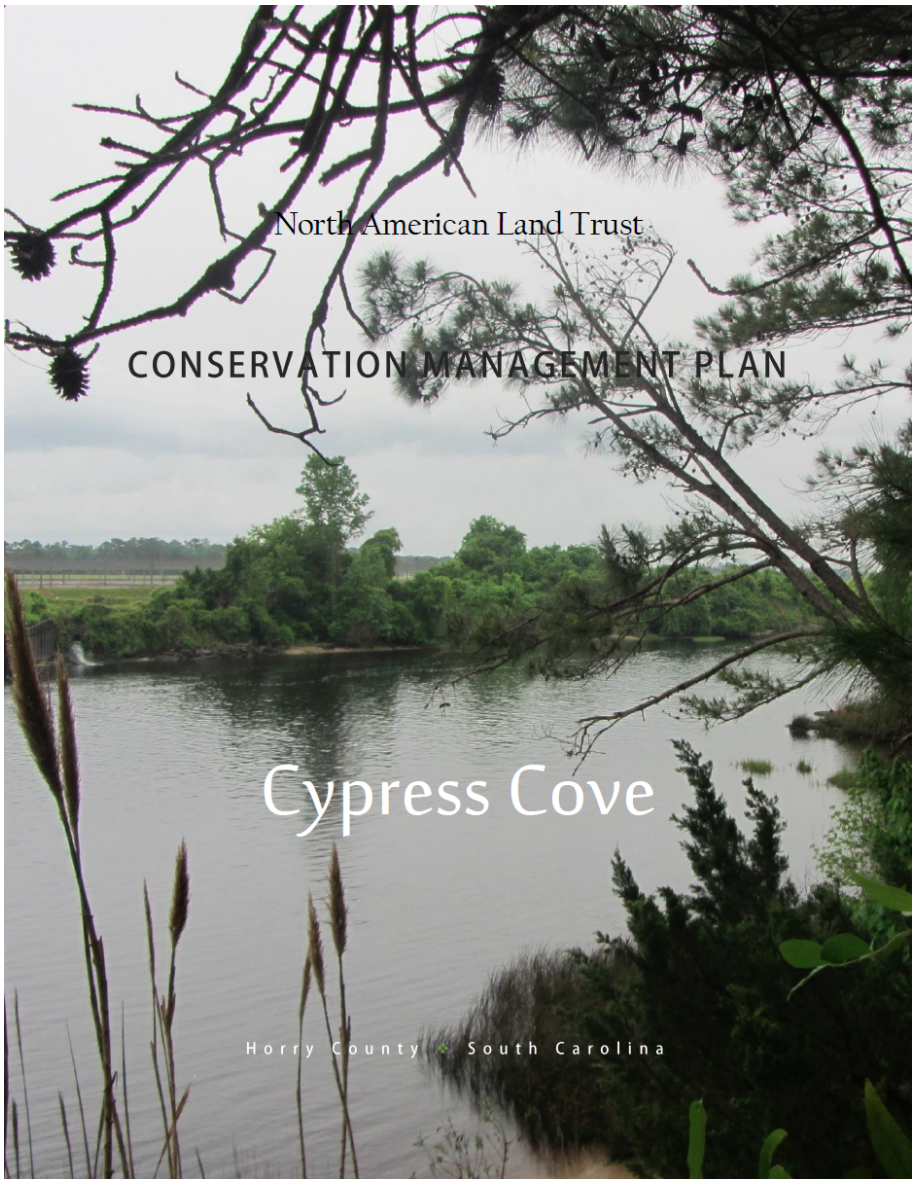
North American Land Trust
CONSERVATION MANAGEMENT PLAN
Cypress Cove
Horry County • South Carolina

Cypress Cove Conservation Area
Conservation Management Plan

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Cypress Cove Preserve

Conservation Management Plan

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Appendix 1: Conservation Easement and Baseline

I. Property Overview and Regional Context

The Cypress Cove property is located in North Myrtle Beach, Horry County, South Carolina and consists of approximately 28 acres that will be protected by a perpetual conservation easement. This tract is located along Bourne Trail, a dirt road that parallels the new Highway 31. Although rural at one time, this area is slated for intensive development as the highway has made the area easily accessible. Some tracts along this road have already converted to single family residential development. It is likely the road will be paved in the future. Although a small portion of the property is planted pine, the majority of the property is a mixed hardwood canopy.

This Conservation Management plan is being prepared for the conservation area, as mentioned above, the majority of which is forested with varying mixtures of oaks and pines dominating the vegetation. A unique rhododendron thicket exists on the north western portion of the property. Geographically the property is located in the Coastal Plain Ecoregion as identified by EPA.

The long term goals and objectives for Cypress Cove Preserve are as follows:

- To maintain the biological integrity of the property
- Water quality protection or restoration
- Preservation and enhancement of biodiversity
- Implementation of a conservation management strategy
- Scenic viewshed protection/Aesthetics, particularly from public roads and the AIW

The short term goals and objectives would be:

- Preservation of biodiversity
- Treatment of invasive species
- Maintain a diversity of sites and habitats
- Maintaining open woods that are aesthetically pleasing

Listed below are practices that are recommendations by the North American Land Trust, to achieve the long term and short term goals of an integrated conservation management plan.

1. Transition planted Loblolly Pine stands into natural habitats (Mesic Hardwood Forest) using strategic timber thinning/chipping
2. Riparian and watershed protection
3. Manage unique habitat (Emergent and Forested Wetland)
4. Creation of trail network for management and access
5. Continue biological surveys of the property

By protecting the Cypress Cove Property, the owners have ensured that ecologically valuable lands will forever remain intact.

II. Management Goals and Objectives

Although Cypress Cove is not a large site, three distinct habitats exist on the property including a Loblolly and Shortneedle Pine forest, a Mesic Hardwood forest, and an Emergent and Forested Wetland. Additionally, the property is directly adjacent to the Atlantic Intercoastal Waterway, a natural and recreational resource. The property is located in the Coastal Sampit watershed.

This variation in ecotones allows for high biodiversity. Additionally, the proximity of the preserved area which is located in the Town of North Myrtle Beach, a highly developed and developing area makes the natural communities associated with this site even more important as refuge for a variety of wildlife species, as well as for water quality protection.

Management recommendations for the property include:

1. Establish a naturally vegetated river buffer to protect water quality.
2. Protect scenic values of the property.
3. Transition Pine Forest areas into a Mesic Hardwood Forest.
4. Carefully manage and maintain the unique wetland area identified on the property.
5. Establish and maintain trails/firebreaks for the property.
6. If desired long-term, consider wildlife openings planted with native warm season grasses.
7. Continue biological surveys and botanical inventories.

III. Management Recommendations for Habitat or Species

Management Recommendation #1: Water Quality Protection/River Buffers

Cypress Cove property sits along the bank of the Atlantic Intracoastal Waterway. The portion of this waterway is manmade; however it is an important natural and recreational resource. The waterway boasts a variety of aquatic and terrestrial wildlife.

