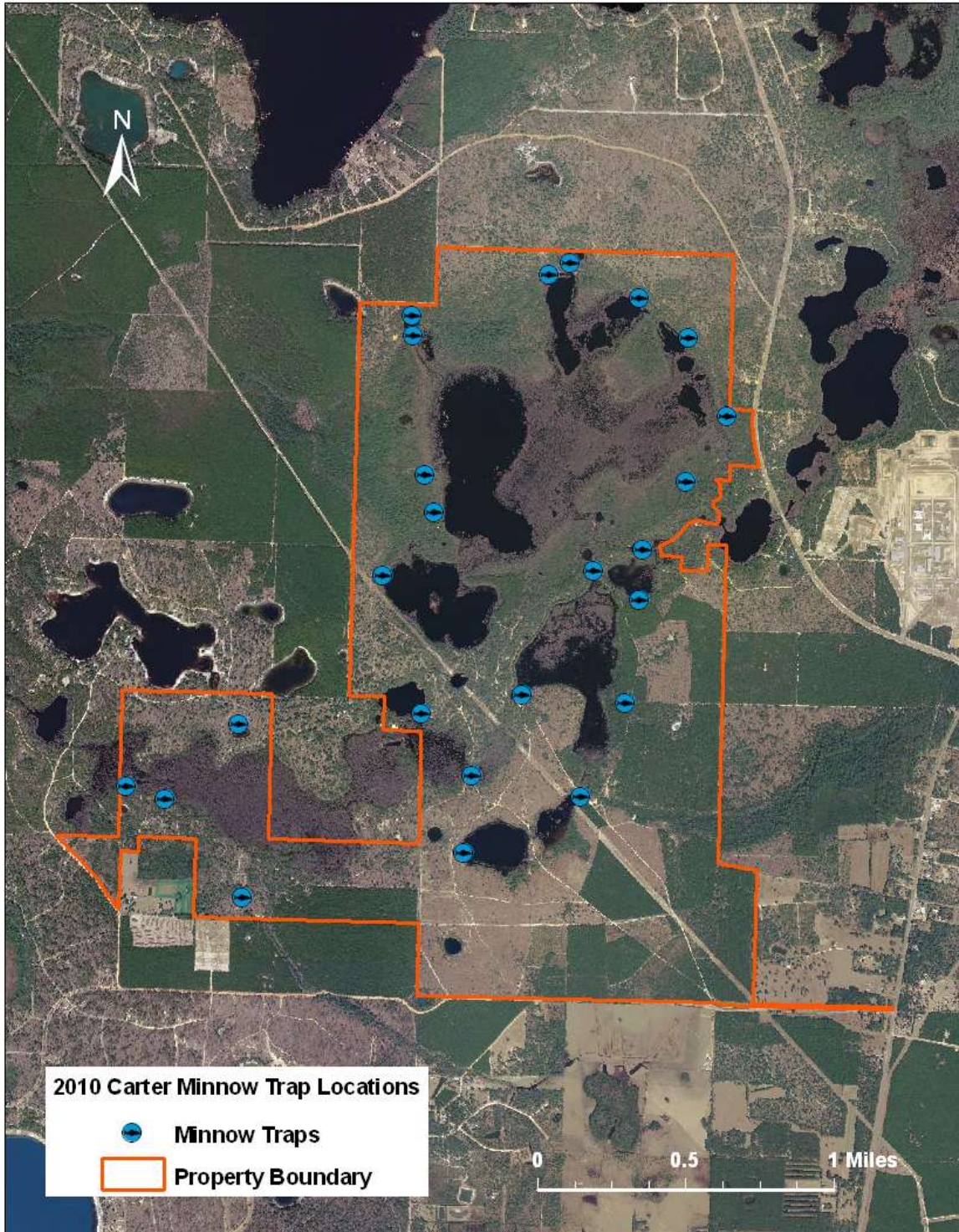


Figure 39. Location of aquatic funnel (minnow) traps used for sampling herpetofauna on the Carter Tract of Econfinia Creek WMA, Washington County, Florida, February – April 2010.



**Figure 40. Adult mole salamanders (left) captured using aquatic funnel (minnow) traps on the Carter Tract of Econfinia Creek WMA, Washington County, Florida.**

Over 71 trapping nights from February – April 2010, 24 minnow traps captured 358 individual animals. Fish made up 76% of captures while amphibians made up 20% of captures. The remaining 4% of captures were comprised of 13 crayfish and one Florida softshell turtle (*Apalone ferox*). Bowfin (*Amia calva*) larvae was the most captured fish species (n = 154) while the southern leopard frog (*Rana spinocephala*) and mole salamander were the most captured amphibians (n = 21 and n = 22, respectively). A detailed table showing all species captured is provided in Appendix XI.

### ***Snake Traps***

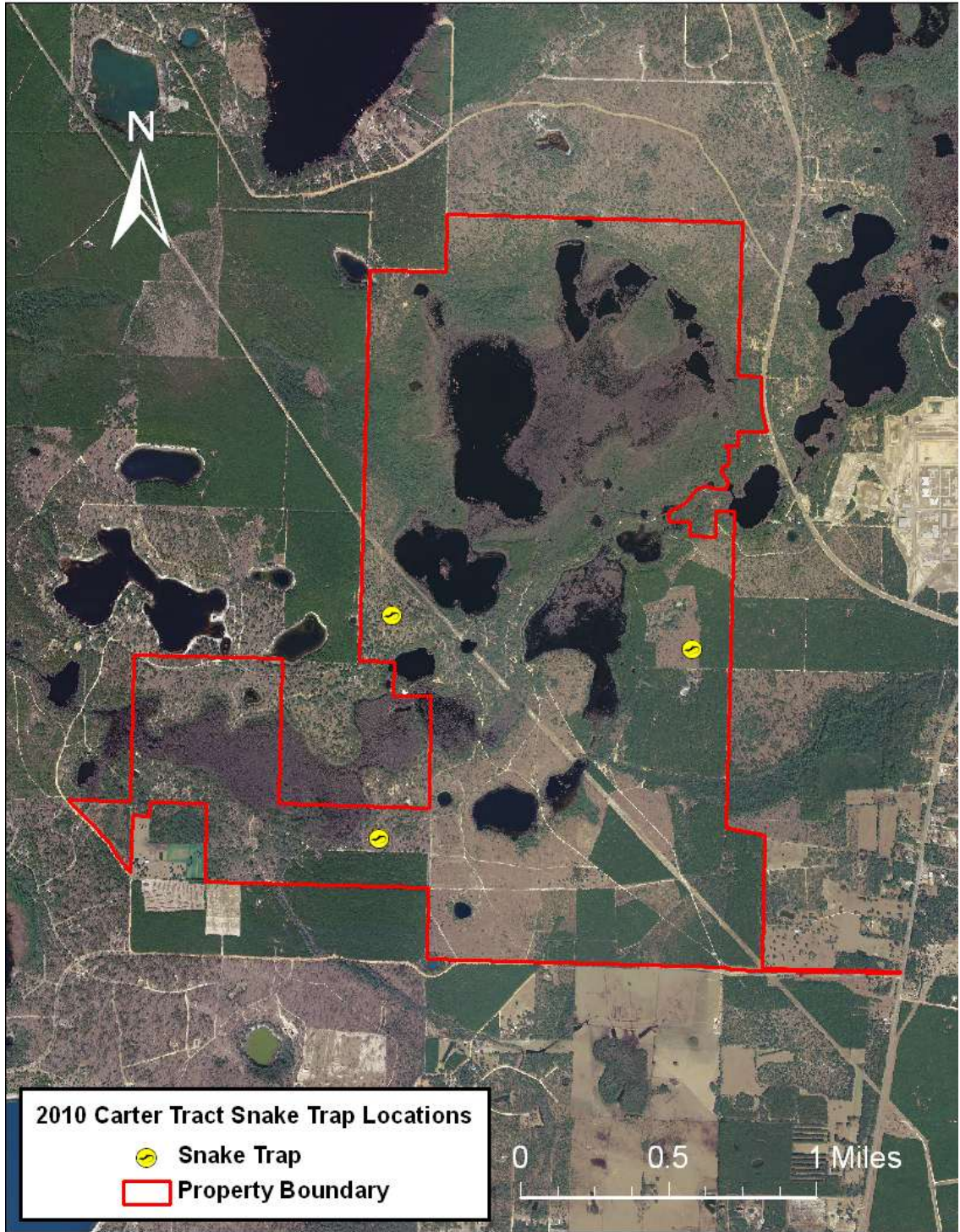
During spring 2010, two additional herpetofauna survey methods were implemented: upland snake traps and treefrog tubes. Because of their size, large terrestrial snakes such as racers, rat snakes, coachwhips, Florida pine snakes (SSC), and the eastern indigo snake (Threatened) can be difficult to capture 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. We therefore constructed three box-style snake traps (Appendix XII) and installed them in conjunction with four 100-foot drift fence arms (Figure 41). Three spatially distinct upland sandhill habitats were chosen based on their vegetation composition and structure, as well as proximity to mesic habitats (Figure 42). Two 5-gal buckets were installed on each side of the four arms of drift fence leading to the box trap (eight total buckets per array) to aid in capturing small-bodied terrestrial snakes, lizards, small mammals, and amphibians. Buckets were



maintained with 1-2 inches of soil and a 3 x 5-inch sponge saturated with water to help prevent desiccation. The bottoms of buckets were perforated to allow excess rainwater to drain and to prevent drowning of captured animals. Box traps were maintained with a 1.5-gal water tray, and were checked daily beginning in the early morning to prevent desiccation and undue stress on captured animals. Traps also contained a 22-ounce tin can filled with dried grass to act as refugia for any small mammals captured.



