

# Data Inventory and Analysis Coastal Management - Conservation Element

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## INTRODUCTION

Pursuant to the requirements of §163.3177(6)(d) and (a), FS ; §163.3178 (2) and (3), FS; and §9J-5.013(1), FAC, this section presents an inventory and analysis of land use data for the City of Bradenton. The data and analysis presented herein are used in the formulation of the City's plan and policy direction for the preservation, conservation and management of natural resources and coastal areas.

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# Purpose

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The Coastal Management and Conservation Element is to provide a plan and policy direction for the preservation, conservation and management of natural resources occurring within the City of Bradenton. The element will identify and analyze the City's existing air, land, water and living resources (land and marine) and will be used to establish objectives and policies for the protection and enhance of these resources.

## General Location

Bradenton is a coastal community located on the Manatee River, a major estuary of lower Tampa Bay. Wares Creek, a tributary of the Manatee River flowing through the middle of the City, is estuarine in its lower reaches, and the Braden River, a tributary of the Manatee River, is estuarine to the dam at Evers Reservoir. Also important to the Coastal Zone is Perico Island; ~~the south half and most of the recently annexed north half (416± acres) are within the City limits.~~ however, a very small portion already

developed in the northern half remains in Manatee County. The island is in Palma Sola Bay.

The preservation, protection, and enhancement of these areas and their natural systems are the major concerns of this element. Other major concerns of the element are ground water, plants, animals, and environmentally sensitive lands.

## Study Area

Bradenton is located on the central Gulf Coast of Florida, along the southern bank of the Manatee River and approximately 40 miles south of Tampa. Development began in the mid-nineteenth century, and the population doubled every decade between 1900 and 1930, marking the beginning of urbanization. Since 1970, growth has accelerated; until the downturn in the economy starting in 2007. Today Bradenton is a stable urban/suburban center of ~~close to~~ more than 50,000 54,000 persons in a suburban area of about ~~250,000~~ 320,000 residents ([Decision Data Resources, January 2008](#), [U.S. Census Bureau, January 2008](#)).

For the purpose of this plan, the coastal area includes all incorporated area north of Manatee Ave., the 100-year flood plain of Wares Creek from 14<sup>th</sup> Ave. to its confluence with the Manatee River and the State Road 64 causeway from 75<sup>th</sup> Street to Perico Island. Also included are the incorporated areas on each side of the Braden River, which lie in the 100-year flood plain ([Map CMC – 1: City of Bradenton Coastal Area](#)).

## Climate

The City's location and climate have attracted the influx of new residents. The climate is oceanic and subtropical with high relative humidity, short mild winters, and long warm summers. The average yearly temperature is 72-degrees F., and the average yearly rainfall is 55 inches. Much of the rainfall is from thunderstorms in the rainy season from June to September.

Hurricanes are an occasional cause for coastal flooding and wind damage; however, Bradenton is buffered from the direct Gulf waves by the barrier islands (Anna Maria Island in particular) and by its location on the mid-reaches of the Manatee River estuary. The Hurricane

Evacuation Map (Map CMC - 2) shows low-lying areas subject to flooding during a major storm. Bradenton is not a high frequency hurricane target. The area has a 6% annual probability of a hurricane and a 1-percentage annual probability of a “great” hurricane. Over the next 25 years it is predicted the peninsula of Florida will have an increased chance for hurricane strikes. Thus, the probability for hurricanes impacting Manatee County and consequently the City, is heightened.

### Geomorphology

Bradenton is built on Florida’s extensive Coastal Plain, which takes in about a 25-mile wide margin along the entire Florida shore, and includes the entire landmass of South Florida (south of Charlotte Harbor and Lake Okeechobee). Sixty million years ago, what is now the West Coast of Florida lay under a Paleocene shallow sea. During the next 50 million years, marine sediments and limestone deposits formed the Florida platform, of which the highest areas emerged from gradually regressing sea levels as dry land. Wind and water erosion took sands and clays from the higher portions of the Florida platform and deposited them across the Florida embayment during the Miocene Epoch (25 million years ago). During the late Miocene and Pliocene eras, the emerged

land was again subjected to inundation by shallow seas and phosphoric clay sediments formed. Later in the Pleistocene Epoch (one million years ago), the fluctuating sea levels deposited several layers of quartz sand across Florida, which form the parent materials for many of the soils of Southwest Florida.

Bradenton lies on the Pamlico Terrace, one of the Terraced Coastal Lowlands divisions of the coastal plain formed during the Pleistocene period. The Pamlico Terrace is underlain by quartz sand, sandy limestone and shell material, which has provided the parent material for local soils. Present soils are level, somewhat poorly drained, with organic pan or, as in East Bradenton, underlain by calcareous materials (shells). Along 1<sup>st</sup> Street runs a ridge of excessively drained to moderately well drained, deep sandy soils

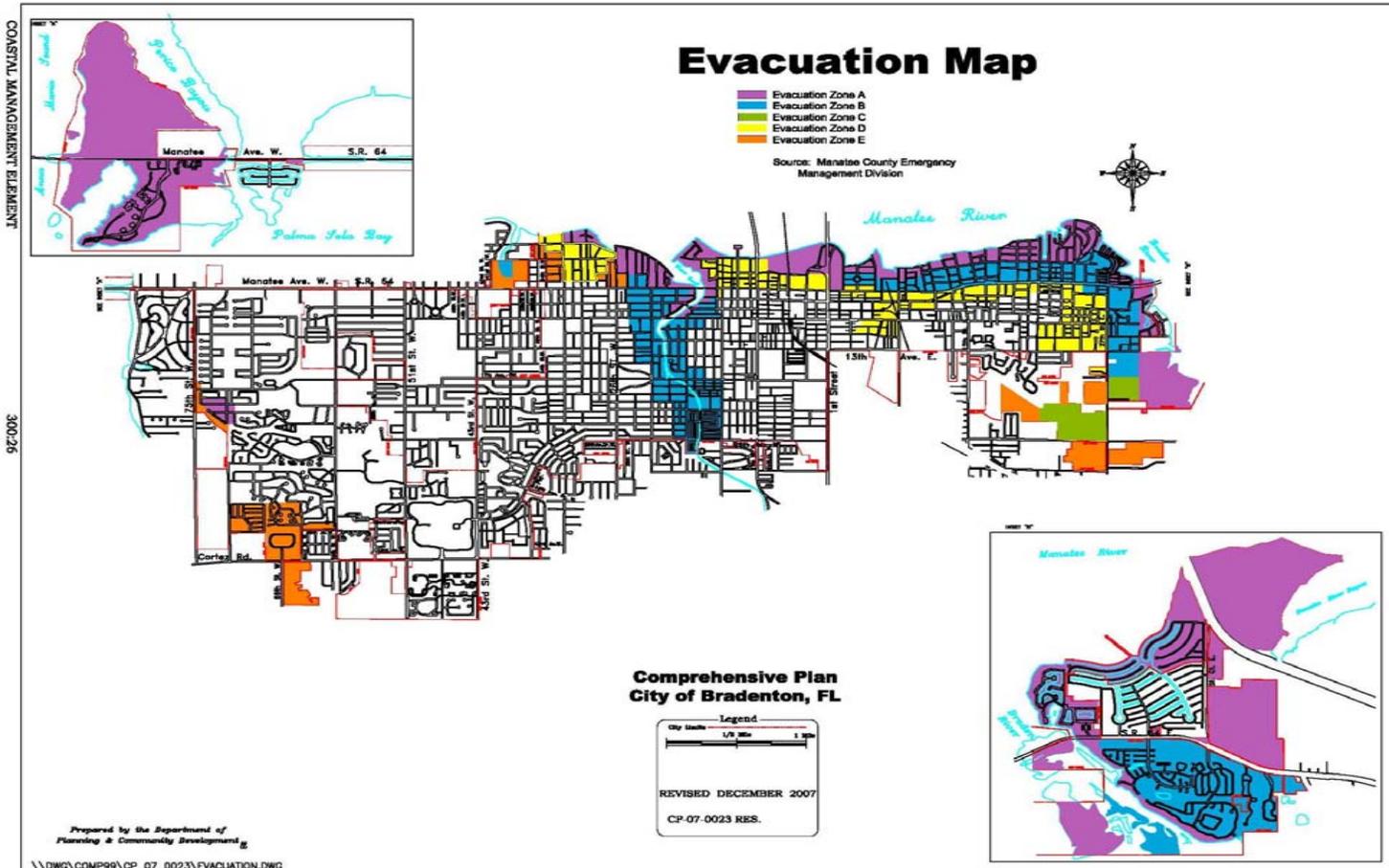
### Topography

The topography of the area shows little change in elevation. What variations there are resulted from marine terracing and sedimentation followed by erosion by surface water systems. In Bradenton, elevation varies from sea level to only about 35 feet above sea level in the south central portion of the City along 1st Street. The low-lying areas are subjected to periodic flooding (see Drainage Element).

### Ground Water

Ground water in Bradenton occurs in two conditions: artesian and non-artesian. Non-artesian conditions are usually found in shallow, localized subsurface deposits of shell, gravel, and sand. These surface aquifers are supplied by infiltration of rainwater through the soil. The artesian aquifer is ground water confined between relatively impermeable limestone formations and clay beds. The Florida Aquifer underlies much of the peninsula and provides most of the ground water for the state. In Bradenton, the artesian aquifer is relatively close to the surface, beginning 15 to 25 feet below ground level, and continues down through a layered system of aquifers to depths of over 400 feet. The Florida aquifer is replenished by infiltration of rainwater in areas where confining beds are sufficiently permeable or absent. The lake region of Polk County is the center of a large recharge area, which replenishes the southwest portion of the aquifer. Water in an artesian aquifer moves at a very slow rate and is not quickly replenished.





