Chatham County, GA

NATURAL FLOODPLAIN FUNCTIONS PLAN

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2024

TABLES

FIGURES

1 INTRODUCTION

Floodplains are areas adjacent to rivers, ponds, lakes, and oceans that are periodically flooded at different points in time. Floodplains are hydrologically important, environmentally sensitive, and ecologically productive areas that perform many natural functions. They contain both cultural and natural resources that are of great value to society. Flooding occurs naturally along every river and coastal area. Flood waters can carry nutrient-rich sediments which contribute to a fertile environment for vegetation. Floodplains are beneficial for wildlife by creating a variety of habitats for fish and other animals. In addition, floodplains are important because of storage and conveyance, protection of water quality, and recharge of groundwater.

These natural processes influence human activities and are, in turn, affected by our activities. They represent important natural functions and beneficial resources and provide both opportunities and limitations for particular uses and activities. Traditionally, while much attention has been focused on the hazards associated with flooding and floodplains, less attention has been directed toward the natural and cultural resources of floodplains or to evaluation of the full social and economic returns from floodplain use. The natural and cultural values associated with floodplain resources can be categorized in a variety of ways. Floodplain values can be thought of in terms of environmental quality values such as fish and wildlife habitat and water quality. They can also be thought of in terms of socioeconomic values, which are more easily understood by some because these values provide either dollar savings (related to flood and storm damage protection, for example) or financial profit (related to increased production from floodplain use). A document initially prepared by the U.S. Water Resources Council in 1979 titled A Unified National Program for Floodplain Management divides riverine and coastal floodplain resources into three categories: 1) water resources, 2) living resources (habitat), and 3) cultural resources.

Humans have always been attracted to floodplains because of their many sustaining attributes; however, human development and industrialization take a toll on the natural functions of the floodplains. Development in the floodplains causes decreases in water quality, loss of wildlife habitats, and an increase in severity and frequency of flood losses. In many cases, the communities responsible for decisions about growth, development, and flood protection do not understand the natural processes that take place in riverine and coastal areas and lack adequate tools to deal with the flooding issues they face. Floodplain management decisions often are made outside of the context of regional or watershed-level planning and without appreciation of the complexities of the water-based ecosystem.

Understanding the importance of maintaining the natural functions of floodplains can lead to better floodplain management approaches that will better protect the natural and beneficial functions of floodplains. The goal of this plan is to aid in the understanding of floodplain natural resources and functions and to examine strategies and tools to help protect, preserve and/or restore these resources.

Some benefits of natural floodplains or relatively undisturbed floodplains can include reduced or moderated flooding conditions, reduced erosion and sedimentation, reduced or lessened waves or wave action from coastal storms, better water quality including the recharge of groundwater and provision of fish and wildlife habitat to name a few.

1.1 PURPOSE AND BACKGROUND

Chatham County is an active participant in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) and is currently a Class 5 community within the program. The CRS program recognizes and encourages community floodplain management activities that exceed the minimum standards defined by the NFIP. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that (1) reduce flood losses, (2) facilitate accurate

insurance ratings, and (3) promote the awareness of flood insurance. Through the County's participation in the NFIP and a Class 5 rating with the CRS, flood insurance policyholders in the County are entitled to a 25% discount on their flood insurance premiums.

The CRS encourages communities to implement effective floodplain management activities, including those intended to improve natural floodplain functions. The current definition of "natural floodplain functions" in the CRS Glossary (Section 120) reads:

a) The functions associated with the natural or relatively undisturbed floodplain that moderate flooding, retain flood waters, reduce erosion and sedimentation, and mitigate the effects of waves and storm surges from storms; and
b) Other significant beneficial functions, which include maintenance of water quality, recharge of groundwater, and provision of fish and wildlife habitat.

The CRS Program is primarily concerned with reducing flood losses to insurable buildings and there are several reasons why protecting natural floodplain functions supports that goal. Studies show that natural floodplain features can be more effective at controlling or attenuating flooding and can be less expensive over the long run than traditional human-made flood control structures. Therefore, there is a direct, supportive relationship between protecting natural floodplain functions and the CRS's goal of reducing flood losses to insurable buildings. Natural floodplain functions are not limited to locations in the mapped floodplain. Floodwaters come from the watershed and there are many watershed features and functions that affect flooding and water quality.

