

NATURAL RESOURCES OF REGIONAL SIGNIFICANCE

INTRODUCTION AND BACKGROUND

Florida has been inhabited for at least 10,000 years. The earliest Floridians were the Paleo-Indians who were nomadic and hunted mammoths, bison, camels, and giant tortoises. The extinction of the megafauna led to a change in hunting patterns to fish, game, shellfish, and plants. It is estimated that agriculture did not occur in Florida until approximately 800 years ago.¹

The aborigine Floridians, while consumers of natural resources, did not markedly alter the landscape. The major impacts to Florida's landscape did not occur until European colonization. During the period of colonization, the area that runs northeast of Tampa Bay, curves north and west up the Suwannee river basin, then cuts west into the Panhandle--parallel to the Georgia border experienced gradual deforestation. This area was cleared for agriculture, lumber, and phosphate processing. Additionally, the central ridge of the state was converted to citrus plantations, and in the southern quarter of the state a network of canals and dikes began draining that area. The impact of land clearing associated with the citrus cultivation in central and south Florida was the loss of species found no where else on earth. Additionally, the alteration of the watershed in south Florida has affected fire regimens, vegetation patterns, salinization, and invasions of exotic species.² The Apalachee Region, unlike other areas of Florida, has not experienced the severity of impacts associated with the loss or alteration of natural resources. The natural, recreational, historical and cultural resources of the lands in the Apalachee Region remain rich and diverse. These resources can be divided into the following categories: surface waters systems, groundwater recharge areas, and species habitat.

Surface Water Systems

Surface water systems are some of the most valuable resources of the Apalachee Region. They provide recreational and economic opportunities for the Region's residents and visitors, habitat for many species of fish and wildlife, and serve as a mode of transportation. Surface water systems in the Region are in good hydrological and biological condition, with some exceptions, and, in some cases, their uniqueness and importance are recognized not only by the State of Florida, but also nationally and internationally. The Region contains Outstanding Florida Waters (OFW) Class I and Class II waters, Surface Water Improvement Management (SWIM) waters, State Special Waters, State Aquatic Preserves, a National Estuarine and Research Preserve, and First and Second Magnitude Springs. Waters classified within any of these categories are designated in the ARPC SRPP as natural resources of regional significance. These resources are mapped on Map NR-1 of the Natural Resource Map Series.

The delineation of surface waters is not limited to boundaries of lakes and rivers, but also includes wetlands and floodplains. Wetlands can be generally divided into tidal (coastal) and non-tidal (inland) wetlands. Tidal wetlands include coastal marshes, mudflats and swamps that are subject to periodic flooding by tides. Non-tidal wetlands include areas which are flooded when rivers overflow their banks during heavy storms, as well as areas where the soil may remain saturated due mainly to seepage or a seasonal high water table.

Wetland functions include: serving as a natural reservoir to moderate the impact of floods; improving water quality through settlement of sediments and removal of pollutants through biological processes; providing habitat for animal and vegetative species; protecting estuarine resources which in turn provide habitat for a great number of fish and shellfish; providing groundwater recharge, and maintaining aesthetic value by preserving scenery, visual buffering, and recreational opportunities. Wetlands are defined by the hydroperiod, the seasonal cycle of flooding and drying.³ The State of Florida has adopted a unified definition for wetlands:

...those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophilic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce, or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.⁴

The wetlands of the Region are designated as natural resources of regional significance and are mapped on Map NR-2 of the Natural Resources Map Series. The Region's wetlands are illustrated using data from the Florida Game and Fresh Fish Commission land cover map. The land cover map was developed from Landsat satellite data collected from 1985-1989. The following land cover categories were used to develop the wetland map: Coastal Salt marsh, Freshwater Marsh, Cypress Swamp, Hardwood Swamp, Bay Swamp, Shrub Swamp, Mangrove Swamp, and Bottomland Hardwood Forest. It should be noted that the Map NR-2 is not intended to be synonyms with the wetland definition listed above, which is a permitting standard. Map NR-2 represents the best available data and, like all maps in the Natural Resources Map Series, is intended to be used in conjunction with the ARPC SRPP for planning purposes only.

The floodplain is the normally dry area adjoining rivers, streams, lakes, bays, or the ocean. Streams carve a channel large enough to carry the most frequent flow. An increased amount of water due to heavy rains may overtop the natural banks of a surface water and occupy the low land floodplain adjacent to the stream. Encroachment of human uses in the floodplain often interferes with natural water flow patterns and can reduce the flood storage areas, often causing increased flood heights and exacerbating flooding problems. For example, in July 1994, the Region was inundated by rain from Tropical Storm Alberto, Tropical Storm Beryl, and Tropical Depression 10. The rains resulted in riverine flooding which caused severe damage to residential and commercial properties in Calhoun, Gulf, Jackson, and Liberty Counties.

Surface water in the Region is abundant. Within the Apalachee Region, the major uses of surface waters are cooling and processing, recreation, and the support of the natural systems. Within the Region, only the City of Quincy uses surface water as a public supply.⁵ The water consumption of the Region in 1990 is shown in Table NR-1.

Table NR-1: Water Consumption in the Apalachee Region

County	Surface Water Usage as Percentage of Total Usage	Total Fresh Water Used (millions of gallons/day)	Primary Use
Calhoun	21%	2.38	Agricultural Irrigation
Franklin	4%	2.67	Agricultural Irrigation
Gadsden	84%	18.51	Agricultural Irrigation
Gulf		45.17	Commercial/Industry
Jackson	79%	141.50	Power Generation
Jefferson		12.10	Agricultural Irrigation
Leon	25%	39.49	Public Supply
Liberty	0%	3.72	Agricultural Irrigation
Wakulla	0%	2.69	Public Supply
REGION		265.85	

Source: Northwest Florida District Water Management Plan, 1995.

Groundwater Recharge Areas

Approximately 95 percent of the water used by public supply systems and self-supplied households is groundwater, drawn from the Floridan Aquifer System. The Floridan Aquifer System is primarily composed of limestones. The thickness of the layer in north Florida ranges from 100 to more than 1,000 feet.⁶ In general, the Floridan Aquifer, the Region's major source of potable water, yields water of a quality that requires little treatment. However, there have been some localized incidents of water contamination in the Region. This is alarming since pollutants can move through the more porous layers of the aquifer and contaminate water supplies. Cleanup of aquifer contamination, where possible, is difficult and costly. Therefore, it is critical that these incidents be averted through regulation of activities that may pollute the groundwater.

In coastal areas, the amount of fresh groundwater that can be safely withdrawn is limited by the proximity to salt water. Also, in inland areas of Gadsden, Liberty, Franklin and portions of Calhoun and Gulf Counties, potable groundwater supplies are restricted by residual saline water found at relatively shallow depths. In the past, overpumping in these areas has caused saltwater encroachment upcoming or intrusion, resulting in the abandonment of wells in the vicinity of Port St. Joe, Panacea and Quincy. The cost associated with drilling new wells and "plugging" abandoned ones is high. Therefore, it is important for the local governments in the Region, particularly in coastal areas, to avoid overpumping.

The Region's aquifer systems are replenished by direct and indirect recharge. Indirect recharge occurs when rainfall infiltrates the aquifer from overlying sediments in the form of leakage. Direct recharge occurs where the sediments (i.e., confining units) are breached by karstic

features which allow rainfall to move directly into the aquifer. Areas of higher recharge rates coincide where the aquifer is at or near land surfaces and where karst processes have breached the overlying confining unit.⁷ While this recharge helps ensure an adequate water supply, it may also introduce pollutants to the ground water. Local comprehensive plans and land development regulations provide the opportunity for ensuring that the water resources of the Region are better protected. Provisions should be included to protect areas of aquifer recharge potential, sinkholes, wetlands and surface waters.

The areas of higher recharge rates are designated in the ARPC SRPP as natural resources of regionally significance because of the ease at which ground water contamination could occur. These areas are mapped on Map NR-3 of the Natural Resources Map Series. Documented non-point sources of aquifer contamination include septic tank, urban stormwater run-off, agricultural practices, air conditioning return, and abandoned and free flowing wells (NFWFMD, 1984). In parts of Jackson, Jefferson, Leon, and northern Wakulla Counties, where the limestone formation of the Floridan aquifer is at or near the surface, rainfall and surface water run-off can enter the groundwater system through lakes, sinkholes and direct recharge.

One method of protecting groundwater resources are buffers around wellheads. Based on NFWFMD information, a 200 foot radius buffer around the wellhead would be adequate in areas determined to need minimum protection. These include some sections of Gadsden, Liberty, Calhoun, and Gulf Counties. The reason for this standard is that the aquifer has adequate protection from a confining layer of clays. In more sensitive areas, where the aquifer is not protected, or the protective layer is not consistent, the buffers needed would vary from 1,000 feet or greater. The restrictions would be based on the different characteristics of the aquifer at that point. Ultimately, sophisticated modeling techniques should be used to delineate zone contribution for potable water supply wells. This approach results in a more accurate wellhead protection area within which certain land uses should regulated.

Species Listed as Endangered, Threatened, and of Special Concern and Their Habitats

The other major natural features of the Region are the numerous plant and animal species and their habitat areas. Over three-fourths of the Region's land is forested. Also, nearly 25 percent of the Region is comprised of public conservation lands most of which are concentrated in Gulf, Liberty, Franklin, Leon, and Wakulla Counties. The resource features present on these lands combine to give the Region its distinctiveness. The significance and value of these resources have motivated all levels of government and private citizens to protect our Region's heritage by conserving the areas where these resources remain most unspoiled. These efforts have led to the creation of the Apalachicola National Forest, the St. Marks and St. Vincent National Wildlife Refuges, the many state wildlife management areas, forests, parks and recreation areas of the Region, and the conservation of the floodplains of the Apalachicola and Chipola Rivers and large tracts of wetlands such as Tate's Hell. Owners of extensive tracts of private lands have also acted as stewards, balancing game management with silvicultural production. These public and private lands contain some of state's largest and most diverse remaining wildlife habitats and offer tremendous outdoor recreational opportunities. The Region's resource features combine to create the outstanding qualities necessary to make it an ecotourism destination and an important

contributor to the Region's economic base. The area's distinctive natural and cultural qualities create a unique sense of place.

These lands and the flora and fauna they support are the foundation for the Region's ecosystems. The various components of the Apalachee Region's natural systems are interrelated, since an adverse impact to one may have deleterious effects upon another. Since various natural resource features of the Apalachee Region form ecosystems, they should be viewed and managed as such. The Florida Department of Environmental Protection has defined ecosystem management as:

..an integrated, flexible approach to the management of Florida's biological and physical environments--conducted through the use of tools such as planning, land acquisition, environmental education, regulation, and pollution prevention--designed to maintain, protect, and improve the state's natural, managed, and human communities.⁸

Many of the lands within the Apalachee Region act as hubs, capable of anchoring a greenway system providing the origins and destinations for people and wildlife moving through it. Greenways are defined as:

- A linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or overland along a railroad right-of-way converted to recreational use, a canal, scenic road, or other route.
- Any natural landscape course for pedestrian or bicycle passage.
- An open space connector linking parks, nature reserves, cultural features, or historic sites with each other and with populated areas.
- Locally, certain strips or linear parks designated as a parkway or greenbelt.

Greenways can be linked to form a system. Greenway systems are composed of large hubs, links and smaller sites comprised of natural, historic, cultural, and recreational features. The hubs anchor the system and provide an origin or destination for people and wildlife moving to or through it. The Region's natural hubs are:

- Apalachicola River floodplain, Apalachicola National Forest, Tate's Hell, and coastal areas of Apalachicola Bay and St. Joseph Bay;
- Red Hills; and
- St. Marks National Wildlife Refuge, wetlands of the Wakulla, St. Marks, Wacissa and lower Aucilla Rivers.

The Region's rivers and trails serve as greenways connecting these hubs forming the foundation or green infrastructure for the Apalachee Region's diverse ecosystem. The Region's rivers and their floodplains are the unifying links between the Region's recreation and conservation lands and are the linchpins for the Region's ecosystem. Many of the Region's outdoor recreational activities and its cultural heritage are associated with these rivers. Conserving the natural corridors of the Region's rivers-- the Chipola, Apalachicola, Ochlocknee, Sopchoppy, Wakulla,

St. Marks, Wacissa, and Aucilla-- will protect the natural, recreational, historic and cultural linkages which bind the Region and give it much of its distinctiveness.

Wildlife thrives in the Region as do the people who live and visit here. There are over 2,300 trailer and tent camping sites, 411 acres of primitive camping areas, over 207 miles of the Region's rivers and streams designated as canoe trails, (though virtually every stream in the Region is a potential canoe trail), 181 miles of hiking trails, 50 miles of nature trails, and 38 miles of horse trails. Swimming areas such as creeks, lakes, springs, sinkholes, and beaches are abundant. The extensive forested and rural areas of the Region also support many different types of wildlife and vegetation, including several species of plant and animal life considered to be endangered, threatened, or of special concern. Of the 35 species of animals officially designated by the State as being endangered, fourteen may be found within the Region. Seventeen of the 35 threatened species of wildlife on the U.S. List of Endangered and Threatened Species and 29 of the 423 endangered and threatened plants may be found in the Region. In addition, 11 of the 43 Florida "species of special concern" may exist in the Region.

The Region's resource lands are extensive, varied, and transcend political boundaries, thereby necessitating an integrated effort to successfully conserve and manage their significant natural resources. The diversity of ownership of the Region's lands and natural resources presents a major challenge to a coordinated resource conservation and land management program. Existing comprehensive plans, land development regulations, coordination procedures and private and public stewardship should continue to be the primary tools to conserve these significant natural resources. Stewardship by citizens and landowners is critical because without their support and participation conservation of the Region's significant resources will not be successful. Property owners with resource features are encouraged to voluntarily continue and strengthen their stewardship of their lands. This integrated regional system of resources provides a medium for federal, state, regional and local agencies to work together with landowners, businesses and visitors to retain the Region's qualities which are enjoyed by all. The resulting partnerships will help focus financial, administrative and stewardship resources so they are better coordinated and produce more effective results. The benefits of coordinated natural resource stewardship efforts are much greater than the sum of the separate conservation and planning practices and are also an excellent mechanism for ensuring sustainable development in the Region. One of the mechanisms for achieving this has been through the conservation of greenways and greenway systems.

The following sections identify the natural resources of regional significance within Region's natural hubs and along its rivers and greenways which warrant management and protection through local comprehensive planning, environmental regulation, public acquisition of lands in fee simple and less-than-fee simple interests, public and private land stewardship, and intergovernmental coordination. Also identified are potential issues which need to be addressed to effectively conserve the Region's significant natural resources.

Natural features of the Region are discussed in the context of ecosystems hubs, using the drainage basins in the Region as the focal point. The land area that contributes to surfacewater runoff to a stream, lake, or wetland is called a watershed. The area of a watershed can vary from

thousands of square miles to less than an acre. Subwatersheds are smaller watersheds within a larger watershed. Terms that are used synonymous with subwatershed are basin or drainage basin. Drainage basins are defined by the State as a subdivision of a watershed.⁹

There are five major drainage basins within the Apalachee Region: Apalachicola River and Bay System, Ochlocknee River and Bay System, St. Marks River Basin, St. Andrews Bay System Basin, and the Aucilla River Basin.