Map CMC – 2: Coastal Evacuation

**Ground Water - continued**

Artesian systems along the coast and up to several miles inland often contain highly mineralized water due to lateral infiltration of coastal waters. Groundwater is used only for irrigation purposes in the City and there is no evidence of salt-water intrusion or pollution to groundwater.

**SURFACE WATER**

The Manatee River drainage basin includes the Manatee and Braden Rivers, which flow into the Palma Sola Bay and lower Tampa Bay. Various creeks, bayous, and lakes feed these rivers. The estuaries and bay enable Bradenton to benefit from tourist dollars to a degree, but the island communities greatly overshadow Bradenton in regard to tourism. Bradenton's economy is for the most part not a tourist economy, but is based upon service industries of a more general nature, and on industry and financial institutions.

The Future Land Use Element's existing land use maps show Bradenton as a largely residential community with ~~an old~~ mature downtown area, and highway commercial developments. The City's location in the coastal zone, although a significant economic factor, is not a major factor in land use pressures or concerns.

The environmental, social, and economic values of this surface water system are inestimable. The rivers, creeks, and estuaries

and their associated marine grasses and mangrove communities provide habitat and breeding ground for a variety of marine life including fish, shellfish, birds, and mammals, including several endangered species. The waters are a year-round recreational resource, not only for local residents but also for tourists, and have been a main factor in stimulating in-migration to the area. The direct and indirect economic benefits attributable to local surface water are enormous. During 2008, about a half a million tourists visited Manatee County and spent over \$ 266 million (Manatee Chamber of Commerce, 2009). The multiplier effect or total benefit to the local economy has been estimated to be two to five times the dollars spent by the tourists.

Waterfront property is increasing in value in Bradenton because of the recreational advantages of living near the water and the diminishing supply of waterfront acreage. The attraction of the shore is pointed up by the statistic that 80% of Florida's population lives in the Coastal Zone.

Although Bradenton does not have a natural shoreline with beaches or water suitable for swimming, its shores offer considerable opportunities for recreation, and public access is good. Of the approximately 12 miles of shoreline in the City (Perico Island and the Braden River islands are not included in this figure), over one mile is public waterfront,

including the Bradenton's ~~Waterfront Park, now called~~ Anthony T. Rossi Park, and its extensions which allow continuous public access to the Manatee River from 15th Street West to 6<sup>th</sup> Street East. The Park has a pedestrian/bike path extending its full length, an outdoor performance area, picnic shelters, play equipment, ~~an antique train,~~ and a fishing pier which attract people to the waterfront. In this area also is the municipal marina, where a restaurant and marina attract people daily to the river. ~~The marina has been approved for expansion to 225 boat slips and is currently under major renovation.~~ In addition to the Anthony T. Rossi Park, approximately three miles of waterfront is accessible via segments of roadways along the shore, including Riverview Boulevard, Virginia Drive (along Wares Creek), and three segments of Riverside Drive which has benches for public enjoyment of the view, and Riverfront Drive in Carlton Arms.

Available to City residents are the County's 59th Street Boat Ramp at the Manatee River, the SR 64 boat ramp at Braden River, and the Palma Sola Bay Causeway on State Road 64. Parking for waterfront access is available at the Anthony T. Rossi Park, Municipal Auditorium and River Run golf links.

The City's waterfront facilities are underutilized. This includes the mile-long Anthony T. Rossi Park, its picnic areas, playgrounds, fishing pier, and parking areas.

The Causeway to Perico Island is heavily used at peak times by boaters. There are currently two boat launching facilities located on SR 64 within the City limits. Although the 59th Street boat ramp is located in the County and maintained by the County, it is convenient for City residents. Boat docking facilities ~~are being expanded~~ at the municipal marina have been expanded to meet a needs of boaters.

The Manatee River flows from eastern Manatee County westerly toward the Gulf of Mexico where it discharges to lower Tampa Bay. In Manatee County, much of the river is in a natural state with a meandering course and native vegetation along the banks. A ~~portion~~ stretch of the river in the eastern portion of the County is dammed to form Lake Manatee, the County's reservoir.

In Bradenton the banks of the Manatee River have been heavily developed and altered over the years. The majority of the shoreline is bulkheaded and a significant amount of filling has taken place ~~over the years~~, most notably the formation of the waterfront property, now in City ownership, on each side of the Seaboard Coastline Railroad, and the shore west of Wares Creek.

Water quality in the Manatee and Braden Rivers meets Class III standards except for some violations of the dissolved oxygen levels upstream of the DeSoto Bridge on the Manatee River. Although Wares Creek is also

classified as Class III, the water quality does not meet Class III standards. Class III waters are suitable for recreational and wildlife management purposes, but not for shellfishing. Palma Sola Bay is classified Class II, indicating that it is theoretically suitable for shellfishing, but it has not been approved for that purpose. The Bay meets Class II standards as a rule with only an occasional violation of bacteriological standards.

Pollution sources to surface waters are shown on one map (Map CMC – 3: Coastal Area Point and Non-Point Sources of Pollution, Coastal Area) and include two wastewater treatment plant outfalls from the City of Bradenton and Tropicana Products, Inc. The major stormwater pipe outfalls are also shown.

The Manatee River also receives heavy loads of stormwater runoff from Bradenton and Palmetto. The estuarine portion of the Braden River (below the Evers Reservoir Dam) receives no domestic waste discharges, but does receive heavy stormwater loads.

To manage surface waters of the state, Florida has developed a surface water quality standards system. The components of this system include classifications, criteria, an anti-degradation policy, and special protection of certain waters.

The Federal Clean Water Act provides the statutory basis for state water quality standard programs. States are responsible for reviewing, establishing, and revising water quality standards.

The Clean Water Act requires that the surface waters of each state be classified according to designated uses. Florida has five classes with associated designated uses, which are arranged in order of degree of protection required:

#### Class I – Potable Water Supplies

Fourteen general areas throughout the state including: impoundments associated tributaries, certain lakes, rivers, or portions of rivers, used as a Drinking water supply.

#### Class II – Shellfish Propagation or Harvesting

Generally coastal waters where commercial shellfish harvesting occurs.

#### Class III – Recreation, Propagation, and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife

The surface waters of the state are Class III unless described in Rule 62.302.400 F.A.C.

**Class IV – Agricultural Water Supplies**

Generally located in agriculture areas around Lake Okeechobee.

**Class V – Navigation, Utility and Industrial Use.** Currently there are not any Class IV bodies of water.

- **WARES CREEK**

Wares Creek which flows in a northward direction draining about one-third of urban Bradenton before emptying into the Manatee River, has very poor water quality. The Class III bacteriological standards are regularly exceeded; only one or two monthly samples per year show bacteria levels below the standards. The creek's value as a natural resource is all but destroyed by the pollution problems. Dredging and channel improvements have been contemplated for years and an Amy Corps of Engineers study was done on the Creek. Work is scheduled to take place in ~~2001–2002~~ 2010 - 2012.

- **MANATEE RIVER**

The major source of pollution to the Manatee River has been identified as stormwater. Most of the coastal area along the Manatee River from the City

limit line at about 34th St. W. to the Braden River was developed early in this Century and has stormwater runoff flowing directly into Wares Creek and the Manatee River with no detention or treatment. Retrofitting of the storm sewer system, which serves the older, urbanized areas, would be a costly and challenging undertaking for the City. In November of 1997 the City was issued National Pollutant Discharge Elimination System (NPDES) Permit No. FL000037. Pursuant to Part II of this Permit the City has developed a Storm Water Management Program.

This Program includes the controls necessary to prohibit the discharge of non-storm water into municipal separate storm sewers, and to reduce to the maximum extent practicable the discharge of pollutants from the municipal separate storm sewer system. Elements contained within the Storm Water Management Program will be implemented by the City as directed during the five-year term of the Permit. Included in this Program are in depth studies of the individual drainage basins which discharge into the following

United States water bodies or tributaries thereto with the City of Bradenton, Florida, including but not limited to:

- Manatee River
- Palma Sola Creek
- Wares Creek
- Braden River
- Anna Maria Sound
- Palma Sola Bay

These studies are known as the Basin Master Plans. These Plans will define basin boundaries, and will evaluate existing drainage structures and facilities for deficiencies.