**Figure 41. Upland snake trap array used for surveying herpetofauna on the Carter Tract of Econfinia Creek WMA, Washington County, Florida.**



**Figure 42. Location of upland snake traps used for sampling herpetofauna on the Carter Tract of Econfina Creek WMA, Washington County, Florida, March – June 2010.**



From March – June 2010 over 139 trapping nights, 323 individual animals representing 36 species were captured. Sixty-nine percent of animals were captured in buckets, while the remaining 31% were captured in box traps. Fifty-eight percent of animals captured in box traps were snakes (Figure 43), while amphibians made up 73% of bucket captures. The southern black racer (*Coluber constrictor priapus*) and eastern coachwhip (*Masticophis flagellum*) were the most captured snake species, with 28 and 14 individuals captured respectively, while the eastern narrowmouth toad (*Gasrophryne carolinensis*) was the most captured amphibian, representing 74 captures. All non-venomous snakes captured were marked by clipping belly scutes in a unique numerical pattern following procedures outlined by Enge (1997). Nine percent of animals captured were small mammals, six species of which were previously unconfirmed as occurring on the Carter Tract. Similarly, four reptile and two amphibian species captured were considered newly documented species on the Carter Tract. The table in Appendix XIII details the number of species and individuals captured in snake trap arrays (note that species in red had previously been undocumented on the Carter Tract).



**Figure 43. An upland snake trap with five individual snakes (four black racers and one corn snake) caught over one trapping night at the Carter Tract of Econfinia Creek WMA, Washinton County, Florida (note the 22-ounce can with dried grass bundle for use by small mammals as refugia from temperature extremes).**

### **Frog Tubes**

Twenty-four treefrog tubes were installed throughout the Carter Tract on trees adjacent to water bodies (Figure 44). Frog tubes were made of 1.5-inch diameter PVC tubing, capped on the bottom. Tubes were 24 inches in length and contained a 1/8-inch diameter hole in the side approximately 4 inches from the bottom to drain excess water, as well as a piece of nylon string attached to the side of the tube on the inside. The nylon string serves as an escape route for non-target captures such as southern flying squirrels, cotton mice, green anoles, and skinks. Frog tubes were installed in February 2010 and will remain on trees indefinitely, being checked periodically for use. To date, three green anoles (*Anolis carolinensis*) and two barking treefrogs (*Hyla gratiosa*; Figure 45) have been found utilizing frog tubes.

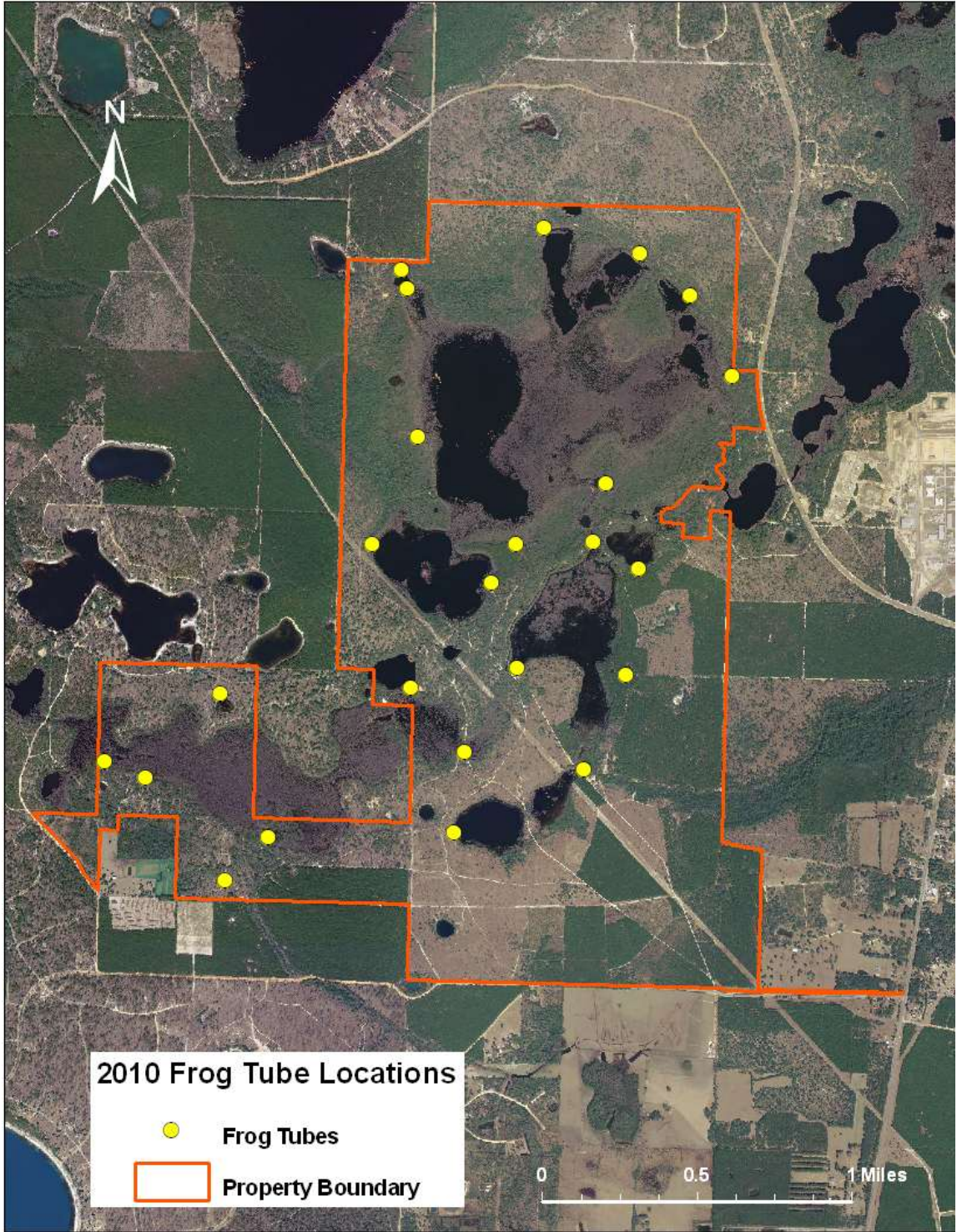


Figure 44. Location of treefrog tubes on the Carter Tract of Econfina Creek WMA, Washington County, Florida.





**Figure 45. Treefrog tube in a hydric pine flatwoods and a barking treefrog (*Hyla gratiosa*) in a tube (note escape string to right of frog to aid escape of non-target species) on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

## **FUTURE BIOLOGICAL ACTIVITIES**

In a continuing effort to document species diversity across all taxa of vertebrates present on the Carter Tract, additional surveys are scheduled to be implemented during 2010-11. FWC personnel will implement small mammal trapping, as well as mist-netting for bats. To date, bat species documentation on the Carter Tract has been anecdotal at best. Carter field staff plan to mist net for bats over shallow water bodies in various habitats in an effort to document species occurrence in those areas. Bridges and abandoned structures will also be surveyed, as these areas often serve as roost sites for different bat species. Further, frog call surveys and turtle trapping using hoop nets will be initiated. Frog call surveys are a good way to document species occurrence without necessarily capturing individuals of that species. Several species of tree frogs are difficult to capture, but can easily be heard calling, especially during the spring and summer months. This effort, combined with continued use of treefrog tubes should help to identify any additional treefrog species that occur on the property. Additionally, the many permanent ponds on the Carter Tract are currently known to provide habitat for three species of aquatic turtle: the Florida softshell, Florida cooter (*Pseudemys floridana*), and chicken turtle (*Dierochelys reticularia*). However, trapping specifically for turtles using hoop traps is likely to reveal additional species thriving in area ponds and wetlands on the Carter Tract, including potentially the Alligator snapping turtle (*Macrochelys temminckii*), a SSC.



Worldwide bird species diversity continues to decline each year due to habitat fragmentation, development, and degradation. While the Carter Tract harbors a unique variety of habitat types that are utilized by a number of species, providing man-made nesting structures can help to supplement natural cavities. Therefore, FWC staff plan to construct bluebird boxes for distribution throughout the property. Bluebird boxes are not only utilized by eastern bluebirds, but other cavity nesting species will also take advantage of them when available. Some species we hope to document using nest boxes include tufted titmice (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), downy woodpecker (*Picoides pubescens*), Carolina wren (*Thryothorus lucovicianus*), and potentially brown-headed (*Sitta pusilla*) and white-breasted nuthatches (*Sitta carolinensis*). In addition to bluebird boxes, we also plan to construct larger nest-boxes designed for use by American kestrels (*Falco sparverius*). The southeastern American kestrel (*Falco sparverius paulus*) is a subspecies 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. 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).

## **ADDITIONAL ACTIVITIES**

During late summer 2009 through spring 2010, FWC staff and Carter Tract recreators periodically witnessed a pack of free-ranging dogs running through the property. Some dogs observed were collared while others were not. Following an incident involving direct interaction with a pack of dogs, representatives from FWC, NFWFMD, Washington County Animal Control, Washington County Sheriff's Office, and Washington County Parks and Recreation, FWC Law Enforcement and Washington County Sheriff's Office increased patrols of the property and FWC staff and Washington County Animal Control began actively trapping for free-ranging dogs to prevent

additional human-dog interactions. Six large cage traps were set in strategic locations based on visual confirmation of the pack and other sign (i.e. dog tracks and digging under boundary fences), and adjusted accordingly as behavior patterns and areas of use changed. Traps were baited daily with dry and wet dog food and checked the following morning. All non-target animals captured were released immediately. To date seven dogs have been captured since trapping efforts began in late December 2009. All dogs captured were handled by Washington County Animal Control upon immediate notification.

## **LAW ENFORCEMENT ACTIVITIES**

(Lieutenant Hampton Yates reporting)



Florida Fish and Wildlife Conservation Commission officers patrol the Carter Tract providing enforcement to include wildlife and fisheries enforcement and general law enforcement including narcotics and trespass violations. This FY 2009-2010 officers provided approximately 255 hours of patrol directed to the Carter Tract. We had approximately 44 user contacts for the area with no arrests or written warnings issued. Area officers reported activity on the area seemed to be light compared to previous years.