Trends and Conditions

Apalachicola River and Bay System Basin

The significance of the natural resources of Apalachicola River and Bay cannot be over emphasized. The resources of these significant natural features combine to form one of the eastern United States' most diverse, productive and economically important ecosystems.¹⁰ The Apalachicola Bay also is one of Florida's and the nation's most highly productive estuaries.¹¹

All levels of government are working to protect the productivity of this natural system. The lower reach of the Apalachicola River and Bay has been designated as an International Biosphere Reserve by the United Nations Education, Scientific and Cultural Organization, and as a National Estuarine Research Reserve by the Federal government. The State of Florida has designated the River and both Bays as OFWs and State Aquatic Preserves, designated the River as State Special Waters, and designated the Apalachicola Bay as an Area of Critical Concern.¹²

The Apalachicola River begins its 107-mile journey to the Apalachicola Bay from the Jim Woodruff Dam at the Georgia and Florida state line. The Dam was built at the confluence of the Flint and Chattahoochee Rivers creating Lake Seminole. Because nearly 90 percent of the drainage basin lies in Georgia and Alabama, the Apalachicola River and Bay are greatly influenced by water uses and land management practices in these other states.¹³ The Apalachicola River has the highest annual flow of any Florida river as it meanders through the state's largest floodplain. The heavily forested floodplain is contained by natural levees one to two miles apart in the upper basin and three to five miles apart in the lower basin.¹⁴ In Liberty County, north of the City of Bristol, the east side to the River has 150-200 feet high bluffs that offer the some of the state's most dramatic vistas overlooking the River's vast floodplain.¹⁵

The economic base of the river basin in Florida is directly tied to the natural resources of the Apalachicola River and Bay. Activities such as commercial fishing in the River and bay, agriculture, silviculture, recreation and tourism are the foundations of the economy of the area.¹⁶ For years it has supported the largest oyster harvesting industry in Florida, producing approximately 90 percent of the state's oysters in addition to supporting extensive commercial fishing and shrimping for white, pink and brown shrimp. The waters also serve commercial barges plying the River and bay carrying primarily gravel, fertilizer and oil.¹⁷ This traffic is made possible through dredging of a nine feet deep by 100 feet wide channel by the U.S. Army Corps of Engineers.

Protection of the Apalachicola River floodplain is critical to maintaining the health of the Apalachicola Bay and its estuary. The water quality of the Apalachicola River and Bay is relatively high because the basin is relatively undeveloped, pollutants generally settle out and are

retained in upstream reservoirs, and the sedimentary-nature of the river bottom.¹⁸ The health and productivity of Apalachicola Bay is dependent on good water quality, abundant fresh water, and seasonal flooding which carries nutrients, detritus, and sediments from its floodplain and creates variability in the salinity of its estuary. Its diverse plant and animal life thrive in its clean waters which are less saline and more turbid than most Florida estuaries.

The water quality of the Apalachicola River, Apalachicola Bay, St. Joseph and Alligator Harbor is generally very good.¹⁹ However, effluent from the City of Port St. Joe's wastewater treatment plant has biologically degraded St. Joseph Bay in vicinity of the Gulf County Canal.²⁰ Apalachicola Bay has good water quality, but there are localized problems from non-point source pollution from fish houses, marinas, and developed areas. Additionally, New River basin, which drains into St. George Sound at the eastern end of the Bay, has experienced little development and has very good water quality with the exception of the area near the City of Carrabelle. The City previously discharged primary treated wastewater into the Bay, but has made upgrades. Scipio Creek, which at the mouth of the Apalachicola River, is impaired by shrimping and marina activities as well as wastewater loading. The City of Apalachicola wastewater treatment facility, which formerly discharged into Scipio Creek, has been converted to wetlands discharge. At this time, excessive flows to the Apalachicola treatment facility have caused occasional discharges of poorly treated wastewater.²¹ Pollution has primarily affected its tributaries, and progress has been made over the past five years in cleaning up point-source pollution. Potentially problematic point-sources include waste water treatment plants and seafood industry operations. Also, large silvicultural and agricultural operations, road building, spills from barges and development could potentially have a deleterious effect on the River. The following tributaries carry existing and potential sources of pollution to the Apalachicola River and Bay:

Table NR-2: Potential Pollution Sources to the Apalachicola River and Bay via Tributaries

County	Water Body	Potential Pollution Sources
Calhoun County	Sutton Creek	wastewater treatment plant
Calhoun County	Graves, Thomas Mill, Stafford and lower Ocheese Creeks	sediment
Franklin County	Scipio Creek	marina, seafood processing and urbanization
Gadsden County	Mosquito Creek	wastewater treatment plant and urbanization
Gulf County	Cypress Creek	silviculture
Liberty County	Johnson Branch	wood treatment plant
Liberty County	Rock Creek	sediment
Liberty County	Florida River, Equaloxic Creek	pesticides and chemicals from agriculture

Source: Northwest Florida District Water Quality Assessment 1994 305(b) Technical Appendix, 1994

Although the Jim Woodruff Dam helps somewhat to improve the River's water quality by trapping sediment and other water pollutants, tributaries with near pristine water quality which should be protected. These are: Rock Creek and Sweetwater Creek in Liberty County, Flat Creek and Mosquito Creek (Class 1 Waters upstream of U.S. 90) in Gadsden County, Crooked Creek in Gadsden and Liberty counties. The most serious threat to the Bay's water quality is

non-point source pollution from urban areas.²² The St. George Sound has the Bay's best water quality, but there are isolated areas of the estuary that have pollution problems. These include waters in a two mile radius from the City of Apalachicola, the southern bay area off of St. George Island from Nicks Hole to Rattlesnake Cove, and north of the Eastpoint breakwater. Sediments polluted with high levels of oils and greases, nutrients and heavy metals found in the Eastpoint Channel potentially threaten the Cat Point oyster bed (the most productive bar in the estuary) as they migrate with the prevailing current. Other portions of the Bay are sometimes closed to oyster harvesting due to increased bacterial levels from runoff associated with major rainfalls and high flows from the Apalachicola River. Failing on-site disposal systems (septic tanks with drainfields) have caused problems in the following areas: City of Apalachicola, Eastpoint, Greenpoint, Carrabelle Beach, Lanark Village, St. James, Dog Island and St. George Beach.

The Apalachicola River Basin has large undisturbed tracts providing a wide variety of habitats for more species of plants and animals than found anywhere else in temperate North America.²³ The Apalachicola drainage basin supports at least 260 species of vertebrates including 52 mammals, 99 breeding birds, 64 reptiles, and 44 amphibians found in Florida. The river corridor is also home to the greatest diversity and highest species density of amphibians and reptiles found in the United States or Canada. The largest number of freshwater species (86) in Florida, including 20 species of gastropods and 50 species of mollusks inhabit the basin. The Apalachicola River and Bay Basin has been identified as a Strategic Habitat Conservation Area for Florida black bear, the American swallow-tailed kite, and rare wading birds and bats.²⁴ The River's high bluffs in Liberty and Gadsden counties are cut by steephead ravines of seepage streams that are home to more endangered species and greater plant and animal diversity than can be found in any like-sized area between Virginia and Texas. These high sandy bluffs, deep ravines and seepage streams are unique because they support relic plants of Appalachian-origin from 2 million years ago and are not found anywhere else in Florida.²⁵ Some of the rarest of these endemic plants include: Florida torreyia, Florida yew, croomia, Ashe's magnolia, pyramid magnolia, wild hydrangea, Carolina lily, Apalachicola wild indigo, Apalachicola rosemary, Marianna columbine, Florida anise, Florida spiny-pod, Florida corkwood and mountain laurel.²⁶ The Nature Conservancy's Apalachicola Bluffs and Ravines Preserve and Torreya State Park protect a portion of this area. Closing the Gaps in Florida's Wildlife Habitat Conservation System (1994) also identified the River and its corridor as home to many other listed species including, but not limited to those species listed in Table NR-3.

Table NR-3: Partial Roster of Listed Species Within the Apalachicola River and Corridor

eastern indigo snake	alligator snapping turtle	Barbour's map turtle
Suwannee cooter	Gopher tortoise	copperhead
Florida pine snake	one-toed amphiuma	four-toed salamander
Apalachicola dusky salamander	flatwoods salamander	spotted bullhead
southern bald eagle	osprey	Cooper's hawk
yellow-crowned night-heron	least bittern	peregrine falcon
Southeastern American kestrel	ivory-billed woodpecker	Bachman's warbler
red-cockaded woodpecker	goldstripe darter	Indiana bat
white birds-in-a-nest	giant water-dropwort	Alabama anglepod
thick-leaved water-willow	wiregrass gentian	West's flax

wild columbine	orange azalea	false hellebore
lance-leaved wake robin	schisandra	Baltzell's sedge
fringed campion	Indian cucumber root	rattlesnake plantain
halberd-leaved yellow violet	buckthorn	trailing arbutus
American bladdernut	toothed savory	narrow-leaved trillium
Carolina lily	trout lily	pine-woods aster
Chapman's crownbeard	Apalachicola dragon-head	gentian pinkroot
mock pennyroyal	violet-flowered butterwort	southern milkweed
Carolina grass-of-parnassus		

In the Apalachicola National Estuarine Research Reserve over 282 species of birds have been identified including 164 migratory, 98 breeding and 20 non-breeding.²⁷ Many listed species inhabit the coastal areas and islands of Apalachicola Bay, St. Joseph Bay, and Alligator Harbor including, but not limited to those presented in Table NR-4:

Table NR-4: Partial Roster of Listed species in the Apalachicola National Estuarine Research Preserve

Florida black bear	red-cockaded woodpecker	loggerhead sea turtle
little blue heron	brown pelican	Cuban snowy plover
black-crowned night-heron	piping plover	Wilson's plover
black skimmer	American oystercatcher	southern bald eagle
osprey	least bittern	black rail
Wakulla seaside sparrow	gull-billed tern	peregrine falcon
reddish egret	great egret	least tern
sandwich tern	gull-billed tern	peregrine falcon
Gulf salt marsh snake	Apalachicola king snake	eastern indigo snake
St. Andrews Beach Mouse	round-tailed muskrat	flatwoods salamander
large-leaved joint-weed	Chapman's crownbeard	telephus spurge
Gulf coast lupine	corkwood	Godfrey's blazing star
white-topped pitcher plant	thick-leaved water-willow	wiregrass gentian

Source: Closing the Gaps in Florida's Wildlife Habitat Conservation System (1994)

While the river system retains its overall health, many species have declined. In the last decade populations of Atlantic sturgeon, Gulf sturgeon and striped bass have dramatically declined because the rocky deep holes in mid-river, the tailrace of the Jim Woodruff dam and the deep still waters of oxbow lakes have been altered or filled.²⁸ Populations of mollusks have also declined and some species have become extinct. Factors attributed to these declines include habitat alteration, reservoir construction, siltation due to dredging, pollution and agricultural runoff.²⁹ The productivity of these estuaries must be protected by restricting over-fishing and dredging of channels.³⁰

Nearly all of the adjacent lands to the Apalachicola River below Calhoun County are owned by the Federal or state governments and are principally managed to conserve the natural values of the floodplain. The *Florida Rivers Assessment* (1989) identified over 20 public and private conservation and recreation areas and boat ramps along the River, protecting the significant natural resources and providing public access. These include: Three Rivers State Recreation Area (on the western shore of Lake Seminole), Apalachee Wildlife Management Area, Torreya

State Park, The Nature Conservancy's Apalachicola Bluffs and Ravines Preserve, Apalachicola River Water Management Area, Dead Lakes State Park, the Apalachicola National Forest, Edward Ball Wildlife Management Area, and Ft. Gadsden State Park. The River's most productive fishery is in its upper reaches near the Jim Woodruff tailrace with channel catfish, white catfish, striped mullet, southern flounder and American eel being primarily harvested. Sport fishing for striped bass, white bass and catfish is also very popular on the River.

Helping to protect the coastal resources of Apalachicola Bay are the Apalachicola National Estuary Reserve, St. Vincent National Wildlife Refuge, and Cape St. George State Preserve. The Dr. Julian D. Bruce St. George Island State Park and T.H. Stone Memorial St. Joseph Peninsula State Park and Wilderness Preserve are two of the best swimming beaches in the State of Florida and also protect important habitats for many birds, turtles, mice, and plants. St. Joseph Bay supports the best scallop resources in the state, and it supports high levels of recreational fishing and shell fishing.³¹

Because the basin plays such an important role in providing habitat for so many species, it is critical that its resources be managed to ensure its habitat diversity and richness is sustained. In order to protect the significant natural features of the Region, the NFWFMD and the State of Florida are attempting to acquire nearly all of the private land within the River's floodplain north of Gulf County through willing-seller land acquisition programs. These targeted areas include Gadsden Glades and Apalaga Landing in Gadsden County; Atkins Tract in Calhoun County; Sweetwater Creek in Liberty County; the Apalachicola River floodplain lands in Jackson, Gadsden, Liberty and Gulf Counties; and Tate's Hell in Franklin and Liberty Counties. Other lands targeted for acquisition are Blue Springs, Gerome's Cave, Sneads Cave, Waddell's Mill Pond in Jackson County and lands buffering St. Joseph Bay in Gulf County.

It is also critical that the changes to the River or its flow be avoided so to not block or vary the transportation of detritus and nutrients to the estuary of Apalachicola Bay.³² In 1992, the states of Florida, Georgia, and Alabama and the Assistant Secretary of the Army entered into a Memorandum of Understanding to define the extent of the water resources, define demands for water, and evaluate alternatives for using available water resources to benefit all user groups of the River system.³³ When completed, this study will provide the states with information necessary to develop consistent plans for allocating water resources.

The Apalachicola National Forest and Tate's Hell are located within the Apalachicola River and Bay Basin and together, at over 1,200 square miles in size, form one of the largest contiguous blocks of public land east of the Mississippi River. The extensive size of this forested area with its few paved roads, isolation and composition of the plant communities makes it one of the state's best habitats for wide-ranging species such as Florida black bear.³⁴ The western portion of the Apalachicola National Forest and the northern and western portions of Tate's Hell are designated as Strategic Habitat for the Florida black bear.³⁵ Although silvicultural operations extensively ditched, drained, clear-cut, and replanted the vast forested plain of Tate's Hell in the 1960's, the area is critical for habitat and in providing clean surface waters which flow into the Apalachicola Bay estuary.³⁶ Together, the National Forest and Tate's Hell may offer an attractive location for the future reintroduction of the Florida Panther or red wolf.³⁷

This portion of the Region is renowned for its longleaf pine and wiregrass ecosystem; its bay and swamp ecosystems; and its large acreage of flatwoods. It provides habitat for many rare plants and animals, including the world's largest and only recovered population of the endangered red-cockaded woodpecker, as well as some of the state's largest populations of game animals including turkeys, deer, and wild hogs. Near Whiskey George and Trout creeks in Tate's Hell, there is a 2000 acre stand of dwarf pond cypress that is thought to be the only one of its kind in the Florida panhandle with some trees nearly 300 years old. Listed species identified within the National Forest and Tate's Hell include, but are not limited to those presented in Table NR-5. Identified other listed species in the National Forest and Tate's Hell including, but are not limited to:

Table NR-5: Partial Roster of Listed species in the Apalachicola National Forest and Tate's Hell

Florida black bear	fox squirrel	Coopers hawk
Bachman's sparrow	Barbour's map turtle	least bittern
Southeastern American kestrel	Eastern indigo snake	Bald eagle
Florida pine snake	flatwoods salamander	Apalachicola king snake
Woodville cave crayfish	red-cockaded woodpecker	karst pond xyris
Panhandle meadowbeauty	Chapman's crownbeard	wire-grass gentian
Drummond's yellow-eyed grass	Florida skullcap	scare-weed
West's flax	Apalachicola dragonhead	Florida beargrass
Chapman's butterwort	Godfrey's blazing star	Ashe's magnolia
pine-wood aster	Harper's beauty	butterwort

Source: *Closing the Gaps in Florida's Wildlife Habitat Conservation System* (1994). p. 150.

More than 500,000 people visit the Apalachicola National Forest every year to camp, swim, picnic, boat, hunt, fish, hike, bicycle and horseback ride.³⁸ The Trout Pond Recreation Area provides recreational opportunities for physically challenged visitors. Other sites include Florida's only federally designated scenic road, the Apalachee Savannahs Scenic Byway, the New and Sopchoppy Rivers (both being considered for designation as National Wild and Scenic Rivers), the Ochlocknee River, Bradwell Bay Wilderness Area, Mud Swamp/New River Wilderness Area, a proposed wilderness surrounding Clear Lake, 66 miles of the Florida National Scenic Trail, the Munson Hills Off-Road Bicycle Trail, Vinzant Riding Trail, six canoe trails, 17 developed recreation sites, and four special interest areas. The Leon Sinks Geological Area protects many the Region's most notable sinkholes including Big Dismal Sink which is an Outstanding Florida Water. Adjacent to national forest lands, the State is attempting to protect River Sink Spring through acquisition. The proposed Gopher, Frog, and Alligator (G.F.& A.) Rail-to-Trail running from Tallahassee to Carrabelle would complement these and other recreational opportunities available in the Apalachee Region.