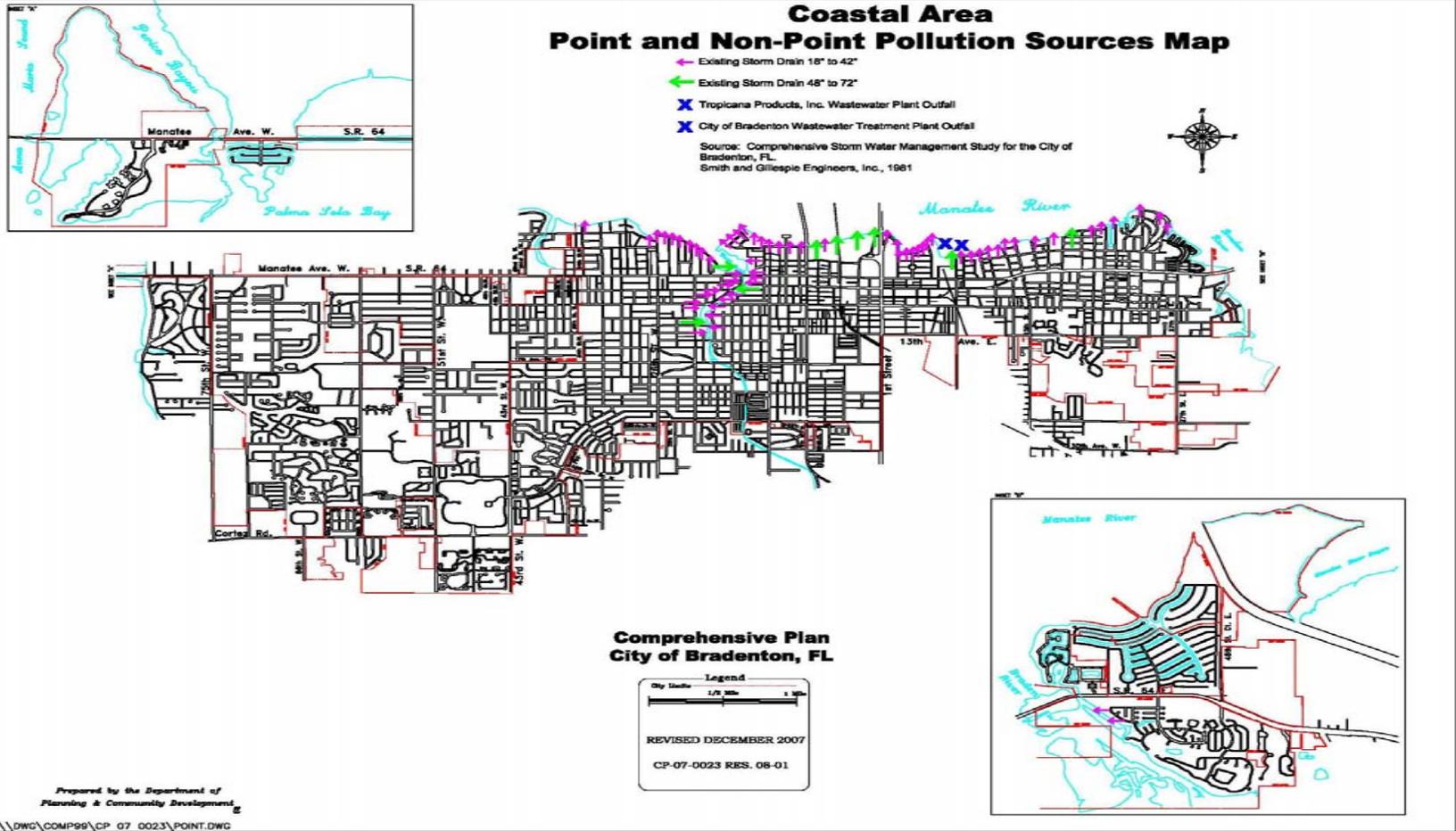
**Air Quality**

In June 2008, Manatee County suspended air quality monitoring operations. It is expected however, that data collection and quality assurance procedures will be reinstated in January of 2009, but on a smaller scale.

Under a County reorganization the Manatee County ~~Environmental Management~~ Natural Resources Department, Environmental Protection Division will operate a reduced ambient air quality-monitoring network. This is a result of historical (twenty-five years) data trends which demonstrate the County was, and currently is substantially below the acceptable levels of particulate matter (PM) and Oxides of Nitrogen (NOx).

~~Consequently, the network will only monitors for Particulate Matter of 10 Microns and smaller (PM10), Particulate Matter of 2.5 microns and smaller (PM2.5), Oxides of Nitrogen (NOx), Sulfur dioxide (SO2), and ozone (O3). The network will consists of five three sites continuously monitoring gaseous pollutants ozone (O3) in the ambient air, one site for monitoring PM2.5, and one colocated site for monitoring PM10. The sites are installed at ~~four~~ three locations in the County. The site locations and functions are as follows~~

The monitoring network is constructed and operated according to Federal and State guidelines. Monitoring data is compiled according to the State of Florida's Quality Assurance and Quality Control Plan. The National Ambient Air Quality Standards for the monitored EPA criteria pollutants are closely observed. An Air Quality Index is updated twice daily and can be obtained by calling The Manatee County ~~Environmental Management~~ Natural Resources Department at ~~749-0079~~ (941) 748-4501 x4602.



Map CMC – 3: Point and Non-Point Source Pollution

### **Lands of Environmental Concern**

Since Bradenton is highly urbanized, there are few remaining unaltered land areas, which are worthy of preservation. Two areas, which are of concern, are the north and south half of Perico Island and the shoreline and islands of the Braden River. The value of these lands is that they are coastal lands with abundant sea life and habitat. In an urbanized area where much of the natural shoreline has been destroyed, these remaining lands should be protected because of their intrinsic value as well as because of their dwindling supply.

Other than coastal wetlands, a very small amount of sporadic areas determined to be wetlands are found within the city limits. These areas are very small in surface and are concentrated mostly in the eastern portion of the city. One small area is also found west of the city, south of Cortez Road. (Map CMC – 4: Coastal Vegetation Map). For the purpose of this Plan, the following is a definition of “wetlands.”

*“Wetlands” means those areas that are inundated or saturated by surface water or ground water 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 hydrophytic 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. Map CMC – 3: Coastal Vegetation Map, shows identified wetland(s) within the City.

- **PERICO ISLAND**

Perico Island is dissected in half by State Road 64 (Manatee Avenue) and it is bounded by the Intercoastal Waterway on the north, Palma Sola Bay on the south. The entire island is within the 100-year flood hazard zone and is less than five feet above sea level with large areas below the mean high water line. The shoreline is fringed with mangroves, mud flats, oyster bars, and grass flats. The low-lying areas also support disturbed and undisturbed mangroves.

The upland portions of the south half of the Perico Island incorporated area has been developed into approximately 900 residential

units. Lands below the 1.5-foot elevation and in an historic shell mound on the western peninsula of the site are severely damaged by erosion and people. The mounds are important and are protected.

A great diversity of animal and plant life is found on the island. Various amphibians and reptiles, several mammalian species, including raccoons, skunks, and opossums, and numerous species of birds including roseate spoonbills, herons, ibis, egrets, brown pelicans, osprey, and an occasional bald eagle will inhabit the area. The mangrove swamps mud flats, and marine grass flats fringing Perico Island support a variety of marine life including commercial and game fishing species such as mullet, trout, redfish, and snook, as well as shellfish.

There are over 75 species of plants on Perico Island including red, white, and black mangroves, Australian pines, guavas, live oaks, Brazilian pepper, cattails, prickly pear cactus, and the butterfly orchid.

- **BRADEN RIVER ISLAND AND SHORELINE**

The mouth of the Braden River, an estuary surrounded by coastal wetlands, has large undeveloped and relatively undisturbed areas on both banks and on the islands.

The wetlands contain an assortment of vegetation dominated by red mangroves with scattered white and black mangroves, rushes, and red Brazilian pepper. Numerous marine organisms are present including blue crabs, fiddler crabs, horseshoe crabs, and oysters, among others. The wetland system provides habitat for numerous estuarine and juvenile species of fish such as mullet, redfish, trout, and snook. The extensive network of mangrove island/oyster bars provides habitat and nesting areas for numerous species of birds including roseate spoonbills, ibis, and great blue herons, several species of egrets, as well as sandpipers and brown pelicans.

The western side of the river is largely undeveloped and has over one mile of natural shoreline including the shore of the City-owned River Run Golf Links tract along Sugarhouse Creek. The islands, the largest of which is Pine Island, are completely undeveloped. About one-half of the east shore has been affected by upland development, but the area below the high water mark has been preserved in accordance with state law.

As with Perico Island, the Braden River and its wetlands are an invaluable natural resource. Such tidal wetlands not only reduce water pollution by filtering pollutant-laden runoff, but also influence water quantity by retaining water during dry periods and absorbing it during flooding. Wetlands also

stabilize the shoreline and act as a hurricane buffer. They provide essential breeding, nesting, resting areas for myriad fish and bird species and support a diverse food web extending to terrestrial animals as well. The Braden River and its wetlands also provide recreational and aesthetic benefits to the community.

#### **Historic Resources**

There are two historic shell mounds located on Perico Island. These mounds are buffered from development through stipulations placed on development orders. Manatee County's purchase of the property containing these historic resources provides another level of protection of these historic resources. Historic resources and their protection are addressed in the Historic Preservation Element of this document.

#### **Habitat**

##### **DOMINANT, PROTECTED AND ENDANGERED**

**SPECIES:** Within the City of Bradenton there are the following habitats: pine flatwoods, former agricultural fields and pasture, oak hammocks, coastal wetlands, freshwater aquatic and estuaries/bays. Following are descriptions of the dominant species in these habitats (Table CMC – 1: Protected Species Potentially Found in Manatee County, and Maps CMC – 4: Coastal Vegetation; – 5:

Hotspots for Biological Resources; - 6: Priority Wetlands for Listed Species; - 7: Strategic Habitat Conservation Areas; – 8: Prairie Bird Species Overlap; - 9: Wading Bird Rookeries; – 10: Florida Black Bear Potential Habitat and – 11: Multiple Species Occurrences). The table and maps are located in the Appendices section.

- **PINE FLATWOODS**

The pine flatwoods is the most common habitat in Manatee County and the Tampa Bay Region. Pine flatwoods are dominated by longleaf and slash pine with an understory of saw palmetto, wax myrtle, felterbush, gallberry, greenbriar, wiregrass, broomsedge, and panicum grasses. Live oaks, hickories, and cabbage palms may also be present, but do not dominate.

Dominant, animal species include the oak toad, southern black racer, warblers, hawks, armadillo, skunks, raccoon, opossum, and whitetail deer.

Within the City there is one area of pine flatwoods consisting of 39 acres located at the eastern extreme of the City on the South side of Manatee Ave.

- **FORMER AGRICULTURAL FIELDS AND PASTURE**

In 2004, approximately 42 acres of agricultural land were annexed into the City and to date the acreage remains undeveloped. There are no active pasture lands within the City limits. Plant species in such areas are opportunistic species such as brownsedge, dog fennel, grasses in upland areas and primrose, willow, elderberry and cattail in the low-lying areas.

- **OAK HAMMOCKS**

The oak hammock habitat supports abundant wildlife because of the nesting opportunities it provides. Wildlife includes raccoon, opossum, Eastern white-tailed deer, grey squirrel, and abundant bird species such as warblers, woodpeckers, crows, hawks, egrets, songbirds, and sparrows.