Intracoastal Waterway
(taken from the Horry County Comprehensive Plan)

The Intracoastal Waterway (ICW) is a 3,000 mile inland waterway that runs parallel to the Atlantic and Gulf coasts. Some sections of the waterway consist of natural inlets, saltwater rivers, bays and sounds, while others are artificial canals. While the Waccamaw River and Little River are natural portions of the ICW, the majority of the ICW in Horry County was constructed by the US Army Corps of Engineers (ACOE) in 1936. Over time, the waterway has become a part of the natural scenery. While the ICW in Horry County is tidally influenced, salt water only influences its northern reach in Little River. The remaining portion of the ICW in the Grand Strand is freshwater until it reaches Winyah Bay in Georgetown County. Along the freshwater portions of the ICW in Horry County, the artificial portion of the waterway mimics the blackwater rivers in the area.

Originally established to provide a safe transportation route and to protect commerce, the ICW now mainly serves as a route for transient boaters and other recreational users. Because the ICW is no longer primarily used for the transportation of goods, it is no longer regularly dredged to sustain its channel, potentially affecting its use for recreational boaters.

Management recommendations:

1. Reduce impervious surfaces. The conservation easement largely addresses this by removing development from the tract.
2. River buffers. One of the single most important tools for protection of waterways is a naturally vegetated buffer.
   a) Maintain at least 100' natural vegetation.
   b) For waterway views consider view "windows" trimming shrub level vegetation to 1' from ground, and/or "limbing up" removing view obstruction but leaving tree canopies. This leaves root structures for erosion and filtration.
   c) If access is desired to waters/bank edge, consider clearing a "view corridor" only, leaving specimen trees, but removing shrub understory only for the 50-75' strip. Leave the remaining area wooded and natural. If sod is part of the corridor, use a drought tolerant species, such as carpet grass that is ideal for coastal climates and does not require fertilization or irrigation.
   d) Ensure shrub level materials such as wax myrtles are plentiful for native, seasonal and migrating songbirds such as Painted Buntings.

e) Protect or promote mature specimen trees for nesting sites for Bald Eagles and Osprey, as well as other species that will utilize the waterway.

Management recommendation #2: Scenic view protection

Overview: Contrary to what many landowners might consider to be true, this management recommendation is to protect the scenic qualities currently existing on the Cypress Cove property for people viewing the property from waterways and roadways. This is particularly needed in the Myrtle Beach region, one of the most rapidly developing areas in South Carolina and the East Coast. This pressure is acute on beaches, creeks and waterways. With each high rise condominium, multi-family housing complex, commercial venture or even golf course, natural habitats are lost. First and foremost this impacts the flora and fauna of the area, but there is also a negative impact to residents and visitors to the area with the loss of natural landscapes to visually enjoy.

This property, conserved in a natural state without intense development, will benefit the larger public, residents and visitors alike.

Management recommendations:

1. The protection of this property with a conservation easement will largely protect this property as a scenic view from the waterway and adjacent upland.
2. Careful consideration should be given to any structures and their placement, orientation and size to minimize visual impact to the surrounding area.
3. Wherever possible create or maintain “nature curtains” or natural buffers of 30-100’ from roadways and/or waterways.
4. Consider natural solutions for erosion control or streambank stabilization in lieu of riprap or bulkheads. If these are necessary, native landscaping should be used to naturalize the site.
5. Avoid large scale clearings of forests in viewshed areas.
6. If exercising the reserved right for homesites, remove only vegetation required for the homesite, gradually increasing any further clearing to minimize disruption.

Intracoastal Waterway

Commented [MM1]: This pic should fit on management recommendation 2 page

Management Recommendation #3: Create Trail/firebreak Network

Wildfires are a serious threat in the North Myrtle Beach area. Given that, the fuel load for Cypress Cove is not problematic. Although NALT generally encourages the reintroduction of prescribed burning to any property to mimic natural conditions, and to reduce the threat of wildfire, that is unlikely on this property.

NALT does recommend that a naturalized trail network be established to serve multiple purposes: access for management activities; potential access for future homesites; passive recreational use for the property; and to act as a firebreak in the unlikely event that a wildfire were to occur.

Management recommendations:

1. Establish logical trail network as identified.
2. Roads should be cleared, stumped and graded, and average 8’ widths.
3. Roads should be placed on a long-term maintenance rotation.

Management Recommendation #4: Eradicate Invasive Species

Invasive species are non-native plant, insect or animal species that have been introduced into an area outside of their original range and compete with native species for resources. Invasive species reproduce and spread rampantly because they have no natural enemies in their new homes. Invasive species are recognized as one of the leading threats to biodiversity and impose enormous costs to agriculture, forestry, fisheries, and other human enterprises, as well as to human health.

There are several notable invasive species occupying the tract such as kudzu (*Pueria lobata*), Japanese Honeysuckle (*Lonicera japonica*), and English ivy (*Hedera helix*). All of these species should be eradicated.

Kudzu is by far the most aggressive and destructive of the invasives, and was observed on the northern boundary of the property along the road right of way for the road/powerline on the adjacent parcel (Long Bay Marina - also under conservation easement). This growth is likely from a large kudzu infestation at a clear cut area for this adjacent property. In 2015, treatment for Kudzu occurred on Long Bay Marina, and many of the plants located on Cypress Cove were also sprayed.

Management recommendations:

1. The herbicide called Veteran was used for previous treatments, and should be used for additional treatments at this parcel. It is rated to apply in proximity to wetlands and is effective at kudzu control.
2. Treatment are 3 gallons per acre with Veteran 720, 1% surfactant.
3. Plan for at least two treatments per year in the first three years.
4. English Ivy and Japanese honeysuckle could be treated with 3% glyphosate and 1% surfactant applied to leaf surface area in late spring

Kudzu

(http://www.invasivespeciesinfo.gov/plants/kudzu.shtml)

Commented [MM2]: This is the full citation for this photo:
Miller, James H. (Photographer). Old Infestation draped on killed trees in July. Retrieved from USDA, Forest Service, www.Invasive.org

Management Recommendation #5: Continue Biological Surveys/Manage for Species of Concern (current/future)

Overview: NALT recommends that biological inventories and botanical surveys be continued each season, and management strategies refined accordingly. Whether hiring experts in a particular biological discipline, engaging with natural resource agencies, or partnering with universities and coalitions, NALT recommends continued documentation of this property. The priority species listed in the next section should be a starting point for inventories.

Any species identified should be input into a Priority Species Map when discovered. Overall management techniques should be adapted and refined as new priority species are discovered.

South Carolina State Flower Yellow Jessamine (*Gelsemium sempervirens*)

Management recommendation #6: Protect/Enhance Current Habitats to Maximize Biodiversity

Young Loblolly and Shortneedle Pine Dominated Forests

Habitat Description: The southeastern third of the property is primarily pine dominated *(Pinus taeda, P. echinata*) and was last harvested approximately 20 years ago. Indicative of much of this region, the pines were planted for silviculture. This small stand is a remnant, and should be transitioned into another habitat.