Officers conducted foot patrol and all terrain vehicle patrols of the interior roads and perimeter for the area throughout the year. Officers worked illegal hunting, trespassing, and baiting violations during the hunting season. We responded to complaints for driving in closed areas and on closed roads during construction. Officers conducted a search regarding a lost hunter, and responded to a report of illegal entry. Continued patrols to monitor night hunting were conducted along the area boundaries.



(Officer Warren Walsingham's photos)

Officers conducted foot patrols along the boundary during spring gobbler season after receiving complaints from users checking out at the check station reporting possible unlawful entry. Additionally, officers followed up on complaints worked last year regarding baiting along the southwest corner and the other on the north end. Officers checked on a ladder stand that was set up to overlook both properties, however, no violation was observed.

Officers conducted patrols and monitored the area after buckets were found hanging from trees apparently from a past growing season. Officers suspect they were used to grow marijuana. (see photos taken by Officer Walsingham).



Officers worked with Carter Tract personnel regarding a pack of dogs running on the area. One of these dogs was responsible for biting an area employee during a field work day. Traps were set for the dogs and contact with area residents was made in an attempt to curtail the problem. The Washington County Sheriff's Office and Animal Control worked in conjunction with FWC on this endeavor. A few were trapped and moved from the site by the animal control officer.

Lieutenant Steve Carter's field office is located at the Carter Tract office and check station. His patrol time is included in the hours reported above with foot and perimeter patrols and user contacts. He assisted on the dog bite incident and monitored the traps for animal control daily. He provided information to citizens while at the field office and conducted routine patrols on the area. Lieutenant Carter passed away recently after a courageous battle with

cancer. He will be missed. This report is dedicated to FWC Lieutenant Steve Carter.



(Lt. Steve Carter)

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# Appendix I. Fitzhugh Carter Tract of Econfina Creek WMA Regulations Summary and Area Map, July 1, 2009 – June 30, 2010.

**Fitzhugh  
Carter  
Tract**

**2009-  
2010  
Hunting  
Season**


**Econfina Creek  
Wildlife Management Area**

Regulations Summary and Area Map  
July 1, 2009 - June 30, 2010



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 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 activities. These publications are available from any Commission office, county tax collector and at [MyFWC.com](http://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 [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, for one year.

Hunting, trapping and fishing licenses, and management area, archery, muzzleloading gun, wild turkey and state waterfowl permits may be purchased from county tax collectors, license agents, at [MyFWC.com/license](http://MyFWC.com/license) or by telephone at 1-888-486-8356. 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 [duckstamp.com](http://duckstamp.com). Americans with Disabilities Act accessibility information is available at [MyFWC.com/ADA](http://MyFWC.com/ADA).

**QUOTA PERMIT INFORMATION:**  
Archery - 15, no-cost, quota permits (no exemptions) for each of 2 hunts.  
Muzzleloading Gun - 15, no-cost, quota permits (no exemptions).  
General Gun - 15, no-cost, quota permits (no exemptions) for each of 3 hunts.

Spring Turkey - 5, no-cost, quota permits (no exemptions) for each of 3 hunts.

**Permit applications:** Hunters must submit electronic applications for quota and special-opportunity permits through the Commission's Total Licensing System (TLS) at a license agent, county tax collector's office or [MyFWC.com](http://MyFWC.com). Worksheets listing hunts, application periods, deadlines and instructions are available at county tax collector's offices, FWC offices or [MyFWC.com](http://MyFWC.com). The first quota application period begins June 1 and worksheets will be available about two weeks prior.

**Additional hunters:** A quota permit holder (host) may bring only one additional hunter. This additional hunter must be a youth under 16 years of age, a youth supervisor (if quota permit holder is a youth), a mentor license holder, mentor license supervisor (if applicable) or guest permit holder. The additional hunter does not receive a separate bag limit. The host must share a bag limit with the guest and the host is responsible for violations that exceed the bag limit. The guest and host must enter and exit the area together and must share a street-legal vehicle while hunting on the area. The guest may only hunt while the host is on the area.

**Guest permits:** One guest permit may be issued for each archery, muzzleloading gun, general gun, wild hog, spring turkey and mobility impaired quota permit issued through the Commission's TLS. A guest permit is not issued to a youth under 16, a youth supervisor, a mentor license holder or a mentor license supervisor. A person is only eligible for one guest permit per hunt. Guest permits may only be obtained from license agents or county tax collector's offices. Guest permits may be obtained up to and during the last day of the hunt. 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 (not including special-opportunity) for which quota permits are issued, at least one person in the party must be in possession of a quota permit. During a hunt that allows exemptions, a non-exempt supervisor of a youth must have a quota permit to hunt. A non-hunting supervisor is allowed to accompany a youth or

## Appendix I (continued)

mentor license holder during any hunt (including special-opportunity).

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

### GENERAL AREA REGULATIONS:

All general laws and regulations relating to wild animal life or freshwater aquatic life 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. This is not required during an archery-only season.
2. Taking of spotted fawn, swimming deer or roosted turkey is prohibited. Species legal to take 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.
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 one-half hour before sunrise until one-half 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. It is unlawful for any person to leave any garbage or refuse or in any way litter in the area.
17. It is unlawful to set fire to any forest, grass or woodlands.
18. A Fish and Wildlife Conservation Commission Law Enforcement Officer may search any camp, vehicle or boat in accordance with law.
19. The possession or consumption of intoxicating beverages is prohibited.

### PUBLIC ACCESS AND VEHICLES:

1. The Fitzhugh Carter Tract is located west of State Road 77, 5 miles north of Highway 20 on Chain Lake Road.
2. Open to public access year-round.
3. All persons entering or exiting the Fitzhugh Carter Tract may do so only at a designated entrance (see map).
4. Parked vehicles may not obstruct a road, gate or firelane.
5. No motor vehicle shall be operated on any part of any wildlife management area that has been designated as closed to vehicular traffic.
6. Vehicles may be operated only on named or numbered roads.
7. The use of all-terrain vehicles is prohibited.
8. Horses are prohibited.

### HUNTERS AND CHECK STATIONS:

1. Hunters and anglers shall check in and out at the check station when entering and exiting the area and shall check all game and fish taken.
2. Hunting equipment and dogs may be taken onto the WMA after 8 a.m. the day before the opening of a season and shall be removed by 6 p.m. one day after the end of the season.

### GUNS:

1. All firearms shall be securely encased and in a vehicle, vessel, camper or tent, during periods when they are not a legal method of take. Persons in possession of a valid Concealed Weapon or Firearm License may carry concealed handguns.
2. Target practice is prohibited.
3. Hunting with a gun and light is prohibited.
4. 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 two or more balls.
5. Children under the age of 16 may not be in possession of a firearm unless in the presence of a supervising adult.
6. No person shall have a gun under control while under the influence of alcohol or drugs.
7. For hunting non-migratory game, only shotguns, rifles, pistols, longbows (including compound and recurve bows), crossbows (during the general gun, small game and spring turkey seasons or by permit) or falconry may be used.
8. For hunting migratory game, only shotguns, bow and arrow (not crossbows), and falconry may be used. Shotguns shall not be larger than 10 gauge and shall be incapable of holding more than three shells in the magazine and chamber combined.
9. Firearms using rimfire or non-expanding, full metal jacket (military ball) ammunition are prohibited for taking deer.
10. Fully automatic or silencer-equipped firearms, centerfire semi-automatic rifles having a magazine capable of holding more than five rounds, explosive or drug-injecting devices and setguns are prohibited.

### 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: During quota hunts, host hunters and guests must share all bag and possession 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, season limit 2, possession limit 2.
4. Gray squirrel, quail and rabbit - Daily limit 12, possession limit 24 for each game species.
5. Raccoon, opossum, armadillo, beaver, coyote, skunk and nutria - No bag limits.
6. Migratory birds - See Migratory Bird Hunting Regulations pamphlet.

### ARCHERY SEASON:

October 17-23 and October 24 through November 1.

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

Legal to Take - Any deer (except spotted fawn), wild hog, turkey of either sex, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season.



## Appendix I (continued)

Regulations Unique to Archery Season - In addition to these regulations, all General Area Regulations shall apply. Hunting with firearms or crossbows is prohibited, except that centerfire shotguns are allowed for hunting migratory birds when one or more species are legal to take (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet).

### SMALL GAME SEASON:

December 5-20.

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

Regulations Unique to Small Game Season - In addition to these regulations, all General Area Regulations shall apply. Hunting with centerfire rifles is prohibited.

### MUZZLELOADING GUN SEASON:

November 20-22.

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

Legal to Take - Deer with at least one 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 - In addition to these regulations, all General Area Regulations shall apply. Only muzzleloading guns are allowed for hunting, except that centerfire shotguns are allowed for hunting migratory birds when one or more species are legal to take (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet).

### GENERAL GUN SEASON:

November 26-29, January 23-26 and 27-31.

Permit, Stamp and License Requirements - Quota permit, 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 Take - Deer with at least one 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 - In addition to these regulations, all General Area Regulations shall apply.

### SPRING TURKEY SEASON:

March 20-22, April 2-4 and 16-18.

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

Legal to Take - Bearded turkey or gobbler.

Regulations Unique to Spring Turkey Season - In addition to these regulations, all General Area Regulations shall apply.

1. Legal shooting hours are one-half hour before sunrise until 1 p.m.
2. Hunting other animals is prohibited.

**TRAPPING:** Prohibited.

### MIGRATORY BIRD SEASONS:

Rails, common moorhen, mourning dove, white-winged dove, snipe, duck, geese, coot, woodcock and crows may be taken only during seasons that coincide with the archery, muzzleloading gun, general gun or small game seasons. Waterfowl hunting is allowed during the 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 Take - See Migratory Bird Hunting Regulations pamphlet.

Regulations Unique to Migratory Bird Seasons - In addition to these regulations, all General Area Regulations shall apply.

