SANDHILL LAKES MITIGATION BANK (FITZHUGH CARTER TRACT) OF ECONFINA CREEK WILDLIFE MANAGEMENT AREA

ANNUAL REPORT 2005-2006

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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 physiographic region containing the Carter Tract is classified by the Florida Natural Areas Inventory (FNAI) as xeric upland sandhill (FNAI 1990). It is characterized by relatively high and rolling topography with sandy soils overlying limestone and with numerous small solution ponds. Much of the area's sandhill community, historically dominated by longleaf pine (*Pinus palustris*), has been harvested and converted to sand pine *(Pinus clausa)* or slash pine *(Pinus ellioti)* plantation or developed for home sites and small farms. The surrounding land uses are primarily pine plantation, undeveloped open lands, sod farms, small residential developments and a nearby Department of Corrections facility. There is increasing residential development in the vicinity, and there are plans to widen State Road 77. The parcel lies within the Choctawhatchee River Basin, near the watershed divide to the St. Andrews Bay Basin. Most surface water flows through the ponds and Pine Log Creek to the Choctawhatchee River, but much of the groundwater flow is toward the east into the Econfina Creek watershed of the St. Andrews Bay Basin.

The Carter Tract was purchased by the Northwest Florida Water Management District (NWFWMD or the District) in October 2003, and established as a tract of Econfina Creek Wildlife Management Area (WMA). A mitigation bank permit from the Florida Department of Environmental Protection (DEP) was issued to the District in August 2005 to manage the property. Management objectives identified by the District include wetlands restoration, preservation and management, aquatic habitat preservation, erosion control and uplands restoration and management In June 2005, the Florida Fish and Wildlife Conservation Commission (FWC) entered into a cost-share agreement with the District to develop and implement a comprehensive fisheries and wildlife management program for Carter Tract.

ECOLOGICAL AND LAND COVER CHARACTERIZATION

Figure 1. Upland sandhills leading down to a marsh on the Carter Tract of Econfina Creek Wildlife Management Area.

The Carter Tract contains several distinct ecological communities. It contains a significant percentage of upland sandhill (approx. 1150 acres) (Figure 1), historically logged for longleaf pine and re-planted as pine plantation or left to regenerate with pine, live oak, and shrub oaks, such as turkey oak, bluejack oak, and laurel oak. Interspersed within the uplands are approximately 850 acres of wetlands including cypress with emergent vegetation, degraded hydric pine flatwoods, bayhead wetlands, isolated depression marshes, seepage slopes, and other ecotonal wetland types. Approximately 150 acres are natural solution ponds (isolated, steep-sided karst ponds and shallow, gently-sloping lakes connected by streams and ditches). An expanded summary of the existing land cover classifications is shown in Table 1.

Historic communities have been disturbed by timber operations and suppression of natural fire regimes. However, most of the wetlands and some uplands retain their natural character. The hydrology is typical of a karst landscape and is characterized by both isolated ponds and those connected through streams. Pine Log Creek is the major stream flowing through Carter Tract. Previous landowners substantially modified the historic surface water hydrology: sinkholes were plugged and lakes were connected by canals or ditches and water control structures (Appendix III).

These land cover types occur across several soil types, the composition of which are mostly sand. Swamp soils are the most common soil type, which are strongly acidic, mainly mineral soils containing large amounts of organic matter. Lakeland soils are also present, which are deep, well-drained, strongly acidic sandy and loamy soils. Blanton soils also occur, which are also sandy and acidic in nature. These soil types occur across the range of slopes found on Carter Tract.

Several distinct vegetative communities exist on Carter Tract, based mostly upon soils and topography (Table 1). Little of the historic longleaf pine/wiregrass (*Aristida* spp.) community remains at present. The essential element of maintaining this community, periodic prescribed fire, has been absent for many years. As a result, wiregrass has been replaced with shrubs and taller understory species, and longleaf pine has been outcompeted by hardwoods and other pine species on several of the Tract's parcels. The natural plant communities of the Florida Panhandle have been described in detail by Clewell (1981).

Table 1. Existing Land Cover Classifications as of 2005 on the Fitzhugh Carter Tract of Econfina Creek WMA, given by the Florida Land Use, Cover and Forms Classification System (FLUCCS).

Level II FLUCCS	Description	Acres	Level III FLUCCS / Notes	Acres
420	Upland Hardwood Forest	757.79	421 - Xeric Oak	526.13
			427 - Live Oak	231.66
440	Tree Plantation	395.10	441 - Sand Pine Plantation	296.83
			441 - Sand Pine Plantation (Hydric)	11.53
			441 - Slash Pine Plantation	86.66
520	Lake	170.79	Undifferentiated 520	170.78
610	Wetland Hardwood Forest	127.87	611 - Bay Swamp	41.70
			615 - Stream and Lake Swamp	3.15
			616 - Inland Ponds and Sloughs	7.70
			617 - Mixed Wetland Hardwoods	75.31

620	Wetland Coniferous Forest	605.67	621 - Cypress Swamp	454.50
			625 - Hydric Pine Flatwoods	146.68
			626 - Hydric Pine Savannah	4.49
630	Wetland Forested Mixed	5.21	Undifferentiated 630	5.21
640	Vegetated Non-Forested Wetland	92.658	Undifferentiated 640	2.85
			641 - Freshwater Marsh	31.01
			643 - Wet Prairie	1.70
			644 - Emergent Aquatic Vegetation	57.11
810/830	Transportation / Utilities	18.90	814 - Roads (Stream Crossings)	0.25
			832 - Power Line Right-of-Way	18.64
	TOTAL	2173.89		2173.89

FISH AND WILDLIFE POPULATIONS

Working in cooperation with the District, the responsibilities of the FWC-Division of Habitat and Species Conservation on the Carter Tract are generally 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 maximize recreational opportunities for the public. The following are management programs developed to address targeted species and public opportunities.

Freshwater Fish

Fish Population Assessment

Fish population assessments in fall 2005 (October-November) and spring 2006 (March – April) identified 24 fish species on selected ponds across the area (Table 3). Sportfish surveys were conducted in fall and spring on Black, Dry and Green Ponds using shoreline electrofishing. Sportfish abundance calculated from the electrofishing data of each lake is presented as the amount of fish sampled per minute (Tables 4 and 5). In addition to the largemouth bass, bluegill, warmouth, flier, spotted sunfish and black crappier were the other sportfish sampled, as well as yellow bullhead catfish.

Figure 2. Electrofishing on Black Pond on the Carter Tract of Econfina Creek WMA.

Wegener Rings were also utilized at three different depths to sample the littoral zone for young-of-the-year (y-o-y) sportfish (Wegener et al. 1974). The percent occurrence of all species sampled via Wegener Rings was determined for Dry, Black, and Green Ponds in October - November 2005 and March – April 2006 (Appendix I).

Figure 3. Fish sampling via Wegener Ring on Dyke's Mill Pond on the Carter Tract of Econfina Creek WMA, October 2005.

Otoliths were obtained from selected sportfish (n=15) in fall 2005 and examined to determine age and growth. Species analyzed were largemouth bass (n=5), warmouth (n=9), and spotted sunfish (n=1). Preliminary results indicated that the age and growth of sportfish is comparable to other northwest region oligotrophic lakes (Paxton et al. 2005). Sampling via shoreline electrofishing and Wegener ring sampling is to be repeated each spring and fall.

Schnabel population estimates give a conservative estimate (N) of the population of a species in a given body of water. On the Carter Tract, Schnabel tests for largemouth bass population size (modified for small sample size) were conducted on Dry, Black and Green (north and south) ponds on the Carter Tract in spring of 2006 (Table 2).

Table 2. Modified Schnabel population estimates with 95% confidence intervals for largemouth bass from Carter Tract waterbodies in Spring 2006.

Pond	N	95% CI
Black	74	22.4 – 134.5
Green (N)	141	57.35 – 351.25
Green (S)	112	52.7 – 257.7
Dry	441	255.5 – 826.4

Table 3. Fish species identified from electrofishing and Wegner ring surveys conducted on major waterways within the Carter Tract of Econfina Creek WMA, fall 2005 and spring 2006.

Common name	Scientific name
Eastern starhead topminnow	*Fundulus escambiae*
Mosquitofish	*Gambusia holbrooki*
Lake chubsucker	*Erimyzon sucetta*
Pygmy sunfish	*Elassoma* sp.
Pygmy killifish	*Leptolucania ommata*
Warmouth	*Lepomis gulosus*
Bluespotted sunfish	*Eneacanthus gloriosus*
Tadpole madtom	*Noturus gyrinus*
Chain pickerel	*Esox niger*
Swamp darter	*Etheostoma fusiforme*
Bluegill	*Lepomis macrochirus*
Brook silverside	*Labidesthes sicculus*
Largemouth bass	*Micropterus salmoides*
Yellow bullhead	*Ameiurus natalis*
Dollar sunfish	*Lepomis marginatus*
Banded topminnow	*Fundulus cingulatus*
Pirate perch	*Aphredoderus sayanus*
Spotted gar	*Lepisosteus oculatus*
Bowfin	*Amia calva*
Bluefin killifish	*Lucania goodei*
Grass pickerel	*Esox americanus*
Flier	*Centrarchus macropterus*
Spotted Sunfish	*Lepomis punctatus*
Black Crappie	*Pomoxis nigromaculatus*

Table 4. Electrofishing results for sportfish sampled from the Carter Tract of Econfina Creek WMA, October – November 2005.

Species	Dry Pond		Black Pond		Green Ponds		Dykes Mill Pond	
	N[a]	CPUE[b]	N[a]	CPUE[b]	N[a]	CPUE[b]	N[a]	CPUE[b]
Largemouth Bass	15	0.18	25	0.29	45	0.42	4	0.05
Bluegill	6[c]	0.07	11[c]	0.13	50[c]	0.46	0	0.0
Warmouth	6	0.07	6	0.07	2	0.02	4	0.05
Total	27	0.32	42	0.49	97	0.90	8	0.10

[a] Number of fish sampled.
[b] Catch per unit effort (CPUE) is measured in fish/min.
[c] This does not include >1000 y-o-y bluegill (15-30 mm TL).

Table 5. Electrofishing results for sportfish sampled from the Carter Tract of Econfina Creek WMA, March – April 2006.

Species	Dry Pond		Black Pond		Green Pond N		Green Pond S	
	N[a]	CPUE[b]	N[a]	CPUE[b]	N[a]	CPUE[b]	N[a]	CPUE[b]
Largemouth Bass	48	0.22	17	0.14	23	0.27	25	0.32
Bluegill	81	0.38	31	0.26	37	0.43	22	0.28
Warmouth	14	0.07	6	0.05	8	0.09	4	0.05
Flier	1	0	0	0	5	0.06	2	0.03
Black Crappie	2	0.01	1	0.01	0	0	2	0.03
Total	146	0.68	55	0.46	73	0.85	55	0.71

[a] Number of fish sampled.
[b] Catch per unit effort (CPUE) is measured in fish/min.

Public Fishing

The Carter Tract has a rich history of public fishing on the area. In order to provide a more high quality fishing experience, Mr. Fitzhugh Carter altered some of the property's original hydrology in the late 1950's through installing a series of canals and plugging a sinkhole in one of the lakes (Appendix III). The area was operated as a fish camp for several years, which was highly successful. After purchase by the NWFWMD, and with a history of successful fishing, many local anglers have requested access to the area. However, because the area is under a mitigation bank agreement, special precautions must be taken to ensure public fishing would not be detrimental to the habitat. Our goal is to create a successful special opportunity public fishing program on

the Carter Tract that will not impact the habitat yet provide high quality fishing for the public. A working group comprised of representatives from several stakeholder categories has been organized in order to provide input on the logistics of implementing such a program on the area. Infrastructure improvements are underway to improve roads and bridges, and the current goal for opening the Carter Tract to public fishing is March 2007. Appendix II provides the most recent plans for the public fishing program.

White-tailed Deer

Management objectives

The primary deer 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^2 (25-40 acres/deer). With limited hunting dates and a very conservative hunt format, our goal is to attain a harvest consisting of antlered deer predominantly in 3.5+ year classes. Besides offering quality buck harvest, we plan to bolster and maintain a high degree of hunter participation with the implementation of limited antlerless deer harvest in the future, dependent upon herd expansion. Achieving these objectives requires active monitoring and management of the population, as well as the habitat.

Population trends

Reliable annual indices of population size are fundamental to deer population management. Indices provide an estimate of relative abundance, rather than true population size. Thus the real value of the population surveys is to evaluate trends through time, since the specific relationship between the index and population density is not known. Inferences drawn from only one year of track count data is tenuous at best.

Operated along four separate 1-mile transects, interspersed throughout the area, deer track count surveys were replicated 10 times in September 2005 (Figure 4). Preseason deer density for 2005 was estimated at 8 deer/mi^2 (95% C.L. 6.0 – 10.3 deer/mi^2).

Figure 4. Distribution of deer survey routes established on the Carter Tract of Econfina Creek WMA, September 2005.

Harvest and Hunting Pressure

Mandatory check stations were used to monitor hunter pressure and collect biological data from harvested deer. Deer harvest on the area this past year was relatively low. The 2005-2006 hunting season yielded a harvest of 3 antlered bucks. Hunt success (buck harvest per man-days of hunting pressure) was estimated at 29.6. Two of the three bucks taken were of the 1.5 year-old age class. The low harvest rate is most likely a result of the abbreviated hunt format (Table 6), as well as low hunter pressure during the different

deer hunt seasons (Table 6). It is expected that hunter participation will improve over the next few years.

Table 6. Harvest summary for the deer hunting seasons on the Carter Tract of Econfina Creek WMA, 2005-2006.

Hunt Season	Season Dates	Season Length (days)	Hunter Quota Per day	Hunt Man-Days	Deer Harvest		
					M	F	tot
Archery	Oct. 15-21	4	10	12			0
Archery	Oct. 22-30	5	10	11			0
Muzzleloading Gun	Nov. 18-20	3	10	11	2		2
General Gun	Nov. 24-27	4	10	12			0
General Gun	Jan. 21-24	4	10	11			0
General Gun	Jan. 25-29	5	10	32	1		1

Wild Turkey

Management objectives

1. Encourage and maintain a population of wild turkeys that will provide a high quality hunting experience to the public.
2. Provide high quality habitat for wild turkeys (i.e burning, and maintain forested openings).

Harvest

Spring turkey season on the area constituted three quota hunts, each three days in length plus one day prior to each hunt for scouting. The 2005-06 season yielded a total of 26 man-days and a harvest of 2 gobblers (13 hunter-days/gobbler).

Small Game

The public's interest in utilizing small game resources on the area during the 16 day December season (December 3-18) has generally been low and opportunistic. This past season yielded a harvest of 9 gray squirrels with 4 man-days of hunting pressure.

Waterfowl

Harvest

Harvest of waterfowl on the area is minimal. The Carter Tract provided a "special opportunity" waterfowl season in September, which yielded a total of 2 man-days and a harvest of 2 wood duck (*Aix sponsa*) drakes. The 2005-06 regular waterfowl season yielded a total of 9 man-days and a harvest of 8 wood ducks (6 drakes: 2 hens) for a hunting index of 1.1 hunter-days/duck.

Wood Duck Nest Boxes

Efforts to monitor and facilitate local breeding populations of wood ducks on the area began in September 2005 with the construction and installation of 50 cypress/cedar nest boxes (Figure 5). A maintenance schedule has been devised to quarterly inspect and evaluate each box (Appendix IV). Presently, fifty nest boxes are distributed on selected waterways across the area (Figure 6).