The goal of this plan is to aid in the understanding of floodplain natural resources and functions and to examine strategies and tools to protect, preserve and/or restore these resources. This plan covers the unincorporated areas of Chatham County, including the special flood hazard areas, but does not include incorporated areas within the County.

1.2 NATURAL AND BENEFICIAL FLOODPLAIN RESOURCES AND FUNCTIONS

Undeveloped floodplain land provides many natural resources and functions of considerable economic, social, and environmental value. A fairly well accepted (but not necessarily comprehensive) list and descriptions are included within this section. The resources and functions have been loosely grouped into two categories, and the categories have been labeled according to the primary recipient of the benefit or its relationship to a larger system. "Water resources" include those resources and functions of floodplains that are part of or provide a benefit to the hydrologic cycles on the earth's surface and sub-surface, including natural moderation of floods, water quality maintenance, and groundwater recharge. "Biological resources" are floodplain resources and functions that benefit large and diverse populations of plants and animals.

Table 1.1 – Benefits of Natural Floodplains

Water Resources	
Natural Flood and Erosion Control	Provide flood storage and conveyance Reduce flood velocities Reduce peak flows Reduce sedimentation
Water Quality Maintenance	Filter nutrients and impurities from runoff Process organic wastes Moderate temperature fluctuations
Groundwater Recharge	Promote infiltration and aquifer recharge Reduce frequency and duration of low surface flows Helps to reduce saltwater intrusion

Biological Resources	
Biological Productivity	Rich alluvial soils promote vegetative growth Maintain biodiversity Maintain integrity of ecosystems
Fish and Wildlife Habitats	Provide breeding and feeding grounds Create and enhance waterfowl habitat Protect habitats for rare and endangered species

Source: A Unified National Program for Floodplain Management, 1994

1.2.1 WATER RESOURCES

NATURAL FLOOD STORAGE AND EROSION CONTROL

The characteristics of the floodplain and of flooding are essentially interdependent. Floods shape floodplain topography and soils and influence ecology. In turn, the physical characteristics of the floodplain shape flood flows. Floodplains provide a broad area to spread out and temporarily store stormwater from rain events. This reduces flood peaks and velocities and the potential for erosion. Flood storage is particularly important in urbanized areas where even small floods resulting from heavy rainstorms can cause severe flood damage. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Vegetation also reduces shoreline erosion. In coastal areas, beaches, bars, dunes, and wetlands act as natural barriers to dissipate waves and protect back-lying areas from flooding and erosion.

WATER QUALITY MAINTENANCE

Floodplains serve important functions in protecting water quality. Water that runs off quickly over the surface, as over a barren floodplain, is capable of carrying with it large amounts of sediment and debris to the main water body. Vegetated floodplains have important filtering capabilities for slowing and intercepting surface-water runoff from higher dry land before the runoff reaches open water. As the runoff water passes through, the floodplains retain excess nutrients and some pollutants, and reduce sediment that would clog waterways and affect fish and amphibian egg development. Another example of water quality maintenance is the beneficial shading effect of riparian (streambank) vegetation, which helps to avoid temperature stress on natural biota. Natural floodplain systems can further serve to reduce or avoid the environmental and economic costs associated with wastewater treatment and water quality maintenance.

GROUNDWATER RECHARGE

In addition to improving water quality through filtering, some floodplains maintain stream flow during dry periods, and many replenish groundwater. The slowing of runoff across the floodplain allows additional time for the runoff to infiltrate and recharge available groundwater aquifers, when there is unused storage capacity. The slowing of runoff provides the additional benefit of natural purification of water as local runoff or overbank floodwater infiltrates through the floodplain alluvium. Natural purification comes from filtration, ion exchange, adsorption, absorption, and aerobic and anaerobic biological action.