Though the Apalachicola National Forest and other public lands are conserved as part of the public trust, there are still a number of threats to these public conservation lands.³⁹ Residential development on privately owned lands within and adjacent to the National Forest's boundary is one of the biggest threats to the forest. These private holdings have a significant influence on how the public lands are managed. For example, homes at the edge of the forest make it difficult for the Forest Service to undertake prescribed burns. A number of roads, as well as electricity

and natural gas transmission lines, pass through the National Forest and Tate's Hell, fragmenting its habitat and threatening wildlife, especially the Florida black bear.⁴⁰

Other threats to the Apalachicola National Forest include degradation of outdoor recreation opportunities by overuse, timbering and seedling planting; increased human access; pollution of surface waters; pressures to increase timber sales; and disturbance of wilderness areas and archaeological and historic sites by road construction, recreation and maintenance facility construction.⁴¹ In recent years, the USDA Forest Service's management practices have placed less emphasis on maximizing timber harvests and more on conserving the mature forest needed to provide habitat for the endangered red-cockaded woodpecker. Emphasis also has been placed on improving recreational opportunities. Local, regional, state, and federal agencies and adjacent landowners should establish procedures or mechanisms for coordinating activities to ensure the significant natural resources of the national forest and Tate's Hell are sustained.

Nearly all of Tate's Hell is targeted for acquisition by the State of Florida, the NFWFMD, and the USDA Forest Service. The Tate's Hell Carrabelle Tract Conservation and Recreation Lands Project Assessment (1991) called Tate's Hell "one of the most significant land acquisition proposals ever considered by the State of Florida." The State has already acquired most the western half of Tate's Hell and is managing it as Tate's Hell State Forest.⁴² The NFWFMD has acquired most of the New River Corridor above Carrabelle, and is proceeding with plans to restore the hydrology of Tate's Hell by plugging ditches and culverts that drain the area. These efforts will help protected the water quality of the Apalachicola River and Bay, especially the East Bay marshes which are by far the most productive nursery grounds for estuarine and marine species in the Apalachicola estuary. The acquisition of the Piece Mound Complex outside of the City of Apalachicola by the State will protect one of the most important archaeological sites in Florida and especially on the Florida Gulf coast.⁴³

The Chipola River is also located within the Apalachicola River and Bay System Basin. The Chipola River has a wealth of diverse resources. This 110 mile long river is the largest tributary of the Apalachicola River. The River has been designated as an OFW and a State Special Waters to help protect its good water quality.⁴⁴ Many springs, such as the first magnitude Blue Springs, contribute to the River's flow which has carved rocky bluffs and shoals north of State Highway 20. The southern portion of the River passes through swampy bottomlands before joining the Apalachicola River in east central Gulf County. The river corridor is also noted for its unusual concentration of archaeological sites which have been identified in the state's Master Site File. Archeological and historical resources are identified in the Economic Development Element as regionally significant resources and facilities.

The Chipola River's good water quality is threatened by point and non-point source pollution (*Florida Rivers Assessment*, 1989 and *Apalachicola River and Bay Management Plan*, 1996). The River is over enriched with nitrates which have increased over the past ten years. The most impaired portion of the River is its center section from the City of Marianna to Dead Lake. This section has four impaired creeks flowing into it--Dry Creek, Rock Creek (impaired by mining and agriculture), and Spring Creek and Merritts Mill Pond (impaired by urbanization and construction). Dry Creek is contaminated with metals, other chemicals, sediments and debris

from Sapp Battery, which is a U.S. Environmental Protection Agency Superfund Site and which discharges into the Chipola. Several sewage treatment plants and industrial facilities have degraded the Chipola's water quality as has agricultural and silvicultural runoff, runoff from developed areas, and drainage from septic tanks. The Chipola River is reported to contribute substantially to the total loading of pesticides and fertilizers entering the Apalachicola River and Bay.⁴⁵ Because the River is severely phosphorus limited, phosphorus pollution should be minimized to avoid a great increase of algal growth in the River and Dead Lake.⁴⁶

The Chipola River and its corridor are home to a tremendous diversity of fish, wildlife, and plants. The portions of the forested areas near Marianna, Ochesssee Pond and the western floodplain of the Apalachicola River constitute a Strategic Habitat Conservation Area for bats and bat maternity caves. The terrestrial and aquatic caves found along the upper river are uncommon in Florida and provide habitat for many uncommon invertebrate species. The lower portions of the River are concentration and breeding areas for the endangered red-cockaded woodpecker, and portions of the forested areas around the Apalachicola and Chipola Rivers are a Strategic Habitat Conservation Area for rare wading birds and the Florida black bear.⁴⁷ Other listed species found in and around the Chipola include, but are not limited to those presented in Table NR-6.

Table NR-6: Partial Roster of the Listed Species Located Within and Adjacent to the Chipola River

Georgia blind salamander	alligator snapping turtle	Barbour's map turtle
Indiana bat	gray bat	shoal bass
greyfin redhorse	dusky shiner	Alabama shad
goldstripe darter	bluenose shiner	common rubbywing
Dougherty plain cave crayfish	scarab beetle	robust longtail
Allegheny-spurge	West's flax	Florida maybell
orange azalea	wild columbine	gentian pinkroot
wiregrass gentian	giant water dropwort	Barbara's buttons
Chapman's crowbeard	Flyr's brickell-bush	plumrose aster
Harper's yellow-eyed grass	pine-woods aster	Wagner's spleenwort
yellow fringeless orchid		

Sources: *Florida Rivers Assessment* (1989)

Closing the Gaps in Florida's Wildlife Habitat Conservation System (1994)

The Chipola River is also an important recreation resource. It is heavily used for canoeing, boating, tubing and fishing⁴⁸ and has been designated as a Florida Recreational Canoe Trail.⁴⁹ Spring Creek, fed by Blue Springs through Merritts Mill Pond, is popular for tubing. The river passes through Florida Caverns State Park near its headwaters and the Dead Lakes State Recreation Area in northern Gulf County. There are thirteen recreation sites and fish camps along the River, most of which are privately-owned. The NFWFMD owns most of river floodplain above Florida Caverns State Park and below Dead Lakes. The NFWFMD is investigating the need and feasibility of acquiring lands along the middle section of the Chipola River. The Florida Department of Environmental Protection (FDEP), in conjunction with the Florida Chapter of the Rails to Trails Conservancy, is actively pursuing the acquisition of the abandoned railroad corridor extending from Marianna to Blountstown for conversion to a multi-use recreational trail.

The irreplaceable natural features of the Apalachicola River and Bay System and the supporting habitat which surrounds them must be protected to sustain the populations of listed species. The State should move aggressively forward with its proposed CARL projects to acquire Gerome's Cave and Sneads Cave in Jackson County. Actions should be taken to clean up pollution entering the Chipola from tributaries. The relatively undeveloped corridor of the Chipola River has a similar biological diversity as does the Apalachicola River, and efforts must be made to ensure the long-term protection of these ecosystems.

Ochlocknee River Basin

The Ochlocknee River is one of the Apalachee Region's most important river corridors, and it has the potential to be one of the most significant greenways in the Region. It connects the Red Hills area in the north with the public forests, wildlife management areas, and coastal areas of the south. The Ochlocknee River including Lake Talquin has been designated as an OFW and a State Special Waters.⁵⁰

Though the Ochlocknee River is probably one of the most heavily used rivers for recreation in the Region and many listed species live along its banks, little has been done to conserve the River's natural and recreational resources outside the Talquin State Forest, the Apalachicola National Forest, and the St. Marks National Wildlife Refuge. For much of its length, most of the land along its banks are privately owned and potentially threatened by future residential development. The water quality of the upper portion of the River has been degraded by agricultural runoff, strip mining for Fuller's earth, runoff from Interstate 10 and U.S. Highways 19, 84 and 90, a pickle canning factory in Georgia and from its tributaries.⁵¹ Womack Mill Creek below Havana's wastewater treatment plant also shows high levels of bacteria and low levels of dissolved oxygen. Little River and its tributary, Quincy Creek, which drain into Lake Talquin, have historically had high levels of bacteria, nutrients, and turbidity stemming from mining for Fuller's earth and the City of Quincy wastewater treatment plant. Upstream of the City of Quincy, Quincy Creek is classified as Class 1 Waters as is Bear Creek which drains into Lake Talquin. The City of Gretna's wastewater treatment plant has created severe nutrient and dissolved oxygen problems in Telogia Creek. Telogia Creek is a tributary to the Ochlocknee River and has been designated a Water Resource Caution Area by the NFWFMD because of large surface water withdrawals for tomato farms.⁵² Ochlocknee Bay is also reported to have high nutrients levels stemming from construction, clear-cutting and septic tank leachate in the immediate vicinity of the Bay.⁵³ Limited consumption fish advisories have been issued for both Lake Talquin and the Ochlocknee River and are being investigated for the Sopchoppy River. Lake Jackson, near Tallahassee, is part of the Ochlocknee River watershed and is a SWIM priority waterbody. Also, non-point pollution from urbanized areas have impacted Lake Jackson's water quality.⁵⁴

The River and its corridor are home to many fish, wildlife, and plant species that are endangered, threatened or of special concern.⁵⁵ The river corridor is part of a Strategic Habitat Conservation Area identified by the Florida Game and Fresh Water Fish Commission for the Florida black bear. The Florida Natural Areas Inventory has classified the upper river segments as an alluvial stream community which is rare in Florida. Listed species found along the Ochlocknee River and its tributaries include, but are not limited to those presented in Table NR-7.:

Table NR-7 : Partial Roster of Listed species in the Ochlocknee River Basin

red-cockaded woodpecker	wood stork	southern bald eagle
white ibis	Suwannee bass	little blue heron
Mississippi kite	least tern	Atlantic sturgeon
Apalachicola dusky salamander	Ashe's magnolia	orange azalea
Ochlocknee moccasinshell mussel	bent golden aster	wild gentian
Florida maybell		

Source: FNAI.

The River and its corridor also offer excellent recreational opportunities, as does Ochlocknee Bay.⁵⁶ Recreational activities on the water include fishing for bass, perch, and bream and canoeing on the state designated canoe trail upstream and downstream of Lake Talquin. Near Lake Talquin, hunters enjoy Bear Creek State Recreation Area, and the expansive Joe Budd and Robert Brent Wildlife Management Areas. Recreationists can explore the Ft. Braden tract of the Lake Talquin State Forest on foot or horseback, and can enjoy the day at River Bluff State Picnic Site. Canoeists also enjoy floating on Telogia Creek and the Little River below State Road 12. The canoe trails on the Ochlocknee and Sopchoppy Rivers end at the bay. Nearby are ten fresh and salt water beaches, 15 campgrounds, and several trails for hiking, bicycling, and horseback riding. The Florida National Scenic Trail follows the River for two miles before crossing it in the Apalachicola National Forest. Archaeological sites have been found in the river corridor indicating it has been used by at least five Native American cultures.

Most residential development along the River is scattered, with the greatest concentration being near Lake Talquin and Ochlocknee Bay. Stewardship of the plantation lands north of Lake Talquin State Forest has helped to protect this portion of the River's natural corridor. The greatest threat to the continuity of the River's natural corridor are the numerous crossings separated by only a few miles, including: two highways (U.S. Highway 90 and Interstate Highway 10); a railroad (CSX); pipelines (Florida Gas); and electricity transmission lines. Further development in this area may compound this fragmentation of the River's wetlands and floodplains.⁵⁷ Development of Bald Point at the mouth of Ochlocknee Bay could also degrade the land and aquatic habitats of listed species, including: Godfrey's blazing star, Gulf coast lupine, Gulf salt marsh snake, piping plover, black skimmer and other shorebirds that aggregate in the area, as well as nesting populations of least tern, Cuban snowy plover, and American oystercatcher.⁵⁸

Another major hub within the Ochlocknee River Basin are the Red Hills. The Red Hills are bounded by Tallahassee on the south and Thomasville, Georgia on the north, with approximately half of the Red Hills' 300,000 acres within northern Leon and Jefferson Counties. This area of rolling hills, lakes, and wetlands has been inhabited for 10,000 years. Native Americans first settled the area to hunt and gather in its fields and forests and then farmed its rich soils. The Lake Jackson Mounds State Archaeological Site and Letchworth Mounds on Lake Miccosukee are reminders of the heritage of the Apalachee Indians for which the Region is named. This agricultural legacy was carried on by Spanish missions in the 17th century and cotton plantations in the 19th century. The Red Hills many historic sites, buildings and roads are reminders of the traditional lifestyle that still characterizes much of the area today.⁵⁹

The area's reddish sandy loam and rich clay soils help retain moisture, allowing plants that would normally be confined to valleys and low areas to grow in upland pine forests.⁶⁰ The plantations of the Red Hills have some of the best remaining examples of the natural upland longleaf pine and wiregrass forest that once covered the southern United States from Virginia to Texas. In large part, the areas natural qualities have been retained because most of these lands are owned by fewer than 100 individuals whose historical land stewardship has limited development. These lands are managed primarily as plantations for hunting quail and for limited agricultural and silvicultural production, and many landowners are restoring the native longleaf pine forests.⁶¹

The Red Hills area provides important habitat to 43 species of animals that are endangered or are of special concern.⁶² The old growth longleaf pines of the Red Hills provide critical habitat to the largest population (100 clans) of the endangered red-cockaded woodpecker found on privately owned lands in the United States. The Red Hills area also has extensive freshwater marsh and forested wetland systems associated with its lakes and rivers. The Florida Game and Fresh Water Fish Commission has identified Lake Lafayette, Lake Iamonia, Lake Miccosukee, and the Ochlocknee River as Strategic Habitat Conservation Areas for some wading birds, and because they contain colonial rookeries for the Woodstork, little blue heron, great egret and snowy egret.⁶³ Other listed species are found at:

- Lake Miccosukee: eastern indigo snake, American swallow-tailed kite, mud sunfish, Mexican tear-thumb, Miccosukee gooseberry, and buckthorne;
- Lake Iamonia: southern bald eagle and karst pond xyris;
- Lake Jackson and Lake Carr: southern bald eagle, least tern, round-tailed muskrat, and striped newt; and
- Lake Lafayette: least tern and the tiger salamander.

The Florida Game and Fresh Water Fish Commission report, *Closing the Gaps in Florida's Wildlife Habitat Conservation System* (1994), identified other listed species in the Red Hills area, which include but are not limited to those presented in Table NR-8.

Table NR-8: Partial Roster of Listed species in the Red Hills

southeastern shrew	Coopers hawk	Florida pine snake
American swallow-tailed kite	southern bald eagle	mud sunfish
striped newt	Florida mountain-mint	turks cap lily
Mexican tear-thumb	Miccosukee gooseberry	karst pond xyris

Most of the land in the Red Hills area is privately owned. However, lands in public ownership offer some of the Region's best passive and active recreational opportunities. The largest public recreation area is the new Phipps-Overstreet-Maclay Greenway. This 1,300 acre greenway north of Tallahassee protects a five-mile-long corridor between Lake Jackson and Alfred B. Maclay State Gardens. Visitors can hike, bicycle, and horseback ride on extensive trail systems, as well as fish, swim, canoe, observe wildlife, visit formal gardens, and use athletic fields and courts. Other natural, historic, and recreational sites in the Red Hills area include the Tall Timbers

Research Station and lands, Lake Jackson Mounds State Archaeological Site, Lafayette Heritage Trail, and Tallahassee's community parks.

Because it is a critical aquifer recharge area and headwaters for many rivers and lakes, activities in the Red Hills affect ground and surface water throughout the Region.⁶⁴ Additional development in the Red Hills will almost certainly worsen existing pollution problems in the Region's lakes, rivers, and groundwater. Regional water quality problems have worsened over time due to new developments, poorly sited land uses, inadequate attention and funding for stormwater treatment and maintenance of facilities, and poor regulation and water management decisions such as filling wetlands and altering natural drainage. The Red Hill's large lakes are especially susceptible to pollution because they act as sinks, trapping sediment, nutrients, and other pollutants transported by stormwater.