Management recommendation:

1. The long-term management objective for this stand is to re-establish Mesic Mixed Hardwood Forest. The pines should be selectively thinned to allow for natural hardwood regeneration. Additionally, removing or treating undersireable hardwood or softwood species may be considered to achieve an ideal forest composition of 25% oaks, 25% other hardwoods/softwoods and 50% pine.
2. Species to protect and/or promote include: oaks, hickories, tulip poplar, pines, sugarberry and elm with dogwood, southern sugar maple, ironwood, American holly, swamp bay, dwarf palmetto, cane grass indicative of the understory.
3. This forest is critical to the scenic conservation purpose for Cypress Cove. Any forestry activities that disturb the canopy run the risk of jeopardizing this purpose.
4. Avoid clearing or converting this area.
5. Prescribed burning is always ideal, but in this situation unlikely. Consideration should be given to mechanical understory control or selective thinning of undesireable species as necessary.
6. Eradicate invasive as identified.
7. Due to the proximity to the AIW chemical application should be considered cautiously, and carefully applied to minimize harm to water quality.
8. Leave specimen pines in/near the waterway buffer to act as nest trees for Bald Eagles and Osprey.

Additionally, implement the following management recommendations:

Management recommendation #1: Water Quality/River Buffer

Management recommendation #2: Scenic viewshed protection

Management recommendation #5: Continue biological surveys

Habitat Importance: Species of Concern associated with Coastal Plain Pine Woodland Forest:

SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	LEGAL STATUS	PRIORITY	SPECIFIC HABITAT REQUIREMENTS	
MAMMALS	-	-	-	-			
Condylura cristata	Star-nosed Mole	G5	S3?	Of concern, State	High	X	swamps, marshes, bogs, streamsides; dense leaf litter
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3/G4	S2?	State Endangered	Highest	X	T-beam and I-beam bridges, abandoned buildings, old bunkers and tunnels, cavity trees, rock outcrops, mines, caves
Eptesicus fuscus	Big Brown Bat	G5	SNR		Highest	X	buildings, cavity trees, under bridges and in bat boxes; forage in open fields or forest gaps
Lasionycteris noctivagans	Silver-haired Bat	G5	SNR		Highest	X	roosts include tree cavities, under loose bark, rock crevices, under tree foliage, and occasionally in buildings, stacks of firewood, and bird boxes; forage over water
Lasiurus borealis	Red Bat	G5	SNR		Highest	X	thinned stands; roost on smaller branches or twigs, often in the hardwood tree canopy; may roost in leaf litter
Lasiurus cinereus	Hoary Bat	G5	S?		Highest	X	tree cavities, trunks, tree foliage, squirrel nests, and Spanish moss
Lasiurus intermedius	Northern Yellow Bat	G4/G5	S?	Of concern, State	Highest	X	forage over open areas such as fields, pastures, golf courses, marshes, and along lake and forest edges; roost in clumps of Spanish moss or under old palm fronds
Lasiurus seminolus	Seminole Bat	G5	SNR		Highest	X	roost in large pines located near forested corridors; may roost in leaf litter
Microtus pennsylvanicus	Meadow Vole	G5	SNR	Of concern, State	High	X	tall grass prairie habitats
Neotoma floridana	Eastern Woodrat	G5	S3/S4	Of concern, State	Moderate	X	wide variety of habitats
Perimyotis subflavus	Tri-colored Bat	G5	SNR		Highest	X	abandoned mines and caves, bridges, buildings
Ursus americanus	Black Bear	G5	S3?	Of concern, State	Moderate	X	early successional habitat and forest interior; den sites
REPTILES & AMPHIBIANS	-	-	-	-	-	-	-
Ambystoma cingulatum	Flatwoods Salamander (Frosted)	G2/G3	S1	Federal Threatened; State Endangered	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Ambystoma tigrinum	Tiger Salamander	G5	S2/S3	Of Concern, State	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Crotalus adamanteus	Eastern Diamondback Rattlesnake	G4	S3	Of Concern, State	High	X	underground refugia such as stump holes and rodent burrows
Crotalus horridus	Timber Rattlesnake	G4	SNR	Of Concern, State	High	X	dry, south-facing slopes at high elevations; rock outcrops or logs for den sites with south face exposed to sun
Eurycea chamberlainii	Chamberlain's Dwarf Salamander	G4	SNR		Highest	X	wetland types like seepages near small streams; leaf litter and small debris
Heterodon simus	Southern Hognose Snake	G2	SNR	Of Concern, State	Highest	X	friable soils; underground refugia such as stump holes and rodent burrows; abundance of toads

Micrurus fulvius	Coral Snake (Harlequin)	G5	S2	Of Concern, State	Highest	X	underground refugia such as stump holes and rodent burrows; loose soil for burrowing
Ophisaurus attenuatus	Slender Glass Lizard	G5	S4		Moderate	X	underground refugia such as stump holes and rodent burrows; open canopied forests or fields
Pituophis melanoleucus	Pine Snake (Northern)	G4	S2/S3	Of Concern, State	Highest	X	pine sites with dry soils; underground refugia such as stump holes and rodent burrows
Pituophis melanoleucus mugitus	Pine Snake (Florida)	G4	S2	Of Concern, State	Highest	X	pine sites with well-drained soils; underground refugia such as stump holes and rodent burrows
Rhadinea flavilata	Pine Woods Snake	G4	SNR	Of Concern, State	High	X	moist pine flatwoods with many rotten logs; underground refugia such as stump holes and rodent burrows
Terrapene carolina	Eastern Box Turtle	G5	SNR		Moderate	X	moist woodlands; sandy or loamy soils in open for egg laying; loose soils and leaf litter for burrowing
BIRDS							
Caprimulgus carolinensis	Chuck-will's-widow	G5	S4		High	X	openings for nocturnal feeding; mixed forests with light to moderate understory
Chaetura pelagica	Chimney Swift	G5	SNRB		High	X	open areas for foraging; cavity for nesting (often chimneys)
Columbina passerine	Common Ground-Dove	G5	SNR	State Threatened	Highest	X	shrubs near openings for nesting; sandy bare ground or short grass for foraging
Contopus virens	Eastern Wood-Pewee	G5	S5		High	X	open forests with sparse midstory
Dendroica pinus	Pine Warbler	G5	SNR		Moderate	X	typically middle to mature pine forests
Dryocopus pileatus	Pileated Woodpecker	G5	SNR		Moderate	X	extensive mature forests with dead snags for nest cavities; probably prefer riverbottom hardwoods
Icteria virens	Yellow-breasted Chat	G5	S4B		High	X	old fields, briar thickets, dry woodland margins;
Junco hyemalis	Dark-eyed Junco	G5	SNRB,SNRN		Moderate	X	short grass openings near conifer woodlands
Melanerpes carolinus	Red-bellied Woodpecker	G5	SNR		Moderate	X	open, mature woods with dead snags for nest cavities; man-made poles with cavities
Melanerpes erythrocephalus	Red-headed Woodpecker	G5	SNR		Moderate	X	open, mature woods with dead snags for nest cavities; man-made poles with cavities
Passerina ciris	Painted Bunting	G5	SNRB		Highest	X	woodland margins; dense thickets in openings
Passerina cyanea	Indigo Bunting	G5	SNRB		Moderate	X	woodland margins; shrubby thickets in openings
Picoides pubescens	Downy Woodpecker	G5	SNR		Moderate	X	middle-aged to mature woodlands; prefer hardwoods; dead snags for nest cavities
Pipilo erythrophthalmus	Eastern Towhee	G5	SNR		High	X	brushy areas; woodland margins and understory
Piranga rubra	Summer Tanager	G5	S?		Moderate	X	dry, mixed woodlands
Poecile carolinensis	Carolina Chickadee	G5	SNR		Moderate	X	mature woodlands with dead snags for nest cavities; will use bird boxes
Regulus satrapa	Golden-crowned Kinglet	G5	S4		Moderate	X	winter in coniferous or mixed woodlands
Scolopax minor	American Woodcock	G5	S4		Moderate	X	moist soils and leaf litter for probe foraging; woodlands for nesting; openings for mating displays
Setophaga dominica	Yellow-throated Warbler	G5	S3?		Moderate	X	moderately open, mature, moist forests; pines, mixed forests; Spanish moss