Figure 5. Efforts to monitor and facilitate local breeding populations of wood ducks on the area began in September 2005 with the construction and installation of 50 cypress/cedar nest boxes.

Figure 6. Location of Wood Duck nest boxes placed on Carter Tract of Econfina Creek WMA, December 2005 – January 2006.

Wading Birds

Figure 7. This wading bird rookery was noted on Little Deep Edge Pond on the Carter Tract of Econfina Creek WMA. Six species and over 117 individuals were recorded on the rookery in April 2006.

Most wading birds nest semi-colonially in groups called rookeries, usually along edges of lakes or creeks, or in trees or shrubs growing out of water bodies (Figure 7). The many wetlands and water bodies present on the Carter Tract provide excellent nesting habitat for the many species of wading bird found in the Florida panhandle. Protocols for surveying wading birds on their breeding sites vary from aerial surveys to shoreline visual surveys. On Carter Tract, water bodies and creeks were surveyed in spring 2006 by roadside visual surveys. One large rookery was found in Little Deep Edge Pond. This rookery was subsequently surveyed by canoe to identify species and numbers of birds present. Table 7 summarizes data collected on this rookery in late April 2006.

Beginning in spring 2007, all water bodies and creeks on the Carter Tract will be surveyed annually for possible wading bird breeding activity, and the existing rookery

will be monitored monthly during the breeding season (March – July) to document species present, number of birds and nesting success.

Figure 8. Little Blue Herons (*Egretta caerulea*) and Tricolored Heron (*Egretta tricolor*) flushing from rookery on Little Deep Edge Pond, Carter Tract of Econfina Creek WMA, April 2006.

Table 7. Summary of activity on wading bird rookery at Little Deep Edge Pond, Carter Tract of Econfina Creek WMA, April 2006.

Species	Number present	Species on nest?
Great Egret (*Ardea alba*)	24	Yes
Snowy Egret (*Egretta thula*)	14	Yes
Cattle Egret (*Bubulcus ibis*)	30	Yes
Little Blue Heron (*Egretta caerulea*)	45	Yes
Tricolored Heron (*Egretta tricolor*)	2	Couldn't determine
Anhinga (*Anhinga anhinga*)	2	Couldn't determine
Total	117	

Breeding Birds

The following 77 species have been seen and/or heard by biologists on the Fitzhugh Carter Tract. A "Carter Tract Checklist of Birds" brochure is underway and will be placed at the kiosk for visitors to the area.

Pied-billed Grebe (*Podilymbus podiceps)*
Double-crested Cormorant (*Phalacrocorax auritus*)
Anhinga (*Anhinga anhinga*)
Great Blue Heron (*Ardea herodias*)
Great Egret (*Ardea alba*)
Snowy Egret (*Egretta thula*)
Little Blue Heron (*Egretta caerulea*)
Tricolored Heron (*Egretta tricolor*)
Cattle Egret (*Bubulcus ibis*)
Green Heron (*Butorides virescens*)
White Ibis (*Eudocimus albus*)
Wood Stork (*Mycteria americana*)
Black Vulture (*Coragyps atratus*)
Turkey Vulture (*Cathartes aura*)
Wood Duck (*Aix sponsa*)
Ring-necked Duck (*Aythya collaris*)
Osprey (*Pandion haliaetus*)
Bald Eagle (*Haliaeetus leucocephalus*)
Cooper's Hawk (*Accipiter cooperii*)
Red-shouldered Hawk (*Buteo lineatus*)
Red-tailed Hawk (*Buteo jamaicensis*)
Wild Turkey (*Meleagris gallopavo*)
Northern Bobwhite (*Colinus virginanus*)
Common Moorhen (*Gallinula chloropus*)
American Coot (*Fulica americana*)
Common Snipe (*Gallinago gallinago*)
Mourning Dove (*Zenaida macroura*)
Common Ground-Dove (*Columbina passerine*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
Barred Owl (*Strix varia*)
Common Nighthawk (*Chordeiles minor*)
Chuck-will's-widow (*Caprimulgus carolinensis*)
Chimney Swift (*Chaetura pelagica*)
Ruby-throated Hummingbird (*Archilochus colubris*)
Belted Kingfisher (*Ceryle alcyon*)
Red-headed Woodpecker (*Melanerpes erythrocephalus*)
Red-bellied Woodpecker (*Melanerpes carolinus*)
Downy Woodpecker (*Picoides pubescens*)
Pileated Woodpecker (*Dryocopus pileatus*)
Eastern Phoebe (*Sayornis phoebe*)
Great Crested Flycatcher (*Myiarchus crinitus*)
Eastern Kingbird (*Tyrannus tyrannus*)
Loggerhead Shrike (*Lanius ludovicianus*)
White-eyed Vireo (*Vireo griseus*)
Red-eyed Vireo (*Vireo olivaceus*)
Blue Jay (*Cyanocitta cristata*)
American Crow (*Corvus brachyrhynchos*)
Fish Crow (*Corvus ossifragus*)
Purple Martin (*Progne subis*)
Carolina Chickadee (*Poecile carolinensis*)
Tufted Titmouse (*Baeolophus bicolor*)
Carolina Wren (*Thryothorus ludovicianus*)
Ruby-crowned Kinglet (*Regulus calendula*)
Blue-gray Gnatcatcher (*Polioptila caerulea*)
Eastern Bluebird (*Sialia sialis*)
Hermit Thrush (*Catharus guttatus*)
Northern Mockingbird (*Mimus polyglottos*)
Brown Thrasher (*Toxostoma rufum*)
Northern Parula (*Parula americana*)
Yellow-rumped Warbler (*Dendroica coronata*)
Pine Warbler (*Dendroica pinus*)
Palm Warbler (*Dendroica palmarum*)
Prothonotary Warbler (*Prothonotaria citrea*)
Common Yellowthroat (*Geothylpis trichas*)
Hooded Warbler (*Wilsonia citrina*)
Yellow-breasted Chat (*Icteria virens*)
Summer Tanager (*Piranga rubra*)
Scarlet Tanager (*Piranga olivacea*)
Eastern Towhee (*Pipilo erythrophthalmus*)
Chipping Sparrow (*Spizella passerine*)
Field Sparrow (*Spizella pusilla*)
Northern Cardinal (*Cardinalis cardinalis*)

Blue Grosbeak (*Guiraca caerulea*)
Indigo Bunting (*Passerina cyanea*)
Red-winged Blackbird (*Agelaius phoeniceus*)
Eastern Meadowlark (*Sturnella magna*)
Brown-headed Cowbird (*Molothrus ater*)

Neotropical Migrants

Figure 9. White-eyed Vireo (*Vireo griseus*), captured in mist net during surveys on the Carter Tract of Econfina Creek WMA, Spring 2006.

Surveys of neotropical migrant passerines were initiated on the Carter Tract in 2005 in order to determine the area's use as a stopover point for breeding songbirds en route to and from nesting and/or wintering sites. Neotropical migrants are well known to use the Gulf Coast States as the first foraging spot after crossing the Gulf of Mexico in the spring and the last opportunity to build up fat reserves before embarking on the trans-Gulf flight in the fall (Moore et al. 1990). Although Washington County does not lie directly on the Gulf of Mexico, areas of the Carter Tract, particularly the combination of sandhills, wetlands and open water unique to the area, are well-suited foraging habitat for many neotropical migrant species in transit between their breeding and wintering grounds.

On several non-consecutive mornings in spring 2006, two 9 meter high by 2.6

meter tall mist nets were placed at several locations on the Carter Tract in areas of high flight traffic. For maximum effectiveness, nets were placed in concealed locations, usually along trails bordered on both sides by heavy woods, or along edges of thickets (Figure 10). The nets, which are strung on aluminum poles placed in the ground, were placed in the evening and kept closed overnight. Surveys began just prior to dawn, when nets were opened, and concluded mid-morning, following the period of highest avian activity. Captured birds were freed from the net, identified to species, age and sex (when possible), then released. Future surveys may include placing leg bands on birds to track possible annual returns by individuals to the area.

Surveys completed in spring 2006 were preliminary, mostly to evaluate the feasibility of this type of survey on the area and resolve logistical issues. Survey locations on the area are depicted in Figure 11. Results of these preliminary surveys are given in Table 8. Beginning in fall 2006 more extensive surveys, including more nets, survey locations and survey days, will be implemented and repeated every spring and fall.

Table 8. Mist net survey results on the Carter Tract of Econfina Creek WMA, spring 2006. WEVI = White-eyed Vireo; NOCA = Northern Cardinal; NOPA = Northern Parula; CHSP = Chipping Sparrow; AHY = after hatch year (adult); SY = second year. Sex in WEVI not determinable.

Date	Location	Species	Age	Sex
3/26/2006	Carter	WEVI	AHY	-
4/4/2006	Carter	NOCA	AHY	M
4/7/2006	Carter	NOCA	AHY	M
4/7/2006	Carter	NOPA	SY	M
4/7/2006	Carter	CHSP	AHY	M

Figure 10. Mist net placed during bird surveys in upland hardwoods on the Carter Tract of Econfina Creek WMA, Spring 2006.

Figure 11. Locations of mist net surveys on the Carter Tract of Econfina Creek WMA, spring 2006.

Gopher Tortoise

Comprehensive Burrow Surveys

Comprehensive burrow counts were used to determine the relative abundance of tortoise populations. Soil maps and aerial photograpy facilitated prioritizing areas to survey/monitor. Most notably, the soils excessively drained were surveyed first. Burrow clusters were defined as boundaries around mapped concentrations of tortoises (Figure 13). Generally, these boundaries do not coincide with forest stand boundaries, and often include several stands. Clusters were primarily delineated for devising management options. No attempt to group burrows using stringent behavioral or spatial criteria was made. Cluster numbers simply denote location and are used for accounting and management purposes.

Burrows were located by a thorough visual search of potential habitat (Figure 12). Systematic transects bisected by ATVs were used in the field for assurance of nearly complete coverage. However, the transects served only as a guide. Distances between transects were variable, depending on vegetative cover within the survey areas. Survey intensity reflected the circumstances of a specific site (eg. scrub habitat versus pinelands habitat). The transects should not be confused with transect sampling methods for estimating population density of gopher tortoises per Cox et al. (1987). It has been assumed that comprehensive surveys are more accurate than line-transect estimates, which are vulnerable to distortions resulting from the scarcity and patchiness of tortoise burrows on many sites (Mann 1993).

Figure 12. Gopher Tortoise burrows were found and marked on the Fitzhugh Carter Tract of Econfina Creek WMA by ATV transect surveys in areas of suitable habitat.

Figure 13. Gopher tortoise survey clusters and burrows with activity status located via visual searches using systematic transects across suitable habitat on the Carter Tract of Econfina Creek WMA, fall 2005 and summer 2006.

Distinguishing between active and inactive classes followed Breininger et al. (1986) and Diemer (1992b):

1. **Active-** recent slide marks and footprints; soil at entrance

has recently been disturbed by tortoises.

2. **Inactive-** Soil undisturbed, lacks fresh sign of tortoise use but appears to be maintained.

3. **Possibly Active-** difficult to determine whether activity was recent or caused by a tortoise.

4. **Old- abandoned;** partly or completely filled with litter, caved in, dilapidated.

The standard correction factor (0.614) used to relate density of active and inactive burrows to population densities (Auffenberg and Franz 1982) wasn't used. Several authors (Burke 1989, Breinger et al. 1991, McCoy and Mushinsky 1992a, Witz et al. 1992) have cautioned against the generic use of this correction factor. Burke (1989) and Breininger et al. (1991) argue that the occupancy of tortoise burrows differs by season or habitat types. The standard correction factor yielded predictions of number of tortoises that were too high for 85% of the populations (n=26) that McCoy and Mushinsky (1992a) employed in their analyses. In a west-central Florida population of gopher tortoises, Witz et al. (1992) found that using the "0.614 correction factor" resulted in an overestimate of this population by a factor of 1.4. Therefore, due to a lack of site or habitat specific correction factor(s) for Washington County tortoise populations, a "minimum number" estimate of gopher tortoise population size has been derived based on the percentage of active and possibly active burrows relative to the total number of burrows (after Diemer 1992b). This relative abundance index (active & possibly active/total burrows x 100) will allow comparison over time.

Given the relationship between gopher tortoise body size and burrow width/age (Wilson 1991), burrow size class distribution data obtained during the comprehensive surveys were examined as an indirect estimate of the demographic structure of the tortoise population. Burrow widths correlate strongly with the age/carapace lengths of tortoises inhabiting them (Alford 1980, Martin and Layne 1987). Therefore, the size distribution of burrow widths may accurately reflect the size distribution of carapace lengths of resident gopher tortoises. Subsequently, carapace length can be used also as a characterization of reproductive potential in individual tortoises. However, resulting biases must be considered (e.g. small tortoises occurring in large burrows and obscurity of hatchlings). The width of each identified burrow was measured to the nearest 5 cm at a depth of 50 cm with the aid of constructed calipers (Martin and Layne 1987, Wilson

1991) (Figure 14). Abandoned burrows with collapsed tunnels were not measured. Calipers were constructed from two pieces of 5/8" rebar welded on a hinge to form a connected pair of calipers and appropriately marked in 5 cm increments.

Figure 14. Rebar calipers used to measure the width of gopher tortoise burrows during surveys on the Carter Tract of Econfina Creek Wildlife Management Area.

Located burrows were marked and numbered. For permanent identification, a marker was placed in the ground approximately 5" deep with an aluminum numbered tag (1.5" diameter) at a distance of approximately one meter in front of the burrow entrance and to the left approximately two meters. Individual burrow coordinates were marked using Garmin® GPSmap 76S units. The compass orientation of burrow entrances was also recorded for burrows categorized as active, possibly active and inactive. Entrances to old, abandoned, and many inactive burrows were often obscured so that no direction could be determined. Standardized data sheets were completed for each burrow found (Appendix V). Data was tabulated and analyzed digitally and GIS software (ArcGIS® 9.0) was used to map clusters on a local scale.

Burrow Activity

During our efforts in the late summer/early fall of 2005 and the spring 2006, 194 burrows were located across the Carter Tract (Figure 13). Of the 194 burrows located, 65

(33.5% relative abundance) were classified as active/possibly active. This year, 17.53% of burrows found were classified as abandoned. Burrow activity is presented in Table 7. Analysis of data as per gopher tortoises present included only active and possibly active burrows. Possibly active burrows were included in the results with active burrows based on work by Breininger et al. (1991) and Diemer (1992b). The authors found site-specific correction factors were usually similar for active and possibly active burrow classifications.

Table 9. Activity status of gopher tortoise burrows located on the Carter Tract of Econfina Creek WMA, June - July 2006.

Abandoned	34
Inactive	95
Active	53
Possibly Active	12
Total	194

Observation of the placement of burrows, particularly active and possibly active burrows, within a cluster showed colonization of subpopulations within the Carter Tract population. Alford (1980) described three types of spatial distributions of burrows among gopher tortoises:

1. Clumped Colonies: small amounts of available habitat occupied by a relatively large number of burrows.
2. Dispersed Colonies: much of the available habitat occupied somewhat evenly at a relatively high density.
3. Noncolonial Burrows: available habitat being widely scattered with occasional individual burrows.