1.2.2 BIOLOGICAL RESOURCES

BIOLOGICAL PRODUCTIVITY

The nation's coastal and riverine floodplains support large and diverse populations of plants and animals. In addition, they provide habitat and critical sources of energy and nutrients for organisms in adjacent and downstream terrestrial and aquatic ecosystems. The wide variety of plants and animals supported directly or indirectly by floodplains constitutes an extremely valuable, renewable resource important to economic welfare, enjoyment, and physical well-being. The floodplain is biologically important because it is the place where land and water meet and the elements of both terrestrial and aquatic ecosystems mix. Riparian

floodplain ecosystems are distinct associations of soil, flora and fauna occurring along a river, stream, or other body of water and depend for survival upon high water tables and occasional flooding.

FISH AND WILDLIFE HABITATS

Due to the abundance of water and vegetation, floodplains provide wetland, riparian and other habitat (including shelter and food sources) for large and diverse populations of fish and wildlife species. More than one-third of the United States' threatened and endangered species live only in wetlands, and nearly half use wetlands at some point in their lives. Many other animals and plants depend on wetlands for survival.

Estuarine and marine fish and shellfish, various birds, and certain mammals must have coastal wetlands to survive. Most commercial and game fish breed and raise their young in coastal marshes and estuaries. Menhaden, flounder, sea trout, spot, croaker, and striped bass are among the more familiar fish that depend on coastal wetlands. Shrimp, oysters, clams, and blue and Dungeness crabs likewise need these wetlands for food, shelter, and breeding grounds.

For many animals and plants, like wood ducks, muskrat, cattails, and swamp rose, inland wetlands are the only places they can live. Beaver may actually create their own wetlands. For others, such as striped bass, peregrine falcon, otter, black bear, raccoon, and deer, wetlands provide important food, water, or shelter. Many of the U.S. breeding bird populations-- including ducks, geese, woodpeckers, hawks, wading birds, and many song-birds-- feed, nest, and raise their young in wetlands. Migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds for at least part of the year. Indeed, an international agreement to protect wetlands of international importance was developed because some species of migratory birds are completely dependent on certain wetlands and would become extinct if those wetlands were destroyed.

2 NATURAL RESOURCE INVENTORY

Under natural conditions, a flood causes little or no damage to floodplains. Nature ensures that floodplain flora and fauna can survive the more frequent inundations. This is the case with the local marshlands within Chatham County. They are flooded daily during high tide and yet life exists without damaging the environment. Historic floodplain areas also include canals and green spaces such community parks, nature preserves and wildlife refuges. Such areas reduce flood damage by allowing flood water to spread over a large area. This reduces flood velocities and provides flood storage to reduce peak flows downstream. Natural and historic floodplains also reduce wind and wave impacts, and their vegetation stabilizes soils during flooding.

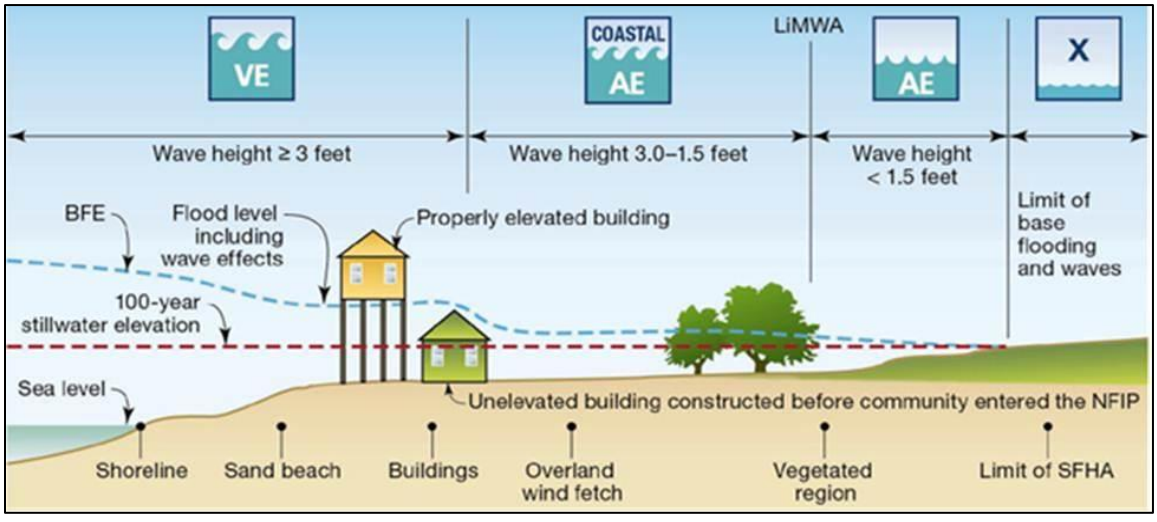
Chatham County has barrier islands such as Little Tybee, Ossabaw, Cabbage and Wassaw Islands. These islands serve as a natural protective barrier to forces from incoming storms such as wave attack and serve to reduce tidal and wind energies. These islands serve as natural aquatic habitats and support the existence of wetlands, marshes, and estuaries.