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

### FISHING AND FROGGING:

Allowed by permit only.

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

Legal to Take - Bag and size limits will be posted at the check station.

Regulations Unique to Fishing and Frogging - All General Area Regulations and 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. On all area lakes and water bodies, fishing is allowed only by permit issued by the Commission. Days and hours of operation, fish bag and size limits, angler quotas and other related rules shall be as designated by the Commission and posted at the check station.
3. 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. This land was acquired by the Northwest Florida Water Management 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 Northwest Florida Water Management District 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.
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).

### COOPERATION REQUESTED:

*If you see law violators or suspicious activities, contact your nearest Commission regional office or call 1-888-404-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 handicap. 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.*

**When you spot law violators or suspicious activities,  
contact your nearest Commission regional office or  
call**

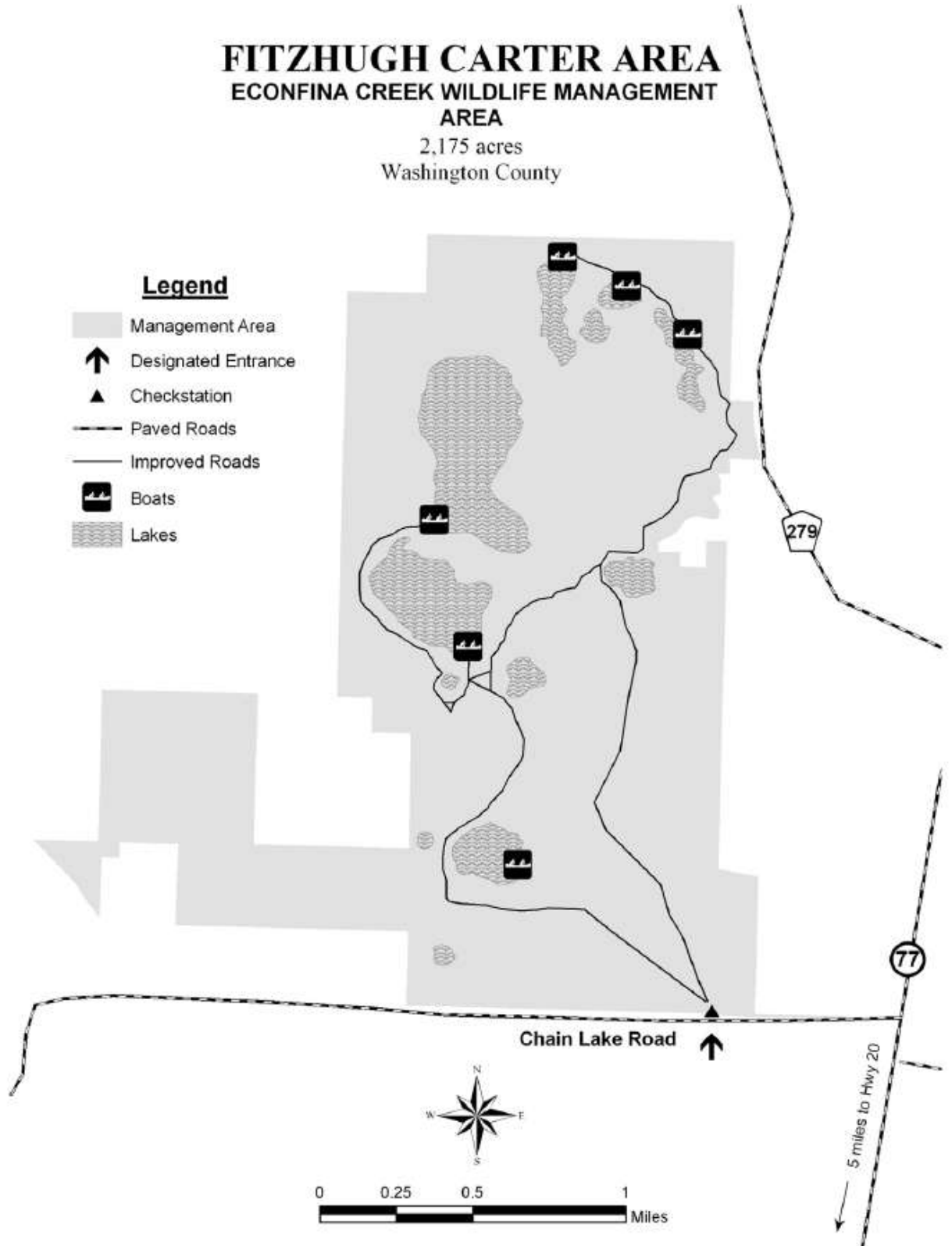
**1-888-404-FWCC**

**You may qualify for a cash reward from the  
Wildlife Alert Reward Association.**

Appendix I (continued)

# FITZHUGH CARTER AREA ECONFINA CREEK WILDLIFE MANAGEMENT AREA

2,175 acres  
Washington County





## Appendix II. Rules, Regulations, and Area Map unique to the Special Opportunity Fishing Program on the Carter Tract.

### FITZHUGH CARTER TRACT ECONFINA CREEK WMA

Special Opportunity Fishing Program

### PUBLIC FISHING ACCESS

### RULES, REGULATIONS AND AREA MAP



A PARTNERSHIP BETWEEN  
THE NORTHWEST FLORIDA WATER  
MANAGEMENT DISTRICT  
AND  
THE FLORIDA FISH & WILDLIFE  
CONSERVATION COMMISSION



Fitzhugh Carter Tract  
Econfina Creek WMA  
2830 Chain Lake Road  
Chipley, FL 32428  
(850) 773-2631

- All anglers, except those exempt under Florida Statute 372.57, must have a valid freshwater fishing license (call 1-888-FISH-Florida; 347-4356).
- Fishing is allowed Friday through Monday by daily use permit only. All anglers shall check in and out at the Carter check station and deposit their valid fishing license or other I.D. with the custodian unless otherwise instructed.
- Anglers must be in possession of the Carter daily fishing permit badge at all times while fishing.
- Fish may not be filleted, nor their heads or tail fins removed, until the angler has completed fishing for the day. **(An angler has completed fishing for the day only after he/she has checked out at the Carter check station.)**
- Only boats provided on the area are allowed.
- Panfish daily bag limit: 20
- All bluegill and redear sunfish less than 8 inches total length must be released immediately.
- Daily bag limit for channel catfish: 6
- Daily bag limit for black crappie: 10
- All black crappie less than 10" in total length must be released immediately.
- All largemouth bass are catch and release only.
- The use or possession of nets, seines, fish traps, trotlines, set lines, spears, gigs, snatch hooks, crossbow, bow and arrow or bush hooks is prohibited.
- Public access is prohibited in areas posted as "Restricted" for protection of threatened or endangered species, or environmentally sensitive areas.
- Motor vehicles may be operated only on roads and parking areas designated on map and by signage on area.
- Possession of alcoholic beverages or firearms, camping or open fires on the area is prohibited.
- Bicycling, all-terrain vehicle use and horseback riding are prohibited on the area.
- Other recreational uses, including canoeing, kayaking, hiking, and bird watching, are allowed on the area during the same days and hours as public fishing, and subject to the same rules and regulations.

**DAYS/HOURS:** Fishing on the Carter Tract is open every Friday through Monday except days coinciding with area hunts, starting at 6:00 am. Gates close at 8:00 pm during the summer period (March through October) and 5:00 pm during the winter period (November through February).

**RESERVATIONS:** Only sixteen fishermen are allowed on the area at one time. Ten slots are available to reserve ahead by calling the check station at (850) 773-2631; the other six are first-come, first-serve. Reservations can be made for up to 4 days in a 30-day period, and can be made up to 60 days in advance. No more than 2 boats can be reserved per person.

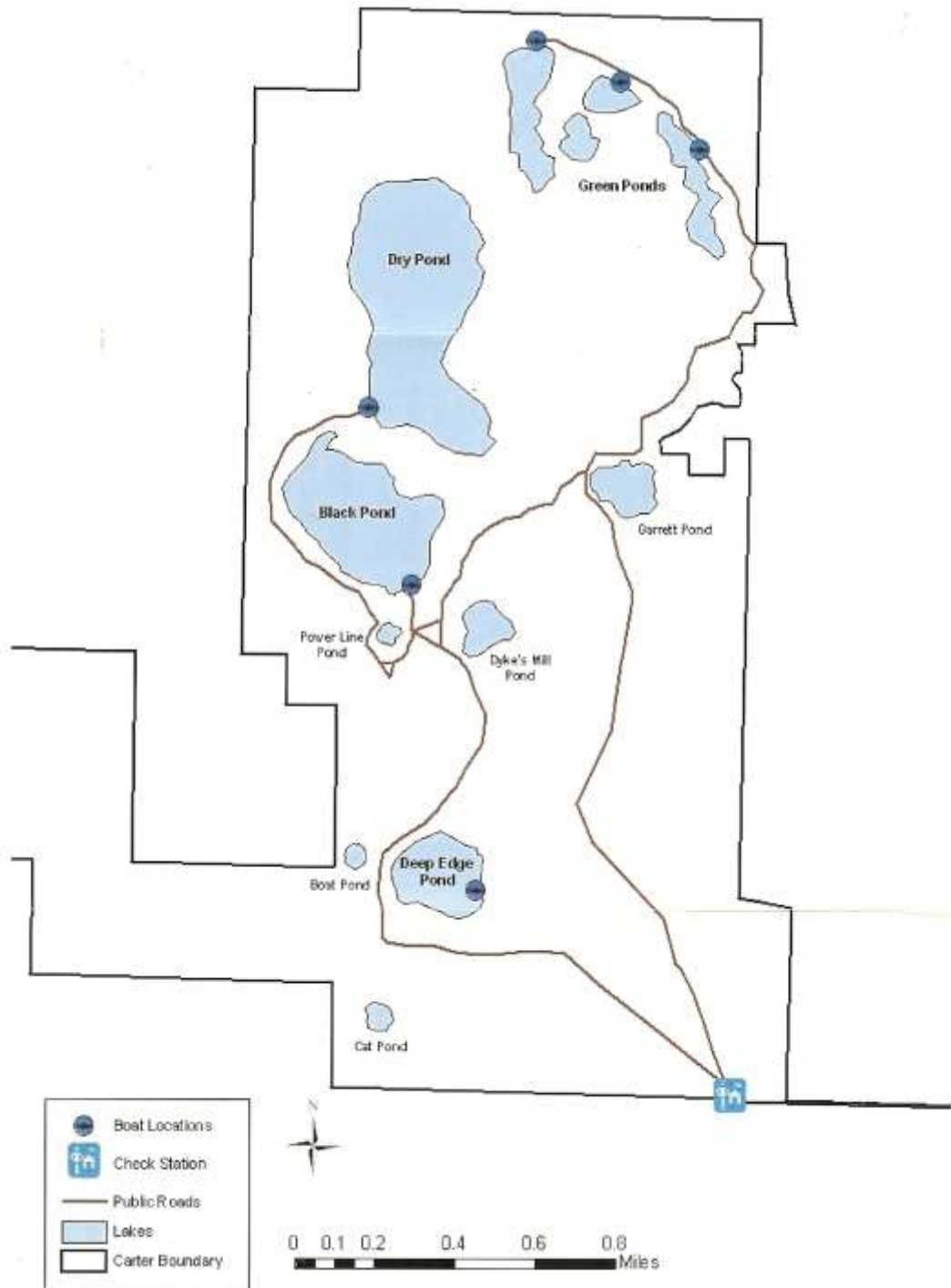
**BOATS: No outside boats will be allowed into the area.** Eight boats are provided for use on the lakes. Oars, life jackets and flotation cushions are provided. Boats must be kept at the lake on which they are placed. For safety purposes, anglers are required to remain at the lake for which they have been issued the daily use permit. Angler must check back in at check station if he/she wishes to change lakes.