Our survey of the Carter Tract showed burrows in all three types of distributions, although primarily in clumped colonies. Several of the survey clusters had very few burrows, despite similarities in the amount of bare ground and soil type. Of the five clusters delineated across the Carter Tract, cluster 1 had only three of the 65 active/possibly active burrows found; cluster 2 had only five; cluster 3 had four. Cluster 4 had more than 56% of the active or possibly active burrows found (37 of 65 burrows), and cluster 5 had 16. The lack of dispersed colonies of burrows may be a sign of heavy

human depredation in this area in the past (pre 1988). In 1985, gopher tortoise populations on nearby Eglin Air Force Base were suspected to be drastically depleted due to over harvest, subsequently prompting the Reservation to prohibit harvesting (Diemer 1987). Removal of individuals, which thins out the population, could have led to greater distances between remaining tortoises. This may be seen in a more scattered, seemingly random dispersal of individuals. As the population rebounds, young do not have to travel as great a distance to find suitable unoccupied habitat. Available habitat may not be used completely or evenly, which may lead to a clumping of burrows within available habitat.

Burrow Size Classes

Burrow size classes are presented in Table 10. Of the active and possibly active burrows identified and classified, 47.69% were from 25cm and 30cm burrow width size class (Table 10).

Alford (1980) established that tortoise burrow width and carapace length (CL) are highly correlated according to the following equation: $\log_{10}y = 0.879 \log_{10}x + 0.149$, where y is carapace length in centimeters and x is burrow width in centimeters. The growth rate of gopher tortoises is not specifically known. Alford (1980) chose to use a growth rate factor of 1.8 cm/yr to approximate age based on the available data from Auffenberg and Iverson (1979).

Table 10. Size class distribution of active and possibly active gopher tortoise burrows (n=65) on the Carter Tract of Econfina Creek WMA, June-July 2006.

Burrow width size class	Predicted Carapace Length (cm)	Number of Burrows	Approximate Tortoise Age	Percent Total Burrows
<10	10.67	6	5.93	9.23%
15	15.23	3	8.46	4.61%
20	19.62	12	10.9	18.46%
25	23.87	13	13.26	20%
30	28.01	18	15.56	27.69%
35	32.08	12	17.82	18.46%
40	36.08	1	20.04	1.54%
Total		65		

Diemer (1992b) found that the combined size class distributions from three study sites in northern Florida were bimodal. Whereas, three of the colonies from Alford's

(1980) sample of 13 northern Florida sites showed bimodal size distributions, while 10 were unimodal. He attributed these differences to variable reproductive success, predation rates, and migrations to or from colonies.

The tendency of younger tortoises (up to 10-12 cm CL) not to dig their own burrows, to share burrows with adults, or to conceal themselves under leaf litter is well documented (Auffenberg and Weaver 1969, Douglass 1978, Alford 1980, Landers et al. 1982). Additionally, predation of eggs and hatchlings likely can produce a real shortage of individuals in younger size classes (Witz et al. 1991). Landers et al. (1980) found that 87% of the nests were depredated within a few weeks after laying and estimated that a female gopher tortoise would produce a successful hatch only once in about 10 years. Auffenberg and Iverson (1979) described tortoise colonies in northern Florida in which no young were produced for as long as seven years. Furthermore, Wilson (1991) documented considerable predation on tortoises less than 5 years old. Larger individuals (>16.9 cm CL) seemingly have a higher survival rate than smaller tortoises (Layne 1989). In regard to relative frequencies, the fact that subadult and adult tortoises tend to use more burrows than juveniles could also induce biases toward the larger size classes (Diemer 1992b).

We found 1 burrow ≥ 35 cm in width. The scarcity of > 35 cm burrows is not readily explained, and may reflect either a past history of human predation, reduced growth rates with age, (Alford 1980, Auffenberg and Iverson 1979) and/or degradation of habitat quality (Mushinsky et al. 1994). The most likely scenario, however, is one of past (pre 1988) human predation. If this were the case, then one would expect recruitment into the subadult classes to be apparent now. This is possibly the case on Carter Tract, where 43.17% of burrows were in the subadult class (15 to 25 cm). Human predation on adult tortoises is well documented (Auffenberg and Franz 1982, Taylor 1982). Particularly, many local Northwest Florida panhandle populations had been heavily impacted in the late 1980's (J. Diemer-Berish pers. comm.).

Although Alford's (1980) histograms indicated a maximum burrow width of 41 cm, others have found burrows with greater widths (O'Meara and Abbott 1987, Witz et al. 1991). We found one burrow of a width of 40+ cm, which was the largest active burrow found on Carter Tract. Since maximum tortoise carapace length is approximately 37 cm (Ernst and Barbour 1972), it has been suggested that burrow width > 42 cm probably represents instances where burrow walls eroded and, therefore should be

included with smaller size classes. However, because we included only active and possibly active burrows in our analyses, whereas others included inactive burrows, we presume our size class distribution readily reflects the demography of the Pine Log WMA tortoise population.

A distinction between juveniles (tortoises < 13 cm CL) and subadults (immature tortoises ≥ 13 cm CL) was made following criteria of Landers et al. (1982). The 15 cm burrow size class on Carter Tract likely includes some subadults, but probably includes a considerable percentage of large juveniles. Assuming that all the tortoises of 15cm burrow width and smaller are juveniles, then 13.84% of Carter Tract tortoises are juveniles. McCoy and Mushinsky (1992b) found on select Federal lands in Florida that burrow percentages in size classes smaller than 20 cm ranged from 15-22%. O'Meara and Abbott (1987) found only 6.84% of the burrows in size classes smaller than 20 cm. It appears that the juvenile population on Carter Tract falls within these ranges.

Gopher tortoises may reach sexual maturity at considerably different ages in different geographical regions. Mushinsky et al. (1994) found that female tortoises in south Florida become sexually mature 6-10 years before females of northern areas. Diemer and Moore (1994) found that depending on gender and location, gopher tortoises may reach sexual maturity anywhere between 9 and 21 years of age. Sexual maturity appears to be determined by carapace length rather than age (Mushinsky et al. 1994). Depending upon latitude and location, adult gopher tortoises reach sexual maturity between 18-24 cm CL for males and 21-28 cm CL for females (Diemer and Moore 1994). This CL corresponds to ages 10-15 yr by the approximation method used by Alford (1980) (1.8 cm/yr). The approximation method used by Alford is used for the purposes of our report to gain a general estimate of tortoise age, and is not meant to be a precise aging method.

Of active/possibly active burrows measured on the Carter Tract, 47.69% resulted in a CL corresponding to sexual maturity (CL > 23.87 cm). This is a conservative estimate because we did not directly determine gender or sexual maturity in our burrow surveys. Sexually mature adults appear to outnumber sexually immature gopher tortoises (which include subadults and juveniles on the area).

Soil Types

Gopher tortoise burrows were located predominantly in Lakeland Coarse Sand soils, the most common soil type found on the Carter Tract. Lakeland Coarse Sands occupy large acreages in southern Washington County (Huckle and Weeks 1965). The only other soil type found in known burrow areas is Blanton Sand.

Soil type is an important limiting factor for gopher tortoises. Burrow depth has generally been considered a function of ground water (see Diemer 1986). Throughout much of its range, the gopher tortoise is generally associated with well-drained sandy soils (Diemer 1987). The soil must be friable enough for the digging of burrows and firm enough so that burrows will not collapse. In the panhandle of Florida, some of the commonly preferred soil types cited by Cox et al. (1987) included Lakeland, Troup, Kureb and St. Lucies soils.

Almost all gopher tortoise burrows on the Carter Tract were located in Lakeland Coarse Sands, one of the soil types recognized for supporting gopher tortoises in northern Florida (J. Diemer-Berish, pers. comm.). Lakeland Coarse Sand is best characterized as deep, well-drained to excessively drained, strongly acid sandy soils on nearly level to steep uplands (ranging from 0-45% slopes). This soil type is very rapidly permeable and deep, extending from the surface to a depth ranging from 60 inches to many feet (Huckle and Weeks 1965).

Management Recommendations

This is our first comprehensive gopher tortoise burrow survey for the area. The data collected in this survey will serve as a baseline. Our future work will provide comparative data on tortoise population trends within the Carter Tract in which to make better informed management decisions.

We offer the following recommendations as a start in developing and implementing a management program for the gopher tortoise populations. Management guidelines are intended to produce favorable habitat conditions in and around existing gopher tortoise clusters, improve recruitment, increase the population and allow for expansion of existing clusters into adjacent habitat. Basically silvicultural practices that most nearly mimic the dynamics of natural systems, (i.e. shelterwood regeneration system with frequent prescribed burning and natural regeneration), minimize soil disturbance and improve herbaceous cover conditions are preferred to optimally support the gopher tortoise. Our guidelines follow closely to those recommended by Landers and

Speake (1980) and Diemer (1986) and address such management considerations as canopy closure in timber stands, mid-story/hardwood management, regeneration and site-preparation, treatment of hardwoods for cluster site reclamation and scheduling of ground disturbing activities during non-nesting periods.

- In longleaf pine-scrub oak stands, the hardwood component should continue to be controlled by mechanical thinning and/or summer burning. A density of oaks is acceptable, if the canopy is kept open and most stems are in the small diameter class.

- Removal of "non-natural" sand pine / "off-slash" pine and restoring the longleaf pine integrity to the ecosystem, through planting and prescribed burning is strongly encouraged to continue.

- Drainage areas with notorious titi encroachment should be periodically burned. The discontinuous nature and small size of Carter Tract xeric habitat, which are often separated by "overgrown" streams or wet boggy areas, could serve as impediments to dispersal, particularly courtship travels of adult males.

- Nesting peak for gopher tortoises is generally May and June. Less intensive site preparations (i.e. prescribed burning) and foregoing soil disturbing activities through tortoise clusters at this time is strongly encouraged.

- Control nest predators through public hunting and trapping seasons. Nest predation via unregulated and overabundant furbearer populations can have a negative effect on improving gopher tortoise populations.

- Gopher tortoise clusters should not be made conspicuous through management (i.e. signing and fencing).

- Herbicide treatments followed by a prescribed burn would be compatible with maintaining quality habitat for gopher tortoises. However, herbicide treatments would be secondary in importance to maintaining an open canopy and prescribed burning at regular intervals. Selective herbicides are preferred over broad-spectrum herbicides.

- For stands regenerated naturally and for established plantations with a high stocking density, thin to reduce stocking to acceptable levels. A tree spacing of 20-25 feet should be used as a guide for thinning over story trees.

Areas of Concern

Several significant factors threaten the long-term maintenance of gopher tortoise populations on the Carter Tract. Probably of most concern is the likelihood of a decline in the capability of landscapes between proper tortoise habitats to support tortoises that would otherwise disperse from one subpopulation to another. As urban and residential

areas expand, the suitability of dispersal habitat may decline to the point that successful dispersal is to be restricted within the confines of the Carter Tract. This population must then survive demographically on their own or decline. Therefore, the need for habitat quality cannot be overly emphasized. Fortunately, the 30,000 acre plus Econfina Creek Wildlife Mangement Area is just to the east.

The second level of concern is at the scale of the individual cluster. It may be that the greatest threat to the persistence of the gopher tortoise population is a subtle but continual decline in habitat quality on a site-by-site basis. It is at this level of individual clusters that a sense of urgency for habitat recommendations be prepared in subsequent years, now that we have established baseline data on the status of gopher tortoises on the Carter Tract with this initial comprehensive burrow survey.

Future Plans and Expectations

Comprehensive gopher tortoise burrow surveys should continue from April through October in subsequent years. Specific demographic and habitat recommendations will be made for each cluster. Clusters will be prioritized as per need for treatment, existing gopher tortoise activity, and potential tortoise expansion.

The maintenance of a current and complete GIS database of burrow and cluster information will be essential. Plans are to incorporate vegetation data and forest management actions (i.e. prescribed burning, scrub oak removal, longleaf restoration) into the gopher tortoise population database. In concert with recent re-evaluation of gopher tortoise relocations statewide, we will explore the benefits and feasibility of tortoise relocation onto the Carter Tract as a mechanism for future population recovery and expansion across the forest as habitat improvements make available more potential tortoise habitat.

Herpetofauna

Drift fences were installed to intercept adult amphibians and reptiles entering and exiting ponds and wetlands. Drift fences were placed parallel to pond margins on breeding sites with a large amount of grassy ecotone and extensive herbaceous ground cover in the upland habitat.

Drift fences were constructed from standard 100ft x 3ft silt fencing. The bottom edge of the fence material was buried 6 inches into the ground to prevent salamanders

from tunneling underneath the fences. The drift fences were supported by wooden stakes and staples. Repairs on drift fences were conducted when necessary.

Funnel traps were constructed from window screening and modeled after the size and schematics of Enge (1997). Traps were placed at each end and in the middle of both the inside and the outside of the fence, for a total of 6 funnel traps per fence. The fences were utilized with respect to local weather. Traps were opened when rainy conditions were forecast and salamanders were expected to be moving. Soil ramps were placed in the mouth of the funnel to act as a natural surface and herbaceous vegetation was used to shade the funnel traps from direct exposure from the sun and intensive heat. When in use, traps were checked each morning to ensure no trap-induced mortality occurred.

Eleven drift fences were constructed around potential herpetofauna breeding ponds and wetland areas (Figure 16). Fifteen "fence nights" during October through May yielded 10 different species captured (Table 11).

Figure 15. Drift fence used in herpetofaunal surveys dividing slope and wetland on the Carter Tract of Econfina Creek WMA.

Table 11. Herpetofaunal species captured in drift fences on the Carter Tract of Econfina Creek WMA, October 2005- May 2006.

Cricket frog	*Acris gryllus*
Eastern Narrowmouth toad	*Gastrophryne carolinensis*
Florida Chorus frog	*Pseudacris nigrita nigrita*
Southern Leopard frog	*Rana utricularia*
Eastern Spadefoot toad	*Scaphiopus holbrookii holbrookii*
Southern Black racer	*Coluber constrictor priapus*
Pigmy Rattlesnake	*Sistrurus miliarius*
Garter snake	*Thamnophis sirtalis sirtalis*
Southern Fence lizard	*Sceloporus undulatus undulatus*
Ground skink	*Scincella lateralis*

Figure 16. Location of drift fences for herpetofaunal surveys on the Carter Tract of Econfina Creek WMA, October 2005- May 2006.

MISCELLANEOUS MANAGEMENT ACTIVITIES

FWC personnel performed numerous tasks in maintaining and improving the Carter Tract. A kiosk with display cases was built for the entrance to provide additional information to fisherman and hunters (Figure 17). Additional display boards on the front porch of the office will be placed. This information includes aerial photographs, pond

locations, emphasis on new rules or regulations, planned prescribed burning areas, as well as planned timber cutting operations. Gates and barricades have also been repaired as needed. Additional signage was posted as needed. Work plans for Fiscal Years 2005-06 and 2006-07 are contained in Appendices IX and X.

Figure 17. Plexi-glassed kiosk installed at the entrance to the Carter Tract was designed to provide additional information to hunters, anglers and others on the area.

LAW ENFORCEMENT ACTIVITIES

Wildlife Officers provided 251 hours of patrol in the Carter Tract from July 1, 2005 through December 30, 2005. No warnings or citations were written. Officers did find three individuals riding horses inside the area. These individuals were informed about the problems associated with riding in ecological sensitive areas and were verbally warned about the restrictions on horseback riding.

Law enforcement activity from January 1, 2006 through March 1, 2006 is summarized in the table below.

Table 12. Summary of law enforcement activities on the Carter Tract of Econfina Creek WMA, January 1, 2006 – March 1, 2006.

		January 2006 - March 1, 2006	
Ofcr	1. Violation activity	2. Patrol hours	3. And awareness of potential law enforcement problems.
3470	none	8	litter outside of their fence in two places, spot checked it
3471	none	2	none
3472	none	2	none
3474	none	15	none
3475	none	26	worked mostly turkey season, found sign indicative hunter trespass
3476	none	20	22 contacts
	total hrs:	73	

LITERATURE CITED

Alford, R.A. 1980. Population structure of *Gopherus polyphemus* in northern Florida. J. Herpetol. 14:177-182.