2.1 FLOODPLAINS

In its common usage, the floodplain most often refers to the area that is inundated by the "100-year flood," which is the flood that has a 1% chance in any given year of being equaled or exceeded. The 1%-annual-chance flood is the national minimum standard to which communities regulate their floodplains through the NFIP. The "500-year flood" is the flood that has a 0.2% chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Chatham County is susceptible to both coastal and inland flooding. Coastal flooding includes high tides, tidal waves, or storm surge, which typically involve the added risk of wave action. Inland flooding includes heavy rains and riverine overbank flooding and can occur in combination with coastal flooding. The 1%-annual-chance floodplain reflect both of these types of flooding. Figure 2.1 shows the typical coastal floodplain, which accounts for decreasing wave height and intensity as floodwaters move inland.

Figure 2.1 – Characteristics of a Coastal Floodplain



Source: FEMA

Figure 2.2 reflects the typical riverine floodplain, which includes the area adjacent to a channel. A riverine floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

Figure 2.2 – Characteristics of a Riverine Floodplain

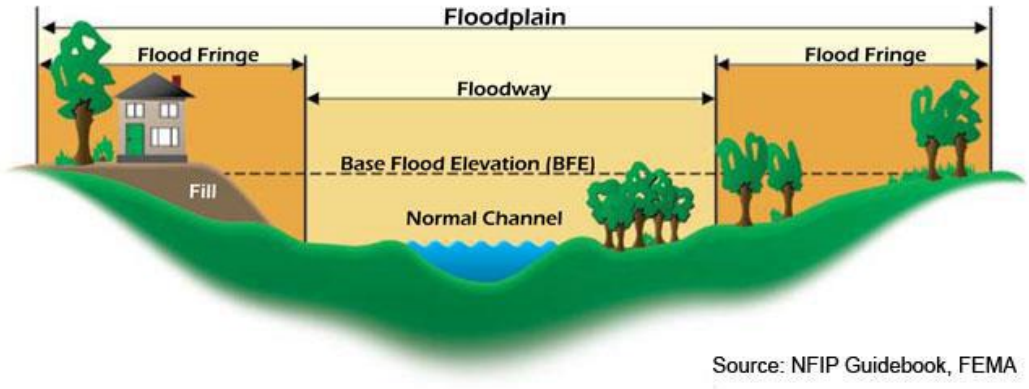
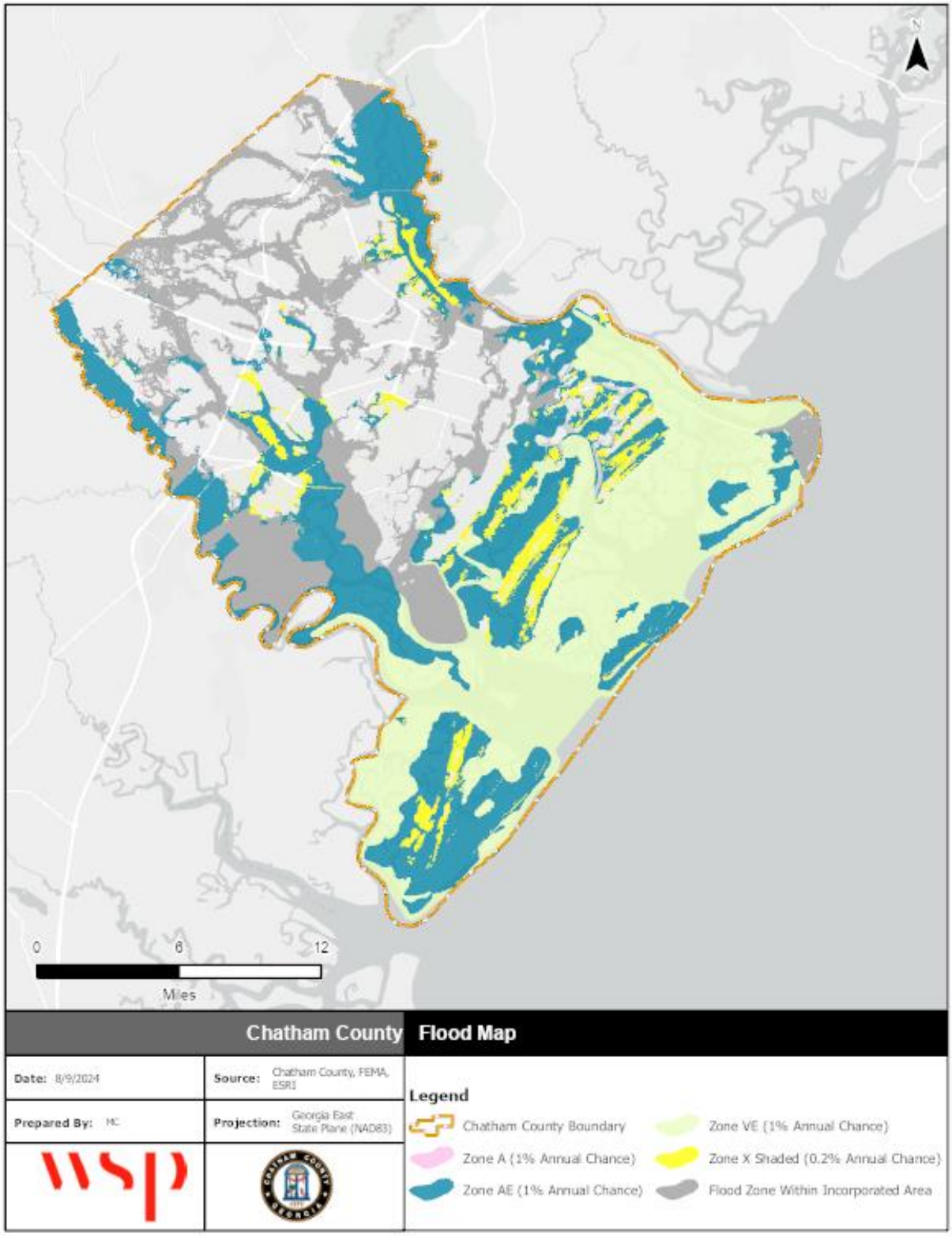


Figure 2.3 illustrates the special flood hazard areas within unincorporated Chatham County. Approximately 80% of the land area within unincorporated Chatham County is considered high risk for flooding according to FEMA's Flood Insurance Rate Maps (FIRMs). Nearly 40% of the unincorporated county is designated as a VE zone; these are located in eastern Chatham County in and around the various islands and up the mouths of the Savannah and Ogeechee Rivers. Another 41% of the county falls within an AE zone. These areas are located throughout the county, including on the islands in the eastern part of the county as well as adjacent to waterways further inland such as the Savannah River, Ogeechee River, and the Little Ogeechee River. About 7% of the county falls within the moderate risk zone (500-year or shaded X). Lastly, less than 12% of the County is designated as low risk or unshaded X.