Sitta pusilla	Brown-headed Nuthatch	G5	S4		Moderate	X	mature, open pines for foraging; nest cavities in snags
Spizella pusilla	Field Sparrow	G5	S5?		High	X	saplings and shrubs in weedy thickets and woodland margins
Thryothorus ludovicianus	Carolina Wren	G5	SNR		Moderate	X	woodland thickets; leaf litter; cavities or ledges for nesting; will use bird boxes and many other human material
Toxostoma rufum	Brown Thrasher	G5	SNR		High	X	moderate to dense brush and saplings
Tyto alba	Barn Owl	G5	S4	Of Concern, State	Moderate	X	grasslands or marshes for foraging; nest cavities; dense roosting cover

Southern Atlantic Coastal Plain Mesic Hardwood Forest

Habitat overview: A young Southern Atlantic Coastal Plain Mesic Hardwood Forest best describes the vegetation composition of the majority of the property. This ecological system varies in age and composition throughout the property. The middle third of the property supports a young-mature mixed mesic hardwood canopy. Dominants include sweetgum (*Liquidambar styraciflua*), tulip poplar (*Liriodendron tulipifera*), and loblolly pine (*Pinus taeda*). Other canopy species supported include, but are not limited to, hickory (*Carya* sp.), swamp chestnut oak (*Quercus michauxii*), water oak (*Q. nigra*), sugarberry (*Celtis laevigata*), and elm (*Ulmus* sp.). Typical subcanopy and shrub taxa include southern sugar maple (Acer barbatum) ironwood (*Carpinus caroliniana*), American holly (*Ilex opaca*), swamp bay (*Persea palustris*), dwarf palmetto (*Sabal minor*), cane grass (*Arundinaria tecta*), and others. Typical herbaceous taxa observed include netted chain fern (*Woodwardia areolata*), yellow jessamine (*Gelsemium sempervirens*), ebony spleenwort (*Asplenium platyneuron*), and others.

Management recommendations:

1. Maintain this habitat in its current condition
2. Avoid clearing or converting this area
3. Prescribed burning would be ideal, but consideration should be given to mechanical understory control or selective thinning of undesirable species as necessary
4. Continue biological surveys of this area

Additionally, implement:

Management recommendation #3

Management recommendation #4

Management recommendation #5

Habitat Importance: Species of Concern associated with Coastal Plain Mesic Forest:

SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	LEGAL STATUS	PRIORITY		SPECIFIC HABITAT REQUIREMENTS
MAMMALS	-	-	-	-			
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3/G4	S2?	State Endangered	Highest	X	T-beam and I-beam bridges, abandoned buildings, old bunkers and tunnels, cavity trees, rock outcrops, mines, caves
Eptesicus fuscus	Big Brown Bat	G5	SNR		Highest	X	buildings, cavity trees, under bridges and in bat boxes; forage in open fields or forest gaps
Lasionycteris noctivagans	Silver-haired Bat	G5	SNR		Highest	X	roosts include tree cavities, under loose bark, rock crevices, under tree foliage, and occasionally in buildings, stacks of firewood, and bird boxes; forage over water
Lasiurus borealis	Red Bat	G5	SNR		Highest	X	thinned stands; roost on smaller branches or twigs, often in the hardwood tree canopy; may roost in leaf litter
Lasiurus cinereus	Hoary Bat	G5	S?		Highest	X	tree cavities, trunks, tree foliage, squirrel nests, and Spanish moss
Lasiurus intermedius	Northern Yellow Bat	G4/G5	S?	Of concern, State	Highest	X	forage over open areas such as fields, pastures, golf courses, marshes, and along lake and forest edges; roost in clumps of Spanish moss or under old palm fronds
Lasiurus seminolus	Seminole Bat	G5	SNR		Highest	X	roost in large pines located near forested corridors; may roost in leaf litter
Myotis austroriparius	Southeastern Bat	G3/G4	S1	State Threatened	Highest	X	caves (including limestone sinks), mines, abandoned buildings, and large hollow trees; prefers to feed and roost over water
Neotoma floridana	Eastern Woodrat	G5	S3/S4	Of concern, State	Moderate	X	wide variety of habitats
Perimyotis subflavus	Tri-colored Bat	G5	SNR		Highest	X	abandoned mines and caves, bridges, buildings
Ursus americanus	Black Bear	G5	S3?	Of concern, State	Moderate	X	early successional habitat and forest interior; den sites
REPTILES & AMPHIBIANS	-	-	-	-	-	-	-
Ambystoma cingulatum	Flatwoods Salamander (Frosted)	G2/G3	S1	Federal Threatened; State Endangered	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Ambystoma tigrinum	Tiger Salamander	G5	S2/S3	Of Concern, State	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Crotalus adamanteus	Eastern Diamondback Rattlesnake	G4	S3	Of Concern, State	High	X	underground refugia such as stump holes and rodent burrows
Crotalus horridus	Timber Rattlesnake	G4	SNR	Of Concern, State	High	X	dry, south-facing slopes at high elevations; rock outcrops or logs for den sites with south face exposed to sun
Eurycea chamberlainii	Chamberlain's Dwarf Salamander	G4	SNR		Highest	X	wetland types like seepages near small streams; leaf litter and small debris
Micrurus fulvius	Coral Snake (Harlequin)	G5	S2	Of Concern, State	Highest	X	underground refugia such as stump holes and rodent burrows; loose soil for burrowing
Ophisaurus attenuatus	Slender Glass Lizard	G5	S4		Moderate	X	underground refugia such as stump holes and rodent burrows; open canopied forests or fields