Auffenberg, W. and R. Franz. 1982. The status and distribution of the gopher tortoise (*Gopherus polyphemus*). Pp. 95-126 *In* R.B. Bury, ed. North American tortoises: conservation and ecology. USDI Fish and Wildlife Serv. Res. Rep. 12.

_____ and J.B. Iverson. 1979. Demography of terrestrial turtles. Pp. 541-569. *In* M. Harless and N. Morlock, eds., Turtles: Perspectives and Research. Wiley International, New York.

_____ and W.G. Weaver, Jr. 1969. *Gopherus berlandieri* in southeastern Texas. Bull. Florida State Mus., Biol. Sci. 13:141-203.

Breininger, D.R., P.A. Schmalzer and C.R. Hinkle. 1991. Estimating occupancy of gopher tortoise (Gopherus polyphemus) burrows in coastal scrub and slash pine flatwoods. J. Herpet. 25:317-321.

Breininger, D.R., P.A. Schmalzer, D.A. Rydene and C.R. Hinkle. 1986. Burrow and habitat study of the gopher tortoise in scrub and flatwoods habitat types. Final Project Report, Project No. GFC-84-016. Florida Game and Fresh Water Fish Comm., Nongame Wildlife Program. 313pp.

Burke, R.B. 1989. Burrow-to-tortoise conversion factors: comparison of three gopher tortoise survey techniques. Herp. Review 20:92-94.

Clewell, A.F. 1981. Natural Setting and Vegetation of the Florida Panhandle: An Account of the Environments and Plant Communities of Northern Florida West of the Suwanee River. United States Army Corps of Engineers Contract No. DACN01-77-1-104. Mobile District, Alabama. 773pp.

Cox, J., D. Inkley and R. Kautz. 1987. Ecology and Habitat protection needs of gopher tortoise (*Gopherus polyphemus*) populations found on land slated for large scale development in Florida. Nongame Wildlife Program Technical Report No. 4. Florida Game and Fresh Water Fish Comm., Tallahassee, FL. 64pp.

Diemer, J.E. 1986. The ecology and management of the gopher tortoise in the southeastern United States. Herpetologica 42:125-133.

_____. 1987. Gopher tortoise status and harvest impact determination: Final Report. Florida Game and Fresh Water Fish Comm., Nongame Wildlife Program. Tallahassee, FL. 87 pp.

_____. 1992b. Demography of the tortoise *Gopherus polyphemus* in Northern Florida. J. Herp. 26:281-289.

_____ and C.T. Moore. 1994. Reproduction of Gopher Tortoises in North-central Florida. Pp. 129-137 *In* Bury, R.B. and D.J. Germano, Eds. 1994. Biology of North American Tortoises. Fish and Wildlife Research 13. USDI, National Biological Survey, Washington, D.C. 204pp.

Douglass, J.F. 1978. Refugia of juvenile gopher tortoises, *Gopherus polyphemus* (Reptilia, Testudines, Testudinidae). J. Herp. 12(3):412-413.

Enge, Kevin M. 1997. A standardized protocol for drift-fence surveys. Florida Game and Freshwater Fish Commission Technical Report No. 14, Tallahassee, FL.

Ernst, C.H. and R.W. Barbour. 1972. Turtles of the United States. The University Press of Kentucky, Lexington. 347pp.

Ernst, C.H., Lovich, J.E., and Barbour, R.W. 1994. Turtles of the United States and Canada. Smithsonian Institution. Washington, DC. 466-478.

Florida Natural Areas Inventory and Florida Department of Natural Resources. February 1990. Guide to the Natural Communities of Florida, p. 3-6.

Huckle, H.F. and H.H. Weeks. 1965. Soil survey of Washington County, Florida. U.S. Department of Agriculture Soil Conservation Service, in cooperation with the University of Florida Agricultural Experiment Stations.

Landers, J.L., and D.W. Speake. 1980. Management needs of sandhill reptiles in southern Georgia. Proceed. of Annual Conf. Southeastern Assoc. Fish Wildlife Agencies. 34:515-529.

Landers, J.L., J.A. Garner, and W.A. MacRae. 1980. Reproduction of gopher tortoises (*Gopherus polyphemus*) in southwestern Georgia. Herpetologica 36: 353-361.

Landers, J.L., W.A. MacRae, and J.A. Garner. 1982. Growth and maturity of the gopher tortoise in southwestern Georgia. Bull. Florida State Mus. Biol. Sci. 27(2):81-110.

Layne, J.N. 1989. Comparison of survival rates and movements of relocated and resident gopher tortoises in a south-central Florida population. Pp. 73-79 *In* J.E. Diemer, D.R. Jackson, J.L. Landers, J.N. Layne, And D.A. Wood (eds.), Proc. Gopher Tortoise Relocation Symp., Florida Game and Fresh Water Fish Comm., Nongame Wildl. Prog. Tech, Rep. No. 5., Tallahassee, FL. 109pp.

Mann, T. 1993. Gopher tortoise densities and burrow occupancy rates on selected sites in Mississippi. Mississippi Museum of Natural Science. Mississippi Department of Wildlife, Fisheries, and Parks. Jackson. 20pp.

Martin, P.L. and J.N. Layne. 1987. Relationship of gopher tortoise body size to burrow size in a southcentral Florida population. Florida Scientist 50:264-267.

McCoy, E.D. and H.R. Mushinsky. 1992a. Studying a species in decline: gopher tortoises and the dilemma of "correction factors". Herpetologica 48(4):402-407.

McCoy, E.D. and H.R. Mushinsky. 1992b. Studying a species in decline: changes in populations of the gopher tortoise on Federal lands in Florida. Fla. Scientist 55(2):116-125.

Moore, Frank R., P. Kerlinger and T.R. Simons. 1990. Stopover on a Gulf Coast barrier island by spring trans-gulf migrants. Wilson Bulletin 102(3): 487-500.

Mushinsky, H.R. and L.A. Esman. 1994. Perceptions of gopher tortoise burrows over time. Fla. Field Nat. 22(1):1-7.

Mushinsky, H.R., D.S. Wilson and E.D. McCoy. 1994. Growth and sexual dimorphism of *Gopherus polyphemus* in central Florida. Herpetologica 50(2):119-128.

O'Meara, T.E. and M.J. Abbott. 1987. Gopher Tortoise Response to Summer Burning in Longleaf Pine/Turkey Oak Sandhills. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Section Annual Performance Report, Tallahassee.

Paxton, C.J., C.W. Hickey and F.E. Cross. 2005. Northwest Regional Office Freshwater Fisheries Management. Draft Completion Report: Deer Point Lake Angler Exploitation Study. Florida Fish and Wildlife Conservation Commission, Panama City, Florida, USA.

Taylor, R.W., Jr. 1982. Human predation on the gopher tortoise (*Gopherus polyphemus*) in north-central Florida. Bull. Florida State Mus. Biol. Sci. 28:79-102. Wilson, D.S. 1991. Estimates of survival for juvenile gopher tortoises, *Gopherus polyphemus*. J. Herp. 25(3):376-379.

Wegener, W.D., O. Holcomb, and V. Williams. 1974. Sampling shallow water fish populations using the Wegener Ring. Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies 27(1973): 663-673.

Wilson, D.S. 1991. Estimates of survival for juvenile gopher tortoises, *Gopherus polyphemus*. J. Herp. 25(3):376-379.

Witz, B.W., D.S. Wilson and M.D. Palmer. 1991. Distribution of *Gopherus polyphemus* and its vertebrate symbions in three burrow categories. Amer. Midl. Nat. 126:152-158.

Witz, B.W., D.S. Wilson and M.D. Palmer. 1992. Estimating population size and hatching mortality of *Gopherus polyphemus*. Florida Scientist 55:14-19.

Appendix I. Percent Occurrence of Fish Species Sampled via Wegener Rings for Dry, Black, Dykes Mill and Green Ponds on the Carter Tract of Econfina Creek Wildlife Management Area,October – November 2005 and March – April 2006.

Percent occurrence of fish species on Dry Pond through Wegener Ring sampling, fall 2005.

Fish Species	Shoreline	1/2 Meter	1 Meter	Total
E. Starhead Topminnow	0.0	0.9	1.5	1.1
Mosquitofish	2.2	9.2	13.4	10.2
Lake Chubsucker	0.9	0.0	1.6	0.9
Pygmy Sunfish	24.6	19.7	9.7	15.3
Pygmy Killifish	60.3	56.6	64.3	61.2
Warmouth	0.0	0.9	0.7	0.7
Bluespotted Sunfish	6.5	6.6	2.2	4.3
Tadpole Madtom	3.9	0.2	0.0	0.8
Chain Pickerel	0.0	0.2	0.1	0.2
Swamp Darter	0.9	3.6	3.5	3.1
Bluegill	0.0	1.7	2.9	2.1
Silverside	0.0	0.0	0.0	0.0
Largemouth Bass	0.0	0.0	0.0	0.0
Yellow Bullhead	0.0	0.0	0.0	0.0
Dollar Sunfish	0.0	0.2	0.0	0.1
Banded Topminnow	0.4	0.0	0.0	0.1
Pirate Perch	0.4	0.0	0.0	0.1

Percent occurrence of fish species on Black Pond through Wegener Ring sampling, fall 2005.

Fish Species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	2.6	3.6	5.6	3.6
Mosquitofish	4.2	17.9	27.1	14.9
Lake Chubsucker	1.1	2.4	0.9	1.6
Pygmy Sunfish	12.2	5.6	3.7	7.5
Pygmy Killifish	65.6	57.5	38.3	56.6
Warmouth	1.1	1.2	0.0	0.9
Bluespotted Sunfish	10.6	10.7	8.4	10.2
Tadpole Madtom	0.0	0.0	0.9	0.2
Chain Pickerel	0.0	0.4	0.0	0.2
Swamp Darter	1.6	0.8	0.9	1.1
Bluegill	0.0	0.0	12.1	2.4
Silverside	0.0	0.0	0.9	0.2
Largemouth Bass	0.0	0.0	0.9	0.2
Yellow Bullhead	0.5	0.0	0.0	0.2
Dollar Sunfish	0.5	0.0	0.0	0.2
Banded Topminnow	0.0	0.0	0.0	0.0
Pirate Perch	0.0	0.0	0.0	0.0

Percent occurrence of fish species on Dyke's Mill Pond through Wegener Ring sampling, fall 2005.

Fish Species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	0.0	1.4	6.1	1.3
Mosquitofish	1.3	32.5	14.6	13.7
Lake Chubsucker	0.3	0.0	0.0	0.2
Pygmy Sunfish	15.6	31.1	46.3	25.0
Pygmy Killifish	81.3	33.0	15.9	56.0
Warmouth	0.3	0.0	3.7	0.7
Bluespotted Sunfish	1.3	0.9	3.7	1.5
Tadpole Madtom	0.0	0.5	0.0	0.2
Chain Pickerel	0.0	0.0	1.2	0.2
Swamp Darter	0.0	0.5	3.7	0.7
Bluegill	0.0	0.0	0.0	0.0
Silverside	0.0	0.0	0.0	0.0
Largemouth Bass	0.0	0.0	0.0	0.0
Yellow Bullhead	0.0	0.0	0.0	0.0
Dollar Sunfish	0.0	0.0	0.0	0.0
Banded Topminnow	0.0	0.0	1.2	0.2
Pirate Perch	0.0	0.0	3.7	0.5

Percent occurrence of fish species on Green Ponds through Wegener Ring sampling, fall 2005.

Fish Species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	2.4	0.0	1.6	1.3
Mosquitofish	0.8	4.3	22.9	12.5
Lake Chubsucker	4.3	0.3	0.0	1.0
Pygmy Sunfish	57.7	55.0	24.2	40.8
Pygmy Killifish	27.3	27.1	35.5	31.2
Warmouth	0.8	2.3	0.0	0.9
Bluespotted Sunfish	5.1	10.1	9.5	8.7
Tadpole Madtom	0.8	0.0	0.0	0.2
Chain Pickerel	0.0	0.3	0.2	0.2
Swamp Darter	0.8	0.6	4.1	2.3
Bluegill	0.0	0.0	2.0	0.9
Silverside	0.0	0.0	0.0	0.0
Largemouth Bass	0.0	0.0	0.0	0.0
Yellow Bullhead	0.0	0.0	0.0	0.0
Dollar Sunfish	0.0	0.0	0.0	0.0
Banded Topminnow	0.0	0.0	0.0	0.0
Pirate Perch	0.0	0.0	0.0	0.0

Percent occurrence of fish species on Green Pond North through Wegener ring sampling, spring 2006.

Fish species	Shoreline	1/2 meter	1 meter	Total

E. Starhead Topminnow	0	0	2.67	0.63
Mosquitofish	8.08	5.71	4.28	6.15
Lake Chubsucker	3.08	0.86	4.28	2.38
Pygmy Sunfish	56.92	69.43	64.71	64.24
Pygmy Killifish	13.46	4.86	8.02	8.41
Warmouth	3.46	5.43	0.53	3.64
Bluespotted Sunfish	8.85	9.14	3.21	7.65
Tadpole Madtom	3.46	0.57	1.6	1.76
Swamp Darter	1.15	1.71	8.02	3.01
Bluegill	0	0.57	1.07	0.5
Largemouth Bass	0	0.86	1.6	0.75
Yellow Bullhead	0.38	0	0	0.13
Banded Topminnow	0.38	0	0	0.13
Grass Pickerel	0.77	0.57	0	0.5
Spotted Gar	0	0.29	0	0.13

Percent occurrence of fish species on Green Pond South through Wegener ring sampling, spring 2006.

Fish species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	0.87	0.39	0	0.37
Mosquitofish	6.99	11.39	6.27	8.87
Lake Chubsucker	1.31	0.58	9.85	3.6
Pygmy Sunfish	45.41	29.15	34.03	34.1
Pygmy Killifish	34.93	45.56	30.45	38.63
Warmouth	1.31	0.58	1.79	1.11
Bluespotted Sunfish	6.11	10.23	6.27	8.13
Tadpole Madtom	0.87	0.19	2.09	0.92
Swamp Darter	0.87	1.54	7.16	3.14
Bluegill	0	0	1.19	0.37
Largemouth Bass	0	0	0.9	0.28
Grass Pickerel	0.44	0	0	0.09
Dollar Sunfish	0.87	0.39	0	0.37

Percent occurrence of fish species on Black Pond through Wegener ring sampling, spring 2006.

Fish species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	0	1.92	0	0.49
Mosquitofish	21.88	15.38	23.14	20.98
Lake Chubsucker	0	1.92	0.83	0.98
Pygmy Sunfish	25	34.62	40.5	36.59
Pygmy Killifish	37.5	21.15	14.05	19.51
Warmouth	0	1.92	0	0.49
Bluespotted Sunfish	0	11.54	7.44	7.32
Tadpole Madtom	3.13	0	0	0.49
Swamp Darter	0	11.54	13.22	10.73
Largemouth Bass	0	0	0.83	0.49
Banded Topminnow	9.38	0	0	1.46
Dollar Sunfish	3.13	0	0	0.49

Percent occurrence of fish species on Dry Pond through Wegener ring sampling, spring 2006.