The Red Hills public waterways and roads provide excellent opportunities for residents and visitors to enjoy and appreciate this scenic and historical area. Canoeing, boating and fishing are popular activities on the Ochlocknee River, Lake Lafayette, Lake Iamonia, Lake Talquin, Lake Miccosukee, Lake Hall, and Lake Jackson. Lake Jackson has been designated an Aquatic Preserve and Outstanding Florida Water, and is renowned as a largemouth bass fishery. Nearly 300 miles of tree-canopied roads in Florida and Georgia provide scenic drives and routes for bicycle tours. Many existing canopy roads trace historic regional trade routes and look much the same as they did 100 years ago. The *Red Hills Historic and Scenic Road Assessment* (1993), a study commissioned by Tall Timbers Research, Inc., evaluated 18 roads in the Red Hills area, ranking them on four criteria: historic significance; historic integrity; visual preference; and interpretive value. The roads in Florida receiving the highest rank and thus the highest level of protection are:

- **Sunnyhill Road** in Leon County running parallel to the state line between Thomasville Road and Centerville Road; and
- **Magnolia Road** in Leon County running north from U.S. Highway 90 just west of Lake Miccosukee.
- **Meridian Road** in Leon County;
- **Thomasville Road** (U.S. Highway 319) in Leon County;
- **Miccosukee Road** in Leon County;
- **Centerville Road** in Leon County; and
- **Florida Highway 59** in Leon County.

The Region's historic and scenic roads will be lost unless users and landowners understand and appreciate their historic and aesthetic values and their importance in creating a distinctive sense of place. The primary threats to these roads, most of which are "canopy roads," are adjacent development and pressure to allow more access points, and pave, widen, straighten or add lanes to allow faster commutes.⁶⁵ Leon County has protected five roads by designating them as Canopy Roads: Old Bainbridge, Old St. Augustine, Miccosukee, Centerville and Meridian. This designation protects the massive live oak trees lining the roads by managing development within 100 feet of the roads.

Urban encroachment from the rapidly expanding Tallahassee metropolitan area is the biggest threat to retaining the natural and cultural heritage of the Red Hills area and the Apalachee Region.⁶⁶ The character of the landscape and the traditional lifestyle of its residents can be preserved by reducing fragmentation. Fragmentation of plantation lands by residential development, construction of linear transmission lines, and highway and road improvements, threatens the ecological systems of the Red Hills. Fragmentation disrupts natural processes, such as surface drainage, that occur over large areas. It has decreased the biological diversity of the area, especially for wide-ranging animals such as the Florida black bear, and threatens rare and endemic species, such as the red-cockaded woodpecker. The Red Hills Conservation Program of Tall Timbers, Inc. has successfully negotiated conservation easements with several private landowners in the Red Hills to help conserve the significant natural and cultural heritage of the area. Expansion of the Tallahassee urban area north into the Red Hills must be limited if the area's significant resources are to be sustained in the future.

A third hub within the Ochlocknee River Basin is the Sopchoppy River. The Sopchoppy River is the best protected river in the Region. Its headwaters are the wetlands of the Apalachicola National Forest, and approximately 60 percent of this 47 mile long river corridor is within the National Forest and the St. Marks National Wildlife Refuge. This blackwater river has excellent water quality, and the state has designated it an Outstanding Florida Water to prevent its degradation.⁶⁷ The U.S. Secretary of Agriculture is considering designating the River as a National Wild and Scenic River, which will complement the federally designated Bradwell Bay Wilderness Area and St. Marks Wilderness Area in the National Forest and Refuge, respectively. The River flows past about 100 residences and fish camps along a 10 mile stretch on either side of the City of Sopchoppy.⁶⁸

The Sopchoppy River's wilderness setting and scenic qualities provide many opportunities for outdoor recreation.⁶⁹ In addition to the more than two dozen archaeological sites are found along the River, the river winds through a dense forest canopy, passes high sandy bluffs and limestone outcrops, and flows around white sandbars and huge bald cypress trees. It is a state designated canoe trail, and offers one of the few true wilderness canoeing experiences in the state. The Florida National Scenic Trail follows the Rivers high sandy bluff for five miles between Oak Park Bridge and the Bradwell Bay Wilderness Area. This is one of the most popular and scenic sections of the national scenic trail in northern Florida. Swimming from the Rivers white sand bars is popular, as is fishing for bass, bream and catfish, especially in the lower river. Motorboats can use the River up to County Road 375 just west of the City of Sopchoppy. The area is also very popular for viewing wildlife and hunting deer, wild hog, and turkey. *Closing the Gaps in Florida's Wildlife Habitat Conservation System* (1994) identified the River and its corridor as home to many listed fish, wildlife and plant species including, but not limited to those presented in Table NR-9.:

Table NR-9: Partial Roster of Listed species of the Sopchoppy River and its Corridor

Florida black bear	mole snake	little blue heron
Apalachicola common kingsnake	snowy egret	coal skink
one-toed amphiuma	tricolored heron	osprey
red-cockaded woodpecker	Mississippi kite	green adders mouth
Godfrey's blazing star	scareweed	mock pennyroyal

Venus hair fern	water sundew	
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Most of Sopchoppy's watershed is encompassed by the public conservation lands of the Apalachicola National Forest and the St. Marks National Wildlife Refuge. Habitat fragmentation and nutrient pollution from septic systems are the biggest threats to the River. The area of most concern is the 10 mile segment above and below the City of Sopchoppy, which will continue to be a magnet for residential development.⁷⁰

St. Marks River Basin

The St. Marks and Wakulla Rivers are critical to the Apalachee Region's ecosystem and central to the area's wealth of outdoor recreation. The St. Marks River originates in the hardwood and cypress river swamps of the Red Hills area and flows for 35 miles through Florida before emptying into Apalachee Bay. At Natural Bridge, it disappears underground in Natural Bridge Springs and reappears a mile downstream in St. Marks Springs, both of which are proposed for acquisition by the State. Its major tributary, the Wakulla River, is one of the few spring-fed rivers in northern Florida. The Wakulla River rises from Wakulla Springs and the Floridan Aquifer at Edward Ball Wakulla Springs State Park, then flows south for ten miles to its confluence with the St. Marks River at the City of St. Marks. Near their confluence, river swamps gradually give way to freshwater tidal swamps and salt marshes. These two rivers generally have good or excellent water quality⁷¹, and both have been designated as OFWs and State Special Waters except for the portion of the St. Marks River adjacent to the industrial complex of the City of St. Marks.⁷²

Development in the rapidly urbanizing St. Marks River watershed threatens to degrade the water quality of both rivers and the Region's groundwater as well as fragment the rivers' natural corridors.⁷³ The upper watershed of the St. Marks River, including Lake Lafayette, receives polluted stormwater runoff from the eastern half of Tallahassee. An industrial park and state prison are planned in northeastern Wakulla County which, because this area is internally drained (via sinkholes) or drains directly into the St. Marks River, may degrade the River and groundwater. Residential development currently lines the west bank of the St. Marks for more than two miles below Natural Bridge and at Newport, fragmenting the Rivers natural greenway corridor and likely contributing nutrient pollution from septic systems. There are numerous sinks and streams which disappear into the ground north and west of Wakulla Springs, and it is widely speculated that there is a strong relationship between surface waters entering the sinks to the north and outflow from the Springs. This was borne out when abnormally heavy rains in 1994 turned the normally clear spring waters dark with tannin from surface waters.⁷⁴ Urban runoff from southern Tallahassee pollutes Lake Munson with nutrients and bacteria which then drains into one of these sinkholes.⁷⁵ The State is proposing to protect Kini Springs, a first Magnitude Spring, by acquiring the land surrounding it.

The water quality of the lower portion of the St. Marks River below Rattlesnake Branch has been degraded by petroleum tank farms, petroleum transport barges, a power plant, marinas, wastewater effluent from the city of St. Marks, and urban stormwater runoff.⁷⁶ There have been several major and minor oil spills in the past, and river bottom sediments in the area are coated

with oil. An effort to dredge polluted sediments from the River was abandoned when a suitable disposal area could not be found.

The Wakulla River's water quality has been degraded by nutrient pollution from septic systems and stormwater runoff from residential and recreational facility development along the river and in adjacent uplands. One source of nutrient loading is Boggy Branch which drains the Olin Corporation industrial site. Wildlife habitat along the River has been fragmented by highways and electric transmission lines, and heavy recreational use of the River by fast traveling boats poses threats to the West Indian manatees which frequent the River.⁷⁷

The St. Marks and Wakulla Rivers are lined with hardwood and cypress swamps for much of their lengths. This habitat along these Rivers are important breeding areas for Mississippi kites, osprey and wood ducks, and are concentration areas for shorebirds, songbirds, wading birds, and waterfowl. Wakulla Springs State Park has preserved habitat for over a dozen rare and endangered ferns and orchids. Closing the Gaps in Florida's Wildlife Habitat Conservation System identified many listed species that inhabit the rivers corridors including, but not limited to those listed presented in Table NR-10.

Table NR-10: Partial Roster of Listed Species within the St. Marks River Basin

Woodville cave crayfish	Suwannee bass	West Indian manatee
bald eagle	tricolor heron	little blue heron
Wakulla seaside sparrow	white ibis	wood stork
red-cockaded woodpecker	snowy egret	limpkin
warblers (prothonotary, hooded, Kentucky, and Northern Parula)		

Most recreational opportunities in the watershed are closely linked to the natural features and beauty of these two rivers.⁷⁸ The watershed includes sites that draw visitors to the outdoors for fishing, hunting, hiking, swimming, horseback riding, off-road bicycling, in-line skating, canoeing, and manatee watching. These include Edward Ball Wakulla Springs State Park, popular for picnicking, swimming, snorkeling, hiking and boating; abandoned town sites such as Port Leon and Magnolia; Leon Sinks Geological Area; the Natural Bridge Battlefield State Historic Site; and the San Marcos de Apalache State Historic Site.

The Wakulla River is a state designated canoe trail used by thousands of people each year for canoeing, manatee watching, and fishing. The St. Marks River also offers an enjoyable paddle, with limited motorboat traffic upstream of the U.S. Highway 98 bridge. The Florida National Scenic Trail crosses the St. Marks River in the City of St. Marks and follows the Tallahassee-St. Marks Historic Railroad State Trail to U.S. Highway 98, crossing the Wakulla River on the highway bridge before re-entering the Refuge. The Tallahassee-St. Marks Historic Railroad State Trail follows Florida's oldest rail line (operating from 1837 to 1984 as the Tallahassee-St. Marks Railroad) for sixteen miles to the port City of St. Marks. Since its opening, the trail has been used by approximately 170,000 bicyclists, walkers, skaters, and equestrians each year. Landowners, many of whom were skeptical about the trail before it opened, are now some of its most enthusiastic users.⁷⁹ This trail is currently being extended from its current northern trailhead to the Florida State University campus where it will connect with the Stadium Drive

Bike Path and the proposed G.F.&A Rail-Trail. The Goose Pond Greenway is also proposed to connect the Tallahassee-St. Marks Trail to Leon County's Tom Brown Park, and the Lafayette Heritage Trail to Tallahassee's Dorothy B. Oven Park.

The St. Marks National Wildlife Refuge and Apalachee Bay are also hubs within the St. Marks Basin. The St. Marks National Wildlife Refuge is one of the oldest in the national wildlife system and has a greater variety of habitats than any other public forest or refuge in northern Florida. Its 65,000 acres of land and 32,000 acres of Apalachee Bay help buffer estuarine areas from the influences of development and provide many opportunities for outdoor recreation and historical interpretation. The coastal waters of the Refuge have been designated as OFWs and are part of the Big Bend Seagrasses State Aquatic Preserve. Several first magnitude springs are found in Apalachee Bay which provide freshwater to the estuary including Spring Creek Springs (Florida's largest spring), Bear Creek Spring, Crays Rise, Ocean Hole.⁸⁰ About 18,000 acres of the Refuge have been designated as a federal wilderness area, making them off limits to motorized vehicles and development. The Refuges expansive salt marshes are a part of the vast salt marsh ecosystem that stretches from Cedar Key north to the Ochlocknee Bay.

An insidious threat to Apalachee Bay and the Refuge is pollution of the bay with nutrients, bacteria and other pollutants from the Region's rivers.⁸¹ Unless the pollution is trapped in the lakes or aquifer, Apalachee Bay and the Gulf of Mexico are the eventual sink for all pollutants washed into the ditches, creeks and rivers in Thomasville, Cairo, Quincy, Havana and Tallahassee. The Bay and Refuge also are threatened by spills from oil-transporting barges serving the tank farms and power plant in the City of St. Marks. Additional recreation and commercial use of the bay should be monitored to avoid degrading its abundant natural resources. Because of the linear nature of the Refuge along the coast, fragmentation from roads and development in small communities presents a significant threat to its habitats and recreation resources.

The Refuge contains longleaf pine and old growth hardwood forests, cypress and gum swamps, cabbage palm and live oak hammocks, hardwood swamps, 11 fresh water impoundments, and portions of five rivers. Thousands of birds representing more than 300 species are attracted to the Refuge including 19 species of ducks and two species of geese. Ninety-eight species of birds nest in the Refuge including the threatened southern bald eagle (11 pairs), osprey, and red-cockaded woodpecker. Also found at the Refuge are 65 species of reptiles and 50 species of mammals. The salt marsh protected in the Refuge acts as a nursery area for Apalachee Bay shellfish, shrimp and fish. The Refuge's hardwood swamps offers nesting sites for wood ducks and night herons and provides habitat for otter and the threatened Florida black bear. The pine flatwoods provide food and cover to fox squirrels, turkey, pine warblers and deer. Approximately 2,500 American alligators also live in the Refuge's marshes and swamps. The Refuge is also a gathering point for monarch butterflies as they migrate across the Gulf of Mexico to Mexico each October. Other listed species identified in the Refuge include, but are not limited to those presented in Table NR-11.

Table NR-11: Partial Roster of Listed Species within the St. Marks National Wildlife Refuge

West Indian manatee	black rail	least tern
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black-crowned night heron	American oystercatcher	Wilson's plover
Wakulla seaside sparrow	Gulf salt marsh snake	round-tailed muskrat

Source: Closing the Gaps in Florida's Wildlife Habitat Conservation System. 1994. p. 150.

The Refuge also offers many recreational opportunities, such as hunting, fishing and wildlife observation. Fishermen can cast a line in four freshwater impoundments, seven rivers, several natural lakes, or the saltwater of Apalachee Bay. Other recreational activities include sea kayaking on the state designated Big Bend Historic Saltwater Paddling Trail, sailing and boating in Apalachee Bay, crabbing, picnicking, bicycling and horseback riding on the Stoney Bayou Trail and the Refuge's dikes and roads, and backpacking and hiking on 44 miles of the Florida National Scenic Trail. The Refuge has few private land holdings, and most surrounding lands are compatibly managed as pine plantations and wildlife areas. The State is proposing several land acquisition to better protect the resources of the Refuge. The first is the CARL project, Dickerson Bay, in Wakulla County. Three small areas are proposed for acquisition to protect the corridor for the Florida National Scenic Trail in the Refuge: (1) between US 98 and the Refuge west of the Aucilla River; (2) between US 98 and the Refuge west of the Wakulla River; (3) and in the Spring Creek area to create a greenway linking the Refuge's St. Marks and Panacea Management Units. One of the most difficult issues for the Refuge's managers is balancing heavy consumptive (hunting and fishing) and non-consumptive (bird watching and using trails) recreational uses with protecting the natural integrity of the Refuge for fish and wildlife.