The oak hammock is a type of mixed forest. Such forests are characterized by the following vegetation: live oak, bull bay, southern red cedar, cabbage palm,

Australian pine, pigment hickory, wax myrtle, American beautybush, saw palmetto, breenberry, Cherokee bean and mailberry.

There are few such communities remaining undeveloped within the City. Along the Braden River and along both shores are limited examples. South of Cortez Road in the southwest corner of a 100-acre vacant parcel there is a hammock of about 25 acres.

- **COASTAL COMMUNITIES**

Mangrove swamps, salt flats, salt marshes and estuaries are the coastal communities found in Bradenton. These provide habitat and breeding areas for many types of fish, invertebrates, and birds.

The West Indian Manatee and bald eagle are two endangered species, which use coastal areas as habitat.

**IMPACT OF FUTURE LAND USE**

The 1989 Plan, identified four areas where future development would potentially impact the coastal area. The first area is located in

the northern half of Perico Island, and the second area is located in the western part of Perico Island south of S.R. 64 respectively (see earlier discussion of Perico Island habitat, page 8).

A third area is downtown, and consists of 14-acres of City owned land and a municipal marina where redevelopment will contribute additional storm-water pollution loads to the Manatee River, ~~and possibly aggravate local flooding conditions. A development is proposed on the City's vacant 14-acre waterfront tracts east of 9th Street. An expansion of the municipal marina to 225 slips is underway. Recommendations in this plan in the Future Land Use Element, Neighborhood 1.01 are applicable to this area.~~

The fourth area includes the Braden River Islands, which are not presently accessible but may be proposed for development in the future. Recommendations in this plan in the Future Land Use Element Neighborhood 20.04 are applicable to this area.

The 1998 Plan concluded the impact of these developments being properly designed will

have little if any effect upon living marine resources. The development of the Braden River Islands is unlikely, given access and elevation problems. However, if they are developed, significant environmental damage could occur in this productive estuary if the development is not designed carefully.

To address the impacts of potential development in these areas, policies in the 1998 Plan are were geared toward limiting density and the attendant impacts on natural resources as well as restricting development outside within of the coastal high hazard area.

Since the adoption of the 1998 Plan, two of the four areas have been approved for development. In 2000, the upland portion of the northern half of Perico Island was approved for the development of a marina and 686 condominium units and ancillary facilities. Stipulations of approval addressed mangrove protection and buffering, removal of invasive species, water quality monitoring, and surface water runoff. Further, the Environmental Resource Permit (ERP) required off-site seagrass mitigation. Project implementation has been limited to extending utilities and limited site grading. There has also been some interest from

Manatee County in purchasing the site for recreational purposes.

The 14-acre waterfront tract was leased (99-years) by the City for a mixed use development consisting of 148 apartments for senior citizens, 247 condominiums, 300 seat theater, 40,000 square feet of retail, 62,000 square feet of office, 115 room hotel and a 21,000 square foot cultural/office facility. To date, the site has been developed with condominiums and a partially constructed community theater. As predicted in the 1998 Plan, Plan policies mitigated the projects impacts on the natural environment through stipulations placed on the “development order”. When taken in conjunction with other state and federal permit requirements (e.g. Environmental Resource Permit and National Pollutant Discharge Elimination System Permit) the project, while not fully developed, has had an insignificant effect on the natural and built environment.

In 2001, the City purchased (through a grant) Braden River Islands and subsequently transferred the land to Southwest Florida Water Management District. The property is currently designated “Conservation” on the City’s Future Land Use Map.

In 2008, the upland portion of the second Perico Island area was purchased by the County for parkland purposes and has also been designated as “Conservation” on the City’s Future Land Use Map.

- **PUBLIC FACILITIES**

Public facilities called for in this Plan will have no known adverse effects upon water quality, circulation patterns, or accumulation of contaminants in sediments. The proposed expansion of the City’s reservoir (Evers Reservoir) and long-term improvements, described in the JEA study (May, 2009) will supply the City’s water needs during this planning period (2010 - 2030). Testing of recently discharged water from the upgraded sewer treatment plant has shown had a significant improvement in water quality and therefore, imparts a positive effect on water quality in the Manatee River.

- **PROJECTED DEVELOPMENT**

Projected development will have no effect on historic resources and sites except for downtown redevelopment, which could entail some demolition of historic structures. However, the historic tax incentives of the locally ordinated districts have had and are

expected to continue to have a positive effect on the preservation and renovation of historic structures. Stipulations on future development of the approved residential project on the western peninsula of Perico Island will be required to protection of the historic shell mound on that site.

Properties in the evacuation zone for a Category 1 hurricane which are also designated as a velocity zone or lands below the two-foot contour line shall conform to the construction standards in Section(s) ~~400.C.1.b.(4.)~~(c) 404.C and 404.D, respectively of the Land Use and Development Regulations. Also, new development or redevelopment, which increases densities within the evacuation zone (Map CMC – 2), shall maintain the evacuation times established in the goals, objectives and policies section of this element.

#### **Natural Hazards**

The City, through the “technical/working group” has worked with Manatee County in preparing the *Draft Local Mitigation Strategy for Manatee County (February 2009)*. The purpose of this plan is to identify and assess the risk of natural and man caused hazards to the county/cities and to evaluate the effects of these hazards and identify hazard

mitigation actions to minimize the impact of these events on county/city residents and property. The adoption of this Plan by the County is scheduled for July/August 2009 and it is proposed for City adoption in October 2009. Although in draft form, much of the base line data is taken from the previous LMS and is incorporated in the data and analysis section.

The draft Plan indicates that the City of Bradenton has a “high risk” vulnerability to hurricane/coastal storms, severe storms, and floods/severe rains (see Table CMC – 2: Natural and Manmade Hazard Vulnerability). This due in part to geographic location however, coastal topography contributes to localized flooding from the overflow of the Manatee and Braden Rivers and their smaller tributaries (Wares Creek), storm surge or inadequate drainage. Consequently, the City has experienced substantial flooding not only as a result of tropical storms and hurricanes, but as a result of “normal” summer and winter storms.

From 1960 to 2000 there have been 18 reported major weather events in Manatee County of which 15 have led to flood and water related damage to structures within the City. Since 2000 there have been 11

reported weather events in the County; however, there was no reported damage within the City (Table CMC - 3: Appendix B *Historical Hazard Events, Manatee County Local Mitigation Strategy, February 2009, DRAFT*).

The City has been participating in the National Flood Insurance Program (NFIP) since 1968. As discussed in the following sections (Emergency Management Plan and Post-Disaster Redevelopment) the City has assiduously worked on a comprehensive approach to reducing the impacts of natural hazard events. The City through local land use planning, zoning, building codes, and acquisition and/or relocation of flood prone buildings has achieved a FEMA Community Rating of 6 (1835 points).

The City has also participated in FEMA’s “Repetitive Loss Program” since 2002. Since 2002 the City has received about \$1.95 million. This money has been used to flood-proof eight (8) residential units the acquisition of one flood-prone property. Two other residential properties are pending approval of their application.

Since the 1998 Plan, the City, in keeping with House Bill 1359 and changes in Chapter

163.3178, F.S., has redefined the Coastal High Hazard Area (CHHA) by definition and mapping. Further, the City revised and adopted policies which prohibited increases of density in the CHHA, and promoted maintenance or reduction of evacuation times.

### **Emergency Management Plan**

In 2008 the City of Bradenton adopted its Emergency Management Plan. The Plan was developed using Manatee County's Comprehensive Emergency Management Plan (EMP) as its guiding document and incorporated by reference coordinating elements [e.g. pre-disaster planning, use of national incident management system (NIMS) and coordinated use of resources] of the two plans.

The purpose of the Plan was to establish a uniform policy and procedure to ensure all occupants of structures within the City of Bradenton are prepared for emergencies and the execution of a safe and efficient evacuation of a facility during an emergency.

The Plan addresses a number of emergency situations (e.g. lightning, wind, tornadoes, and bomb threat) however, pre- and post disaster strategies for flooding and hurricanes/tropical storms are of particular interest to this element. Strategies for appropriate pre-disaster planning, inter-governmental coordination and incident management are reflected in the objectives and policies of the Conservation and Coastal Management Element. Also, The City's Floodplain Management Plan, and Flood Prevention ordinance (Section 404.C, Land Use Regulations) implement the goals, objectives and policies protecting residents and property from flooding

### **Post-Disaster Redevelopment**

In the event of a devastating hurricane or other hazard, which causes extensive damage in the coastal areas of Bradenton, redevelopment would be guided by the policies and strategies in this the City's Comprehensive Plan. These policies reflect the post-disaster redevelopment and local

mitigation strategies found within the City's EMP (adopted July 2008) and Manatee County's DRAFT Local Mitigation Strategy, the development of which the City of Bradenton was an active participant. The Plan policies include adherence to the local flood ordinance, (which is based upon Federal Emergency Management Agency regulations), a prohibition of development or location of public infrastructure in the coastal high hazard areas below the 2-foot contour line, the limiting of density in the identified coastal high hazard area, the evacuation of City residents based on storm event and the processes and procedures for post-incident assessment, resident return and redevelopment.