**CHECK IN/OUT: All anglers are required to check in and check out at the Carter check station.** Upon check in, each angler must leave his/her fishing license at the check station (unless otherwise instructed). A daily fishing permit will then be issued with a specific lake designation. Anglers will receive a creel kit that corresponds to his/her assigned boat. Anglers must fill out the creel information sheet completely and accurately, as well as comply with all regulations. Anglers must possess the daily fishing permit at all times. Fishing licenses may be picked up upon check out, which must be no later than the designated check station closing time. Vehicles must remain only on public roads outlined in this brochure. Fishing hours and days are subject to change due to hunt seasons, management activity, infrastructure work, etc. by posted notices at the main entrance.

**GENERAL REGULATIONS:** This area is to be closed to the public (other than walk-in hiking) outside the approved fishing or hunting days and times. Fishing rules and regulations follow standards established by the Florida Fish and Wildlife Conservation Commission, and contain, but are not limited to, the following:

Appendix II (continued)

Carter Tract Public Fishing Access



**Appendix III. Average percent occurrence of fish species per sampling depth and at all depths combined via Wegener rings sampled November 2009 on Black, Dry, and Green Ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Species	Dry Pond				Black Pond			
	Shore	0.5 m	1 m	All depths	Shore	0.5 m	1 m	All depths
Dollar sunfish	-	1.0%	0.7%	1.5%	1.0%	1.0%	-	0.8%
Swampdarter	4.3%	29.3%	30.3%	13.6%	6.0%	28.0%	47.7%	23.8%
Warmouth	10.0%	3.3%	0.7%	6.6%	1.0%	3.0%	0.7%	1.9%
Blue-spotted sunfish	4.7%	8.7%	8.0%	9.9%	1.0%	12.0%	-	5.2%
Pygmy sunfish	41.0%	7.0%	6.0%	14.5%	3.7%	1.0%	1.3%	2.0%
Pygmy killifish	27.7%	32.3%	19.3%	5.2%	36.0%	23.0%	9.7%	26.6%
Mosquitofish	21.3%	14.3%	30.7%	20.6%	38.0%	8.0%	12.3%	16.3%
Lake chubsucker	-	1.7%	-	2.4%	1.3%	-	-	0.3%
Eastern starhead topminnow	16.7%	1.0%	-	11.0%	3.0%	-	-	1.1%
Flier	9.0%	1.7%	2.3%	4.5%	0.7%	-	-	0.2%
Lined topminnow	4.7%	1.0%	-	9.1%	7.0%	1.0%	-	2.3%
Bluegill	-	-	2.3%	1.1%	2.0%	23.0%	26.0%	15.5%
Brook Silverside	-	-	-	-	-	-	2.0%	0.9%

Species	Green Pond North				Green Pond South			
	Shore	0.5 m	1 m	All depths	Shore	0.5 m	1 m	All depths
Dollar sunfish	3.7%	-	-	1.5%	1.7%	-	-	1.2%
Swampdarter	6.3%	14.0%	68.7%	13.5%	0.3%	36.7%	60.0%	8.3%
Warmouth	1.3%	0.7%	-	1.0%	0.3%	-	6.7%	1.2%
Blue-spotted sunfish	1.7%	7.7%	-	4.0%	1.7%	1.3%	-	1.4%
Pygmy sunfish	25.7%	5.3%	2.3%	15.6%	16.7%	0.7%	10.0%	14.4%
Pygmy killifish	48.7%	40.0%	-	40.9%	56.0%	47.3%	3.3%	52.2%
Mosquitofish	7.7%	24.0%	-	15.6%	22.0%	13.0%	10.0%	19.8%
Lake chubsucker	0.3%	1.7%	-	1.0%	0.3%	-	-	0.2%
Eastern starhead topminnow	3.7%	-	-	2.0%	-	-	-	-
Flier	-	0.7%	-	0.2%	0.3%	-	-	0.2%
Lined topminnow	-	0.3%	-	0.3%	0.7%	-	-	0.5%
Bluegill	-	5.3%	-	1.9%	-	0.7%	6.7%	0.4%
Brook Silverside	-	0.7%	29.0%	2.5%	-	0.7%	-	0.2%

**Appendix IV. Average percent occurrence of fish species sampled via fyke nets May 2010 on Black, Dry, and Green Ponds at the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Species	Pond			
	Green North	Green South	Black	Dry
Dollar sunfish	61.3%	0.0%	74.3%	71.4%
Swampdarter	0.4%	0.3%	-	0.4%
Warmouth	12.5%	46.4%	2.1%	7.6%
Blue-spotted sunfish	8.0%	12.7%	1.6%	2.5%
Mosquitofish	0.4%	-	0.3%	2.4%
Lake chubsucker	0.2%	-	-	0.4%
Eastern starhead topminnow	2.2%	0.6%	13.1%	9.1%
Flier	0.8%	6.6%	0.6%	-
Lined topminnow	-	-	0.3%	-
Bluegill	8.5%	5.8%	3.7%	3.1%
Chain pickerel	-	0.6%	-	0.6%
Yellow bullhead	-	4.5%	0.1%	-
Tadpole madtom	0.2%	0.6%	-	-
Gar	0.2%	-	0.5%	1.9%
Unknown panfish	4.6%	1.0%	3.4%	0.7%
Unknown baitfish	0.7%	-	-	-

**Appendix V. Catch per unit effort (CPUE) results for sportfish sampled via Electrofishing at Black, Dry, and Green Ponds in November 2009 and May 2010 on Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Fall 2009	Black Pond		Dry Pond		Green Ponds	
Species	N <sup>a</sup>	CPUE <sup>b</sup>	N <sup>a</sup>	CPUE <sup>b</sup>	N <sup>a</sup>	CPUE <sup>b</sup>
Bluegill	26	0.36	7.5	0.1	9	0.2
Largemouth bass	12	0.18	3.5	0.04	2	0.04
Warmouth	3.5	0.05	7	0.1	1.5	0.03
Black Crappie	0	0	1	0.02	0	0
Totals	41.5	0.59	19	0.26	12.5	0.27

<sup>a</sup>Number of fish sampled (average of two sampling efforts)

<sup>b</sup>Catch per unit effort (CPUE) measured in weight of fish/minute (average of two sampling efforts)

Spring 2010	Black		Dry		Green	
Species	N <sup>a</sup>	CPUE <sup>b</sup>	N <sup>a</sup>	CPUE <sup>b</sup>	N <sup>a</sup>	CPUE <sup>b</sup>
Bluegill	23	0.46	11	0.25	1	0.02
Largemouth bass	2	0.04	0	0	1	0.02
Warmouth	0	0	2	0.05	6	0.14
Black Crappie	1	0.02	0	0	2	0.05
Totals	26	0.52	13	0.295	10	0.23

<sup>a</sup>Number of fish sampled

<sup>b</sup>Catch per unit effort (CPUE) measured in weight of fish/minute



**Appendix VI. Number of fish caught and released per pond from July 1, 2009- June 30, 2010 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Species	Pond					All Ponds
	Black	Dry	Green	Powerline	Deep Edge	
<b>Largemouth Bass (<i>Micropterus salmoides</i>)</b>						
Total caught	<b>102</b>	<b>41</b>	<b>30</b>	<b>22</b>	<b>15</b>	<b>210</b>
<b>Bluegill (<i>Lepomis macrochirus</i>)</b>						
Kept	216	246	82	79	16	639
Released	939	455	141	463	62	2060
Total caught	<b>1155</b>	<b>701</b>	<b>223</b>	<b>542</b>	<b>78</b>	<b>2699</b>
<b>Catfish (<i>Ictalurus punctatus</i> and <i>Ameirus nebulosus</i>)</b>						
Kept	46	9	0	143	0	198
Released	90	12	4	99	0	205
Total caught	<b>136</b>	<b>21</b>	<b>4</b>	<b>242</b>	<b>0</b>	<b>403</b>
<b>Black Crappie (<i>Pomoxis nigromaculatus</i>)</b>						
Kept	61	14	0	4	0	79
Released	41	26	1	8	0	76
Total caught	<b>102</b>	<b>40</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>155</b>
<b>Warmouth (<i>Lepomis gulosus</i>)</b>						
Kept	7	8	4	2	0	21
Released	73	29	5	11	0	118
Total caught	<b>80</b>	<b>37</b>	<b>9</b>	<b>13</b>	<b>0</b>	<b>139</b>
<b>Total catch</b>	<b>1575</b>	<b>840</b>	<b>267</b>	<b>831</b>	<b>93</b>	<b>3606</b>