Aucilla River Basin

The Aucilla and Wacissa Rivers are two of Florida's most distinctive rivers. The Aucilla River is a blackwater stream that flows undefined through marshes and lakes and then past limestone outcroppings, disappearing in sinkholes and rising in springs downstream. At one point it drops rapidly over shoals, making it one of north Florida's most exciting and popular canoe runs. The Wacissa River is unusual in that it is both a spring-run and blackwater river. Its first-magnitude group of headwater springs combine to form one of Florida's largest springs, with a flow of 360 cubic feet per second. Both Rivers are protected by state designations as OFWs and State Special Waters.⁸² The lower portions of the rivers pass through private and public wildlife management areas and the St. Marks National Wildlife Refuge.

The greatest threats to the Aucilla and Wacissa Rivers are lowering of water quality due to surrounding land uses, and fragmentation of wildlife habitat by residential development, highways, and transmission lines.⁸³ The greatest existing threat to the rivers' water quality is discharge from septic systems.⁸⁴ Because the Aucilla River disappears underground at Aucilla Sinks, it is very important to protect the rivers' water quality so groundwater does not become polluted.

The Aucilla and Wacissa Rivers and their corridors are home to many fish, wildlife and plant species. The river corridors are part of a Strategic Habitat Conservation Area identified by the Florida Game and Fresh Water Fish Commission for the Florida black bear, American swallow-tailed kite and limpkin. A four-mile portion of the Aucilla River below U.S. 98 is a breeding area for bald eagles, Mississippi kites, osprey, red-cockaded woodpeckers, wood ducks, and shorebirds.⁸⁵

The Wacissa and lower Aucilla River corridors also offer excellent recreational opportunities as they connect or pass through the Aucilla Wildlife Management Area in Jefferson and Wakulla counties, the Aucilla River Water Management Area and Aucilla Sinks Wildlife Management Area in Jefferson and Taylor counties, and the St. Marks National Wildlife Refuge in Wakulla County. Recreational activities in these river corridors include fishing, wildlife observation, hunting of deer, wild hog, turkey and small game, hiking and canoeing (both rivers are state designated canoe trails). The portion of the hiking trail through the Aucilla Sinks area has been designated as part of the Florida National Scenic Trail. The Florida Trail which follows the Aucilla River for 10.7 miles below the State Highway 14 bridge is proposed to be designated as part of the Florida National Scenic Trail. The State is proposing to acquire the Aucilla Wildlife Management Area and adjacent private lands to protect the significant natural resources associated with these rivers.⁸⁶

St. Andrews Bay System Basin

Within the St. Andrews Bay System, St. Andrews and St. Joseph's Bays have fairly good water quality except the areas around paper mill discharges. The System, which is primarily in the West Florida Regional Planning Council's (WFRPC) jurisdiction, also contain Watson and Beatty Bayous (in the Panama City area), which are degraded by urban stormwater and wastewater treatment plant discharges. High concentration of lead, mercury, DDT, chlordane, PCBs, and other polycyclic aromatic hydrocarbons have been found in Watson Bayou. Deer Point Lake, a Surface Water Improvement Management (SWIM) priority waterbody, has localized pollution problems. Development in the watershed may cause water quality problems in the future.⁸⁷ The management of these issues will require the coordination of the ARPC and WFRPC as well as local governments, the NFWFMD, and the FDEP.

Regional Water Resources Issues

The summaries of the various resource hubs in the Region indicate that, in general, the water quality levels are good and water quantity is more than adequate to meet the needs of the projected population. The greatest threat to water quality in the Region is non-point source pollution. In the Apalachee Region, this type of pollution generally includes: stormwater runoff from construction sites (which carry sediment, chemicals and debris); urban stormwater from lawns, highways, buildings, streets and parking lots (carrying oils, grease, heavy metals nutrients and other pollutants); agricultural runoff (carrying sediment, fertilizers and pesticides); lechates or seepage from septic tanks and landfills; and logging, mining, dredging or other activities that send sediments to adjacent water bodies.

The amount of stormwater runoff from a location is dependent on site specific factors such as infiltration, transpiration and evaporation rates, and surface storage. These rates are determined by the soil type, topography, vegetative cover and type of land use. The quality of stormwater runoff is affected by the activities performed on the site. Pollutants from human activities are deposited on the grounds and are flushed when it rains. The most common types of pollutants in stormwater runoff are: sediments (created from rock disintegration, erosion, or accumulated organic material); oxygen demanding substances (organic materials); heavy metals (from the operation of motor vehicles or highway degradation); and nutrients (such as nitrogen and phosphorus from fertilizers and other sources).

Past actions to address flooding throughout the Region involved creating drainage systems intended to move rainwater as fast as possible to reduce flooding potential. These techniques often have the unintended consequence of rapidly moving pollutants on the ground directly into surface waterbodies. Current stormwater management techniques consider both the quantity and quality of the runoff. An effective stormwater management program provides for: surface drainage, flood control, erosion and sedimentation control, and reduction of pollutant loads. To achieve this purpose, stormwater management should be an integral part of site development. The best method to deal with sedimentation is the adoption and implementation of erosion control regulations. Biological oxygen demand can be treated by the use of aerators or through other oxygenation mechanisms, such as designing facilities to induce wind mixing. Heavy metal removal can be achieved by designing stormwater facilities to promote particle sedimentation and include aquatic plants to promote removal of dissolved metals. Nutrients in stormwater runoff can also be removed by using aquatic plants.

In addition, seepage from septic tanks also threatens water quality. Types of on-site wastewater treatment include septic tank and absorption, aerobic treatment, and mixed media filters. The most common system is the septic tank and absorption field. In this type of system the wastewater flows into the tank, solids are settled (to be pumped out later) and the liquid effluent flows into the absorption field (perforated drainpipes located below ground or in an elevated absorption bed). The absorption field is intended to act as a filtering system to remove pollutants, bacteria and particulate solids. Septic tank suitability is dependent on site characteristics such as soil type, water table elevation, slope, location of trees, drainage patterns and floodplain elevations. If the soil type or the depth of the absorption layer is not appropriate, partially treated effluent may seep into the groundwater systems or flow into surface waters. There are many reasons for the potential failure of a septic system. These include: percolation rate is too slow, seasonal water table is too high, system is overloaded, caustic or toxic systems have entered the system, and improper installation or maintenance.

Aerobic units are an alternative to septic tank and absorption systems. These systems work by increasing the amount of oxygen in the wastewater through mechanical aeration or other methods to increase the decomposition rates. The effluent from aerobic systems that operate properly is much cleaner than the effluent from a septic tank unit. Media filters, such as sand filters, can also be used in combination with on-site systems to improve the quality of the effluent. To ensure adequate functioning, the systems should be evaluated for suitability, design and maintenance.

There are several methods to reduce impacts from non-point source pollution. One set is preventive measures, which include controlling the land use (e.g., floodplain or shoreline management, and designating land uses that will reduce the impact of development, such as recreation, open space, conservation or very low density residential development); and establishing buffer zones around the water body. A second set is treatment measures include chemical, physical or biological processes to reduce the levels of pollution, such as storage of stormwater (retention and detention facilities), sedimentation basins, and specialized stormwater treatment facilities. Source control measures involve things such as street cleaning and maintenance of stormwater management facilities.

Other factors that affect water quality are point source pollution, artificial changes to water flow, and coastal armoring. In the Apalachee Region, point source pollution is usually related to effluent source from wastewater or industrial sources. The majority of water flow change issues arise as a result of construction of structures (such as weirs or dams) to artificially stabilize the water flow, filling or construction along the floodplain dredging for navigational purposes, and water management for recreation, water supply, flood protection, and navigation purposes. Coastal beaches, especially barrier islands and dunes, protect the mainland from the brunt of major storms and act as buffers to lessen flooding and wave and wind action. Coastal beaches are dynamic in character and by nature subject to erosion and accretion. As a result, structures built too close to active beaches face the risk of potential damage and loss of life. Efforts to protect such structures through engineering mechanisms such as groins and jetties often increase the

problem and hasten destruction of the natural beach. Regulations should be directed at reducing the effects of development on these areas.

Local ordinances are of great importance in the efforts to protect water resources. In 1989, the ARPC prepared a regulatory assessment of local ordinances for all counties and some of the municipalities in the Region for the SWIM Program of the NFWFMD. The assessment contained a description of all local ordinances that were directly or indirectly related to the protection of surface water bodies. The findings of the assessment showed that most of the Region's jurisdictions did not have ordinances to deal with surface water protection, stormwater management, wetlands preservation, or floodplain management (related to the protection of water quality).

Since the survey, the local governments in the Region have adopted comprehensive plans in accordance with Chapter 163, Part II, Florida Statutes. The patterns of development surrounding surface water bodies contribute greatly to their condition. Land use designations, densities, and intensities should be consistent with the long term management of water bodies. Furthermore, densities and intensities of development in the floodplain should be restricted to reduce impacts to water bodies.

The issues identified in this section highlight the interrelation between land use and water management. From 1960 to 1990, the Apalachee Region experienced a 73.8 percent growth in population compared to a 161.3 percent increase for the entire state. In addition, projected growth is expected to remain below the state rate. The slower growth rate affords the Region additional opportunities to plan for growth.

The 1995 Florida Water Plan (FWP) states that Florida's population growth will result in increased competition for water which will cause conflicts between agricultural, industrial, and urban interests. The FWP portends that the ability to sustain the economy and quality of life will be dependent on proper protection, management, conservation, and reuse of vital resources. In order for these efforts to be successful, they must be cooperative and integrated between federal, state, regional, local entities and programs as well as citizens. Policy directions included in the FWP for protection, management, conservation, and reuse of resources are improving linkages between land and water planning, cooperative management, watershed and ecosystem approaches, better data collection, optimization of local water sources, wellhead and aquifer recharge protection, and flood mitigation.

Regional Habitat Issues

The composition, density, and distribution of animal and plant species within a biological community are the result of a long evolutionary interaction between the member species of the community. Losing one of the species may deprive the system of a critical member and may lead to undesirable changes. Good examples of these changes are the predator-prey relationships. If the predators are decimated the prey may multiply fast enough to become a pest. On the other hand, if the prey is decimated, the predators may die of starvation.

The extensive forested and rural areas of the Region are capable of supporting many different types of wildlife and vegetation, including several species of plant and animal life considered to be endangered, threatened, or of special concern. Of the 35 species of animals officially designated by the State as being endangered, fourteen may be found within the Region. Seventeen of the 35 threatened species of wildlife on the U.S. List of Endangered and Threatened Species and 29 of the 423 endangered and threatened plants may be found in the Region. In addition, 11 of the 43 Florida "species of special concern" may exist in the Region. Most of these species, both plants and animals, are completely reliant upon the particular ecosystem they have evolved in, and its disturbance could threaten their very existence. Species listed by 50 CFR 17.11-12, Chapters 372 and 581, Florida Statutes, and Rule 39-27, Florida Administrative Code, as endangered, threatened, or of special concern and the habitat which support these species are designated by the ARPC SRPP as regionally significant resources. These species are referenced in the SRPP as "listed species". Rule 27E-5.004(3)(a), F.A.C., requires all natural resources of regional significance be mapped by geographic location. The ARPC will include a map or maps depicting the location of listed species within one year of initial adoption of the SRPP. These maps will be developed by an advisory committee consisting of representatives of the ARPC; local governments in the Region; public agencies involved in the management, protection, and use of natural resources; land owners; and citizens.

Much of the forested land in the Region is held in silviculture use by private ownership. While the short-rotation management commonly practiced on many of these lands may favor wildlife species adapted to early successional forest conditions, other species requiring older forest conditions may be negatively affected. The red-cockaded woodpecker, an endangered species which needs extensive stands of older pine trees for nesting, is a well-known example. Without adequate management, the different varieties of trees grown for economic production may not attain the size and age of the trees preferred by the woodpecker. Some of these stands are already being preserved in the commercial forests of the Region, specifically for this one species of bird.

The rural nature of this Region has seemed to cushion many of the effects of past development, but future development may occur at an accelerated rate and may well outstrip the ability of various plants and animals to cope with the change. It is particularly important that the public in general be aware of the basic requirements for preserving and maintaining wildlife habitats. The management techniques to protect endangered species will be successful only when these principles are understood.

Because the Apalachee region's river corridors remain relatively undeveloped and retain so many outstanding qualities, concerned citizens and local, regional, state and federal officials have a unique opportunity to take a proactive approach to protect these resources by conserving natural greenway corridors along the region's rivers. Efforts should be initiated now to conserve these corridors in order to help maintain their aesthetic and recreational appeal while preserving the ecological function of the riverine systems. Conserving these riverine corridors as greenways now would be much cheaper and easier than restoring degraded resources and minimizing damage on flood-prone properties in the future.

Using the local planning process could help establish visibility and cohesiveness of the greenway concept as a conservation tool while maintaining the necessary flexibility for each local government. Greenways also serve as a vehicle for improved intergovernmental cooperation and build or strengthen public and private partnerships. The local government planning process can encourage the use of area land trusts and other nonprofit organizations as a means of resolving site development conflicts by holding title to easements placed on greenway lands. State and federal agencies need to play a significant role in conserving these greenways through planning, intergovernmental coordination, provision of public infrastructure, voluntary land management agreements, regulation, and land acquisition. Surface water protection could be improved through the development of surface water improvement and management (SWIM) plans for the region's watersheds by the Northwest Florida Water Management District.

The natural systems within the Region transcend political boundaries and, therefore, require an integrated effort if they are to be managed successfully. The diversity of ownership of the Region's lands and natural resources presents a major obstacle to a coordinated land management program. Through ecosystem management and other coordinated activities, these barriers can be identified and resolved.

REGIONAL GOAL NR 1.1.: Sustainability of the ecological productivity of the Apalachicola River and Bay System Basin.

REGIONAL POLICY NR 1.1.1.: Coordinate with the states of Georgia and Alabama to establish and maintain minimum flows and levels for the Apalachicola River and Bay System Basin.

Implementation Strategy:

ARPC, FDEP, and NFWFMD will provide technical assistance to local governments in the Region regarding implementation of guidelines for the Apalachicola River developed by the Apalachicola-Chattahoochee-Flint River Task Force.

REGIONAL POLICY NR 1.1.2.: Sustain and, where necessary, restore the water quality of regionally significant water resources in the Apalachicola River and Bay System Basin to standards established by the FDEP in Rule 62-302, FAC.

Implementation Strategies:

1. FDEP will provide technical assistance to local governments regarding the implementation of ecosystem management procedures.
2. ARPC will participate and help facilitate the Apalachicola Ecosystem Management Area Program established by FDEP.

REGIONAL POLICY NR 1.1.3.: Maintain the near pristine water quality of Rock Creek, Sweetwater Creek, Flat Creek and Mosquito Creek.

Implementation Strategy:

FDEP, WMDs, ARPC, and local governments will coordinate land use planning and water planning.

REGIONAL POLICY NR 1.1.4.: Sustain the diversity of the regionally significant species and their habitat areas and density of the plants and animals within the Apalachicola River and Bay System Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local governments, in their local comprehensive plans, will limit and mitigate impacts to areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.1.5.: Sustain the fisheries of the Apalachicola River and Bay.

Implementation Strategy:

FDEP, WMDs ARPC, and local governments will coordinate land use planning and water planning.

REGIONAL POLICY NR 1.1.6.: Sustain the river's natural flow and flooding characteristics.

Implementation Strategy:

1. FDEP will provide technical assistance to local governments regarding minimum flows and levels for water resources designated as natural resources of regional significance.

REGIONAL POLICY NR 1.1.7.: Sustain the natural functions of the areas containing or designated as natural resources of regional significance within Tate's Hell and undeveloped inholdings in the National Forest.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local governments, in their local comprehensive plans, will limit and mitigate impacts to areas containing or designated as natural resources of regional significance.

REGIONAL POLICY NR 1.1.8.: Restore the wetlands in Tate's Hell.

Implementation Strategy:

FDEP, WMDs, ARPC, and local governments will coordinate land use planning and water planning.

REGIONAL POLICY NR 1.1.9.: Avoid additional fragment of fragmentation of the ecosystem of the Apalachicola National Forest and Tate's Hell Swamp.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.1.10.: Maintain the populations of the Florida black bear and the red-cockaded woodpecker.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.