<b>Table CMC – 2: Natural and Manmade Hazard Vulnerability</b>	
<b><u>Natural and Manmade Hazards</u></b>	<b><u>City of Bradenton Vulnerability*</u></b>
<u>Hurricane/Coastal Storms</u>	<u>H*</u>
<u>Severe Storms</u>	<u>H</u>
<u>Tornadoes</u>	<u>M</u>
<u>Floods/Severe Rain Events</u>	<u>H</u>
<u>Coastal and Riverine Erosion</u>	<u>M</u>
<u>Winter Storms/Freezes</u>	<u>M/L</u>
<u>Droughts/Heat Wave</u>	<u>M</u>
<u>Sinkholes/Landslides</u>	<u>L</u>
<u>Wildfires</u>	<u>L</u>
<u>Earthquakes</u>	<u>N</u>
<u>Tsunamis</u>	<u>N</u>
<u>Volcanoes</u>	<u>N</u>
<u>Hazardous Materials</u>	<u>M</u>
<u>Dam/Levee Failures</u>	<u>L</u>
<u>Port Vessel Collision or Open Water Hazardous Material Spill</u>	<u>M/L</u>
<u>Terrorism/Homeland Security</u>	<u>L</u>
<u>Utility Failure/Power Outages</u>	<u>L</u>

Source: Manatee County Local Mitigation Strategy, February 2009, DRAFT

\*Vulnerability: **H** – High; **M** – Medium; **L** – Low

<b>Table CMC – 3: Historical hazard Event</b>		
<b><u>DATE</u></b>	<b><u>EVENT</u></b>	<b><u>DAMAGE</u></b>
<u>Sept. 1960</u>	Hurricane Donna	<u>Damage not reported</u>
<u>Sept. 22-23, 1979</u>	Flood Event, heavy rain	<u>Damage not reported</u>
<u>June 17 &amp; 18, 1982</u>	No name storm (100 year)	<u>No City damage</u>
<u>August 30 – Sept. 1, 1985</u>	Hurricane Elena	<u>City of Bradenton - \$61,000</u>
<u>Sept. 5 – 10, 1988</u>	Flooding	<u>City of Bradenton - \$357,507.48</u>
<u>Nov. 1988</u>	Tropical Storm Keith	<u>No reported City damage</u>
<u>Oct. 10 – 12, 1990</u>	Tropical Storm Marco	<u>City of Bradenton - \$186,358.11</u>
<u>May – 1991</u>	Flooding	<u>No City reported damage</u>
<u>June 24 – 25, 1992</u>	Flooding	<u>City of Bradenton - \$25,375.17</u>
<u>March 12 – 14, 1993</u>	Winter Storm	<u>City of Bradenton - \$128,027.80</u>
<u>Sept. 28, 1994</u>	Minor Flooding	<u>No reported City damage</u>
<u>Nov. 2, 1995</u>	Flooding	<u>No reported City damage</u>
<u>Oct. 9, 1996</u>	Tropical Storm Josephine	<u>County-wide - \$4 million</u>
<u>June 20, 1996</u>	Flooding	<u>No reported City damage</u>
<u>April 27, 1997</u>	Flooding	<u>No reported City damage</u>
<u>Sept. 28, 1997</u>	Minor Flooding	<u>No reported City damage</u>
<u>Oct. 31, 1997–Sept. 30, 1998</u>	El Nino	<u>City of Bradenton - \$109,921.99</u>
<u>Sept. 23, 1998</u>	Hurricane Georges	<u>City of Bradenton - \$50,812.25</u>
<u>July 15, 2000</u>	Anna Maria Flood	<u>No reported City damage</u>
<u>July 24, 2000</u>	Minor Flooding	<u>No reported City damage</u>
<u>July 28, 2000</u>	Power Failure	<u>No reported City damage</u>
<u>Sept. 16, 2000</u>	Hurricane Gordan	<u>No reported City damage</u>
<u>Sept. 14, 2001</u>	Tropical Storm Gabrielle	<u>County-wide - \$3.3 million</u>
<u>Dec. 31, 2002</u>	Flooding	<u>No reported City damage</u>
<u>June – August 2003</u>	<u>Rainfall Events</u>	<u>County-wide \$1.2 million</u>

<b>Table CMC – 3: Historical hazard Event – cont'd</b>		
<b><u>DATE</u></b>	<b><u>EVENT</u></b>	<b><u>DAMAGE</u></b>
<u>August 2003</u>	<u>Manatee River Dam</u>	<u>No reported City damage</u>
<u>August 2004</u>	<u>Hurricane Charlie</u>	<u>No reported City damage</u>
<u>Sept. 2004</u>	<u>Hurricane Jeanne</u>	<u>County-wide \$17.73 million</u>
<u>July 2005</u>	<u>Hurricane Dennis</u>	<u>No reported City damage</u>

*Source: Manatee County Local Mitigation Strategy, February 2009, DRAFT*

# Appendix

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*The following table(s) and map(s) are referenced in the body of the Data and Analysis and presented herein.*

**TABLE CMC – 1: PROTECTED SPIES POTENTIALLY FOUND IN  
MANATEE COUNTY**

**Map CMC – 5: Hotspots for Biological  
Resources**

**Map CMC – 6: Priority Wetlands for Listed  
Species**

**Map CMC – 7: Strategic Habitat Conservation  
Areas**

**Map CMC – 8: Prairie Bird Species Overlap**

**Map CMC – 9: Wading Bird Rookeries**

**Map CMC – 10: Florida Black Bear Potential  
Habitat**

**Map CMC – 11: Multiple Species Occurrences**

**Table CMC – 1: PROTECTED SPECIES POTENTIALLY FOUND IN MANATEE COUNTY**

SCIENTIFIC NAME	COMMON NAME	Designated Status	
		FGFWFC	USFWS
<b><u>Fish:</u></b>			
<i>Centropomus undecimalis</i>	Common Snook	SSC	
<b><u>Amphibians &amp; Reptiles:</u></b>			
<i>Alligator mississippiensis</i>	American Alligator	SSC	T(S/A)
<i>Caretta caretta caretta</i>	Atlantic Loggerhead Turtle	T	T
<i>Chelonia mydas mydas</i>	Atlantic Green Turtle	E	E
<i>Chrysemys (=Pseudemys) concinna suwanniensis</i>	Suwannee Cooter	SSC	UR5
<i>Dermochelys coriacea</i>	Leatherback Turtle	E	E
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	T	T
<i>Gopherus polyphemus</i>	Gopher Tortoise	SSC	UR2
<i>Pituophis melanoleucus muqitus</i>	Florida Pine Snake	SSC	UR2
<i>Rana areolata</i>	Gopher Frog	SSC	UR2
<i>Eretmochelys imbricata imbricata</i>	Atlantic Hawkbill Turtle	E	E
<i>Lepidochelys kempi</i>	Atlantic Ridley Turtle	E	E
<b><u>Birds:</u></b>			
<i>Ajaia ajaja</i>	Roseate Spoonbill	SSC	
<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	E	E
<i>Aphelocoma citerulescens coerulescens</i>	Florida Scrub Jay	T	T
<i>Aramus quararuna</i>	Limpkin	SSC	
<i>Athene cunicularia</i>	Burrowing Owl	SSC	
<i>Egretta caerulea</i>	Little Blue Heron	SSC	
<i>Egretta rufescens</i>	Reddish Egret	SSC	
<i>Egretta thula</i>	Snowy Egret	SSC	
<i>Egretta tricolor</i>	Tri-colored Heron; Louisiana Heron	SSC	
<i>Falco sparverius paulus</i>	Southeastern Kestrel	T	UR2
<i>Grus canadensis pratensis</i>	Florida sandhill crane	T	
<i>Haliaeetus leucocephalus</i>	Bald eagle	T	E
<i>Mycteria americana</i>	Wood Stork	E	E
<i>Pandion haliaetus</i>	Osprey	SSC	
<i>Pelecanus occidentalis</i>	Brown pelican	SSC	
<i>Charadrius alexandrinus tenuirostris</i>	Southeastern snowy plover	T	UR2
<i>Haematopus palliatus</i>	American oystercatcher	T	
<i>Sterna antillarum</i>	Least tern	T	
<i>Caracara cheriway auduboni</i>	Caracara	T	

**Table CMC – 1: PROTECTED SPECIES POTENTIALLY FOUND IN MANATEE COUNTY**

SCIENTIFIC NAME	COMMON NAME	Designated Status	
		FGFWFC	USFWS
<b><u>Mammals:</u></b>			
<i>Peromyscus floridanus</i>	Florida mouse	SSC	UR2
<i>Sciurus nigerr shermani</i>	Sherman’s fox squirrel	SSC	UR2
<i>Sorex longirostris eionis</i>	Homosassa shrew	SSC	UR2
<i>Trichechus manatus latirostris</i>	West Indian manatee	E	E
<b><u>Plants:</u></b>			
<i>Acrostichum aureum</i>	Golden leather fern	E	
<i>Acrostichum danaeifolium</i>	Giant leather fern	T	
<i>Asclepias curtissii</i>	Curtiss milkweed	T	
<i>Bonamia grandiflora</i>	Florida bonamia; large-flowered bonamia	E	T
<i>Calopogon multiflorus</i>	Many-flowered grass pink	T	
<i>Calopogon tuberosus</i>	Grass pink (unnamed)	T	
<i>Chrysopsis floridana</i>	Florida golden aster	E	E
<i>Drosera Intermedla</i>	Water sundew	T	
<i>Encyclia tampensis</i>	Butterfly orchid	T	
<i>Eulophia alta</i>	Wild coco; ground coco	T	
<i>Garberia Teterophylla</i>	Garberia	T	
<i>Gossypium hirsutum</i>	Wild cotton	E	
<i>Habenaria</i>	Odontopetala - Rein orchid (unnamed)	T	
<i>Habenaria repens</i>	Water spider orchid; creeping orchid	T	
<i>Harrisella filiformis</i>	Orchid (unnamed)	T	
<i>Ilex ambigua</i>	Carolina holly; sandholly	T	
<i>Ilex decidua</i>	Possumhaw	T	
<i>Isoetes flaccida</i>	Florida quillwort	T	UR5
<i>Lilium catesbaei</i>	Catesby lily	T	
<i>Lycopodium alopecuroides</i>	Foxtail club moss	T	
<i>Lycopodium appressum</i>	Southern club moss	T	
<i>Lycopodium cernuum</i>	Nodding club moss	T	
<i>Malaxis spicata</i>	Florida malaxis; Florida adder's mouth	T	
<i>Nephrolepis biserrata</i>	Boston fern (unnamed)	T	
<i>Ophioglossum palmatrum</i>	Hand adder's tongue fern	E	UR5
<i>Phlebodium aureum</i>	Golden polypody	T	
<i>Platanthera ciliaris</i>	Yellow fringed orchid	T	
<i>Polyqala ruqelii</i>	Big yellow milkwort	T	
<i>Polypodium Ptilodon</i>	Polypody fern (unnamed)	T	
<i>Psilotum Nudum</i>	Whisk fern; fork fern	T	