<sup>a</sup>Largemouth Bass are catch-and-release only on Carter Tract ponds

**Appendix VII. Percent nest success, average clutch size, and estimated duckling survival/clutch of wood duck (*Aix sponsa*) nest boxes (2006-2010) by water body on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

Year	Water Body									
	Green S	Green N	Deep Edge	Black	LDE	Dry	Garrett	Warmouth	PLC	All Water Bodies
2006										
% nest success	0%	0%	0%	0%	50%	0%	100%	0%	0%	33%
average eggs/clutch	0.0	9.5	0.0	0.0	8.0	0.0	5.0	0.0	9.0	8.2
hatched ducklings/clutch	0.0	0.0	0.0	0.0	1.5	0.0	3.0	0.0	0.0	1.0
2007										
% nest success	0%	33%	0%	0%	50%	0%	0%	0%	0%	18%
average eggs/clutch	0.0	0.7	4.5	0.0	6.0	11.0	0.0	0.0	0.0	6.8
hatched ducklings/clutch	0.0	0.7	0.0	0.0	1.5	0.0	0.0	0.0	0.0	1.0
2008										
% nest success	0%	0%	0%	0%	0%	100%	0%	0%	0%	40%
average eggs/clutch	6.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	9.4
hatched ducklings/clutch	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	5.0
2009										
% nest success	33%	25%	0%	50%	0%	78%	0%	0%	0%	57%
average eggs/clutch	6.3	6.5	6.0	6.8	12.0	10.0	0.0	0.0	0.0	8.4
hatched ducklings/clutch	0.3	1.5	0.0	2.7	0.0	4.6	0.0	0.0	0.0	2.7
2010										
% nest success	40%	33%	100%	40%	0%	50%	100%	0%	50%	48%
average eggs/clutch	7.2	7.5	8.0	6.6	0.0	8.9	9.0	0.0	8.0	7.8
hatched ducklings/clutch	3.0	1.7	6.0	2.0	0.0	2.1	7.0	0.0	3.5	2.7

LDE=Little Deep Edge Pond

PLC=Pine Log Creek

**Appendix VIII. List of bird species (n=115) identified on the Carter Tract of Econfina Creek WMA, as of June 2009.**

**Upland Game Birds**

Mourning Dove *Zenaida macroura*  
Northern Bobwhite *Colinus virginianus*  
Wild Turkey *Meleagris gallopavo*

**Waterfowl**

American Coot *Fulica Americana*  
Anhinga *Anhinga anhinga*  
Blue-winged Teal *Anas discors*  
Bufflehead *Bucephala albeola*  
Common Moorhen *Gallinula chloropus*  
Double-crested Cormorant *Phalacrocorax auritus*  
Hooded Merganser *Lophodytes cucullatus*  
Pied-billed Grebe *Podilymbus podiceps*  
Ring-necked Duck *Aythya collaris*  
  
Snow Goose *Chen caerulescens*  
Wood Duck *Aix sponsa*  
Redhead *Aythya americana*  
Green-winged Teal *Anas crecca*

**Wading Birds**

Cattle Egret *Bubulcus ibis*  
Great Blue Heron *Ardea herodias*  
Great Egret *Ardea alba*  
Greater Yellowlegs *Tringa melanoleuca*  
Green Heron *Butorides virescens*  
Lesser Yellowlegs *Tringa flavipes*  
Little Blue Heron *Egretta caerulea*  
Roseate Spoonbill *Platalea ajaja*  
Sandhill Crane *Grus Canadensis*  
Snowy Egret *Egretta thula*  
Tricolored Heron *Egretta tricolor*  
White Ibis *Eudocimus albus*  
Wood Stork *Mycteria americana*

**Woodpeckers**

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

**Raptors**

American Kestrel *Falco sparverius*  
Bald Eagle *Haliaeetus leucocephalus*  
Barred Owl *Strix varia*  
Cooper's Hawk *Accipiter cooperii*  
Eastern Screech Owl *Megascops asio*  
Great Horned Owl *Bubo virginianus*  
Merlin *Falco columbarius*  
Northern Harrier *Circus cyaneus*  
Osprey *Pandion haliaetus*  
Red-shouldered Hawk *Buteo lineatus*  
Red-tailed Hawk *Buteo jamaicensis*  
Sharp-shinned Hawk *Accipiter striatus*

**Hummingbirds**

Ruby-throated Hummingbird *Archilochus colubris*

**Nighthawks**

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

**Vultures**

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

**Shore Birds**

Common Snipe *Gallinago gallinago*  
Least Tern *Sterna antillarum*  
Killdeer *Charadrius vociferous*  
American woodcock *Scolopax minor*

**Other**

Belted Kingfisher *Ceryle alcyon*  
Chimney Swift *Chaetura pelagica*  
Common Ground Dove *Columbina passerina*  
Yellow-billed Cuckoo *Coccyzus americanus*

## Appendix VIII (continued)

### Passerines

American Crow *Corvus brachyrhynchos*  
American Robin *Turdus migratorius*  
Barn Swallow *Hirundo rustica*  
Black and White Warbler *Mniotilta varia*  
Blue Grosbeak *Passerina caerulea*  
Blue Jay *Cyanocitta cristata*  
Blue-gray Gnatcatcher *Poliophtila caerulea*  
Brown Thrasher *Toxostoma rufum*  
Brown-headed Cowbird *Molothrus ater*  
Carolina Chickadee *Poecile carolinensis*  
Carolina Wren *Thryothorus ludovicianus*  
Cedar Waxwing *Bombycilla cedrorum*  
Chipping Sparrow *Spizella passerine*  
Common Grackle *Quiscalus quiscula*  
Common Yellowthroat *Geothlypis trichas*  
Dark-eyed Junco *Junco hyemalis*  
Eastern Bluebird *Sialia sialis*  
Eastern Kingbird *Tyrannus tyrannus*  
Eastern Meadowlark *Sturnella magna*  
Eastern Phoebe *Sayornis phoebe*  
Eastern Towhee *Pipilo erythrophthalmus*  
Field Sparrow *Spizella pusilla*  
Fish Crow *Corvus ossifragus*  
Golden-crowned Kinglet *Regulus satrapa*  
Gray Catbird *Dumetella carolinensis*  
Great Crested Flycatcher *Myiarchus crinitus*  
Hermit Thrush *Catharus guttatus*  
Hooded Warbler *Wilsonia citrine*  
Indigo Bunting *Passerina cyanea*  
Loggerhead Shrike *Lanius ludovicianus*  
Marsh Wren *Cistothorus palustris*  
Northern Cardinal *Cardinalis cardinalis*  
Northern Mockingbird *Mimus polyglottos*  
Northern Parula *Parula Americana*  
Northern Rough-winged Swallow *Stelgidopteryx serripennis*  
Orange-crowned Warbler *Vermivora celata*  
Orchard Oriole *Icterus spurius*  
Palm Warbler *Dendroica palmarum*  
Pine Warbler *Dendroica pinus*  
Prothonotary Warbler *Protonotaria citrea*  
Purple Martin *Progne subis*  
Red-eyed Vireo *Vireo olivaceus*  
Red-winged Blackbird *Agelaius phoeniceus*  
Rose-breasted Grosbeak *Pheucticus ludovicianus*  
Ruby-crowned Kinglet *Regulus calendula*

### Passerines (cont.)

Scarlet Tanager *Piranga olivacea*  
Summer Tanager *Piranga rubra*  
Tree Swallow *Tachycineta bicolor*  
Tufted Titmouse *Baeolophus bicolor*  
White-crowned Sparrow *Zonotrichia leucophrys*  
White-eyed Vireo *Vireo griseus*  
White-throated Sparrow *Zonotrichia albicollis*  
Yellow-rumped Warbler *Dendroica coronata*  
Yellow-throated Warbler *Dendroica dominica*

\* NOTE: species in red were previously undocumented prior July 2009

**Appendix IX. Wading bird survey results (2008-10) from Little Deep Edge Pond rookery at the Carter Tract of Econfina Creek WMA, Washington County, FL.**

Species	Number of Birds Observed			
	Year	Present	Nesting	Chicks
<i>Anhinga (Anhinga anhinga)</i>	2008	6	3	0
	2009	3	unkown	3
	2010	2	0	0
<i>Cattle Egret (Bubulcus ibis)</i>	2008	25	18	0
	2009	0	0	0
	2010	0	0	0
<i>Great Egret (Ardea alba)</i>	2008	13	10	10
	2009	31	8	12
	2010	8	6	9
<i>Little Blue Heron (Egretta caerulea)</i>	2008	8	3	0
	2009	1	0	0
	2010	0	0	0
<i>Tricolored Heron (Egretta tricolor)</i>	2008	2	unkown	0
	2009	0	0	0
	2010	0	0	0
<i>Snowy Egret (Egretta thula)</i>	2008	0	0	0
	2009	3	0	0
	2010	0	0	0
<i>Green Heron (Butorides virescens)</i>	2008	1	0	1
	2009	2	unkown	1
	2010	1	0	0
<i>Great Blue Heron (Ardea herodias)</i>	2008	0	0	0
	2009	0	0	0
	2010	1	0	0



**Appendix X. Comprehensive list of herpetofaunal species (n=49) documented on the Carter Tract of Econfina Creek WMA, 2005 – present (species in red denote previously undocumented species confirmed during 2009-10 surveys).**