REGIONAL POLICY NR 1.1.11.: Protect archaeological sites in the Apalachicola Forest and nominate eligible sites for the National Register of Historic Places.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.

REGIONAL POLICY NR 1.1.12.: Minimize disturbance of riparian areas, wetlands, and areas containing or designated as natural resources of regional significance.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.

3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Use Best Management Practices.

REGIONAL POLICY NR 1.1.13.: Protect the route of the Florida National Scenic Trail.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.

REGIONAL POLICY NR 1.1.14 Restore the water quality of the middle Chipola River and its four tributaries - Dry Creek, Rock Creek, Spring Creek and Merritts Mill Pond to standards established by FDEP by Rule 62-302, FAC.

Implementation Strategy:

FDEP, WMDs, ARPC, and local governments will coordinate land use planning and water planning.

REGIONAL POLICY NR 1.1.15.: Protect the terrestrial and aquatic caves found along the upper river, and the habitat areas for regionally significant species near Marianna, Ocheese Pond and the western floodplain of the Apalachicola River.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.1.16.: Sustain the populations of the red-cockaded, Florida Black Bear and rare wading birds in the lower portions of the Chipola River.

Implementation Strategy:

Promote the acquisition of lands in the middle Chipola by the NFWFMD, the abandoned railroad from Marianna to Blountstown for conversion to a rail-trail, and Gerome's Cave and Sneads Cave.

REGIONAL POLICY NR 1.1.7.: Comply with development practices contained in Chapter 380.0555 (the Apalachicola River Area Protection Act), F.S.

Implementation Strategy:

FDEP, ARPC, WMD, FDCA will provide technical assistance to the City of Apalachicola relating to the implementation of land use planning and practices with the protection area.

REGIONAL POLICY NR 1.1.18.: Use best management practices for silvicultural and agricultural operations.

Implementation Strategy:

Local governments will incorporate the use of best management practices into their respective local comprehensive plans.

Indicators:

1. Water quality of water bodies listed as natural resources of regional significance, as measured by FDEP 305(b) Report.
2. Number of species listed by 50 CFR 17.11-12, Chapters 372 and 581, F.S., and Rule 39-27, F.A.C., as endangered, threatened, or of special concern.

REGIONAL GOAL NR 1.2.: Maintenance of the ecological productivity of the Ochlocknee River Basin.

REGIONAL POLICY NR 1.2.1.: Restore the water quality of the tributaries of the Ochlocknee River.

Implementation Strategies:

1. FDEP will provide technical assistance to local governments regarding the implementation of ecosystem management procedures.
2. Evaluate the Ochlocknee River's pollution sources to determine their impact and develop strategies to reduce pollution.
3. Control hydrilla from expanding into the river from Lake Talquin.
4. NFWFMD should initiate a Surface Water Improvement and Management Plan for the Ochlocknee River watershed.

REGIONAL POLICY NR 1.2.2.: Maintain the population of the Florida black bear and red-cockaded in the Ochlocknee River Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.

2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.2.3.: Avoid additional fragmentation of the ecosystem of the Ochlocknee River.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.2.4.: Sustain the diversity of regionally significant species and their habitat areas of the Ochlocknee Bay Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.2.5.: Minimize recreational use in areas with sensitive species and in rookeries.

Implementation Strategy:

ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.2.6.: Formally survey the Ochlocknee River corridor for archaeological and historic sites to identify and register undiscovered sites.

Implementation Strategy:

FDOS will maintain an inventory of all archaeological and historic sites.

REGIONAL POLICY NR 1.2.7.: Improve coordination between local and state governments in Florida and Georgia to develop strategies addressing water quality issues, including implementation of protective local land use regulations for the river corridor and its tributaries.

Implementation Strategies:

1. Following the completion of the ACF basin assessment, FDEP will develop a compact with the states of Georgia and Alabama on management of interstate water systems.
2. FDEP, WMDs, and the ACE will improve early coordination in the planning and design of federal activities, permits, and funding decisions to ensure consistency with state watershed management, ecosystem management, and water quality enhancement efforts.

REGIONAL POLICY NR 1.2.8.: Pursue designation of the Sopchoppy River as a National Wild and Scenic River and the Clear Lake area as a Wilderness Area, while increasing public appreciation and support for conserving these outstanding resources.

Implementation Strategy:

Study the extent to which West Indian manatees use the Sopchoppy River and taking actions necessary to protect the manatees, including boat speed limits. Formally survey the corridor for archaeological and historic sites to identify and register undiscovered sites.

REGIONAL POLICY NR 1.2.9.: Develop additional recreational opportunities in the area, including additional access points to the Sopchoppy River and to the G.F.&A. Trail which may pass through Sopchoppy.

Implementation Strategy:

FDEP will provide technical assistance to local governments regarding the implementation of ecosystem management procedures.

REGIONAL POLICY NR 1.2.10.: Restore the water quality of Lake Jackson and Lake Lafayette to standards established by FDEP in Rule 62-302, FAC.

Implementation Strategy:

FDEP will provide technical assistance to local governments regarding the implementation of ecosystem management procedures.

REGIONAL POLICY NR 1.2.11.: Maintain the scenic qualities of the existing canopy roads.

Implementation Strategy:

FDOT and local governments will coordinate the design and planning of roadway expansion projects to maintain and enhance canopy roads.

REGIONAL POLICY NR 1.2.12.: Minimize disturbance of riparian areas, wetlands, and areas containing or designated as natural resources of regional significance.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Use Best Management Practices.

REGIONAL POLICY NR 1.2.13.: Use best management practices for silvicultural and agricultural operations.

Implementation Strategy:

Local governments will incorporate the use of best management practices into their respective local comprehensive plans.

Indicators:

1. Water quality of water bodies listed as natural resources of regional significance, as measured by FDEP 305(b) Report.
2. Number of species listed by 50 CFR 17.11-12, Chapters 372 and 581,F.S., and Rule 39-27, F.A.C., as endangered, threatened, or of special concern.

REGIONAL GOAL NR 1.3.: Sustainability of the ecological productivity of the St. Marks River Basin.

REGIONAL POLICY NR 1.3.1.: Sustain the water quality of the regionally significant water resources within the St. Marks River Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.

2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. FDEP should develop a public, hand-launch boat access near the St. Marks rise if lands appropriate for such access are acquired.

REGIONAL POLICY NR 1.3.2.: Restore the quality of the waters that drain into Lake Munson and Lake Lafayette.

Implementation Strategy:

FDEP will provide technical assistance to local governments regarding the implementation of ecosystem management procedures.

REGIONAL POLICY NR. 1.3.3.: Sustain the diversity of regionally significant species and their habitat areas of the St. Marks River Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.3.4.: Avoid additional fragment of fragmentation of the ecosystem of the St. Marks River Basin.

Implementation Strategy:

Promote the public acquisition of lands adjacent to the St. Marks National Wildlife Refuge to protect the Florida National Scenic Trail and privately owned lands along the Sopchoppy, Ochlocknee, Wakulla, and Aucilla Rivers; Piney Island, Porter Island, and Boggy Island in Apalachee Bay; and the gap near Spring Creek that divides the Refuge into two areas.

REGIONAL POLICY NR 1.3.5: Minimize disturbance of riparian areas, wetlands, and areas containing or designated as natural resources of regional significance.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinate to minimize habitat fragmentation that threaten species diversity and the habitats or rare and endangered species, and to provide opportunities for outdoor recreation.
5. Use Best Management Practices.

REGIONAL POLICY NR 1.3.6: Use Best Management Practices for silvicultural and agricultural operations.

Implementation Strategy:

Local governments will incorporate the use of Best Management Practices into their respective local comprehensive plans.

Indicators:

1. Water quality of waterbodies listed as natural resources of regional significance, as measured by FDEP 305(b) Report.
2. Number of species listed by 50 CRF 17.11-12, Chapters 372 and 581, F.S., and Rule 39-27, F.A.C., as endangered, threatened, or of special concern.

REGIONAL GOAL NR 1.4.: Sustainability of the ecological productivity of the Aucilla River Basin.

REGIONAL POLICY NR 1.4.1.: Sustain the water quality of the regionally significant water resources within the Aucilla River Basin .

Implementation Strategies:

1. Monitor potential sources of water pollution (residential areas, silvicultural and agricultural operations, and runoff from highways) so degradation can be addressed when found.
2. Acquire areas containing or designated as natural resources of regional significance.
3. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
4. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
5. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
6. Control the infestation of hydrilla in the Wacissa River.

REGIONAL POLICY NR 1.4.2.: Avoid additional fragmentation of habitat areas for regionally significant species in the Aucilla River Basin.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinated to develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.

REGIONAL POLICY NR 1.4.3.: Use best management practices for silvicultural and agricultural operations .

Implementation Strategy:

Local governments will incorporate the use of best management practices into their respective local comprehensive plans.

REGIONAL POLICY NR 1.4.4.: Manage the recreational use of the Aucilla and Wacissa Rivers, especially the Wacissa Springs, to prevent degradation and to protect the rare Horst's Cave Crayfish and West Indian manatee.

Implementation Strategies:

1. Document the extent of use by the West Indian manatee and develop boat use restrictions if necessary to protect this endangered species.
2. Formally survey the river corridors for designed wildlife and plant species and for archaeological and historic sites to identify and register undiscovered habitats and sites.

REGIONAL POLICY NR 1.4.5.: Minimize disturbance of riparian areas, wetlands, and areas containing or designated as natural resources of regional significance.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. ARPC, FDEP, WMDs, local governments and other organizations will coordinate to minimize habitat fragmentation that threaten species diversity and the habitats or rare and endangered species, and to provide opportunities for outdoor recreation.
5. Use Best Management Practices.

Indicators:

1. Water quality of waterbodies listed as natural resources of regional significance, as measured by FDEP 305(b) Report.
2. Number of species listed by 50 CRF 17.11-12, Chapters 372 and 581, F.S., and Rule 39-27, F.A.C., as endangered, threatened, or of special concern.

REGIONAL GOAL NR 1.5.: Conservation, protection, maintenance, and improvement of the regionally significant surface waters of the Region at water quality levels established by Rule 62-302, F.A.C.

REGIONAL POLICY NR 1.5.1.: Use interagency and intergovernmental coordination for the protection of regionally significant water resources.

Implementation Strategies:

1. WMD, FDEP, ARPC, and local governments will coordinate to analyze present mechanisms for the protection of regionally significant water resources.
2. Permitting and planning staff of all agencies and levels of government involved in the protection and allocation of water resources should meet periodically to evaluate current procedures.
3. ARPC and WMDs will evaluate the need for establishing special river conservation strategies through special legislation or federal designation, including designation as a Natural Resource of Regional Significance.
4. Minimize impacts to the resources of river corridors by maintaining and using native vegetation; limiting the amount of vegetation removed near rivers; accessing the rivers using boardwalks instead of paths; limiting the use of fertilizers and pesticides; and removing or not constructing bulkheads, seawalls and riprap for banks.

REGIONAL POLICY NR 1.5.2.: Coordinate the management and protection of public lands adjacent to or containing regionally significant water resources.

Implementation Strategies:

1. The ARPC will maintain a listing of public lands and regionally significant water resources.
2. Based on the inventory developed in Strategy 1, the entity responsible for management will develop management programs for these lands, with input from state, regional, local agencies, and the public.

REGIONAL POLICY NR 1.5.3.: Establish minimum flows and levels for maintenance of regionally significant water resources through expanded monitoring programs.

Implementation Strategies:

1. FDEP and WMDs will conduct research detailing the minimum flows and levels for regionally significant water resources.
2. WMDs will limit permitted water withdrawals to established sustainable levels.

REGIONAL POLICY NR 1.5.4.: Locate and construct new development so that it has a minimal impact on regionally significant water resources.

Implementation Strategy:

FDEP, WMDs, and ARPC will provide technical assistance to local governments.

REGIONAL POLICY NR 1.5.5.: Use Best Management Practices for agriculture and forestry activities to minimize impacts to surface waters.

Implementation Strategy:

Incorporate Best Management Practices into land development regulations.

REGIONAL POLICY NR 1.5.6.: Prevent the destruction of shallow grass flats through boater education and, where feasible, by properly marking these areas.

Implementation Strategies:

1. The ARPC, in conjunction with FDEP, will develop publications directed at improving boater awareness of the cumulative impacts that the destruction of shallow grass flats have on the entire marine ecology.
2. FDEP will properly mark shallow grass flats.

REGIONAL POLICY NR 1.5.7.: Coordinate land use planning and infrastructure development among local comprehensive plans, Strategic Regional Policy Plans, District Water Management Plans, and the Florida Water Plan.

Implementation Strategies:

1. Local comprehensive plan and DRI review agencies will provide comments on consistency with the WMDs Plans and Florida Water Plan.
2. Local comprehensive plans' land uses and densities will be conducive to the protection of regionally significant water resources.

REGIONAL POLICY NR 1.5.8.: Incorporate the natural assimilative capacity of wetlands into development planning and construction to the extent that such assimilative functions are not impaired.

Implementation Strategies:

1. FDEP will study the assimilative capacity of regionally significant wetlands and local governments should use this information to determine the amount of effluent permitted for discharge to wetlands.
2. ARPC will prepare comments to local governments comprehensive plan amendments and DRIs regarding impacts to regionally significant wetlands.

REGIONAL POLICY NR 1.5.9.: Increase the number of educational and public information programs related to the protection and management of regional significant water resources.

Implementation Strategies:

1. ARPC will inventory all existing public information programs related to regionally significant water resources.
2. ARPC, WMDs, and FDEP will develop, where necessary, additional public information data.

REGIONAL POLICY NR 1.5.10.: Establish stormwater management programs for drainage basins, where needed.

Implementation Strategies:

1. FDEP, WMDs, and local governments will identify hydrologic systems within their jurisdictions and develop comprehensive basin plans that provide the means to assess and abate impacts of pollution on local systems. The plans may contain guidelines for urban land development, well field protection, recharge protection, water conservation, wetland protection, intergovernmental coordination and wastewater treatment.
2. FDEP and ACE will maintain, restore, and recreate wetland areas to provide natural cleansing of surface water run-off, water storage, and aquifer recharge.

REGIONAL POLICY NR 1.5.11.: Utilize best management practices for stormwater management in all new development and redevelopment.

Implementation Strategies:

1. All reviewing agencies may encourage all new development to comply with best management practices for stormwater management with the purpose of retaining first flush run-off.
2. Local governments may establish more stringent stormwater management criteria for the watershed of degraded or sensitive waterbodies.

REGIONAL POLICY NR 1.5.12.: Retrofit stormwater systems to improve stormwater water quality.

Implementation Strategies:

1. All reviewing agencies may encourage all new development to comply with best management practices for stormwater management with the purpose of retaining first flush run-off.
2. Local governments may establish more stringent stormwater management criteria for the watershed of degraded or sensitive waterbodies.
3. FDEP and the WMDs will provide technical assistance to local governments regarding the implementation of ecosystem management approaches.
4. FDEP will provide assistance to local governments for establishing stormwater utilities and retrofitting storm water systems.

REGIONAL POLICY NR 1.5.13.: Restore ecological productivity of degraded regionally significant water resources.

Implementation Strategy:

Designate degraded regionally significant water resources as SWIM waterbodies and develop and implement a SWIM Plan.

REGIONAL POLICY NR 1.5.14.: Utilize multi-jurisdictional cooperation and cost-sharing in the planning and construction of new area wastewater treatment and solid waste facilities.

Implementation Strategies:

1. ARPC will encourage local governments in the Region to consider multi-jurisdictional planning for solid waste and sewer treatment facilities.
2. ARPC will provide technical assistance on current cooperative ventures concerning solid waste and sewer treatment facilities.

REGIONAL POLICY NR 1.5.15.: Locate development in areas planned for centralized wastewater treatment facilities or areas suitable for septic tanks.

Implementation Strategies:

1. Require connections to systems with sufficient wastewater treatment capacity.
2. Use incentives to encourage development within areas planned for wastewater treatment facilities.
3. Identify potential growth areas and develop or plan for centralized wastewater treatment facilities rather than individual package treatment facilities.
4. Develop and implement standards that consider the cumulative impact of septic tanks for an area rather than individual impacts.