**Table CMC – 1: PROTECTED SPECIES POTENTIALLY FOUND IN MANATEE COUNTY**

SCIENTIFIC NAME	COMMON NAME	Designated Status	
		FGFWFC	USFWS
<b>Plants:</b>			
Pteris tripartita	Giant brake fern	T	
Pteris Vittata	Brake fern (unnamed)	T	
Rhododendron viscosum	Swamp Honeysuckle	T	
Rudbeckia nitida	St. John's susan	E	UR2
Sabal etonia	Scrub palmetto	T	
Sabal minor	Dwarf palmetto; bluestem	T	
Scaevola plumieri	Inkberry	T	
Selaqinella arenicola	Sand spikemoss	T	
Spiranthes precox	Giant ladies' tresses; grass-leaved ladies' tresses	T	
Spiranthes vernalis	Spring ladies' tresses	T	
Thelypteris dentata	Downy shield fern	T	
Thelypteris Hispidula	Aspidium fern (unnamed)	T	
Thelypteris Interrupta	Aspidium fern (unnamed)	T	
Thelypteris kunthii	Aspidium fern (unnamed)	T	
Thelypteris palustris	Marsh fern	T	
Tillandsia setacea	Wild pine; air plant (unnamed)	T	
Vittaria lineata	Shoestring fern	T	
Woodwardia areolata	Netted chain fern	T	
Zephyranthes simpsonii	Simpson zephyr lily	E	
Zephyranthes (all white species)	Rain lilies	T	

**NOTE:** The above list does not preclude the possibility that other protected species may exist within Manatee County.

**INDEX:**

- **E** Endangered
- **T** Threatened
- **SSC** Species of Special Concern
- **UR2** Under review for listing, but substantial evidence of biological vulnerability and/or threat is lacking.
- **UR5** Still formally under review for listing, but no longer are considered for listing because recent information indicates species is more widespread or abundant than previously believed.
- **FGFWFC** Florida Game and Freshwater Fish Commission
- **USFWS** United States Fish and Wildlife Services
- **FDA** Florida Department of Agriculture and Consumer Services

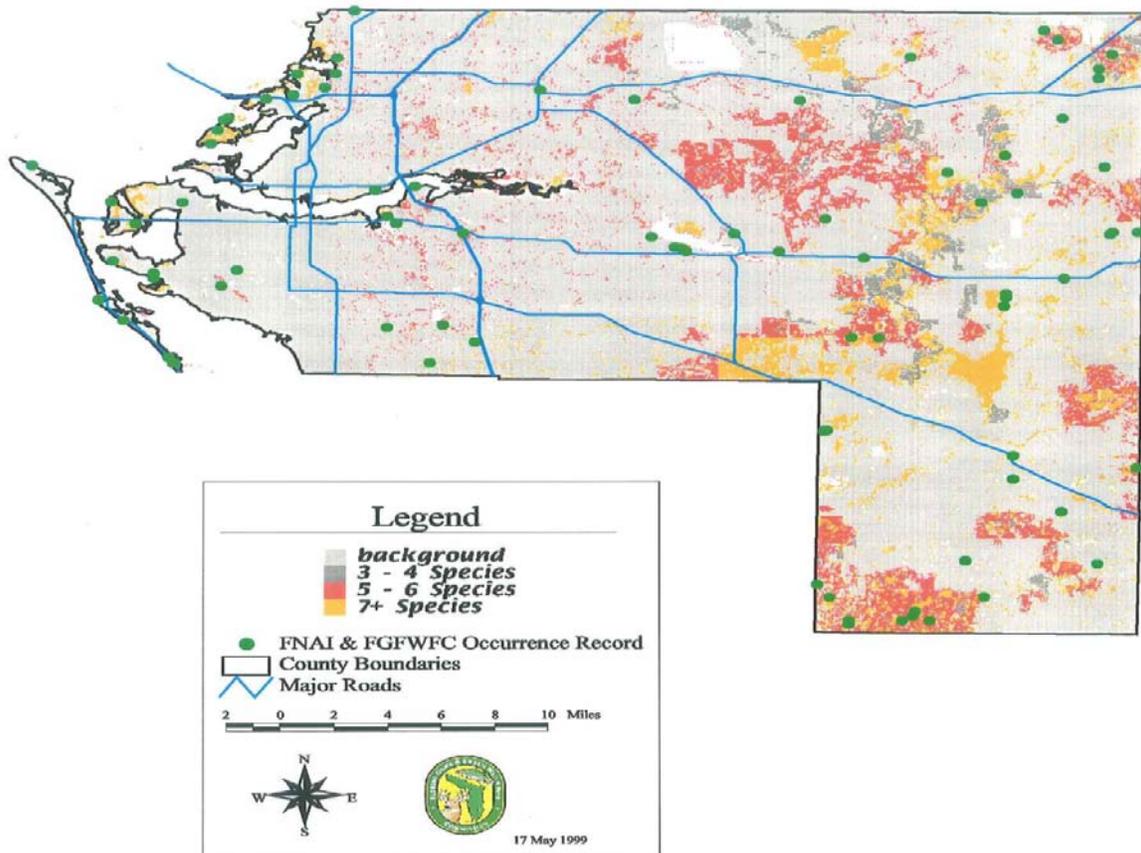
**SOURCES:**

- 1) Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida. July, 1987, FGFWFC.

**SOURCES: continued**

- 2) R. Wunderlin, Checklist of the Vascular Plants of the Florida Suncoast, 1984.
- 3) Florida Department of Agriculture and Consumer Services, Section 581.185-681.187, F.S.
- 4) United States Fish and Wildlife Service - 50 CFR 17.11-12.

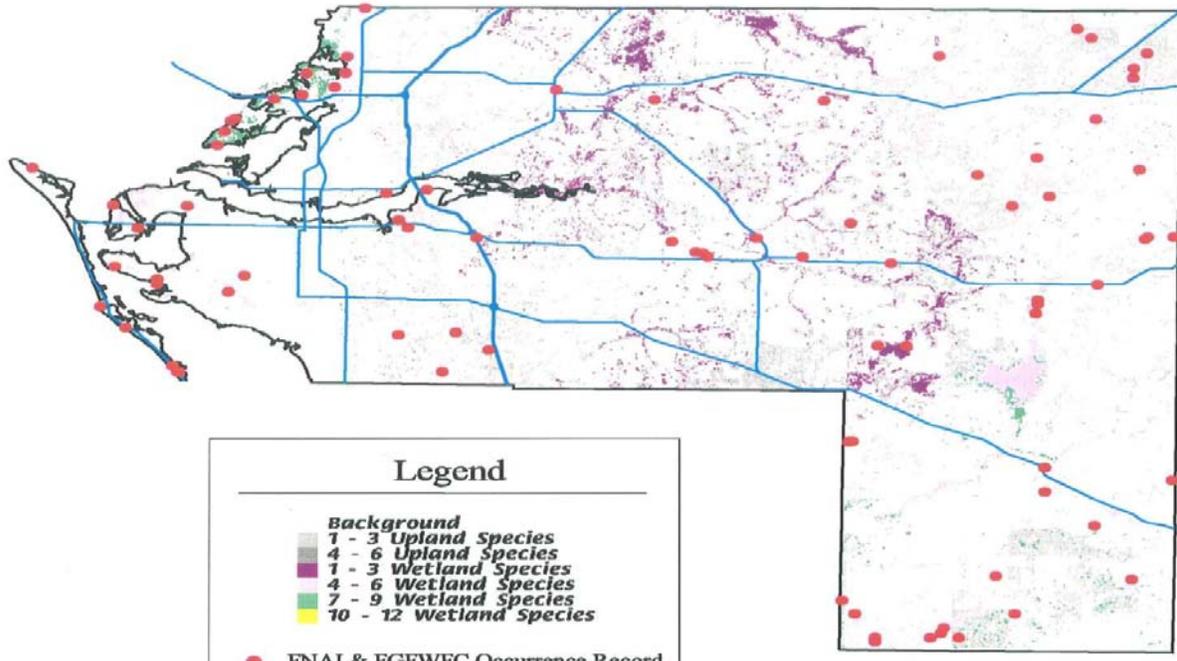
# *Manatee County Florida Hotspots of Biological Resources*



Source: Florida Game and Freshwater Fish Commission, 2009

**Map CMC – 5: Hotspots of Biological Resources**

# *Manatee County Florida Priority Wetlands For Listed Species*



**Legend**

*Background*

- 1 - 3 Upland Species
- 4 - 6 Upland Species
- 1 - 3 Wetland Species
- 4 - 6 Wetland Species
- 7 - 9 Wetland Species
- 10 - 12 Wetland Species