Pituophis melanoleucus	Pine Snake (Northern)	G4	S2/S3	Of Concern, State	Highest	X	pine sites with dry soils; underground refugia such as stump holes and rodent burrows
Pituophis melanoleucus mugitus	Pine Snake (Florida)	G4	S2	Of Concern, State	Highest	X	pine sites with well-drained soils; underground refugia such as stump holes and rodent burrows
Pseudacris feriarum	Upland Chorus Frog	G5	S3/S4	Of Concern, State	Moderate	X	isolated, temporary wetlands with no fish
Rana capito capito	Gopher Frog (Carolina)	G3/G4	S1	Federal Threatened; State Endangered	Highest	X	isolated, temporary to semi-permanent wetlands with no fish that have open canopy above and abundant grasses and sedges
Rhadinea flavilata	Pine Woods Snake	G4	SNR	Of Concern, State	High	X	moist pine flatwoods with many rotten logs; underground refugia such as stump holes and rodent burrows
Terrapene carolina	Eastern Box Turtle	G5	SNR		Moderate	X	moist woodlands; sandy or loamy soils in open for egg laying; loose soils and leaf litter for burrowing
BIRDS							
Buteo lineatus	Red-shouldered Hawk	G5	SNR		Moderate	X	wet or moist hardwood forests for nesting and foraging
Caprimulgus carolinensis	Chuck-will's-widow	G5	S4		High	X	openings for nocturnal feeding; mixed forests with light to moderate understory
Caprimulgus vociferus	Whip-poor-will	G5	S4		High	X	openings for nocturnal feeding; mixed forests with light to moderate understory
Coccyzus americanus	Yellow-billed Cuckoo	G5	S4		High	X	closed canopy deciduous forests with thick tangles
Contopus virens	Eastern Wood-Pewee	G5	S5		High	X	open forests with sparse midstory
Dryocopus pileatus	Pileated Woodpecker	G5	SNR		Moderate	X	extensive mature forests with dead snags for nest cavities; probably prefer riverbottom hardwoods
Hylocichla mustelina	Wood Thrush	G5	S3?		High	X	moist understory of shrubs or saplings in deciduous woodlands; leaf litter
Limnothlypis swainsonii	Swainson's Warbler	G4T4	S4		High	X	in mountains: deciduous or mixed forest ravines with thick understory of rhododendron or mountain laurel; at coast: cane stands in hardwoods
Melanerpes carolinus	Red-bellied Woodpecker	G5	SNR		Moderate	X	open, mature woods with dead snags for nest cavities; man-made poles with cavities
Melanerpes erythrocephalus	Red-headed Woodpecker	G5	SNR		Moderate	X	open, mature woods with dead snags for nest cavities; man-made poles with cavities
Mniotilta varia	Black-and-white Warbler	G5	SNRB,SNRN		High	X	mature hardwood forests; coves
Oporornis formosus	Kentucky Warbler	G5	S4		High	X	moist hardwood forests with rich understory
Parula americana	Northern Parula	G5	SNRB		Moderate	X	mature, moist forests; hemlock forests in mountains and swamps or bottomlands with Spanish moss near coast
Picoides pubescens	Downy Woodpecker	G5	SNR		Moderate	X	middle-aged to mature woodlands; prefer hardwoods; dead snags for nest cavities
Pipilo erythrophthalmus	Eastern Towhee	G5	SNR		High	X	brushy areas; woodland margins and understory
Piranga rubra	Summer Tanager	G5	S?		Moderate	X	dry, mixed woodlands
Poecile carolinensis	Carolina Chickadee	G5	SNR		Moderate	X	mature woodlands with dead snags for nest cavities; will use bird boxes

Protonotaria citrea	Prothonotary Warbler	G5	S3B		Moderate	X	near standing water; open swamps with cavities for nesting; willow thickets near lakes and ponds; old stumps and other rotting logs
Regulus satrapa	Golden-crowned Kinglet	G5	S4		Moderate	X	winter in coniferous or mixed woodlands
Seiurus motacilla	Louisiana Waterthrush	G5	S4		High	X	deciduous or mixed forests with rocky streams
Thryothorus ludovicianus	Carolina Wren	G5	SNR		Moderate	X	woodland thickets; leaf litter; cavities or ledges for nesting; will use bird boxes and many other human material
Toxostoma rufum	Brown Thrasher	G5	SNR		High	X	moderate to dense brush and saplings
Vireo flavifrons	Yellow-throated Vireo	G5	S3?B		Moderate	X	open, moist, mature, deciduous woodlands with tall trees; near water
Vireo griseus	White-eyed Vireo	G5	S4?B		Moderate	X	dense, moist thickets
Wilsonia citrina	Hooded Warbler	G5	S4?B		Moderate	X	mature, moist deciduous forests; some mixed forests; rich understory layer
INSECTS							
Acanthametropus pecatonica	"A Mayfly"					X	mesic forests near water
Dolania americana	American Sand Burrowing Mayfly	G4	S3			X	mesic forests near water
Homoeoneuria dolani	"A Mayfly"					X	mesic forests near water
Siphlonurus decorus	"A Mayfly"					X	mesic forests near water
Somatochlora calverti	Calvert's Emerald	G3	SNR			X	boggy forest seepages for breeding; forest openings for foraging
Taeniopteryx robinae	Savannah Willowfly	G1	SNR			X	mesic forests near water
Toxorhynchites rutilus rutilus	"An Elephant (Tree Hole Mosquito)"					X	tree holes and artificial basins for breeding; nectar producing plants for foraging
Toxorhynchites rutilus septentionalis	"An Elephant (Tree Hole Mosquito)"					X	tree holes and artificial basins for breeding; nectar producing plants for foraging

Freshwater Emergent and Forested Wetland

Habitat description: The northern third of the property transitions to a shrub/forested and emergent wetland habitat. Typical bay species are present and open to semi-open canopy areas are dominated by western bracken fern (*Pteridium aquilinum*), coast azalea (*Rhododendron atlanticum*), dwarf huckleberry (*Gaylussacia dumosa*), and shiny blueberry (*Vaccinium myrsinites*).

As with many depressions in the Coastal Plain this wetland most likely formed due to a natural concavity on the surface topography, holding water perched above the normal sub-surface water table. It is an isolated, temporary wetland with no connection to a surface stream, typically filling and drying with the rainfall cycles. This is most likely a detritus-based system. When it dries, herbaceous plants and grasses die back and desiccate, forming a detrital layer. When the basins are inundated again this, detritus forms the base of a food web that can support a variety of invertebrate and vertebrate species. A number of native plant and animal species, including numerous rare species, rely on depression wetlands as a primary habitat or for some life history stage such as breeding habitat. This wetland will not support large predatory, and as avoidance of larval predators such as fish, is a critical adaptive mechanism for amphibians, this habitat is important for amphibians.

Management recommendations:

1. This habitat should be protected from any long-term disturbance.
2. The semi-open canopy should be maintained, and though prescribed burning is ideal, mechanical control might be considered if necessary.
3. Chemical application is also a consideration, but should be considered carefully to weigh the impacts on reptile and amphibian populations associate with the site.

Additionally:

Management recommendation #5: Continue biological surveys

Habitat Importance: Species of Concern associated with Coastal Plain Depressional Wetlands:

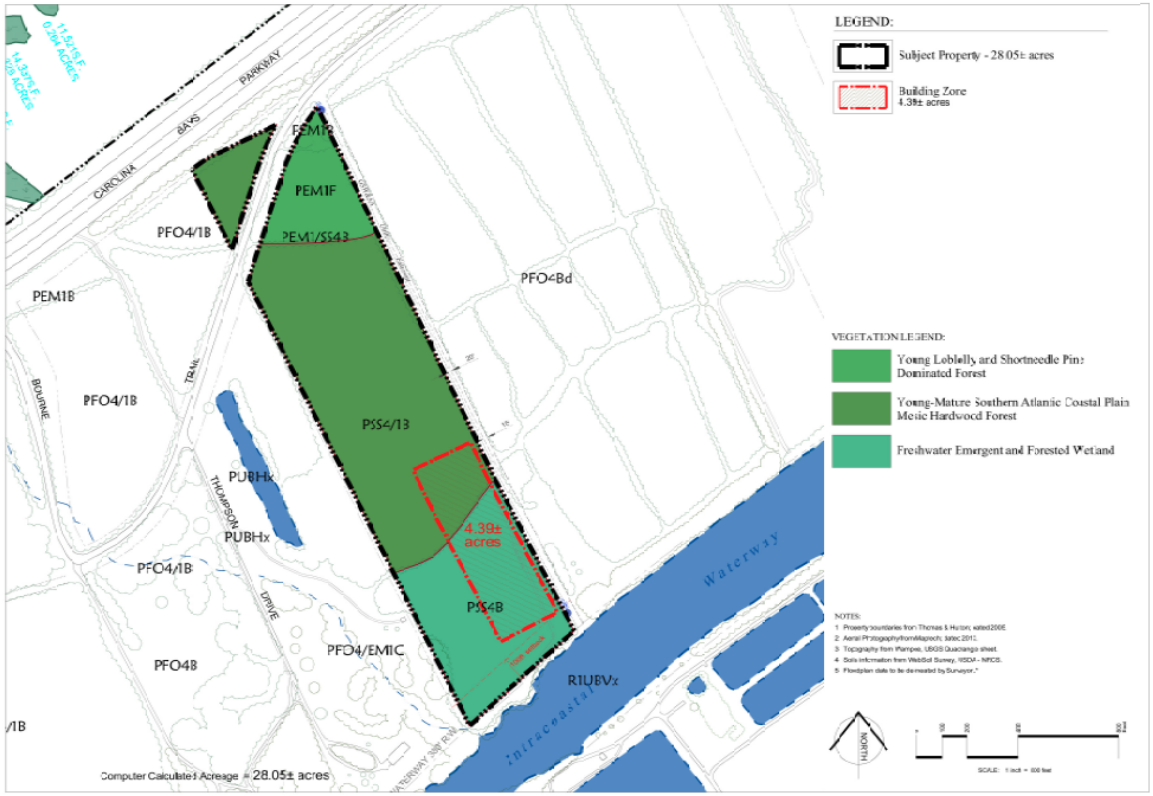
SCIENTIFIC NAME	COMMON NAME	G-RANK	S-RANK	LEGAL STATUS	PRIORITY	SPECIFIC HABITAT REQUIREMENTS	
MAMMALS	-	-	-	-			
Condylura cristata	Star-nosed Mole	G5	S3?	Of concern, State	High	X	swamps, marshes, bogs, streamsides; dense leaf litter
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3/G4	S2?	State Endangered	Highest	X	T-beam and I-beam bridges, abandoned buildings, old bunkers and tunnels, cavity trees, rock outcrops, mines, caves
Eptesicus fuscus	Big Brown Bat	G5	SNR		Highest	X	buildings, cavity trees, under bridges and in bat boxes; forage in open fields or forest gaps
Lasiurus cinereus	Hoary Bat	G5	S?		Highest	X	tree cavities, trunks, tree foliage, squirrel nests, and Spanish moss
Lasiurus intermedius	Northern Yellow Bat	G4/G5	S?	Of concern, State	Highest	X	forage over open areas such as fields, pastures, golf courses, marshes, and along lake and forest edges; roost in clumps of Spanish moss or under old palm fronds
Lasiurus seminolus	Seminole Bat	G5	SNR		Highest	X	roost in large pines located near forested corridors; may roost in leaf litter
Mustela vison	Mink	G5	SNR		High	X	near swamps, streams, rivers, ponds, and saltwater marshes
Myotis austroriparius	Southeastern Bat	G3/G4	S1	State Threatened	Highest	X	caves (including limestone sinks), mines, abandoned buildings, and large hollow trees; prefers to feed and roost over water
Perimyotis subflavus	Tri-colored Bat	G5	SNR		Highest	X	abandoned mines and caves, bridges, buildings
Ursus americanus	Black Bear	G5	S3?	Of concern, State	Moderate	X	early successional habitat and forest interior; den sites
REPTILES & AMPHIBIANS	-	-	-	-	-	-	-
Acris crepitans	Northern Cricket Frog	G5	S5	Of Concern, State	Moderate	X	isolated, temporary wetlands with no fish; open grassy marshes or shallow water bodies
Ambystoma cingulatum	Flatwoods Salamander (Frosted)	G2/G3	S1	Federal Threatened; State Endangered	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Ambystoma tigrinum	Tiger Salamander	G5	S2/S3	Of Concern, State	Highest	X	isolated, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges
Chelydra serpentina	Snapping Turtle (Common)	G5	SNR	State Threatened	Moderate	X	soft -bottomed wetlands like rivers, ponds, and lakes that have abundant aquatic vegetation
Clemmys guttata	Spotted Turtle	G5	S5	State Threatened	High	X	small ponds, streams, swamps, flooded bottomland hardwood forests, and other shallow water bodies with soft substrate for burrowing; aquatic vegetation
Eurycea chamberlainii	Chamberlain's Dwarf Salamander	G4	SNR		Highest	X	wetland types like seepages near small streams; leaf litter and small debris
Kinosternon baurii	Striped Mud Turtle	G5	S?	Of Concern, State	Moderate	X	in and around the floodplain swamps of rivers; shallow water; soft substrates
Nerodia floridana	Florida Green Watersnake	G5	S2	Of Concern, State	Highest	X	quiet open water such as Carolina bays, lakes, old rice fields, and reservoirs with "pad plants"