REGIONAL POLICY NR 1.5.16.: Limit the use of septic tanks in areas designated as natural resources of regional significance and require connection to centralized wastewater treatment facilities when service becomes available.

Implementation Strategies:

1. Require connections to systems with sufficient wastewater treatment capacity.
2. Use incentives to encourage development within areas planned for wastewater treatment facilities.
3. Identify potential growth areas and develop or plan for centralized wastewater treatment facilities rather than individual package treatment facilities.
4. Develop and implement standards that consider the cumulative impact of septic tanks for an area rather than individual impacts.

REGIONAL POLICY NR 1.5.17.: Establish watershed-wide planning partnerships to develop a general consensus on land use goals and to improve intergovernmental coordination between the counties and the incorporated areas.

Implementation Strategies:

1. The ARPC will establish an Intergovernmental Coordination Committee and provide technical assistance to local governments on resource planning issues.

2. FDEP and the WMDs will provide technical assistance to local governments regarding the implementation of ecosystem management approaches.

REGIONAL POLICY NR 1.5.20.: Improve research, data collection, and data sharing.

Implementation Strategies:

1. FDEP and WMDs will evaluate the Surface Water Ambient Monitoring Program and the Ground Water Quality Monitoring Network to determine how to better integrate the two and more effectively use the data generated to make water quality management decisions.
2. FDEP will prepare the State Water Quality Assessment (305(b)) Reports.

Indicator:

Water quality of waterbodies listed as natural resources of regional significance, as measure by FDEP 305(b) Report.

REGIONAL GOAL NR 1.6.: Protection of groundwater resources to meet the potable water needs of the Region.

REGIONAL POLICY NR 1.6.1.: Use alternative water supply options including the reuse of treated water for non-potable uses.

Implementation Strategies:

1. Through the consumptive use permitting process, WMDs need to encourage the use of alternate water supply options such as the use of gray water by agriculture, industry, and golf courses where appropriate.
2. DACS and the FDEP shall develop a process, in coordination with the ARPC, WMDs, and local governments to encourage the owners of self contained agriculture systems to reuse irrigation waters and eliminate discharge into drainage courses.
3. Local government utilities should use incentives such as lower connection fees and service charges to customers who use water saving devices.

REGIONAL POLICY NR 1.6.2.: Prohibit development that would rely on groundwater withdrawals which would increase saltwater intrusion or cause damage to important ecosystems, agriculture, or area geology.

Implementation Strategies:

1. DRI and local development review agencies should assess the impact of proposed development on saltwater intrusion, and development orders should be issued accordingly.
2. ARPC will obtain coastal monitor maps from USGS that depict saltwater intrusion groundwater resources through isochlor contours. Any water extraction in zones of high potential for saltwater intrusion (based on the isochlor maps) should be prohibited.

REGIONAL POLICY NR 1.6.3.: Use water conservation, reclamation, and reuse techniques for development on coastal barrier islands.

Implementation Strategies:

1. Through development review processes, all reviewing authorities should encourage developers to present a plan to conserve water.
2. WMDs should develop or improve their water quality monitoring networks in coastal areas.
3. ARPC will compile an inventory of available water resources to coastal areas, as well as methods of water reclamation, conservation, and reuse specific to coastal areas. The inventory should be used to assess impacts to water resources in the Region, and to determine the best alternatives to mitigate those impacts if development is approved.

REGIONAL POLICY NR 1.6.4.: Adopt and implement contingency plans for priority water use that are consistent with the Northwest Florida and Suwannee River Water Management Districts Water Shortage Plans.

Implementation Strategies:

1. The WMDs need to issue copies of their water shortage plans to local governments so that they may develop their own plans accordingly and consistently.
2. The ARPC will review local government priority water use contingency plans and prepare comments about their consistency with the Regional Policy Plan and the WMDs Water Shortage Plans.

REGIONAL POLICY NR 1.6.5.: Develop methodologies to determine detailed estimates for water supplies and demands for the Region.

Implementation Strategies:

1. WMDs, with the assistance of ARPC and local permitting agencies, will compile a region-wide groundwater basin data base identifying basins and recharge areas, quantity and usability of water resources, major aquifer locations, watershed identification, and saltwater intrusion areas. This inventory should be used as a base for studying potential water problems that may lead to water shortages in the Region.
2. WMDs should research the need and feasibility of expanding their water quantity monitoring network as well as new methods for using the network more effectively.

REGIONAL POLICY NR 1.6.6.: Increase water use conservation of regional irrigation, mining, power development, and domestic municipal and industrial uses.

Implementation Strategy:

The WMDs should base all new consumptive use permits for irrigation, mining, power developments, and domestic sources upon the applicants conservation plan for their water use.

Indicators:

1. Number of jurisdictions experiencing long term water shortages.
2. Per capita water use.

REGIONAL GOAL NR 1.7.: Maintenance the quality of the Region's groundwater.

REGIONAL POLICY NR 1.7.1.: Activities that would introduce pollutants into the groundwater system via aquifer recharge areas or water well cones of influence should be prohibited.

Implementation Strategies:

1. All reviewing officials and agencies will examine the impact that proposed activities have on aquifer recharge areas. Development approval will be contingent upon the quantity and quality of discharge, the proximity of the proposed development to aquifer recharge systems, and the mitigation measures that the developer proposes.
2. DACS should improve enforcement of the current agricultural stormwater pollution standard.

REGIONAL POLICY NR 1.7.2.: Protect wellheads through the establishment of minimum buffer radii consistent with Water Management District guidelines, wellhead protection areas, regulations to guide land uses within the protections areas, or any other technique that will limit groundwater intrusion.

Implementation Strategies:

1. WMDs and ARPC should establish a water quality data base detailing regional soil and hydrological characteristics that may influence water quality in the Region (including water table, soil types, drainage patterns, and recharge areas).
2. Public water suppliers should request that the FDEP prepare a model of their wellheads to delineate wellhead protection areas.
3. Local governments will adopt land development regulations for lands within delineated wellhead protection areas.

REGIONAL POLICY NR 1.7.3: Protect the quality of groundwater systems in all levels of planning.

Implementation Strategy:

WMDs and ARPC should establish a water quality data base detailing regional soil and hydrological characteristics that may influence water quality in the Region (including water table, soil types, drainage patterns, and recharge areas).

REGIONAL POLICY NR 1.7.4.: Develop and expand water quality monitoring programs within the Region to provide a sound data base for controlling sources of water contamination.

Implementation Strategies:

1. The WMDs should develop water quality monitoring systems at primary recharge areas and areas receiving excessive quantities of effluent. A minimum water quality standard shall be established by local government, which may be more stringent than state standards. If water quality at any of these reporting stations falls lower than the locally adopted standard, WMDs and local governments should identify the causes for the problem and prohibit or mitigate the activities that are causing it.
2. The FDEP should use sediment sampling techniques to identify pollution sources.
3. The ARPC will enhance its Geographic Information System (GIS) station to include data on current land use, soil information, and watershed information in the Region to be used in development review and plan updates.
4. Local governments should identify all areas having degraded water quality conditions and coordinate with other agencies to develop programs for their restoration.

REGIONAL POLICY NR 1.7.5.: Increase awareness of the potential dangers to water resources caused by improper storage, use, and disposal of hazardous substances.

Implementation Strategy:

Information on proper storage, use and disposal practices for hazardous substances should be disseminated by FDEP and ARPC through media and publications.

REGIONAL POLICY NR 1.7.6.: Expand awareness regarding the need for the protection of regional water resources from contamination.

Implementation Strategy:

ARPC, in coordination with the WMDs, shall issue publications depicting the water quality problems in the Region and what individuals can do to help maintain high water quality.

Indicator:

Pollutants in groundwater and surface waters in the Apalachee Region.

REGIONAL GOAL NR 1.8.: Sustainable habitat areas for regionally significant species.

REGIONAL POLICY NR 1.8.1.: Coordinate planning efforts in the Region to protect and preserve species listed as endangered, threatened, or of special concern (as designated by 50 CFR 17.11-12, Rule 39-27, F.A.C., Chapter 372, F.S., and Chapter 581, F.S.) and their habitat.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.

4. Develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Notify the Department of Environmental Protection of all new development proposals within and adjacent to FDEP's designated Greenline Areas.
6. Notify the USDA Forest Service of all new development proposals within and adjacent to the Proclamation Boundary of the Apalachicola National Forest.
7. Notify other public conservation land managers of all new development proposals adjacent to public conservation lands under their management.
8. Cooperate with the USDA Forest Service in implementing the Land and Resource Management Plan for the Apalachicola National Forest.
9. Coordinate with the state and federal governments in minimizing the effects of road crossings through public lands which may include reducing speed limits, constructing caution and informational road signs, constructing wildlife underpasses, and not paving dirt roads.
10. Coordinate with the utility and transmission companies and state and federal governments in minimizing the effects of utility line crossings through public lands which may include mitigation for crossing public lands, and if possible, burying all new utility lines and collocating with existing utility rights-of-way. If burial and collocation are not possible, require new rights-of-way to cross public lands at the shortest distance and as narrow as practical.
11. Enact standards for limiting noise and restricting nighttime lighting for land uses adjacent to public lands. Land development regulations should be adopted that implement this policy.

REGIONAL POLICY NR 1.8.2.: Increase citizen awareness and educational opportunities with respect to the value of regionally significant species and how citizens can help to preserve these species.

Implementation Strategy:

Maintain collections on regionally significant species and their habitats at County Libraries.

REGIONAL POLICY NR 1.8.3.: Increase economic development efforts that promote the sustainability of habitat areas for regionally significant species.

Implementation Strategy:

ARPC will provide technical assistance to local governments developing an inventory of areas suitable for ecotourism or other passive, revenue generating activities. The suitability criteria will include an analysis impact to habitat areas for regionally significant species.

REGIONAL POLICY NR 1.8.4.: Avoid additional ecosystem fragmentation.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.

2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. Develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Promote the protection and management of areas containing regionally significant resources through conservation easements, fee-simple acquisition, voluntary land management agreements, and estate planning to private landowners.
6. Promote public awareness and appreciation of the ecological and cultural values of natural resources of regional significance.

REGIONAL POLICY 1.8.5.: Maintain native vegetation in upland areas and restore disturbed or degraded upland systems.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.
3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. Develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Promote the protection and management of areas containing regionally significant resources through conservation easements, fee-simple acquisition, voluntary land management agreements, and estate planning to private landowners.
6. Promote public awareness and appreciation of the ecological and cultural values of natural resources of regional significance.

REGIONAL POLICY 1.8.6.: Use Best Management Practices for silviculture and agriculture in areas containing or designated as natural resources of regional significance.

Implementation Strategies:

1. Local governments will incorporate the use of Best Management Practices into land development regulations.

REGIONAL POLICY NR 1.8.7.: Protect archaeological sites on the Master Site List maintained by FDOS.

Implementation Strategies:

1. Acquire areas containing or designated as natural resources of regional significance.
2. Establish public-private stewardship programs for the management of areas containing or designated as natural resources of regional significance.

3. Local comprehensive plans will limit and mitigate impacts areas containing or designated as natural resources of regional significance.
4. Develop strategies to conserve a greenway along the river corridor to minimize habitat fragmentation that threaten species diversity and the habitats of rare and endangered species, and to provide opportunities for outdoor recreation.
5. Promote the protection and management of areas containing regionally significant resources through conservation easements, fee-simple acquisition, voluntary land management agreements, and estate planning to private landowners.
6. Promote public awareness and appreciation of the ecological and cultural values of natural resources of regional significance.

REGIONAL POLICY NR 1.8.8.: Develop local greenway plans.

Implementation Strategies:

1. Form alliances and partnerships between not-for-profit organizations, private interests, neighborhood and homeowner associations, local businesses, landowners, and the chambers of commerce to promote and manage ecotourism, and to help resolve site development conflicts by land trusts holding title to easements placed on greenway lands.
2. FDCA, FDEP, and ARPC will provide technical assistance to local governments for greenway planning, management, promotion, and economic development.
3. Establish an Apalachee Regional Greenways Advisory Committee composed of public land managers and government officials, private property owners and residents, recreational users, scientists, forestry interests, and other interested parties. This group will meet and make recommendations to governments and private interests for the adoption of appropriate greenway management and protection measures.
4. Establish procedures for coordinating the activities of other local governments, and state and federal government to conserve the region's greenways.
5. Conduct a study of the economic, recreation and environmental benefits of greenways in the region.
6. Develop incentives to promote retention of silvicultural land uses and adherence to Best Management Practices in greenway corridors.
7. The ARPC will provide technical assistance to a regional Greenways Advisory Committee.

REGIONAL POLICY NR 1.8.9.: Incorporate appropriate protective measures into local government planning processes, and coordinate with adjacent local governments to incorporate complementary measures into their planning processes.

Implementation Strategy:

Local government comprehensive plans land development regulations will contain guidelines and standards for issuance of land use approvals and development orders relating to land identified as habitat areas for listed species.

REGIONAL POLICY NR 1.8.10.: Link, where feasible, greenways within jurisdictions to parks, forests, , trails and habitat areas for listed species as well as to other greenways and similar areas that are contiguous to jurisdictional boundaries.

Implementation Strategy:

Coordinate greenways activities with the Florida Greenways Coordinating Council in order to tie into its efforts to create a statewide system of greenways.

REGIONAL POLICY NR 1.8.11.: Protect greenways by fee-simple and less-than-fee-simple land acquisition methods. This may include participating in multi-government land acquisition projects, and creating incentives to develop and protect the greenway through tax incentives and conservation easements.

Implementation Strategy:

Use mitigation in regulatory programs to conserve greenways.

REGIONAL POLICY NR 1.8.12.: Promote local government land acquisition programs for conservation and recreation lands.

Implementation Strategy:

ARPC, FDCA, FDEP, and NFWFMD will assist local governments to identify lands suitable for acquisition.

REGIONAL POLICY NR 1.8.13.: Promote state, federal, and private funding to improve recreational facilities and acquire recreation and conservation lands.

Implementation Strategies:

1. ARPC, FDCA, FDEP, and NFWFMD will assist local governments to identify lands suitable for acquisition.
2. ARPC will assist local governments to inform their legislative and congressional delegations regarding funding needs for recreation facilities and recreation and conservation lands.

REGIONAL POLICY NR 1.8.14.: Keep greenways as intact as possible to facilitate wildlife movement where appropriate and to maintain viable populations of designated species.

Implementation Strategy:

Limit the clearing, associated with development activities, of native vegetation in greenways.

REGIONAL POLICY NR 1.8.15.: Develop and adopt by plan amendment within one year of the initial adoption of the ARPC SRPP a map or maps that depict the location of habitat areas for species listed as endangered, threatened, or of special concern (as designated by 50 CFR 17.11-12, Rule 39-27, F.A.C., Chapter 372, F.S., and Chapter 581, F.S.).

Indicators:

1. Percentage of monitored ground water wells that were contaminated by pollutants.
2. Percentage of lakes, streams, and estuaries where the water quality is rated as:
 - a. good
 - b. fair
 - c. poor
3. Average turbidity
4. Compliance with Best Management Practices
5. Land of conservation value that is protected from development.
6. Number of native plant and animal species that are endangered, threatened, or of special concern.
7. Land in managed areas.