**Salamanders**

Mole salamander *Ambystoma talpoideum*  
Central newt *Notophthalmus viridescens louisianensis*  
Dwarf salamander *Eurycea quadridigitata*  
Slimy salamander *Plethodon glutinosus*  
Eastern Lesser siren *Siren intermedia*  
Greater siren *Siren lacertina*  
Two-toed Amphiuma *Amphiuma means*

**Anurans**

Eastern Spadefoot toad *Scaphiopus holbrooki*  
Bullfrog *Rana catesbeiana*  
Pig frog *Rana grylio*  
Southern Leopard frog *Rana sphenoccephala*  
Eastern Narrowmouth toad *Gastrophryne carolinensis*  
Southern Chorus frog *Pseudacris nigrita nigrita*  
Southern toad *Bufo terrestris*  
Florida Cricket frog *Acris gryllus dorsalis*  
Green treefrog *Hyla cinerea*  
Barking treefrog *Hyla gratiosa*  
Oak toad *Bufo quercicus*  
Northern cricket frog *Acris crepitans*

**Crocodylians**

American alligator *Alligator mississippiensis*

**Turtles**

Florida cooter *Pseudemys floridana floridana*  
Eastern Chicken turtle *Deirochelys reticularia*  
Three-Toed Box turtle *Terrapene carolina triunguis*  
Gopher tortoise *Gopherus polyphemus*  
Florida softshell *Apalone ferox*  
Gulf Coast Box turtle *Terrapene carolina major*  
Florida Box turtle *Terrapene carolina bauri*

**Lizards**

Green anole *Anolis carolinensis*  
Southern Fence lizard *Sceloporus undulatus undulatus*  
Six-lined racerunner *Cnemidophorus sexlineatus*  
Southeastern Five-lined skink *Eumeces inexpectatus*  
Ground skink *Scincella lateralis*  
Northern Mole Skink *Eumeces egregius similis*  
Broadhead Skink *Eumeces laticeps*

**Snakes**

Southern Black racer *Coluber constrictor priapus*  
Banded Water snake *Nerodia fasciata*  
Rough Green snake *Opheodrys aestivus*  
Eastern Garter snake *Thamnophis sirtalis*  
Cottonmouth *Agkistrodon piscivorus*  
Eastern Diamondback Rattlesnake *Crotalus adamanteus*  
Dusky Pigmy Rattlesnake *Sistrurus miliarius barbouri*  
Gray Rat Snake *Elaphe obsoleta spiloides*  
Eastern Hognose Snake *Heterodon platyrhinos*  
Corn Snake *Elaphe guttata guttata*  
Eastern Coachwhip *Masticophis flagellum*  
Scarlet Snake *Cemophora coccinea*  
Mud Snake *Farancia abacura*  
Florida green water snake *Nerodia floridana*  
Florida Pine Snake *Pituophis melanoleucus*

\* NOTE: species in red were previously undocumented prior July 2009

**Appendix XI. Minnow trap capture results from February – April 2010 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

<b>Herpetofauna</b>	<b>Number of Captures</b>
Southern leopard frog ( <i>Rana sphenoccephala</i> )	21
Florida cricket frog ( <i>Acris gryllus dorsalis</i> )	7
Mole salamander ( <i>Ambystoma talpoideum</i> )	20
Pig frog ( <i>Rana grylio</i> )	4
Central newt ( <i>Notophthalmus viridescens louisianensis</i> )	12
Green/bronze frog ( <i>Rana clamitans</i> )	1
Bullfrog ( <i>Rana catesbaeana</i> )	2
Florida softshell ( <i>Apalone ferox</i> )	1
Southern toad ( <i>Bufo terrestris</i> )	1
Green treefrog ( <i>Hyla cinerea</i> )	2
Unknown tadpole	3
<b>TOTAL</b>	<b>74</b>

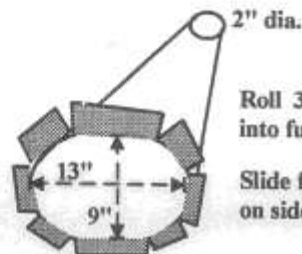
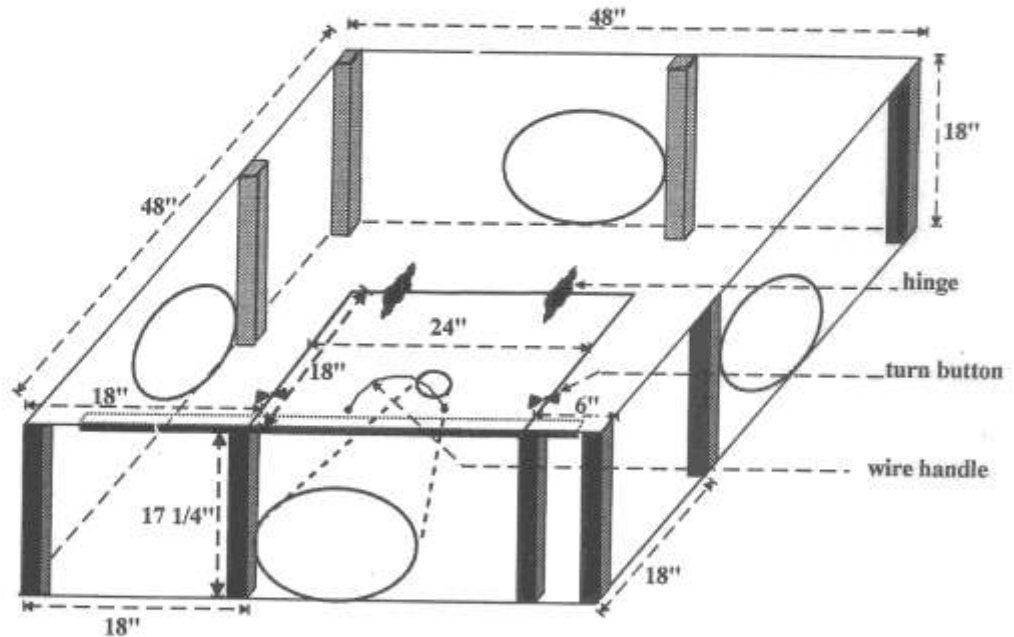
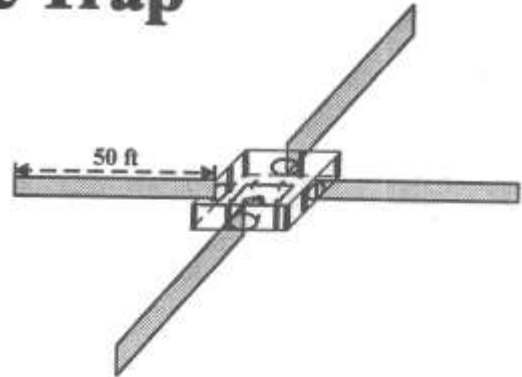
<b>Fish</b>	<b>Number of Captures</b>
Bluegill ( <i>Lepomis macrochirus</i> )	15
Crayfish	13
Mosquitofish ( <i>Gambusia affinis</i> )	8
Pygmy sunfish ( <i>Elassoma</i> sp.)	4
Pygmy killifish ( <i>Leptolucania ommata</i> )	18
Warmouth ( <i>Lepomis gulosus</i> )	11
Dollar sunfish ( <i>Lepomis marinatus</i> )	25
Flier ( <i>Centrarchus macropterus</i> )	11
Lake chubsucker ( <i>Erimyzon sucetta</i> )	2
Bluespotted Sunfish ( <i>Enneacanthus gloriosus</i> )	12
Bowfin ( <i>Amia calva</i> )	154
Florida gar ( <i>Lepisosteus platyrhincus</i> )	3
E. starhead topminnow ( <i>Fundulus escabiae</i> )	3
Chain pickerel ( <i>Esox niger</i> )	4
Brook silverside ( <i>Labidesthes sicculus</i> )	1
<b>TOTAL</b>	<b>284</b>

Appendix XII. General design and dimensions of upland snake traps used at the Carter Tract from March – July 2010 (NOTE: Actual trap and array dimensions differ slightly from those described below).

## Snake Trap

### Materials

- 1/2" sheet of treated plywood (1)
- 2"x2"x8' treated lumber (2)
- 1"x2"x4' treated lumber (1)
- 1/4"x1/4" hardware cloth 24" high
  - 100 ft roll (2)
  - 28 ft peice (1)
- 3" strap hinge (2)
- turn button (2)
- 20ga galvanized wire 50ft (1)
- nails
- heavy duty staple gun and staples



Roll 30" x 18" piece of hardware cloth into funnel and trim excess.

Slide funnel through hole in hardware cloth on side of trap and wire into place securely.