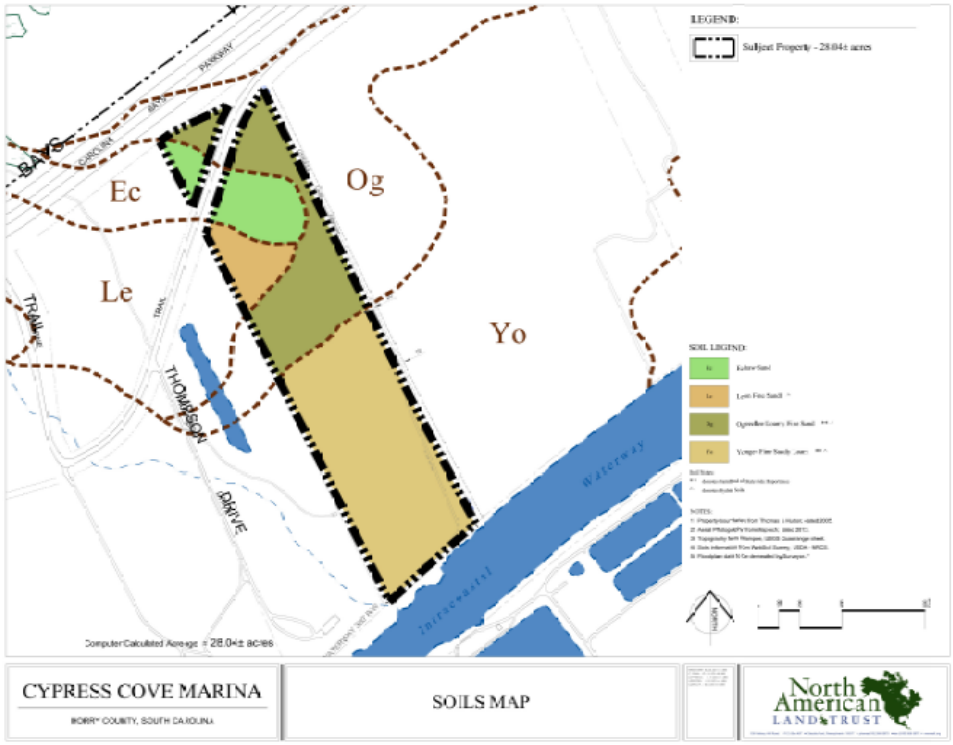
Pseudacris feriarum	Upland Chorus Frog	G5	S3/S4	Of Concern, State	Moderate	X	isolated, temporary wetlands with no fish
Pseudemys floridana	Florida Cooter	G5	SNR	State Threatened	Moderate	X	slow-moving rivers and non-flowing wetlands like ponds and small lakes with soft bottoms, basking sites, and aquatic vegetation
Pseudobranchus striatus striatus	Broad-striped Dwarf Siren	G5	S2	State Threatened	Highest	X	isolated, shallow, acidic, temporary wetlands with no fish that have open canopy above and abundant grasses and sedges; small streams with no flow and muck bottoms sometimes
Rana capito capito	Gopher Frog (Carolina)	G3/G4	S1	Federal Threatened; State Endangered	Highest	X	isolated, temporary to semi-permanent wetlands with no fish that have open canopy above and abundant grasses and sedges
Rana palustris	Pickerel Frog	G5	SNR	Of Concern, State	High	X	standing water in late winter; moist habitat usually within hardwood forests; sphagnum bogs, meadows, and grassy fields near shaded streams
Seminatrix pygaea	Black Swamp Snake	G5	S?	Of Concern, State	High	X	wetlands with abundant aquatic vegetation; leaf litter; *Sphagnum* moss
Trachemys scripta	Yellow-bellied Slider	G5	SNR	State Threatened	High	X	non-flowing wetlands like ponds and small lakes with soft bottoms and abundant vegetation
BIRDS							
Ammodramus henslowii	Henslow's Sparrow	G4	SZN	Of Concern, State	Highest	X	moist, grassy areas in open pinewoods
Ammodramus savannarum	Grasshopper Sparrow	G5	SNRB,SNRN		Highest	X	broomsedge fields and other openings
Ardea alba	Great Egret	G5	SNRB,SNRN		High	X	shallow water bodies or shorelines for foraging; trees over or surrounded by water for nesting
Ardea herodias	Great Blue Heron	G5	SNRB,SNRN		Moderate	X	shallow water bodies or shorelines for foraging; trees over or surrounded by water for nesting
Butorides virescens	Green Heron	G5	SNRB,SNRN		Highest	X	shallow water bodies and shorelines for foraging; dense shrubs and thickets near water for nesting
Cistothorus platensis	Sedge Wren	G5	SUB		Highest	X	favor brackish marshes
Egretta caerulea	Little Blue Heron	G5	SNRB,SNRN	Of Concern, State	Highest	X	shorelines, shallow water, or mudflats for foraging; shrubs or trees over or surrounded by water for colonial nesting
Egretta thula	Snowy Egret	G5	SNRB,SNRN		Moderate	X	shorelines, shallow water, or mudflats for foraging; shrubs or trees over or surrounded by water for colonial nesting
Egretta tricolor	Tricolored Heron	G5	SNRB,SNRN		High	X	shorelines, shallow water, or mudflats for foraging; shrubs or trees over or surrounded by water for colonial nesting
Eudocimus albus	White Ibis	G5	SNR		Highest	X	shallow water or mudflats for foraging on crustaceans; wet meadows or mudflats for probing; thickets or trees over or surrounded by fresh water for colonial nesting
Gallinago gallinagodelicata	Wilson's Snipe	G5	SNRN		High	X	boggy areas; wet meadows with short grass; along pond and marsh margins for probe foraging
Mycteria americana	Wood Stork	G4	S1S2	Federally Threatened and State Endangerd	Highest	X	shallow water with concentrated prey (6-10 in. deep) for foraging; trees over or surrounded by water for colonial nesting, particularly cypress swamps and trees on small islands

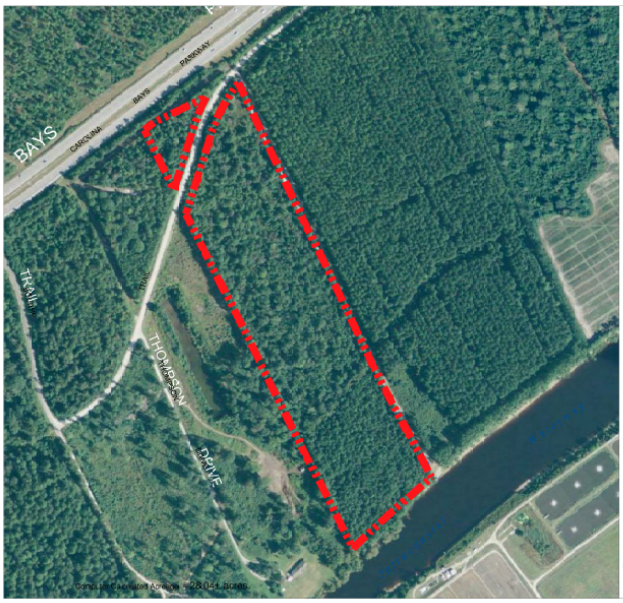
Nyctanassa violacea	Yellow-crowned Night Heron	G5	SNRB,SNRN		Highest	X	shorelines of water bodies for foraging, especially for crustaceans; trees or thickets near water for colonial nesting, will nest in trees that are on dry lands
Progne subis	Purple Martin	G5	SNRB		High	X	forage over open areas near or over water; nest in man-made houses or gourds
INSECTS							
Acanthametropus pecatonica	"A Mayfly"					X	mesic forests near water
Dolania americana	American Sand Burrowing Mayfly	G4	S3			X	mesic forests near water
Euphyes bimacula	Two-Spotted Skipper					X	isolated wetlands: open bogs, fens, and marshes with *Carex* sp.; nectar plants like iris
Homoeoneuria dolani	"A Mayfly"					X	mesic forests near water
Rhadinoceraea zigadenusae	Zigadenus Sawfly					X	dependent upon host plant: Death Camas (*Zigadenus densus*)
Siphlonurus decorus	"A Mayfly"					X	mesic forests near water
Somatochlora calverti	Calvert's Emerald	G3	SNR			X	boggy forest seepages for breeding; forest openings for foraging
Taeniopteryx robinae	Savannah Willowfly	G1	SNR			X	mesic forests near water
Toxorhynchites rutilus rutilus	"An Elephant (Tree Hole Mosquito)"					X	tree holes and artificial basins for breeding; nectar producing plants for foraging
Toxorhynchites rutilus septentionalis	"An Elephant (Tree Hole Mosquito)"					X	tree holes and artificial basins for breeding; nectar producing plants for foraging
TERRESTRIAL LEECHES							
Haemopis septagon	"A terrestrial leech"				High	X	moist areas near water sources; feeds on earthworms; only known from Georgetown County but probably more widespread in Pee Dee region of Coastal Plain