● FNAI & FGFWFC Occurrence Record

□ County Boundaries

▬ Major Roads

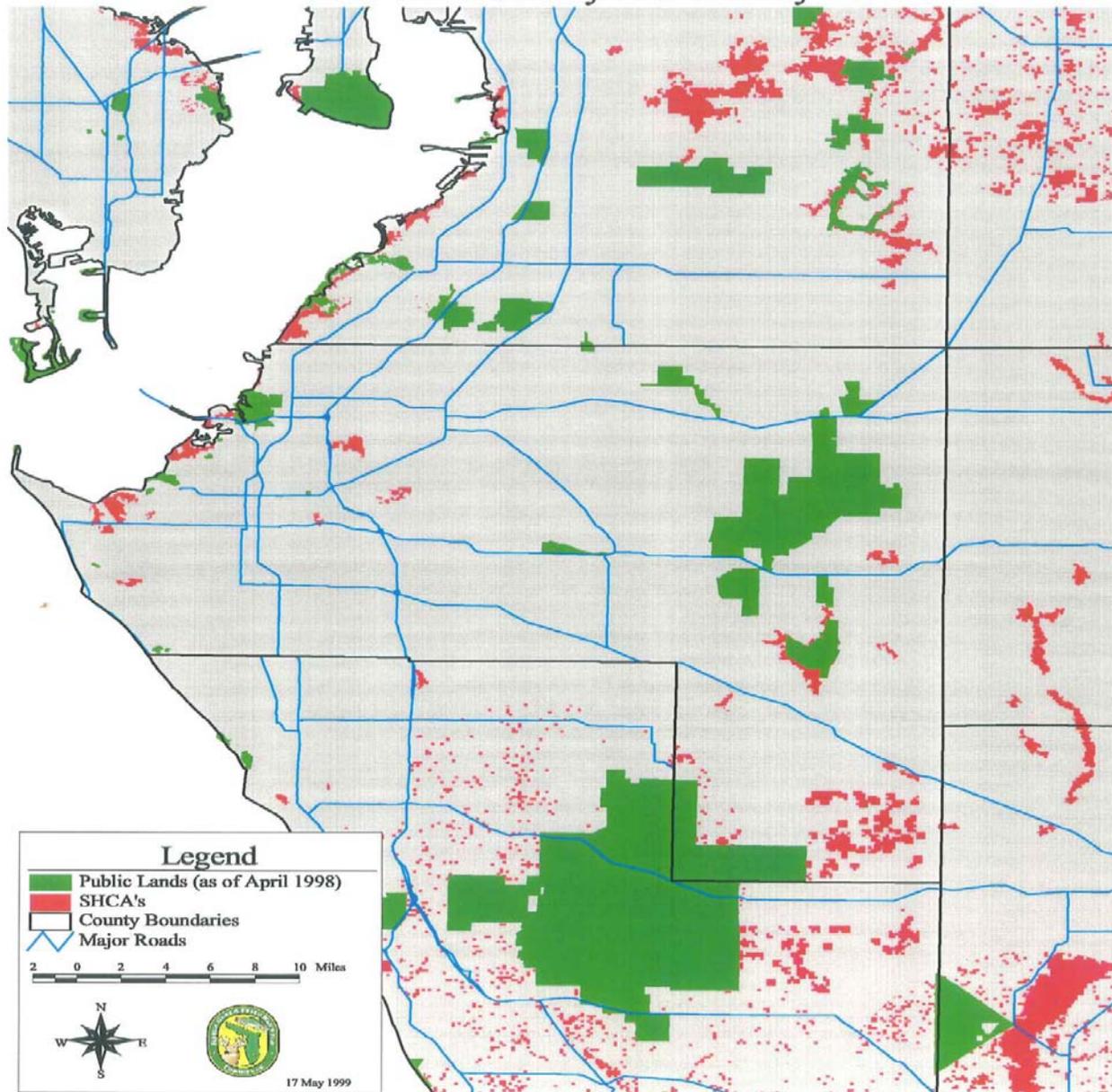
2 0 2 4 6 8 10 Miles

17 May 1999

Source: Florida Game and Freshwater Fish Commission, 2009

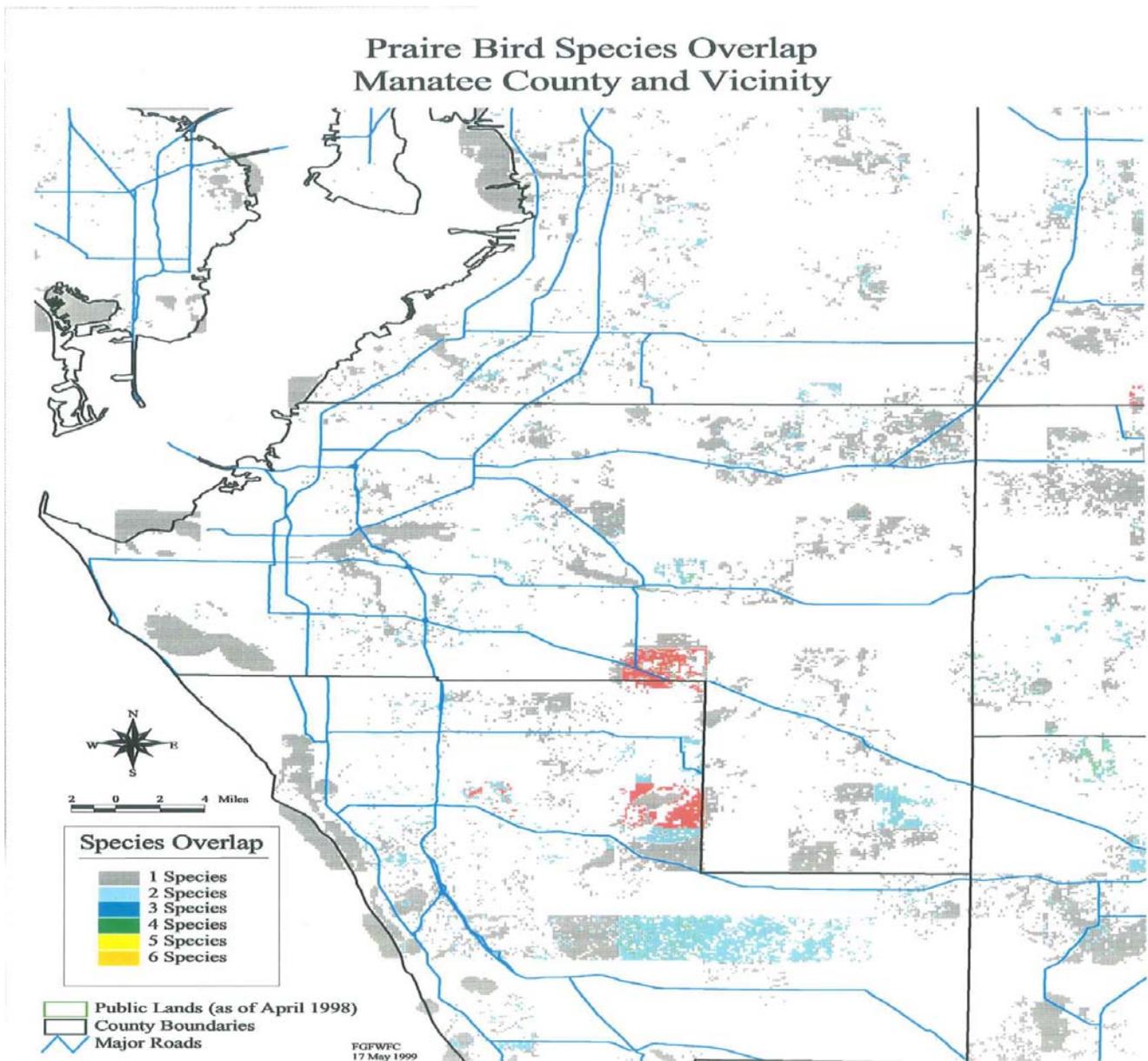
**Map CMC – 6: Priority Wetlands for Listed Species**

## Strategic Habitat Conservation Areas Manatee County and Vicinity



Source: Florida Game and Freshwater Fish Commission, 2009

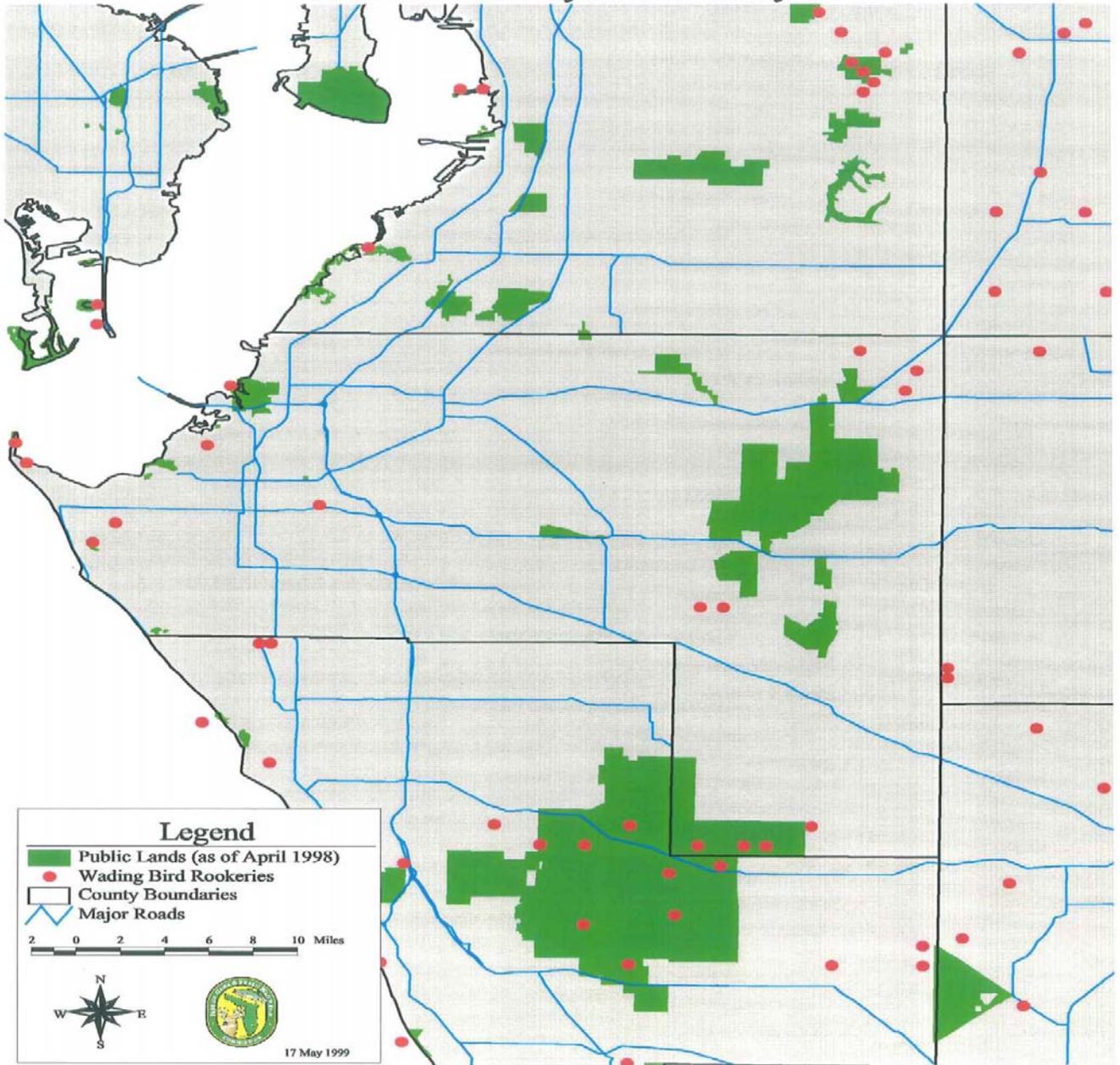
**Map CMC – 7: Strategic Habitat Conservation Areas**