Fish species	Shoreline	1/2 meter	1 meter	Total
E. Starhead Topminnow	0.86	0	0	0.4
Mosquitofish	23.28	8.05	3.06	9.31
Lake Chubsucker	3.45	2.68	3.93	3.44
Pygmy Sunfish	19.83	41.61	29.26	30.77
Pygmy Killifish	33.62	18.12	15.28	20.45
Warmouth	0.86	1.34	0	0.61
Bluespotted Sunfish	5.17	9.4	0.87	4.45
Tadpole Madtom	2.59	1.34	0	1.01
Swamp Darter	9.48	15.44	45.41	27.94
Bluegill	0	0	0.87	0.4
Largemouth Bass	0	0.67	0.44	0.4
Grass Pickerel	0	0.67	0.44	0.4
Dollar Sunfish	0.86	0	0	0.2
Chain Pickerel	0	0.67	0	0.2

Appendix II. Plan for Special Opportunity Public Fishing Program on the Carter Tract of Econfina Creek WMA.

Techniques:

1. Boats/Ramps. Because of the high cost of constructing ramps, it is recommended that boats be provided for the anglers. Fishing will be allowed only in the areas where the boats are located. The anglers will not be allowed to transport or trailer in their own vessels. Per the mitigation bank permit, 10 boats will initially be placed initially, with the possibility of 20 total boats in the future. Boats will be dispersed among the major ponds on the Carter Tract (Deep Edge, Black, Dry, Green Ponds) based on their size. Boats are recommended to be aluminum Jon boats, 14 ft in length with a 48 in beam, outfitted with permanently-affixed oars. In the future electric trolling motors may be added. Boats will be marked in an obvious fashion to deter theft, and secured at identified pond access points.

2. Check Station Operation. Several of the boats will be available by reservation, but most will be available on a first-come, first-served basis during approved hours. It will be mandatory that the angler check in and out with the creel clerk at the check station. Per the mitigation bank permit, a maximum of 20 anglers will be allowed on the property at any one time. Two creel clerks will be hired to check anglers in and out. Days and hours of operation are proposed to be Friday through Monday, from 6:00am until 5:00pm (5:00am until 7:00pm in the summer). Days and hours would be subject to change due to management activities. Ponds may be closed to public access, by posted notice at the main entrance, for management purposes, or in the event that access exposes the public to danger.

Upon check in, anglers will be able to choose the lake on which to fish based on availability. The angler will also receive a creel kit corresponding to their boat, containing a creel data sheet, map of the area, pen, ruler and airhorn. Portable radios may be an option as well, depending upon their range. The angler will surrender their fishing license and receive a daily permit that will indicate which pond they will be authorized to fish. Upon checkout, the creel clerk will verify that the angler has completed the creel data sheet. The angler will then return the daily permit and receive their fishing license.

It will be the creel clerk's responsibility to determine which boat the angler checks out, and subsequently where the angler will be. This information will be posted inside the check station to account for the location of all anglers. At the close of fishing hours, if all anglers have not checked out, the creel clerk or another employee will locate and escort him/her to the station for checkout.

3. Fishing Rules/Regulations. The area is to be closed to public use outside the approved fishing or hunt days and times. This will reduce the risk of poaching and possible habitat degradation, and will help ensure the accuracy of creel/hunt data collected at the check station. This data is vital to understanding the population dynamics of the fauna, and providing accurate management recommendations for the future.

Fishing rules and regulations will be posted at the check station and provided to anglers in the creel kit. Rules and regulations will follow standards established by the FWC, and will contain, but are not limited to, the following:

- All anglers must obtain a permit at the check station
- Fishing License required (call 1-888-FISH-FLORIDA; 347-4356)
- Only boats and motors 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
- Black crappie daily bag limit: 10
- All black crappie less than 10 inches total length must be released immediately
- Largemouth bass are catch and release only
- Fish may not be filleted, nor their head or tail fins removed, until the angler has completed fishing for the day (and has checked out at check station.)
- 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. Landing nets may be used and possessed for boating fish caught by rod and reel or hook and line
- 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 named roads and designated parking areas as designated in the area use brochure
- Swimming and float tubes are prohibited

• Swimming, possession of firearms, camping or open fires at the boat launch site are prohibited

4. Access. Parking along roads will be sufficient for access to the lakes. In addition, cleared areas are already established at access points to Black and Dry Ponds. Parking at Green Ponds may be possible along the dirt road that runs along their eastern edge. Following mitigation bank regulations, gravel parking areas shall be installed where necessary to accommodate increasing numbers of anglers.

The following timeline provides a summary of our intent for opening ponds to fishing:

- Deep Edge Pond, Cat Pond, and Boat Pond: **March 2007** (access via "Loop Road")
- Black Pond: **March 2007** (contingent on the completion of bridges at Greenhead Branch and Dykes Mill Pond)
- Garrett Pond: **March 2007** (contingent on the completion of bridges at Greenhead Branch and Dykes Mill Pond)
- Dry Pond: **March 2007** (contingent on the completion of bridge near Power Line Pond)
- Green Ponds: **March 2007** (contingent on the completion of bridges north of Garrett Pond)

Estimated Costs:

1. Boats and motors. Providing boats will significantly outweigh the costs involved in building boat ramps on the ponds, as well as minimizing impact on the habitat. Estimated cost of one individual boat ramp on Dry Pond would be $50,000. Approximate prices for outfitting one boat, including accessories is outlined below:

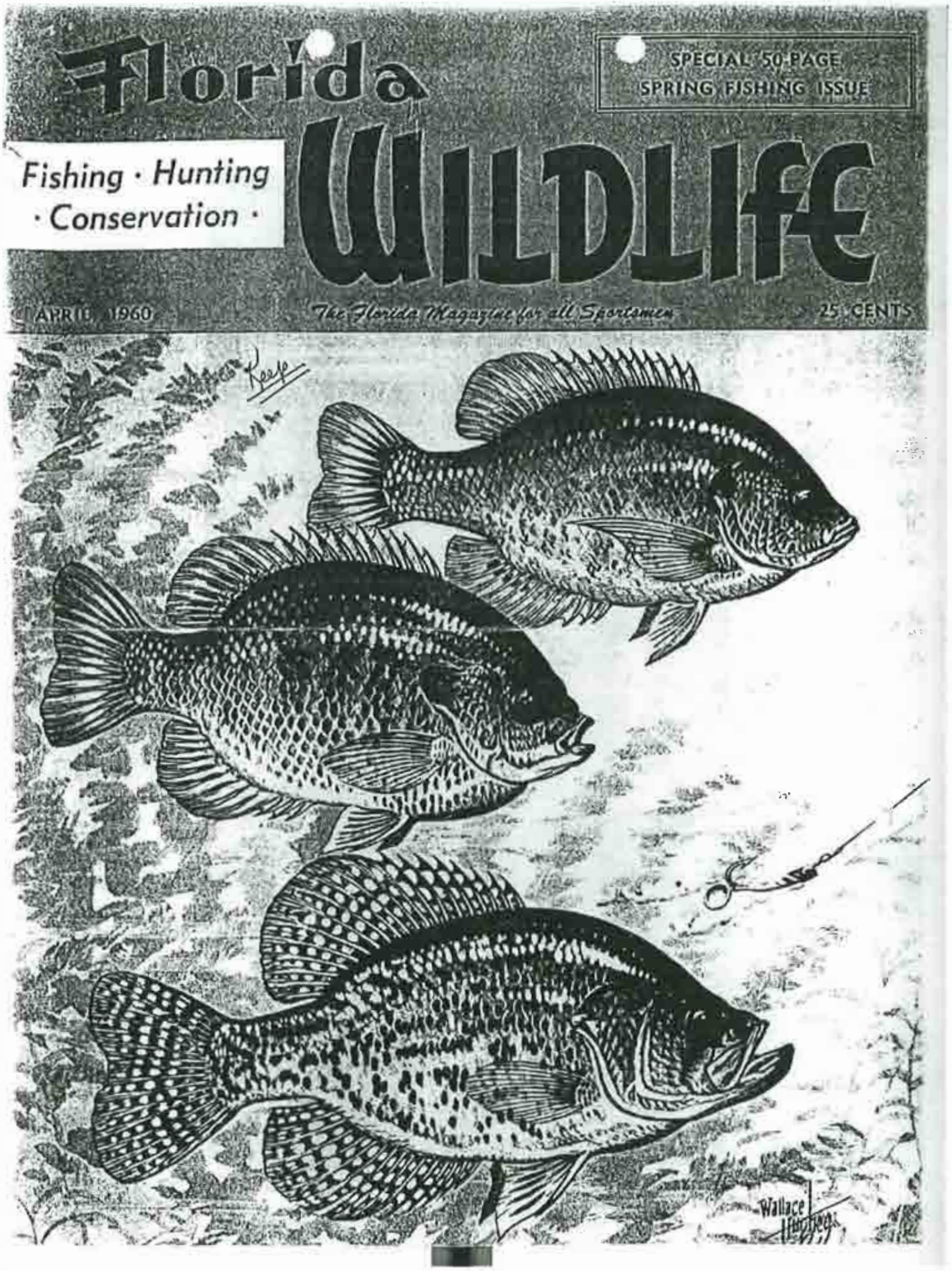
• Boats: 14-foot long, 48-inch beam width Jon boat:	$1500
• Oars, pair, with oar locks:	$ 100
• Creel kit (data sheet, area map, pens, ruler, and airhorn):	$ 5
• Life jackets:	$ 20
Total per boat	$1625

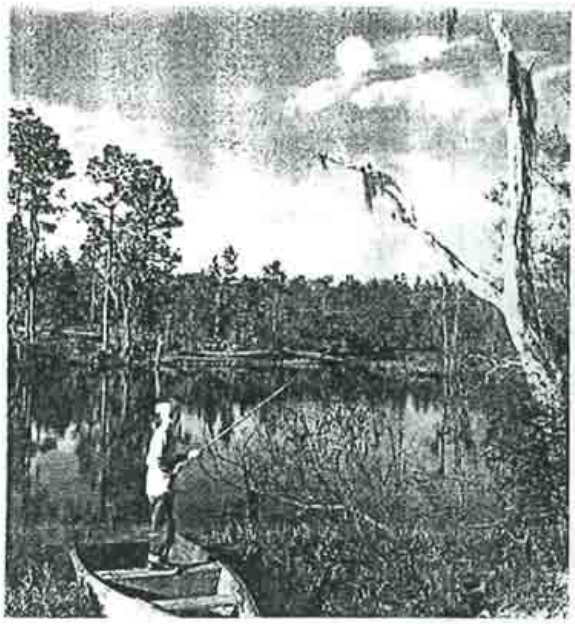
2. Check Station. Two creel clerks are needed for administration of daily quotas, boats, motors and creel kits. See table below for a total cost analysis of implementation, including both OPS budget and boat/supply costs.

Cost Analysis

Fishing Year	Boat/motor	OPS Check Station	Total Annual
2006	$32,500 (20 boats)	$23,420	$55,920
2007	n/a	$23,420	$23,420
2008	n/a	$23,420	$23,420

Appendix III. 1960 *Florida Wildlife* article on fish camp at Carter Tract of Econfina Creek WMA.





Fitzhugh Carter's fishing ranch is made up of 30 ponds spread out over 2,300 acres.

For a small fee, you have 30 ponds to try your fishing luck on . . .

Florida's Fishing Ranch

By MEL TENNIS, JR.

SCHOOL TEACHERS AND FISHERMEN must have faith. They also must have patience, must be practical and not afraid of hard work.

Find a practical school teacher whose problem is to find the fishing he loves and anything can happen.

It has.

It's a 2,300-acre fishing ranch made from some 30 ponds linked by canals 10 miles south of Wausau in Washington County.

It's the property and hobby-turned-vocation of Fitzhugh Carter, 53, who retired from teaching at Vernon High School in 1957.

Dry Pond is the largest and gave the most trouble. Its 1,000 acres stretch for over a mile now taking in the 10 Green Ponds partially lost among the sandhills.

The system is fed by Pinelog Creek and ultimately drains into the Choctawhatchee River, 15 miles west.

The ex-schoolman charges fishermen $1 each to fish in any of the ponds 5 a.m. until 8 p.m. They can also hunt game in season at no extra charge. Of course they must have a valid Florida fishing or hunting license. Visitors may picnic free during the day but are not allowed to camp overnight.

If you should be so unfortunate as not to catch any fish, you get a 'rain-check,' to try your luck again 'on the house.'

Miles of trails—Carter doesn't know how many—winding through the sand hills are marked with signs and arrows at intersections, but if you're not careful you can get lost. At least that's the way it seemed to me.

I know my way around half a dozen big cities, but this fishing ranch in southern Washington County baffles me. Ponds pop into view in the unlikeliest places, over a rise or around a bend, and they stretch back under the trees all over the place.

To link up all of the ponds, canals meander all over the place like a Venice in the sand hills laid out by Rube Goldberg, the cartoonist.

This pioneer do-it-yourself conservationist readily admits that his fish-

(Continued on Next Page)

If you should fail to catch any fish, you get a "rain-check" and can try your luck some other time.

(Continued From Preceding Page)
ing ranch is a kind of crude, home-made job, but—what is strange and wonderful in these inflationary times is it's not financed. His 2,300 acres of sand and water are not in hock to some lending institution. Carter is a pay-as-you-go-type. The only people off and on his payroll for the past ten years have been the dragline man and the bulldozer operator. They'd be working long enough to use up his spare cash and would come around again the next month for more.

The canals, dikes, dams and spillways connecting and controlling the water in the ponds makes a bewildering pattern, but it works. The proof is in the fishing.

While we stood at the edge of Dry Pond—which Carter trusts will never be dry again—a couple of airmen fishing from a boat held up a big bass that looked like it weighed seven or eight pounds. Carter said that it's nothing unusual to pull in five and six-pound bass and that the largest ever landed weighed 13½ pounds.

Other fish caught are blue gill, shellcrackers, crappie, warmouth and jackfish. With the help of Jerry Banks from the Game and Fresh Water Fish Commission's office in Panama City, Carter stocked his first pond in 1951 with bass, blue gill and shellcrackers. His procedure was to get the rough fish out and restock before any pond was connected to the system of ponds and canals.

First he would seine out all the fish he could in a lake then would poison to be sure they were all out.

Carter related that some biologists can tell a male bass from a female but that he didn't know how. As it turned out it didn't make a lot of difference. He'd put in two or three dozen adult fish and they knew who were males and females. It was no problem for the fish. The ex-school teacher gave them an "A" in multiplication.

He has set aside several small lakes as hatcheries to produce fingerlings for restocking any lake that gets low.

The 30 ponds are all linked by a series of canals.

"I fooled with this 'cause I wanted to fish," he explained, adding that the high water in 1940 gave him the idea of holding all the water in the ponds.

Born a mile away he had watched the ponds wax and wane all his life. In the years after a rainy season the ponds would be brimming full and the fishing was good. Then the drought would come. The ponds would shrink to mere potholes and Carter would have to go far to indulge his favorite pasttime.

Dry seasons particularly rendered Dry Pond and the Green Ponds wretched for fishing because their natural source of water, Pinelog Creek, had been diverted to supply Dykes Old Mill Pond ever since 1873.

As long as the ground remained full of water after heavy rains, the ponds would remain full. Once the subsurface water drained away as happened during dry years, the water in Dry Pond would gurgle down a big sink hole as if someone had pulled the plug out of an enormous bathtub. The only way to keep Dry Pond permanently wet was to plug the hole.

In the 1940's Dykes grain mill shut down and the Old Mill Pond was abandoned. It was then that the Vernon school teacher decided to turn the creek back to its original course to nourish Dry Pond and the 10 Green Ponds.

The first step was to acquire land. Carter bought his first 200 acres of near worthless land in 1941 at an Internal Improvement Fund auction. His top bid was $5 per 40 acres. Inheriting 400 acres from his father, Carter had accumulated 2,300 acres by 1954.