IV. Mapping

A. Vegetation Map
B. Soils Map
C. Aerial
D. Concept Plan


LEGEND:
Subject Property - 28.05± acres
Building Zone
4.39± acres
VEGETATION LEGEND:
Young Loblolly and Shortneedle Pine Dominated Forest
Young-Mature Southern Atlantic Coastal Plain Mesic Hardwood Forest
Freshwater Emergent and Forested Wetland
NOTES:
1. Property boundaries from Thomas & Hutton, edited2006
2. Aerial Photography from Maptech, bitec 2011.
3. Topography from Pampas, USGS Quadrangle sheet.
4. Soils information from WebSoil Survey, NSDA - NRCS.
5. Floodplain data to be delineated by Surveyor.*
NORTH
SCALE: 1 inch = 600 feet
PEM1F
PFO4/1B
PEM1/SS4B
PFO4Bd
PEM1B
PSS4/1B
PUBHx
4.39± acres
PSS4B
PFO4/EM1C
PFO4B
R1UBVx
Waterway
Computer Calculated Acreage = 28.05± acres
LAND USE MAP
CYPRESS COVE MARINA
HORRY COUNTY, SOUTH CAROLINA
LAND USE MAP
North American LAND TRUST


LEGEND:
Subject Property - 28.04± acres
Ec
Og
Le
Yo
SOIL LEGEND:
Waterway
THOMPSON
DRIVE
TRAIL
Computer Calculated Acreage = 28.04± acres
CYPRESS COVE MARINA
HORRY COUNTY, SOUTH CAROLINA
SOILS MAP
North American LAND TRUST
SOILS MAP



LEGEND:

Subject Property - 28.04± acres

NOTES:
1. Property boundaries from Thomas & Hutton, dated 2005
2. Aerial Photography from Maptech, dated 2012.
3. Topography from Wampee, USGS Quadrangle sheet.
4. Soils information from WebSoil Survey, USDA - NRCS.
5. Floodplain data to be delineated by Surveyor. *

NORTH

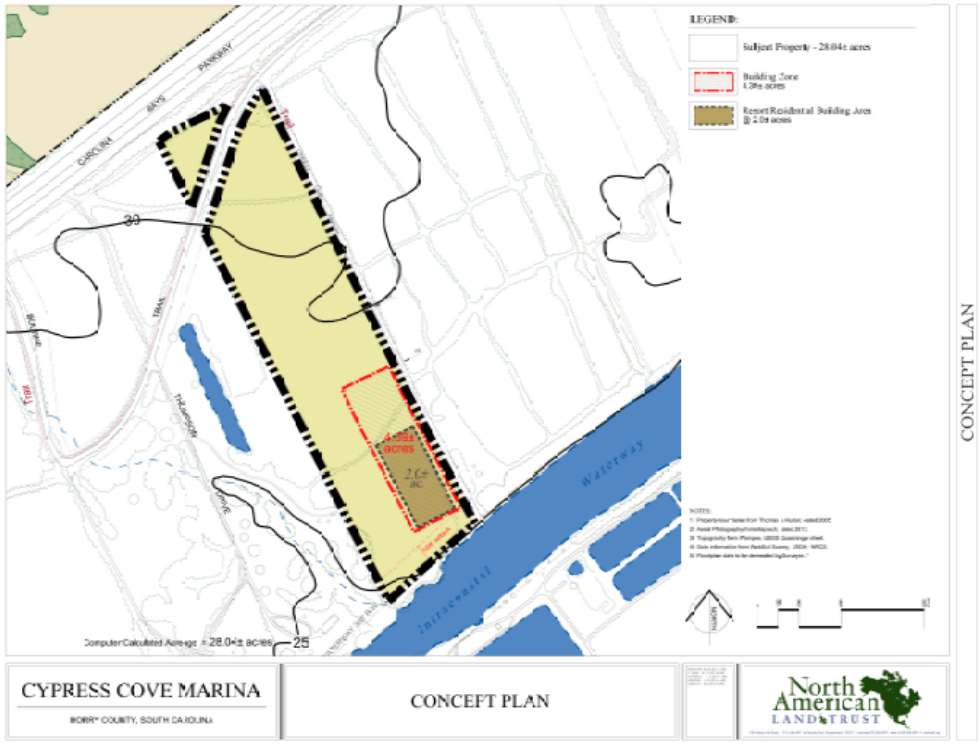
AERIAL PHOTOGRAPH

CYPRESS COVE MARINA

HORRY COUNTY, SOUTH CAROLINA

AERIAL PHOTOGRAPH

North American LAND TRUST


LEGEND:
Subject Property - 28.04± acres
Building Zone
1.36± acres
Resort/Residential Building Area
@ 2.04 acres
Waterway
Intracoastal
Computer Calculated Acreage = 28.04± acres
CYPRESS COVE MARINA
HORRY COUNTY, SOUTH CAROLINA
CONCEPT PLAN
North American
LAND TRUST
CONCEPT PLAN

V. Next Steps and Activity Timeline

NALT recommends the following tasks during the first year of operation:

1. Identify Conservation Management Team to include:
    a. Forestry Management Contractor
    b. Prescribed burning contractor
    c. Road maintenance contractor (general)
    d. Site improvement/repair contractor (construction)
    e. Lagoon maintenance contractor (as necessary)
    f. Biological expertise (as necessary)
    g. Site security contractors (as necessary)
    h. Natural resource agencies and partners

2. Develop a list of local partners/players to open dialogue as necessary:
    a. Utility companies (particularly with powerline easement rights of way)
    b. Local government and planning departments
    c. Academics or natural resource partners
    d. Adjacent POA/landowners
    e. Hunt clubs
    f. State parks or nearby Preserves
    g. Local NGO partners

3. Meet with contractors on CMP Plan components to obtain bids, determine timetable for implementation

4. Draft annual Management Budget for the property (begin 3-5 year projection)

5. Implement Conservation Management Plan to include

6. Modify budget and timetables for the next five-year period.

VI. Proposed Budget

Sample budget to be used for implementation				
Proposed 2015-2016 Budget				
	Proposed Cost	Committed	Discretionary	Notes
Site Maintenance				
Securing site gate, locks, fencing, etc.)				
Misc (signs, hardware, etc.)				
Routine mowing				
Preserve				
ROW				
Drainage pipes				
Road repair/maintenance				
Habitat Enhancement/Land Mngmt				
Prescribed burning				
New firebreaks/trails				
Burning (labor, equip, etc.)				
Timber thinnings				
Improvement cut/transition				
Removal of regeneration stands				
Invasive species treatments				
Lagoon Management				
Water quality monitoring/treatment				
Fish stocking				
Native Grass/Prairie Restoration				
Wildlife Management				
Nuisance control (hogs, beavers, etc.)				
Healthy herd management				
Biological surveys/enhancements				
Wetland enhancement/restoration/monitoring				
Biological surveys				
Site improvement				
Building envelope/view shed ex.				
New trails				
Capital Expenditure/Amenity/Improvements				
Fishing dock/pier				
Boardwalks				
Docks				
Site inspection and management				
Total				
Total Committed				
Total Discretionary				

Appendix 1: Conservation Easement and Baseline

References

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Folk, T. 2014. Forestry and Land Management Plan for Carolina Bay Marina

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