**Appendix XIII. Snake trap array capture results from March – June 2010 on the Carter Tract of Econfina Creek WMA, Washington County, Florida.**

<b>Reptiles</b>	<b>Number captured</b>
Green anole ( <i>Anolis carolinensis</i> )	1
Scarlet snake ( <i>Cemophora coccinea</i> )	1
Six-line racerunner ( <i>Cnemidophorus sexlineatus</i> )	40
Southern black racer ( <i>Coluber constrictor priapus</i> )	28
Eastern diamondback rattlesnake ( <i>Crotalus adamanteus</i> )	1
Corn snake ( <i>Elaphe guttata guttata</i> )	5
Gray rat snake ( <i>Elaphe obsoleta spiloides</i> )	1
Northern mole skink ( <i>Eumeces egregius similis</i> )	1
Southeastern five-lined skink ( <i>Eumeces inexpectatus</i> )	3
Unidentifiable skink ( <i>Eumeces</i> spp.)	1
Eastern hognose snake ( <i>Heterodon platyrhinos</i> )	3
Eastern coachwhip ( <i>Masticophis flagellum</i> )	14
Pygmy rattlesnake ( <i>Sistrurus miliarius</i> )	1
Eastern fence lizard ( <i>Sceloporus undulatus</i> )	12
Ground skink ( <i>Scincella lateralis</i> )	4
Florida cooter ( <i>Pseudemys floridana floridana</i> )	1
Banded water snake ( <i>Nerodia fasciata</i> )	1
<b>TOTAL REPTILES</b>	<b>118</b>
<b>REPTILE SPECIES</b>	<b>17</b>
<b>Amphibians</b>	<b>Number captured</b>
Northern cricket frog ( <i>Acris crepitans</i> )	1
Florida cricket frog ( <i>Acris gryllus dorsalis</i> )	1
Oak toad ( <i>Bufo quercicus</i> )	7
Southern toad ( <i>Bufo terrestris</i> )	38
Eastern narrowmouth toad ( <i>Gastrophryne carolinensis</i> )	74
Barking treefrog ( <i>Hyla gratiosa</i> )	1
Eastern spadefoot toad ( <i>Scaphiopus holbrookii</i> )	32
Southern leopard frog ( <i>Rana sphenoccephala</i> )	19
Pig frog ( <i>Rana grylio</i> )	1
Bullfrog ( <i>Rana catesbaeana</i> )	1
Slimy salamander ( <i>Plethodon grobmani</i> )	1
<b>TOTAL AMPHIBIANS</b>	<b>176</b>
<b>AMPHIBIAN SPECIES</b>	<b>11</b>
<b>Mammals</b>	<b>Number captured</b>
Southern short-tailed shrew ( <i>Blarina carolinensis</i> )	1
Eastern woodrat ( <i>Neotoma floridana</i> )	1
Eastern cottontail ( <i>Sylvilagus floridana</i> )	3
Eastern mole ( <i>Scalopus aquaticus</i> )	1
Oldfield mouse ( <i>Peromyscus polionotus</i> )	15
Cotton mouse ( <i>Peromyscus gossypinus</i> )	1
Golden mouse ( <i>Ochrotomys nuttalli</i> )	6
<b>TOTAL MAMMALS</b>	<b>28</b>
<b>MAMMAL SPECIES</b>	<b>7</b>
<b>Birds</b>	<b>Number captured</b>
Northern mockingbird ( <i>Mimus polyglottos</i> )	1
<b>TOTAL BIRDS</b>	<b>1</b>
<b>BIRD SPECIES</b>	<b>1</b>
<b>TOTAL ALL TAXA</b>	<b>323</b>
<b>TOTAL SPECIES</b>	<b>36</b>

\*NOTE: species in red were previously undocumented prior to the 2010 trapping effort

**Appendix XIV. 2009-2010 Annual Work Plan and Accomplishment Report for the Carter Tract of Econfina Creek Wildlife Management Area.**

**FY 2009-10**

**Project 7281 - NW FLORIDA WATER MANAGEMENT DISTRICT LANDS--  
CARTER TRACT OF ECONFINA CREEK WILDLIFE MANAGEMENT ARE**

	<b>Man Days</b>	<b>Salary</b>	<b>Fuel Cost</b>	<b>Other</b>	<b>Total</b>	<b>Units Accomplishments</b>
<b>Species 9100 - All freshwater fish</b>						
Activity - 221	Animal surveys					
	13.29	\$2,387.59	\$194.75	\$2,713.28	\$5,295.62	0 Conducted sampling of fish populations in area ponds via electroshocking, fyke nets and Wegener rings techniques. NFA
Activity - 250	Monitoring and assessments					
	1.62	\$288.40	\$92.58	-\$2,487.24	-\$2,106.26	0 Monitored area fish population and developed a comprehensive sportfish population assessment through otolith analysis and biological data collected from samples. NFA
Activity - 342	Public use administration (non-hunting)					
	4.53	\$883.82	\$1,866.88	\$20,376.07	\$23,126.77	0 Administered public fishing program. Distributed daily quotas and boats. Collected area use data from fishermen. Salary for OPS fishing check station operators included here. NFA
<hr/>						
Species 9100 Total	19.44	\$3,559.81	\$2,154.21	\$20,602.11	\$26,316.13	
<hr/>						
<b>Species 9200 - All wildlife</b>						
Activity - 101	Project inspection					
	22.12	\$3,945.50	\$342.37	\$3,355.61	\$7,643.48	0 Inspected area projects and activities. Field orientation of land boundaries, features



	<b>Man Days</b>	<b>Salary</b>	<b>Fuel Cost</b>	<b>Other</b>	<b>Total</b>	<b>Units</b>	<b>Accomplishments and habitats.</b>
Activity - 103	Meetings						
	28.45	\$5,065.23	\$227.27	\$1,440.00	\$6,732.50	0	Attended landowner, cooperators, scientific and agency meetings. Attended training workshops (i.e. Interagency Prescribed Fire School) and sessions.
Activity - 140	Report writing/editing/manuscript preparation						
	16.78	\$3,118.09	\$112.18	\$213.60	\$3,443.87	0	Prepared annual and wildlife management reports and cost-share proposals.
Activity - 150	Personnel management						
	25.05	\$5,447.66	\$247.12	\$1,321.46	\$7,016.24	0	Supervised volunteer activities. Recruited, hired and supervised OPS.
Activity - 182	Data management						
	25.79	\$4,666.36	\$258.13	\$1,609.30	\$6,533.79	0	Digitized habitat features for use in GIS database. Incorporated all data into GIS database. Analyzed and summarized WMA databases and pertinent information.
Activity - 200	Resource Management						
	34.73	\$6,210.06	\$417.01	\$5,399.50	\$12,026.57	0	Routine planning, paperwork, purchases and correspondences dealing with daily operations of the WMA.
Activity - 204	Resource planning						
	37.64	\$8,159.26	\$262.13	\$6,687.00	\$15,108.39	0	Coordinated work projects related to management activities. Prepared written work plans and management proposals. Purchased miscellaneous

	<b>Man Days</b>	<b>Salary</b>	<b>Fuel Cost</b>	<b>Other</b>	<b>Total</b>	<b>Units</b>	<b>Accomplishments</b>
							supplies, materials and equipment for performing routine WMA operations.
Activity - 207	Prescribed burning - dormant season						
	0.00	\$0.00	\$0.00	\$185.20	\$185.20	0	Purchased prescribed burning personal protection and gear.
Activity - 221	Animal surveys						
	0.00	\$0.00	\$0.00	\$14.85	\$14.85	0	Purchased wildlife survey equipment and supplies.
Activity - 294	Program coordination and implementation						
	0.81	\$208.98	\$5.42	\$0.00	\$214.40	0	Coordinated and planned with intra and interagency entities.
Activity - 312	Informational signs						
	0.00	\$0.00	\$0.00	\$18.25	\$18.25	0	Purchased informational banner/signs depicting check station operating hours.
Activity - 350	Customer service support						
	0.54	\$96.12	\$3.75	\$0.00	\$99.87	0	Provided verbal and written information to the public regarding wildlife and wildlife management techniques.
Activity - 920	FEM -- buildings/structures						
	0.00	\$0.00	\$0.00	\$1,531.49	\$1,531.49	0	Maintained and repaired area office and buildings as needed, including electrical and phone service.
Activity - 923	FEM -- vehicles/equipment						
	1.11	\$219.38	\$20.43	\$3,710.22	\$3,950.03	0	Repaired and maintained vehicles, boats, ATVs and associated equipment.

	<b>Man Days</b>	<b>Salary</b>	<b>Fuel Cost</b>	<b>Other</b>	<b>Total</b>	<b>Units</b>	<b>Accomplishments</b>
Species 9200 Total	193.02	\$37,136.64	\$1,895.82	\$25,486.48	\$64,518.94		
<hr/>							
Species 9210 - Game wildlife							
Activity - 221	Animal surveys						
	11.36	\$2,180.53	\$197.25	\$3,680.36	\$6,058.14	0	Conducted deer spotlight surveys employing distance sampling methodology.
Activity - 285	Nest structures						
	0.81	\$141.05	\$77.98	\$2,158.49	\$2,377.52	50	Maintained and repaired wood duck nest boxes on area waterways.
Activity - 341	Public use administration (hunting)						
	7.63	\$1,496.98	\$951.42	\$10,098.00	\$12,546.40	0	Collected biological data and samples from harvested game at check station. Salary for OPS fishing check station operators included here.
<hr/>							
Species 9210 Total	19.80	\$3,818.56	\$1,226.64	\$15,936.85	\$20,982.05		
<hr/>							
Species 9240 - Nongame wildlife							
Activity - 221	Animal surveys						
	33.20	\$5,763.49	\$640.11	\$8,368.47	\$14,772.07	0	Conducted herpetofaunal surveys (NFA), breeding bird point counts, and monitoring of wading bird rookery.
<hr/>							
Species 9240 Total	33.20	\$5,763.49	\$640.11	\$8,368.47	\$14,772.07		
<hr/>							
Species 9280 - All threatened and endangered wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	3.54	\$686.97	\$23.77	\$117.45	\$828.19	0	Prepared annual progress report on gopher tortoise surveying and monitoring efforts. NFA

	<b>Man Days</b>	<b>Salary</b>	<b>Fuel Cost</b>	<b>Other</b>	<b>Total</b>	<b>Units Accomplishments</b>
Activity - 182	Data management					
	0.12	\$20.60	\$0.83	\$0.00	\$21.43	0 Summarized and analyzed gopher tortoise survey data from surveys. NFA
Activity - 221	Animal surveys					
	6.81	\$1,267.88	\$145.95	\$1,675.83	\$3,089.66	0 Coordinated and conducted gopher tortoise surveys and monitoring program. NFA
<hr/>						
Species 9280 Total	10.47	\$1,975.45	\$170.56	\$1,793.28	\$3,939.29	
<hr/>						
Project 7281 Total	275.93 <sup>1</sup>	\$52,253.95	\$6,087.35	\$72,187.19	\$130,528.49	

<sup>1</sup>Man-days for OPS Fish & Wildlife Technician (~210 man-days) and OPS Hunting & Fishing Check Station Operators (~382 man-days) not included. However, salary for such is included in "Other" expenses category.