There was a flood in 1948 but by November 1954, it looked like north Florida was well into a dry season, Carter recalled. Though Dry Pond and the Green Ponds were still full, there was no telling how much longer the underground waters would remain as a safeguard against Dry Pond suddenly draining into the earth.

Invisibly and silently one Thursday in November mother nature pulled the plug on Dry Pond. The thousand acre pond began to sink from sight at the rate of one foot a day. By Sunday it had gone down four feet. Hurriedly Carter bulldozed an earthen dam across a narrow part of Dry Pond to hold the waters back from the sink, but that

was only a strategic retreat to gain time.

The bulldozer cautiously shoved earth and stumps into the big hole but that did no good. Water could be seen sinking in the hole 15 feet down. And to make things more difficult, Carter couldn't find a dozer operator who was willing to take on the hazardous job of driving a 30-ton machine to the very edge of the big hole.

"I'm going to fill it up if I have to haul rocks in with a wheelbarrow," Carter declared as he and Jerry Banks made plans to shoot the works.

Finally finding a grizzled veteran 'dozer operator who had gouged roads up and down the Rocky Mountains and who snorted his scorn of the sink hole, Carter and Banks decided to go-for-broke.

They got a case of dynamite, lit two long fuses, dumped it in the sink and ran for cover.

It went off with one hell of a roar! The whole swamp shook, they related, as 45 dead fish popped to the surface.

Thirteen and one-half hours later the Rocky Mountain bulldozer man had scraped thousands of tons of earth and a kind of limestone goo found around the area into the bothersome hole. He filled it in and for good measure triumphantly rode his machine back and forth on top of the hole to make sure the plug was tight.

Rental of the bulldozer was $135, the best investment he ever made Carter says.

With the hole plugged up Carter went ahead with diverting Pinelog Creek back to its original course to supply Dry Pond and the Green Ponds. To do this he put a dam with spillway and a dike between Dykes Old Mill Pond and Dry Pond.

To let his bulldozer man know how high to push up the dirt for the dam and dike, the backwoods engineer cut off cypress saplings at the water's edge at the height he wanted. Then he stuck old empty oil cans on the stobs and all the 'dozer man had to do was shove the earth to the height of the cans.

Carter said that people called him 'pond-crazy' for putting his life savings and most of his income into the project. However, he had no children to dote on and he and Mrs. Carter were thrifty in their habits as most country people are.

Some of the canals cut 15 to 20 feet deep through the sand hills give the impression that much expensive dragline work was done. Visitors shake their heads over how it was accomplished by one school teacher in his spare time.

Carter said that it wasn't as difficult or as expensive as you might think. "The water level in one of the lakes would usually be higher than it was in the other. So we'd scratch the surface just enough to make the water flow and then the water itself would cut through the sand and do a lot of the work." Most of this kind of work would be done when the ponds were very full.

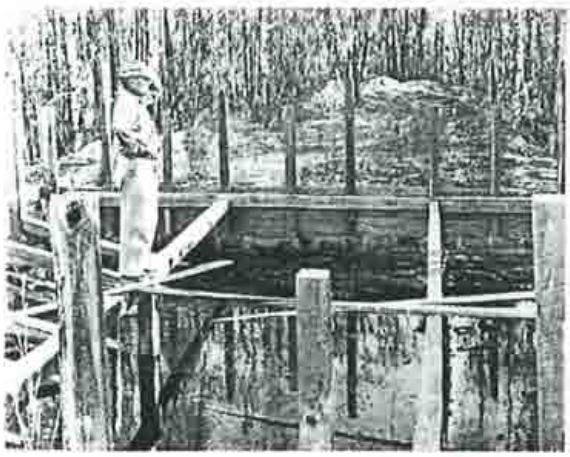
He made the water work in another way. Lily pads clogged the 75-acre Dykes Old Mill Pond so thickly that fishing was impossible. With the aid of his dams, dikes and spillways, Carter raised the water level in the pond a couple of feet over the big bonnets, killing them and making the surface clear once more.

Referring to his project as a

(Continued on Page 43)

Anglers visiting Florida's fishing ranch will find good quantities of bass, bluegills, shellcrackers, crappie, warmouth, and chain pickerel.

An intricate system of dikes, dams, and spillways is used to maintain water levels.



large ants inside the container and used the improvised bait as a slowly retrieved casting plug. Both ideas added fish to his stringer.

Another enterprising angler who ran out of bait while pan-fishing, rolled small pieces of Kleenex into fairly firm balls, dipped them in the oil remaining in the sardine can from which he had just dined. Carefully placed on the point of his hook, the oil-saturated bits of paper proved both attractive and tasty to several large bream.

When necessity has called for such action, successful baits also have been fashioned from empty cartridge cases, cigar butts, pipe cleaners, corks and rubber bands, fingers of old gloves, clothespins—and even a two-sided *picture* of a fish, sandwiched between thin sheets of clear plastic!

Many fish have been taken on strips torn from fishermen's shirttails, and trolled. As a substitute for natural eel baits and pork rind—favorites for black bass—pre-cut pieces of chamois to desired shape, dye and store in scented solution until needed.

For snook at night, try cutting out a fish-shaped piece of thin cardboard about three inches long and attaching it to the hook of a ¼ ounce yellow jig. Fished around docks, piers and pilings, the combination is proving productive in the Marco area.

Fishing success often depends on how bait offerings are presented.

Fool wary fresh water fish by hiding a hook baited with live worms inside a mud ball, then let the fished baits work free naturally as the water softens the mud.

When still-fishing from an anchored boat, you might try removing float and sinker from your line and allow baits to gradually drift downstream. To keep baits down sufficiently long to interest bottom-feeders, you can add a soluble Alka-Seltzer tablet.

A somewhat similar idea for the caster, who needs sinker weight to obtain casting distance, is the use of sinkers made from a water-dampened mixture of eight parts dry, sifted sand and two parts technical ammonium sulphate, and fitted with "line eyes" while still damp. Dried in a home oven, the sinkers will be as hard as stone, but will fall apart as soon as they hit the water, permitting a cast bait to perform thereafter without the drag of a sinker.

Many good fish have been lost by failure of dip nets to open up to full size during the netting operation. Placing a small lead sinker in the very bottom of a landing net will cause it to take proper shape immediately on being picked up.

Recently the nation's newspapers carried a dramatic story of a discouraged musician who committed suicide because he had reached the conclusion that songwriters had exhausted all the possibilities of the musical scale. Obviously, the fellow was never a fisherman. ●

FISH RANCH

(continued from page 25)

'cheap-type operation,' Carter listed his own tools as a sawmill, an old truck he picked up for $50 and a jeep. He traded an old sugar cane mill for the saw mill and cut his own timber for dams, bridges, spillways, benches and boats.

Most of the 50 boats seen around the ponds he made himself. He doesn't rent boats and visitors use them at their own risk. Some sportsmen bring their own boats. It's possible to take a scenic fishing trip for miles from one end of the chain of lakes to the other via the canals.

By setting out a few thousand pines each winter, Carter has reforested about 200 acres in recent years. He anticipates that turkey, squirrel and quail will become more plentiful as natural cover increases.

The season is always closed on deer. The ones seen on the ranch are just passing through, he said, though the entire ranch is surrounded by 10 miles of fence which he put up.

Wild ducks and geese sometimes visit the area. To encourage them to make it a habit he plans to do some planting to supplement the natural food supply.

Otter live in the ponds and canals and their tracks can be seen in numerous spots. The season is always closed on them. Carter has always been very fond of the little animals.

The Washington County fish rancher thanks State and U. S. wildlife officers, the Soil Conservation Service, Agricultural Extension Service and other public agencies for their advice and help in planning the project. A number of those officials feel that he is pioneering a new way to make profitable use of unproductive lands and that his project might be duplicated in a number of areas in Florida.

Others question whether Carter's ponds will hold their water in a sustained drought when underground water is gone and porous limestone passages dissolve or fall away. Carter who knows the limestone sink country from long, hard, intimate experience is reasonably confident of the future. He is going ahead this year with stocking a new lake with fish and adding it to his collection.

He is betting his life savings against old mother nature who might have a trick or two up her sleeve. If she tries to put him out of business, he's sure he can counter punch with a few cases of dynamite and a bulldozer. ●

"Any Luck?"

Appendix IV. Wood Duck nest box monitoring data sheet for Carter Tract of Econfina Creek WMA.

Box # ____

Wood Duck Box Nest Survey Form

Year: _____ **WMA:** Carter Tract of Econfina

Box Location: _____

Winter (*January/February*) – **service date** – repair boxes, remove or add shavings

Observer(s): _____ **Date:** _____

Box Condition: good fair poor

Predator guard? Yes no

Predation signs on pole or in area? _____

Predation signs on or in box? _____

Box use: yes no hatched

If yes Species (circle one): Wood Duck Hooded Merganser other (specify): _____

Hen (circle one): captured/banded flushed absent

band number (if applicable): _____

Eggs (circle one): warm cold neither

eggs found _____ # old eggs _____ # new eggs _____

If hatched Species: Wood Duck Hooded Merganser other (specify): _____

eggs last check _____ # membranes found _____ # unhatched eggs _____

eggs missing _____ # dead ducklings _____

of ducklings estimated to have left the box _____

Comment/remarks: _____

Spring (*late March/early April*) – to record nest starts, clutch size, etc...

Observer(s): _____ **Date:** _____

Box Condition: good fair poor

Predator guard? Yes no

Predation signs on pole or in area? _____

Predation signs on or in box? _____

Box use: yes no hatched

If yes Species (circle one): Wood Duck Hooded Merganser other (specify): _____

Hen (circle one): captured/banded flushed absent

band number (if applicable): _____

Eggs (circle one): warm cold neither

eggs found _____ # old eggs _____ # new eggs _____

If hatched Species: Wood Duck Hooded Merganser other (specify): _____

eggs last check _____ # membranes found _____ # unhatched eggs _____

eggs missing _____ # dead ducklings _____

of ducklings estimated to have left the box _____

Comment/remarks: _____

Summer (*late July*) – to record late-nesting ducks, nest fate, etc...

Observer(s): _____ **Date:** _____

Box Condition: good fair poor

Predator guard? Yes no

Predation signs on pole or in area? _____

Predation signs on or in box? _____

Box use: yes no hatched

If yes **Species** (circle one): Wood Duck Hooded Merganser other (specify): _____

Hen (circle one): captured/banded flushed absent

band number (if applicable): _____

Eggs (circle one): warm cold neither

 # eggs found ____ **# old eggs** _____ **# new eggs** _____

If hatched **Species:** Wood Duck Hooded Merganser other (specify): _____

 # eggs last check ____ **# membranes found** _____ **# unhatched eggs** ____

 # eggs missing _____ **# dead ducklings** _____

# of ducklings estimated to have left the box _____

Comment/remarks: _____

Fall (*September*) – to record hatch of late nesters

Observer(s): _____ **Date:** _____

Box Condition: good fair poor

Predator guard? Yes no

Predation signs on pole or in area? _____

Predation signs on or in box? _____

Box use: yes no hatched

If yes **Species** (circle one): Wood Duck Hooded Merganser other (specify): _____

Hen (circle one): captured/banded flushed absent

band number (if applicable): _____

Eggs (circle one): warm cold neither

 # eggs found ____ **# old eggs** _____ **# new eggs** _____

If hatched **Species:** Wood Duck Hooded Merganser other (specify): _____

 # eggs last check ____ **# membranes found** _____ **# unhatched eggs** ____

 # eggs missing _____ **# dead ducklings** _____

# of ducklings estimated to have left the box _____

Comment/remarks: _____

Appendix V. Gopher Tortoise burrow count survey form for Carter Tract of Econfina Creek WMA.

GOPHER TORTOISE SURVEY

Page ___ of ___

Fitzhugh-Carter Tract of Econfina Creek Wildlife Management Area

Year 2005 Observers _____

Cluster number ____ _____

_____

DATE	BURROW NUMBER	BURROW STATUS	BURROW ORIENT	BURROW WIDTH	SOIL TYPE	HABITAT TYPE	LAT	LONG	COMMENTS

CODES

BURROW STATUS

1 = ACTIVE: Recent slide marks & footprints; soil at entrance has recently been disturbed by tortoise.

2 = INACTIVE: Soil undisturbed, lacks fresh sign of tortoise use but appears to be maintained.

3 = POSSIBLY ACTIVE: Difficult to determine whether activity was recent or due to tortoise.

4 = OLD (Abandoned): Partly or completely filled with litter or partially caved in, dilapidated.

HABITAT TYPES

1 = SANDHILL (Longleaf-turkey oak)
2 = PINELANDS (Flatwoods, plantations, etc.)
3 = SAND PINE SCRUB
4=XERIC OAK SCRUB
5 = HARDWOOD HAMMOCKS
6 = RUDERAL: a = grassland, b = shrub & brushland
7 = COASTAL STRAND
8 = OTHER (specify in comments section)

NOTES

1. Collect all snake skins found at or near burrow entrance. Place skin in zip-loc bag and label.
2. Facing burrow entrance, place numbered stake one meter in front and two meters to the left.
3. Read burrow caliper from inside measurements.
4. Burrow orientation is compass direction burrow entrance is facing.

Appendix VI. Wading bird nest monitoring data sheet for Carter Tract of Econfina Creek WMA.

WADING BIRD SURVEY FORM

MANAGEMENT AREA: _____
LOCATION: _____
DATE/TIME: _____
OBSERVER(S): _____

1. SPECIES: _____
NUMBER OBSERVED: MALE: _____
FEMALE: _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

2. SPECIES: _____
 # OBSERVED: MALE: _____ **FEMALE:** _____ **JUVENILE:** _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

3. SPECIES: _____ **# OBSERVED: MALE:**
_____ **FEMALE:** _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

4. SPECIES: _____
 # OBSERVED: MALE: _____ **FEMALE:** _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

5. SPECIES: _____
 # OBSERVED: MALE: _____ **FEMALE:** _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

6. SPECIES: _____
 # OBSERVED: MALE: _____ **FEMALE:** _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

7. SPECIES: _____
 # OBSERVED: MALE: _____ **FEMALE:** _____
JUVENILE: _____
 # BIRDS ON NEST: _____
 # CHICKS OBSERVED: _____
COMMENTS:
_____
_____

Appendix VII. Herpetofaunal funnel trap monitoring survey form for Carter Tract of Econfina Creek WMA.

DRIFT FENCE SURVEY

WMA ______________________

Date ______________

Observer ________________

Weather conditions last night *(circle one)*

Precipitation	*Wind*	*Temperature*
clear	no wind	<32°F
cloudy-no rain	breeze	32-50°F
light rain	moderate	51-70°F
hard rain	strong	>70°F

DRIFT FENCE NUMBER ______________

Species	*Species*	*Comments*

DRIFT FENCE NUMBER ______________

Species	*Species*	*Comments*

DRIFT FENCE NUMBER ______________

Species	*Species*	*Comments*

DRIFT FENCE NUMBER ______________

Species	*Species*	*Comments*

DRIFT FENCE NUMBER ______________

Species	*Species*	*Comments*

Appendix VIII. Econfina Creek WMA 2005-06 Regulations Summary, including Fitzhugh Carter Tract area-specific hunting regulations.

ECONFINA CREEK

WILDLIFE MANAGEMENT AREA

2005-06

REGULATIONS SUMMARY AND AREA MAP

A COOPERATIVE PUBLIC WILDLIFE AND RECREATIONAL AREA
NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
An Equal Opportunity Agency
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 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 application forms 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.