NATURAL RESOURCES OF REGIONAL SIGNIFICANCE ELEMENT REGIONALLY SIGNIFICANT NATURAL RESOURCES

Surface Water Systems Including Associated Floodplains and Wetlands	
Resource Area or Feature	Special Designation
<i>Apalachicola River and Bay Basin</i>	
Alligator Harbor	Outstanding Florida Water Aquatic Preserve
Apalachicola River (<i>Calhoun, Franklin, Gadsden, Gulf, Jackson, and Liberty Counties</i>)	Outstanding Florida Water State Special Waters National Estuarine and Research Reserve
Apalachicola Bay including East Bay, St. George and St. Vincent Sounds (<i>Franklin County</i>)	Outstanding Florida Water State Aquatic Preserve National Estuarine and Research Reserve
Chattahoochee River (<i>Gadsden County</i>)	Outstanding Florida Water
Chipola River (<i>Calhoun, Gulf, and Jackson Counties</i>)	Outstanding Florida Water State Special Waters State Recreational Canoe Trail
Merritts Mill Pond (<i>Jackson County</i>)	SWIM Priority Waterbody
Mosquito Creek (<i>Gadsden County</i>)	Class 1 Waters
<i>Ochlocknee River Basin</i>	
Bear Creek (<i>Gadsden County</i>)	Class 1 Waters
Lake Iamonia (<i>Leon County</i>)	
Lake Talquin (<i>Gadsden and Leon Counties</i>)	Outstanding Florida Water
Ochlocknee River (<i>Franklin, Gadsden, Leon, Liberty, and Wakulla Counties</i>)	Outstanding Florida Water State Special Waters State Recreational Canoe Trail
Ochlocknee Bay (<i>Franklin, Wakulla Counties</i>)	
Quincy Creek (<i>Gadsden County</i>)	Class 1 Waters
Sopchoppy River (<i>Wakulla County</i>)	Outstanding Florida Water State Recreational Canoe Trail Proposed National Wild and Scenic River

Lake Jackson (<i>Leon County</i>)	Outstanding Florida Water State Aquatic Preserve
<i>St. Andrews Bay Basin</i>	
Econfina Creek	Class 1 Waters
St. Joseph Bay (<i>Gulf County</i>)	Outstanding Florida Water State Aquatic Preserve
<i>St. Marks Basin</i>	
Apalachee Bay (<i>Franklin, Wakulla, Jefferson Counties</i>),	Outstanding Florida Water State Aquatic Preserve State Recreational Sea Kayak Trail
Big Bend Seagrasses (<i>Wakulla, Jefferson, Taylor Counties</i>)	Outstanding Florida Water State Aquatic Preserve State Recreational Sea Kayak Trail
Lake Lafayette (<i>Leon County</i>)	
Lake Miccosukee (<i>Jefferson and Leon Counties</i>)	
Lake Munson (<i>Leon County</i>)	
St. Marks River (<i>Jefferson, Leon, Wakulla Counties</i>)	Outstanding Florida Water State Special Waters
Wakulla River (<i>Wakulla County</i>)	Outstanding Florida Water State Special Waters State Recreational Canoe Trail
<i>Aucilla River Basin</i>	
Aucilla River (<i>Jefferson County</i>)	Outstanding Florida Water State Special Waters State Recreational Canoe Trail
Wacissa River (<i>Jefferson County</i>)	Outstanding Florida Water State Special Waters State Recreational Canoe Trail
Groundwater	
Resource Area or Feature	Special Designation
Floridan Aquifer (<i>under the entire region</i>)	
Bear Creek Spring (<i>Franklin County</i>)	Submarine First Magnitude Spring
Blue Springs (<i>Jackson County</i>)	First Magnitude Spring
Crays Rise (<i>Franklin County</i>)	Submarine First Magnitude Spring
Kini Springs (<i>Wakulla County</i>)	First Magnitude Spring
Natural Bridge Spring (<i>Leon County</i>)	First Magnitude Spring
Ocean Hole Spring (<i>Wakulla County</i>)	Submarine First Magnitude Spring
River Sink Spring (<i>Wakulla County</i>)	First Magnitude Spring
St. Marks Spring (<i>Leon County</i>)	First Magnitude Spring
Spring Creek Springs (<i>Wakulla County</i>)	First Magnitude Spring Submarine First Magnitude Spring
Wacissa Springs Group (<i>Jefferson County</i>)	First Magnitude Spring
Wakulla Springs (<i>Wakulla Springs</i>)	First Magnitude Spring

National Wildlife Refuges	
Resource Area or Feature	Special Designation
St. Marks National Wildlife Refuge (<i>Wakulla and Jefferson, Counties</i>)	National Wildlife Refuge State Aquatic Preserve Outstanding Florida Water State Recreational Sea Kayak Trail Florida National Scenic Trail St. Marks Wilderness Area
St. Vincent National Wildlife Refuge (<i>Franklin County, Pig Island- Gulf County</i>)	National Wildlife Refuge Outstanding Florida Water State Aquatic Preserve
National Forest	
Resource Area or Feature	Special Designation
Apalachicola National Forest (<i>Franklin, Gulf, Leon, Liberty, and Wakulla, Counties</i>)	National Forest Bradwell Bay Wilderness Area Mud Swamp/New River Wilderness Area Florida National Scenic Trail Apalachicola Scenic Byway Vinzant Riding Trail Munson Hills Off-Road Bicycle Trail Rocky Bluff Scenic Area Leon Sinks Geological Area Morrison Hammock Scenic Area Big Dismal Sink Outstanding Florida Water Apalachicola Wildlife Management Area Seventeen developed recreation areas Clear Lake Wilderness Study Area Sopchoppy River National Wild and Scenic River (proposed) New River National Wild and Scenic River (proposed) Gopher, Frog & Alligator Trail (proposed)
National Reserve	
Resource Area or Feature	Special Designation
Apalachicola River and Bay	National Estuarine Research Reserve Outstanding Florida Water State Aquatic Preserve State Special Waters

State Archaeological Sites, Forests, Gardens, Historic Sites, Parks, Picnic Sites, Preserves, Recreation Areas, Water Management Areas and Wildlife Management Areas	
Resource Area or Feature	Special Designation
Apalachee (<i>Jackson County</i>)	Wildlife Management Area
Apalachicola River (<i>Liberty and Gulf Counties</i>)	Water Management Area
Aucilla (<i>Jefferson and Wakulla Counties</i>)	Wildlife Management Area Florida National Scenic Trail (proposed)
Aucilla River (<i>Jefferson County</i>)	Water Management Area Florida National Scenic Trail (proposed)
Aucilla Sinks (<i>Jefferson County</i>)	Wildlife Management Area Florida National Scenic Trail
Bear Creek (<i>Gadsden County</i>)	State Recreation Area
Cape St. George (<i>Franklin County</i>)	State Preserve
Dead Lakes (<i>Gulf County</i>)	State Recreation Area Outstanding Florida Water
Econfina Creek (<i>Jackson County</i>)	Water Management Area
Edward Ball (<i>Gulf and Franklin Counties</i>)	Wildlife Management Area
Florida Caverns (<i>Jackson County</i>)	State Park Outstanding Florida Water
Fort Gadsden (<i>Franklin County</i>)	State Historic Site
Joe Budd (<i>Gadsden County</i>)	Wildlife Management Area
Lake Jackson Mounds (<i>Leon County</i>)	State Archaeological Site
Lake Talquin (<i>Gadsden and Leon Counties</i>)	Outstanding Florida Water State Forest
Alfred B. Maclay (<i>Leon County</i>)	Outstanding Florida Water State Gardens
Natural Bridge Battlefield (<i>Leon County</i>)	State Historic Site
Ochlocknee River (<i>Wakulla County</i>)	State Park State Special Waters
Phipps-Overstreet-Maclay Greenway (<i>Leon County</i>)	City Park Water Management Area State Garden
Robert Brent (<i>Gadsden and Liberty Counties</i>)	Wildlife Management Area
River Bluff (<i>Leon County</i>)	State Picnic Site

Dr. Julian D. Bruce St. George Island (Franklin County)	State Park
T.H. Stone Memorial St. Joseph Peninsula (Gulf County)	State Park Wilderness Preserve Outstanding Florida Water
San Marcos de Apalachee (Wakulla County)	State Historic Site Outstanding Florida Water Aquatic Preserve
Tate's Hell (Franklin and Liberty Counties)	State Forest
Three Rivers (Jackson County)	State Recreational Area Outstanding Florida Water
Torreya (Liberty County)	State Park
Upper Chipola (Jackson County)	Water Management Area
Edward Ball Wakulla Springs (Wakulla County)	State Park
Trails	
Resource Area or Feature	Special Designation
Apalachicola National Forest (Wakulla County and Liberty Counties)	Florida National Scenic Trail
Aucilla River (Jefferson County)	State Recreational Canoe Trail Florida National Scenic Trail (proposed)
Aucilla Sinks (Jefferson County)	Florida National Scenic Trail
Big Bend Historic Saltwater Paddling Trail (Wakulla and Jefferson Counties)	State Recreational Sea Kayak Trail
Bradford Brook Canoe Trail (Leon County)	
Bradford Chain-of-Lakes Canoe Trail (Leon County)	
Chipola River Canoe Trail (Jackson and Calhoun Counties)	State Recreational Canoe Trail
Fisher Creek Canoe Trail (Leon County)	
Florida Caverns State Park Horse Trails (Jackson County)	
Ft. Braden Hiking and Equestrian Trails (Leon County)	
Lafayette Heritage Trail (Leon County)	
Leon Sinks Geological Area Hiking Trail (Leon County)	USFS Special Management Area
Lost Creek Canoe Trail (Wakulla County)	

Munson Hills Off-Road Bicycle Trail (<i>Leon County</i>)	
Ochlocknee (Lower) River (<i>Leon, Liberty, Wakulla, Franklin Counties</i>)	State Recreational Canoe Trail
Ochlocknee (Upper) River (<i>Gadsden and Leon Counties</i>)	State Recreational Canoe Trail
Otter Lake Trail (<i>Wakulla County</i>)	
St. Marks National Wildlife Refuge (<i>Jefferson and Wakulla Counties</i>)	Florida National Scenic Trail
St. Marks River Canoe Trail (<i>Leon and Wakulla Counties</i>)	
Sopchoppy River (<i>Wakulla County</i>)	State Recreational Canoe Trail Proposed National Wild and Scenic River
Stadium Drive Bike Path (<i>Leon County</i>)	
Stoney Bayou Trail (<i>Wakulla County</i>)	
Tallahassee-St. Marks Historic Railroad (<i>Leon and Wakulla Counties</i>)	State Recreational Trail Florida National Scenic Trail
Vinzant Riding Trail (<i>Leon County</i>)	
Wacissa River (<i>Jefferson County</i>)	State Recreational Canoe Trail
Wakulla River (<i>Wakulla County</i>)	State Recreational Canoe Trail
Fisher Creek Horse Trail (<i>Leon County</i>)	Proposed
Goose Pond Greenway (<i>Leon County</i>)	Proposed
Gopher, Frog and Alligator Rail-Trail (<i>Leon, Wakulla and Franklin Counties</i>)	Proposed
Marianna-Blountstown Rail-Trail (<i>Calhoun and Jackson Counties</i>)	Proposed
Tallahassee-St. Marks Historic Railroad State Trail Extension to Tom Brown Park (<i>Leon County</i>)	Proposed
Other Conservation Areas	
Resource Area or Feature	Special Designation
Apalachee Bluffs and Ravines Preserve (<i>Liberty County</i>)	The Nature Conservancy
Tall Timbers (<i>Leon County</i>)	Tall Timbers Research, Inc.
Species Listed as Endangered, Threatened, or of Special Concern Habitat (as designated by 50 CFR 17.11-12, Chapters 372 and 581, Florida Statutes, and Chapter 39-27, Florida Administrative Code) and Their Habitat	

Greenways	
The Florida Greenways Commission has recognized many opportunities for conserving greenways in the Apalachee Region. In celebration of Florida's Sesquicentennial Celebration, the following 27 greenways in the Apalachee Region received official recognition from Governor Chiles as part of the Florida Greenways Commission's 150 Greenways Recognition Program (<i>Florida Greenways</i> newsletter, Winter 1995).	
(1) Apalachee Greenway System in Leon, Gadsden, Jefferson, Wakulla, Liberty, Franklin co.'s	(2) Apalachee Savannahs Scenic Byway in Liberty and Franklin Counties
(3) Apalachicola National Forest Florida National Scenic Trail in Liberty, Wakulla, Jefferson co.	(4) Apalachicola River Greenway in Jackson, Gadsden, Liberty, Calhoun, Franklin, Gulf co.'s
(5) Apalachicola Bay Greenway in Gulf and Franklin Counties	(6) Aucilla River Greenway in Jefferson, Madison and Taylor Counties
(7) Big Bend Coastal Greenway in Wakulla, Jefferson, Taylor, Dixie and Levy Counties	(8) Cascade/Myers Park Greenway in Leon County
(9) Chattahoochee Greenway in Jackson County	(10) Florida Trail in Leon County
(11) Gopher, Frog and Alligator Rail Trail in Leon, Wakulla and Franklin Counties	(12) Indian Head Greenway in Leon County
(13) Lafayette Heritage Trail in Leon County	(14) Marianna to Blountstown Rail Trail in Calhoun and Jackson Counties
(15) Ochlocknee River Greenway in Gadsden, Leon, Liberty, Wakulla and Franklin Counties	(16) Phipps-Overstreet-Maclay Greenway in Leon County
(17) Red Hills Scenic and Historic Byways in Gadsden, Leon and Jefferson Counties	(18) Sopchoppy River Greenway in Wakulla County
(19) St. Marks/Apalachee Bay Coastal Greenway in Franklin and Wakulla Counties	(20) St. Marks River Greenway in Jefferson, Leon and Wakulla Counties
(21) St. Joseph Bay Greenway in Gulf County	(22) Tallahassee/Leon County Canopy Road System
(23) Tallahassee Greenways System in Leon County	(24) Tallahassee-St. Marks Historic Railroad State Trail in Leon and Wakulla Counties
(25) Upper Chipola River Greenway in Calhoun and Jackson Counties	(25) Wacissa River Greenway in Jefferson County
(27) Wakulla River Greenway in Wakulla County	

¹ Myers, Ronald L. Ecosystems of Florida. 1990. p. 5

² Ibid. p. 5.

³ Suwanee River Water Management District. District Water Management Plan. 1994. p.

⁴ Florida Statutes. Section 373.019(17).

⁵ Northwest Florida Water Management District. District Water Management Plan. 1994. pp. 139-225

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- ⁶ Ibid. p. 18.
- ⁷ Ibid. p. 25.
- ⁸ FDEP. Apalachicola River and Bay Ecosystem Management Plan: Environmental Indicator System. 1995. p. 2.
- ⁹ SRWMD. District Water Management Plan. 1994. p.
- ¹⁰ NFWFMD. Apalachicola River and Bay Management Plan, 1996. p. 2.
- ¹¹ Ibid. p. 6.
- ¹² FDEP. Northwest Florida District Water Quality Assessment 1994 305(b) Technical Appendix. 1994. p. 18.
- ¹³ Ibid. p. 25.
- ¹⁴ Ibid. p.25.
- ¹⁵ NFWFMD. Apalachicola River and Bay Management Plan. 1996. p. 6.
- ¹⁶ Ibid. p. 7.
- ¹⁷ FDEP. Northwest Florida District Water Quality Assessment 1994 305(b) Technical Appendix. 1994. p. 26.
- ¹⁸ NFWFMD. Apalachicola River and Bay Management Plan. 1996. p. 6.
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- ²² FDEP. Northwest Florida District Water Quality Assessment 1994 305(b) Technical Appendix. 1994. p. 19.
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- ²⁴ FGFWFC. Closing the Gaps in Florida's Wildlife Habitat Conservation System. 1994. pp. 149-151.
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- ³³ Ibid. p. 26.
- ³⁴ _____. Tate's Hell Carrabelle Tract Conservation and Recreation Lands Project Assessment. 1991.
- ³⁵ FGFWFC. Closing the Gaps in Florida's Wildlife Habitat Conservation System. 1994. p. 150.
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- ³⁹ 1000 Friends of Florida. Apalachee Regional Resource Assessment and Greenways Vision. 1995. p. 48.
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- ⁴² NFWFMD. Apalachicola River and Bay Management Plan. 1996. p. 23.
- ⁴³ FDEP. Conservation and Recreation Lands 1995 Annual Report. 1995.
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- ⁴⁵ NFWFMD. Apalachicola River and Bay Management Plan. 1996. p. D-12.
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- ⁵² NFWFMD. District Water Management Plan. p. 17.
- ⁵³ NFWFMD. Northwest Florida District Water Quality Assessment 1994 305(b) Technical Appendix. 1994. p. 90.
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