Source: Florida Game and Freshwater Fish Commission, 2009

**Map CMC – 8: Prairies Bird Species Overlap**

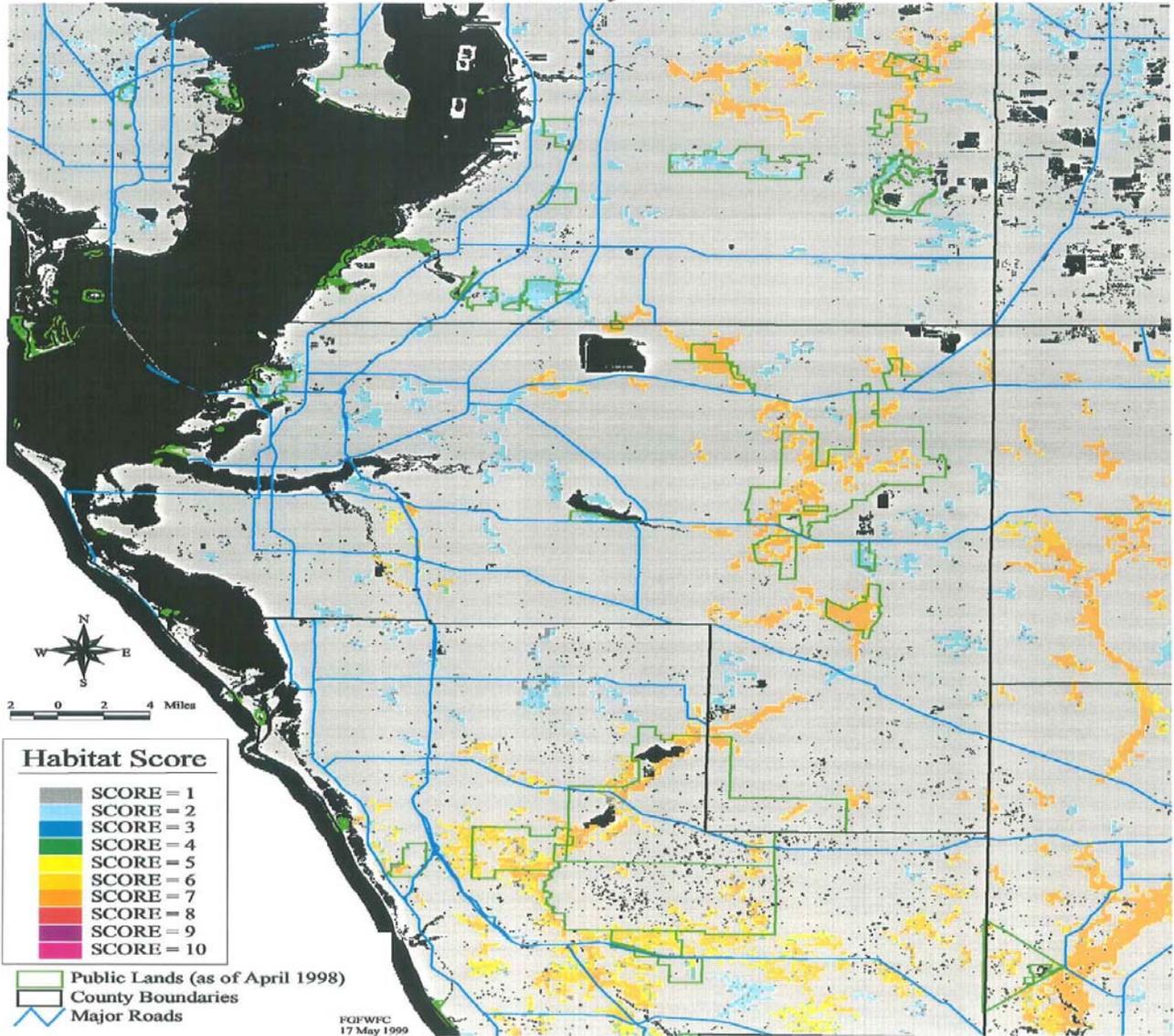
# Wading Bird Rookeries Manatee County and Vicinity



Source: Florida Game and Freshwater Fish Commission, 2009

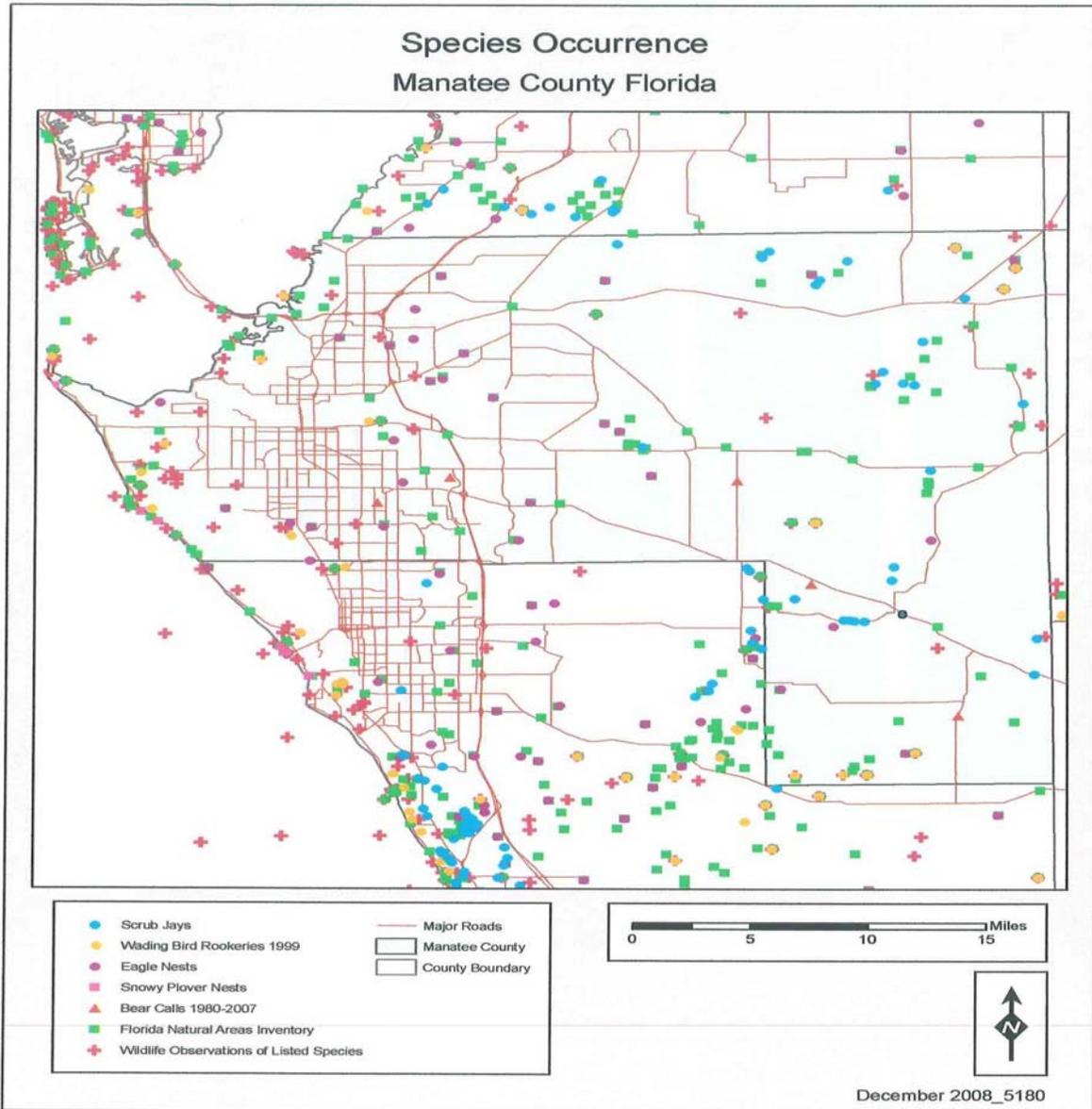
**Map CMC – 9: Wading Bird Rookeries**

## Florida Black Bear Potential Habitat Manatee County and Vicinity



Source: Florida Game and Freshwater Fish Commission, 2009

**Map CMC – 10: Florida Black Bear Potential Habitat**



Source: Florida Game and Freshwater Fish Commission, 2009

**Map CMC – 11: Species Occurrence**