Persons using wildlife management areas are required to have appropriate licenses, permits and stamps, and display them upon request of any Commission employee. The following persons are exempt from all license and permit requirements (except for quota permits when listed as "no exemptions", recreational use 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.

Hunting, trapping and fishing licenses, and wildlife management area, archery, muzzleloading gun, wild turkey and state waterfowl permits may be purchased from county tax collectors, license agents, the Internet at 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 duck stamp, available at most post offices or at duckstamp.com. Mobility-impaired certificate applications are available from regional offices of the Commission and at MyFWC.com.

QUOTA PERMIT INFORMATION:

Archery (Cat Creek area) - 30, no-cost, special quota permits for each of 2 hunts.
Archery (Fitzhugh Carter area) - 15, no-cost, special quota permits (no exemptions) for each of 2 hunts.
Muzzleloading Gun (Cat Creek area) - 30, no-cost, special quota permits.
Muzzleloading Gun (Fitzhugh Carter area) - 15, no-cost, special quota permits (no exemptions).
General Gun (still hunt area) (first thirteen days) - 50, no-cost, regular quota permits.
General Gun (dog hunt area) (first thirteen days) - 80, no-cost, regular quota permits.
General Gun (Cat Creek area) - 30, no-cost, regular quota permits for each of 3 hunts.
General Gun (Fitzhugh Carter area) - 15, no-cost, regular quota permits (no exemptions) for each of 3 hunts.
Mobility-Impaired General Gun - 20, no-cost, special mobility-impaired quota permits (no exemptions) for each of 5 hunts.
Spring Turkey (still hunt and dog hunt area) (first nine days) - 25, no-cost, spring turkey quota permits.
Spring Turkey (Cat Creek area) - 5, no-cost, spring turkey quota permits for each of 3 hunts.
Spring Turkey (Fitzhugh Carter area) - 5, no-cost, spring turkey quota permits (no exemptions) for each of 3 hunts.

Permit applications: **Hunters must submit electronic applications for quota and special-opportunity permits at a license agent, county tax collector's office or online at MyFWC.com. Only the Recreational Use application is to be mailed to Tallahassee.** Most quota hunt permits are issued during a random drawing, which includes all applications submitted during the times and dates listed below. Any remaining permits are issued first-come, first-served. A limited number of antlerless permits may be available for selected Wildlife Management Areas. **Refer to the quota or special-opportunity permit summary for information regarding the issuance of those permits.**

A list of available permits may be obtained 1 - 2 weeks before each application period from FWC offices, tax collectors, license agents and online at MyFWC.com. Application for random drawings begins 10:00 a.m. Eastern Time on the first day of the application period and ends at midnight Eastern Time on the last day. Regular and Special quota permit applications may be submitted June 1 - 11. Mobility-Impaired Persons quota permit applications may be submitted July 13 - 29. Spring Turkey quota permit applications may be submitted November 2 - 11.

Transfer of permits: Quota and antlerless deer permits are transferable, except that any exempt permit is transferable only to another exempt person and any mobility-impaired permit is transferable only to another person who has been issued a mobility-impaired certificate by the Commission. The sale or purchase of any quota hunt permit or antlerless deer permit is prohibited.

GENERAL WILDLIFE MANAGEMENT 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 hogs 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.

AREA SPECIFIC REGULATIONS:

1. The possession or consumption of intoxicating beverages is prohibited.
2. The Cat Creek area is located south of State Road 20 and north of County Road 388. The Fitzhugh Carter area is located west of State Road 77 and the mobility-impaired area is located south of County Road 388.

PUBLIC ACCESS AND VEHICLES:

1. Open to public access year-round.
2. Parked vehicles may not obstruct a road, gate or firelane.
3. No motor vehicle shall be operated on any part of any wildlife management area that has been designated as closed to vehicular traffic.
4. Vehicles may be operated only on named or numbered roads except in the mobility-impaired area by persons possessing mobility-impaired certificates.
5. The use of all-terrain vehicles (ATVs) is prohibited except in the mobility-impaired area by persons possessing mobility-impaired certificates.
6. **Horses are allowed on designated horse trails only** except the use of horses is prohibited in the Fitzhugh Carter area.

HUNTERS AND CHECK STATIONS:

1. 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. Hunting wildlife, or the display or use of a gun in a manner capable of taking wildlife on or from rights-of-way of S.R. 20, C.R. 388, Thomas Road, Rattlesnake Road, Strickland Road, Porter Pond Road, Duma Jack/Deadening Road, Econfina Road, Greenhead Road, Hampshire Boulevard or any other paved road within the area, is prohibited.
2. Possession of a gun is allowed only during periods when hunting with a gun is permitted.
3. Hunting with a gun and light is prohibited.
4. Muzzleloading guns used for taking deer must fire a .40 caliber or larger bullet, or be 20 gauge or larger if firing two or more balls.
5. Possession of a loaded, capped or primed firearm, or discharge of a firearm on, from or across any campsite or check station is prohibited.
6. Children under the age of 16 may not be in possession of a firearm unless in the presence of a supervising adult.
7. No person shall have a gun under his control while under the influence of alcohol or drugs.
8. For taking non-migratory game, only shotguns, rifles, pistols, longbows (including compound and recurve bows), crossbows (during the general gun season or by permit only) or falconry may be used.
9. For taking 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.
10. Firearms using rimfire or non-expanding, full metal jacket (military ball) ammunition are prohibited for taking deer.
11. 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 in the designated still hunt and mobility-impaired areas.
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:

1. Camping is permitted only at designated sites or by permit from the Northwest Florida Water Management District. For additional information, call the Northwest Florida Water Management District at (850) 539-5999.

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. Bobcat and otter - Possession limit 1 unless in possession of a Trapping License.
7. Migratory birds - See Migratory Bird Hunting Regulations pamphlet.

ARCHERY:

October 15 through November 13 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas)

October 15 – 21 and 22 - 30 (Cat Creek and Fitzhugh Carter areas).

Permit, Stamp and License Requirements – Quota permit (if hunting in the Cat Creek or Fitzhugh Carter areas), hunting license, wildlife 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.

Regulations Unique to the Archery Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply.

1. Possession of firearms or crossbows is prohibited, except that centerfire shotguns are permitted 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).
2. Hunting is prohibited in the Mobility-Impaired area.

SMALL GAME:

November 12 through March 5 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas).

December 3 - 18 (Cat Creek and Fitzhugh Carter areas).

Permit, Stamp and License Requirements – Quota permit (if hunting during the quota period of the general gun season), hunting license, wildlife management area permit, migratory bird permit (if hunting migratory birds), and state waterfowl permit and 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. Bobcat and otter December 1 until March 1.

Regulations Unique to the Small Game Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply.

1. Possession of centerfire rifles is prohibited, except during general gun season.
2. Hunting is prohibited in the Mobility-Impaired area.

MUZZLELOADING GUN:

November 18 – 20 (except in the Mobility-Impaired area).

Permit, Stamp and License Requirements – Quota permit (if hunting in the Cat Creek or Fitzhugh Carter areas), hunting license, wildlife management area permit, muzzleloading gun permit, migratory bird permit (if hunting migratory birds) and state waterfowl permit and 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 the Muzzleloading Gun Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply.

1. Only muzzleloading guns are allowed, except that centerfire shotguns are permitted 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).
2. Hunting is prohibited in the Mobility-Impaired area.

GENERAL GUN:

November 24 – 27 and December 10 through February 1 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas)

November 24 – 27, January 21 – 24 and 25 – 29 (Cat Creek and Fitzhugh Carter areas)

November 25 – 27, January 13 – 15, 20 – 22, 27 – 29 and February 1 – 3 (Mobility-Impaired area)

Permit, Stamp and License Requirements - Quota permit (if hunting in the Cat Creek or Fitzhugh Carter areas or if hunting before December 19 or if hunting in the Mobility-Impaired area, unless accompanying a person possessing a mobility-impaired quota hunt permit), hunting license, wildlife management area permit, migratory bird permit (if hunting migratory birds), and state waterfowl permit and duck stamp (if hunting waterfowl)

Legal to Take - Deer with at least one antler 5 inches or more in length, antlerless deer (which includes does and bucks with antlers less than 5 inches in length, but not spotted fawns) in the Mobility-Impaired area by mobility-impaired hunters only (limit 2 per quota permit, daily limit 1), wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season. Bobcat and otter beginning December 1.

Regulations Unique to the General Gun Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply

1. One additional person per mobility-impaired quota permit holder may participate in the hunt.
2. Only one mobility-impaired quota hunt permit may be utilized per individual per hunt.
3. Only mobility-impaired hunters may take antlerless deer (daily limit 1).

ARCHERY/MUZZLELOADING GUN:

February 16 - 26 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas)

Permit, Stamp and License Requirements – Hunting license, wildlife management area permit, archery permit (if hunting with bow and arrow), muzzleloading gun permit (if hunting with a muzzleloading gun), migratory bird permit (if hunting migratory birds), and state waterfowl permit and 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 the Muzzleloading Gun Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply. Only bows and muzzleloading guns are allowed, except that centerfire shotguns are permitted 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).

SPRING TURKEY:

March 18 through April 23 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas)

March 18 – 20, March 31 through April 2 and April 14 - 16 (Cat Creek and Fitzhugh Carter areas)

March 18 – 19, 24 – 26, March 31 through April 2, April 7 – 9, 14 – 16 and 21 - 23 (Mobility-Impaired area)

Permit, Stamp and License Requirements – Quota permit (if hunting in the Cat Creek or Fitzhugh Carter areas or before March 27 in the remainder of the area), mobility-impaired certificate (if hunting in the Mobility-Impaired area unless accompanying a person possessing a mobility-impaired certificate), hunting license, wildlife management area permit and wild turkey permit.

Legal to Take - Bearded turkeys or gobblers

Regulations Unique to the Spring Turkey Season - In addition to these regulations, all General Wildlife Management Regulations shall apply

1. Legal shooting hours are one-half hour before sunrise until 1 p.m.
2. The taking of any other animal is prohibited.
3. One additional person per mobility-impaired quota permit holder may participate in the hunt.
4. Only one mobility-impaired quota hunt permit may be utilized per individual per hunt.

RACCOON:

November 12 through March 17 and April 24 through July 31 (except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired hunt areas)

Permit, Stamp and License Requirements – Quota permit (if hunting during the quota hunt period of the general gun season), hunting license and wildlife management area permit.

Legal to Take – Raccoon.

Regulations Unique to the Raccoon Season - In addition to these regulations, all General Wildlife Management Area Regulations shall apply.

TRAPPING: Prohibited

MIGRATORY BIRDS:

Rails, common moorhens, mourning doves, white-winged doves, snipe, ducks, coots, woodcock and crows may be hunted during seasons established by the Commission for these species except in the Cat Creek, Fitzhugh Carter and Mobility-Impaired areas where these species may be taken only during seasons that coincide with the archery, muzzleloading gun, general gun or small game season. Waterfowl may be taken on the Fitzhugh Carter area during the special September waterfowl duck season.

Permit, Stamp and License Requirements - Quota permit (if hunting during any quota period), mobility-impaired certificate (if hunting in the mobility-impaired area unless accompanying a person possessing a mobility-impaired certificate), hunting license, wildlife management area permit, migratory bird permit, and state waterfowl permit and duck stamp (if hunting waterfowl).

Legal to Take - See Migratory Bird Hunting Regulations pamphlet.

Regulations Unique to Migratory Birds - In addition to these regulations, all General Wildlife Management Regulations shall apply.

1. The use of lead shot for taking ducks and coots is prohibited.
2. Centerfire shotguns are permitted during established area seasons when one or more migratory birds are legal to take, except when prohibited by specific area rule.

FISHING AND FROGGING:

Permitted year-round (except in the Fitzhugh Carter area)

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

Legal to Take - See Florida Freshwater Fishing Regulations Summary.

Regulations Unique to Fishing and Frogging - All General Wildlife Management Area Regulations and General Freshwater Fishing Regulations shall apply. Possession of guns is permitted only during periods when hunting is allowed.

GENERAL INFORMATION:

1. Anyone born on or after June 1, 1975 must have passed a Commission-approved hunter-safety course prior to being issued a hunting license.
2. 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 $2,357,686 or 20 percent of the cost of the program.

YOUR PURCHASE SUPPORTS WILDLIFE RESTORATION

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

1-888-404-FWCC

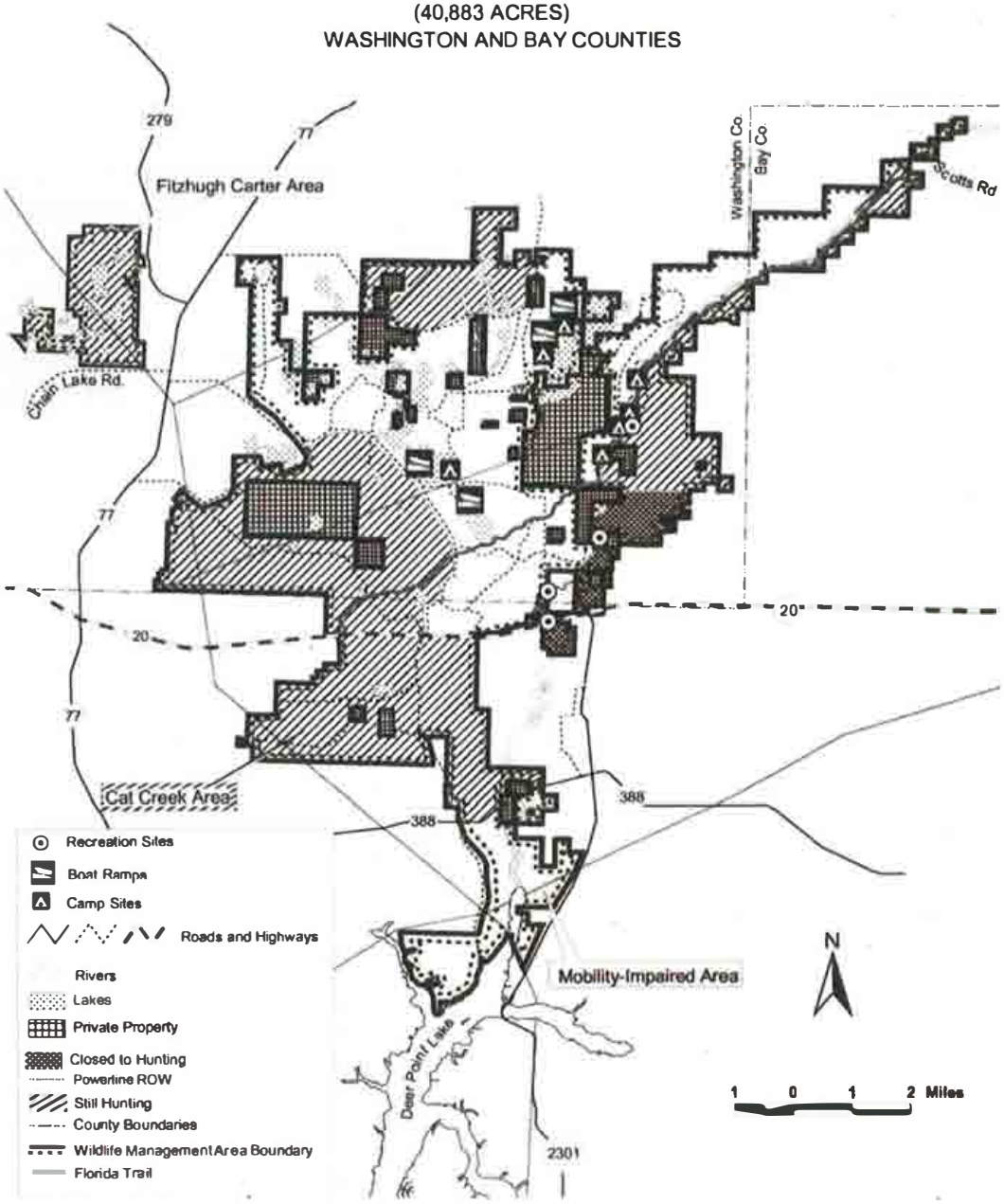
You may qualify for a cash reward from the Wildlife Alert Reward Association.

ECONFINA CREEK

WILDLIFE MANAGEMENT AREA

(40,883 ACRES)

WASHINGTON AND BAY COUNTIES



Appendix IX. 2005-2006 Annual Work Plan for the Carter Tract of Econfina Creek Wildlife Management Area.

FY 2005-06
Project 7281 - NW FLORIDA WATER MANAGEMENT DISTRICT LANDS

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
Species 9100 - All freshwater fish							
Activity - 140	Report writing/editing/manuscript preparation						
	3.00	$480.00	$20.70	$0.00	$500.70	0	Prepare fisheries reports and proposals as needed.
Activity - 221	Animal surveys						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Conduct sampling of fish populations via electroshocking, gill netting, block netting, and/or using rotenone as needed to assess population demographics.
Activity - 250	Monitoring and assessments						
	15.00	$2,400.00	$103.50	$0.00	$2,503.50	0	Population monitoring and assessment of aquatic resources. Comprehensive sportfish population assessment.
Activity - 287	Stocking enhancements/population augmentation						
	2.00	$320.00	$13.80	$0.00	$333.80	0	Restocking of native fish into selected water bodies as needed.
Activity - 320	Outreach and education						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Coordinate and/or administer special fishing events such as kids fishing days.
Activity - 342	Public use administration (non-hunting)						
	3.00	$480.00	$20.70	$0.00	$500.70	0	Conduct creel surveys at check stations. Administer

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							public fishing events.
Species 9100 Total	33.00	$5,280.00	$227.70	$0.00	$5,507.70		
Species 9200 - All wildlife							
Activity - 100	Administration						
	3.00	$480.00	$20.70	$0.00	$500.70	0	General supervisory, clerical and administrative duties.
Activity - 101	Project inspection						
	12.00	$1,920.00	$82.80	$0.00	$2,002.80	0	Inspect area projects and activities. Field orientation of land boundaries, features and habitats.
Activity - 103	Meetings						
	10.00	$1,600.00	$69.00	$240.00	$1,909.00	0	Attend landowner, cooperator, scientific and agency meetings ($240 EXP.).
Activity - 140	Report writing/editing/manuscript preparation						
	7.00	$1,120.00	$48.30	$0.00	$1,168.30	0	Prepare annual and wildlife management reports and proposals as needed.
Activity - 150	Personnel management						
	11.00	$1,760.00	$75.90	$0.00	$1,835.90	0	Supervise volunteer activities. Recruit, hire and supervise OPS.
Activity - 182	Data management						
	6.00	$960.00	$41.40	$0.00	$1,001.40	0	Digitize habitat features for use in GIS database. Incorporate all data into GIS database. Analyze and summarize WMA databases and pertinent information.
Activity - 194	Lake restoration						
	8.00	$1,280.00	$55.20	$0.00	$1,335.20	0	Assist area managers with lake restoration

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							on area waterways.
Activity - 200	Resource Management						
	5.00	$800.00	$34.50	$200.00	$1,034.50	0	Routine planning, paperwork, purchases and correspondences dealing with daily operations of the WMA ($200 EXP.).
Activity - 204	Resource planning						
	10.00	$1,600.00	$69.00	$22,391.00	$24,060.00	0	Copordination of work projects related to management activities. Prepare written work plans and proposals ($22,391 for OPS Fish and Wildlife Technician).
Activity - 218	Water level management						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Solicit and administer cost share funding with Ducks Unlimited MARSH program to replace water control structures on the area.
Activity - 276	Commission rule development and review						
	1.00	$160.00	$6.90	$0.00	$166.90	0	Develop and submit area rule changes, includes preparation, review, advertisement, promulgation and publishing. NFA.
Activity - 281	Technical assistance						
	10.00	$1,600.00	$69.00	$0.00	$1,669.00	0	Provide technical information and assistance to cooperators or other state agencies regarding wildlife management and habitat.
Activity - 294	Program coordination and implementation						
	10.00	$1,600.00	$69.00	$0.00	$1,669.00	0	Intra and interagency coordination.

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
Activity - 312	Informational signs						
	3.00	$480.00	$20.70	$0.00	$500.70	0	Erect and maintain informational signs and kiosks as needed.
Activity - 320	Outreach and education						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Make wildlife management presentations to elementary schools and general public.
Activity - 350	Customer service support						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Provide information to callers regarding fish and wildife-based recreation opportunities and area regulations.
Activity - 920	FEM -- buildings/structures						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Maintain and repair check station on area as needed.
Activity - 926	FEM -- roads/bridges						
	2.00	$320.00	$13.80	$0.00	$333.80	0	Make minor repairs to access roads as needed.
Activity - 928	FEM -- fences						
	1.00	$160.00	$6.90	$0.00	$166.90	0	Maintain and erect gates and fences as needed on access roads and boundaries.
Species 9200 Total	119.00	$19,040.00	$821.10	$22,831.00	$42,692.10		
Species 9210 - Game wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	10.00	$1,600.00	$69.00	$0.00	$1,669.00	0	Prepare deer recommendations and harvest reports as needed.
Activity - 182	Data management						
	5.00	$800.00	$34.50	$0.00	$834.50	0	Analyze data collected from biological samples from harvested

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							game, surveys and inventories.
Activity - 221	Animal surveys						
	11.00	$1,760.00	$75.90	$0.00	$1,835.90	0	Conduct deer surveys and other game surveys as needed.
Activity - 285	Nest structures						
	10.00	$1,600.00	$69.00	$0.00	$1,669.00	0	Solicit and administer cost share funding with Ducks Unlimited MARSH program in developing and maintaining a wood duck nest box program.
Activity - 295	Biological data collection, analysis, and reporting						
	10.00	$1,600.00	$69.00	$0.00	$1,669.00	0	Collect biological data and samples from harvested game at check station.
Activity - 341	Public use administration (hunting)						
	12.00	$1,920.00	$82.80	$1,750.00	$3,752.80	0	Prepare area hunt maps and brochures. Compile weekly harvest reports and hunter pressure. Administer public hunts ($1,750 for OPS check station operators).
Species 9210 Total	58.00	$9,280.00	$400.20	$1,750.00	$11,430.20		
Project 7281 Total	210.00	$33,600.00	$1,449.00	$24,581.00	$59,630.00		

ORG - Category Breakdown

ORG	EO	Category	Total
77352030100	19	101920	$24,581.00

Total Income: $0.00

Appendix X. 2006-2007 Annual Work Plan for the Carter Tract of Econfina Creek Wildlife Management Area.

FY 2006-07
Project 7281 - NW FLORIDA WATER MANAGEMENT DISTRICT LANDS

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
Species 9100 - All freshwater fish							
Activity - 140	Report writing/editing/manuscript preparation						
	3.00	$546.00	$39.72	$0.00	$585.72	0	Prepare fisheries reports and proposals as needed. NFA.
Activity - 221	Animal surveys						
	12.00	$2,184.00	$158.88	$4,000.00	$6,342.88	0	Conduct sampling of fish populations via electroshocking, gill netting, block netting, and/or using rotenone as needed to assess population demographics (101920/19 = $2,000 for supplies and equipment) (100340/29 = $2,000 for supplies and equipment). NFA.
Activity - 250	Monitoring and assessments						
	10.00	$1,820.00	$132.40	$1,000.00	$2,952.40	0	Population monitoring and assessment of aquatic resources. Comprehensive sportfish population assessment (101920/19 = $1,000 misc. materials and supplies). NFA.
Activity - 287	Stocking enhancements/population augmentation						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Restocking of native fish into selected water bodies as needed. NFA.
Activity - 320	Outreach and education						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Coordinate and/or administer special fishing events such

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							as kids fishing days. NFA.
Activity - 342	Public use administration (non-hunting)						
	3.00	$546.00	$39.72	$11,069.00	$11,654.72	0	Conduct creel surveys at check stations. Administer public fishing events (101920/19 = $8,069 for OPS check station operators) (100340/29 = $3,000 misc. materials and supplies). NFA.
Species 9100 Total	32.00	$5,824.00	$423.68	$16,069.00	$22,316.68		
Species 9200 - All wildlife							
Activity - 100	Administration						
	3.00	$546.00	$39.72	$0.00	$585.72	0	General supervisory, clerical and administrative duties.
Activity - 101	Project inspection						
	9.00	$1,638.00	$119.16	$0.00	$1,757.16	0	Inspect area projects and activities. Field orientation of land boundaries, features and habitats.
Activity - 103	Meetings						
	10.00	$1,820.00	$132.40	$2,000.00	$3,952.40	0	Attend landowner, cooperator, scientific and agency meetings (101920/19 = $2,000 misc. materials and supplies).
Activity - 128	New Vehicle and Equipment Purchases						
	0.00	$0.00	$0.00	$5,125.00	$5,125.00	0	Purchase one MACOM radio for area (100340/29 = $5,125 for radio).
Activity - 140	Report writing/editing/manuscript preparation						
	7.00	$1,274.00	$92.68	$1,000.00	$2,366.68	0	Prepare annual and wildlife management reports and proposals as needed (100340/29 = $1,000 for copies and

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							binding).
Activity - 150	Personnel management						
	5.00	$910.00	$66.20	$22,891.00	$23,867.20	0	Supervise volunteer activities. Recruit, hire and supervise OPS. (101920/19 = $22,391 for OPS Field Technician) (100340/29 = $500 misc. materials and supplies).
Activity - 182	Data management						
	6.00	$1,092.00	$79.44	$2,000.00	$3,171.44	0	Digitize habitat features for use in GIS database. Incorporate all data into GIS database. Analyze and summarize WMA databases and pertinent information (100340/29 = $2,000 misc. materials, equipment and supplies).
Activity - 200	Resource Management						
	5.00	$910.00	$66.20	$3,000.00	$3,976.20	0	Routine planning, paperwork, purchases and correspondences dealing with daily operations of the WMA (100340/29 = $3,000 misc. materials and supplies).
Activity - 204	Resource planning						
	10.00	$1,820.00	$132.40	$3,000.00	$4,952.40	0	Coordination of work projects related to management activities. Prepare written work plans and proposals (100340/29 = $3,000 misc. materials and supplies).
Activity - 276	Commission rule development and review						
	1.00	$182.00	$13.24	$0.00	$195.24	0	Develop and submit area rule changes, includes preparation, review,

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							advertisement, promulgation and publishing. NFA.
Activity - 281	Technical assistance						
	5.00	$910.00	$66.20	$0.00	$976.20	0	Provide technical information and assistance to cooperators or other state agencies regarding wildlife management and habitat.
Activity - 294	Program coordination and implimentation						
	5.00	$910.00	$66.20	$0.00	$976.20	0	Intra and interagency coordination.
Activity - 312	Informational signs						
	3.00	$546.00	$39.72	$1,000.00	$1,585.72	0	Erect and maintain informational signs and kiosks as needed (100340/29 = $1,000 for materials and supplies)
Activity - 320	Outreach and education						
	5.00	$910.00	$66.20	$500.00	$1,476.20	0	Make wildlife management presentations to elementary schools and general public (100340/29 = $500 misc. materials and supplies).
Activity - 350	Customer service support						
	5.00	$910.00	$66.20	$0.00	$976.20	0	Provide information to callers regarding fish and wildlife-based recreation opportunities and area regulations.
Activity - 920	FEM -- buildings/structures						
	5.00	$910.00	$66.20	$2,000.00	$2,976.20	1	Maintain and repair area office as needed (100340/29 = $2,000 misc. materials and supplies)
Activity - 923	FEM -- vehicles/equipment						
	3.00	$546.00	$39.72	$6,000.00	$6,585.72	0	Repair and maintain vehicles, boats, ATVs and associated

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							equipment (100340/29 = $5,000 misc. materials and supplies) (101920/19 = $1,000 misc. materials and supplies).
Activity - 926	FEM -- roads/bridges						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Make minor repairs to access roads as needed.
Activity - 928	FEM -- fences						
	1.00	$182.00	$13.24	$0.00	$195.24	0	Maintain and erect gates and fences as needed on access roads and boundaries.
Species 9200 Total	90.00	$16,380.00	$1,191.60	$48,516.00	$66,087.60		
Species 9210 - Game wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	3.00	$546.00	$39.72	$0.00	$585.72	0	Prepare deer and game management recommendations and harvest reports as needed.
Activity - 182	Data management						
	5.00	$910.00	$66.20	$0.00	$976.20	0	Analyze data collected from biological samples from harvested game, surveys and inventories.
Activity - 221	Animal surveys						
	11.00	$2,002.00	$145.64	$2,000.00	$4,147.64	0	Conduct deer surveys and other game surveys as needed (101920/19 = $1,000 misc. materials and supplies) (100340/29 = $1,000 misc. materials and supplies).
Activity - 285	Nest structures						
	10.00	$1,820.00	$132.40	$500.00	$2,452.40	0	Install and maintain wood duck nest

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
							boxes (100340/29 = $500 misc. materials and supplies).
Activity - 295	Biological data collection, analysis, and reporting						
	10.00	$1,820.00	$132.40	$2,000.00	$3,952.40	0	Collect biological data and samples from harvested game at check station (101920/19 = $1,000 for supplies/equipment) (100340/29 = $1,000 misc. materials and supplies).
Activity - 341	Public use administration (hunting)						
	12.00	$2,184.00	$158.88	$8,266.00	$10,608.88	0	Review area hunt maps and brochures. Compile weekly harvest reports and hunter pressure. Administer public hunts (101920/19 = $8,266 for OPS check station operators).
Species 9210 Total	51.00	$9,282.00	$675.24	$12,766.00	$22,723.24		
Species 9240 - Nongame wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Prepare herptofauna survey progress reports. NFA.
Activity - 221	Animal surveys						
	18.00	$3,276.00	$238.32	$3,000.00	$6,514.32	0	Conduct wading bird surveys and monitoring. Conduct herptofauna surveys and monitoring. Install and monitor drift fence arrays (101920/19 = $1,000 misc. materials and supplies) (100340/29 = $2,000 for supplies and equipment). NFA.
Species 9240 Total	20.00	$3,640.00	$264.80	$3,000.00	$6,904.80		

	Man Days	Salary	FuelCost	Other	Total	Units	Accomplishments
Species 9280 - All threatened and endangered wildlife							
Activity - 140	Report writing/editing/manuscript preparation						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Prepare gopher tortoise survey and monitoring progress report. NFA.
Activity - 182	Data management						
	2.00	$364.00	$26.48	$0.00	$390.48	0	Analyze and summarize gopher tortoise survey data. NFA.
Activity - 221	Animal surveys						
	13.00	$2,366.00	$172.12	$3,000.00	$5,538.12	0	Coordinate and conduct gopher tortoise survey and monitoring (101920/19 = $1,000 misc. materials and supplies) (100340/29 = $2,000 for supplies and equipment). NFA.
Species 9280 Total	17.00	$3,094.00	$225.08	$3,000.00	$6,319.08		
Project 7281 Total	210.00	$38,220.00	$2,780.40	$83,351.00	$124,351.40		

ORG - Category Breakdown

ORG	EO	Category	Total
77352030100	19	101920	$48,726.00
77352030100	29	100340	$34,625.00

Total Income: $0.00

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