Figure 2.3 – Special Flood Hazard Areas



2.2 WETLANDS

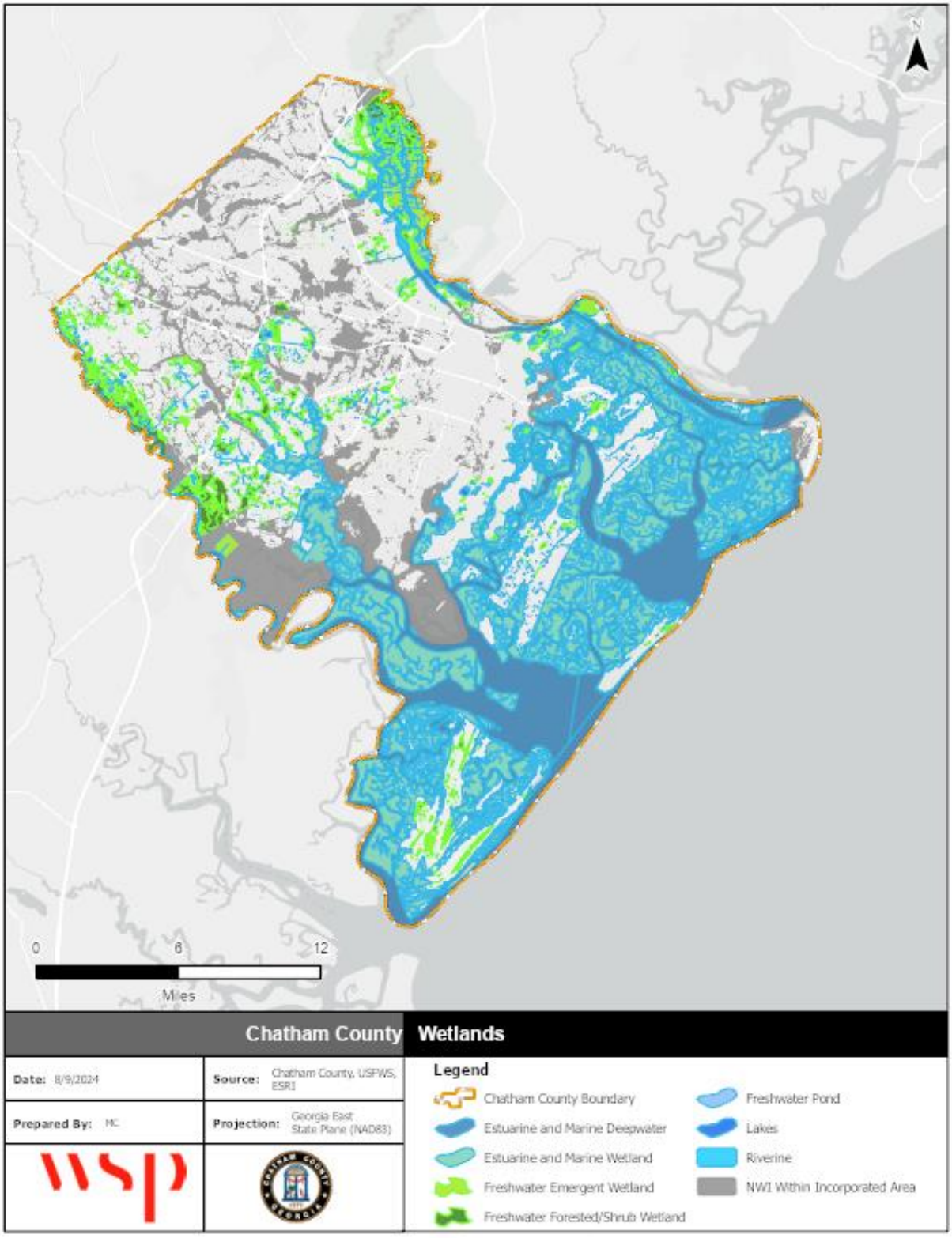
The benefits of wetlands are hard to overestimate. They provide critical habitat for many plant and animal species that could not survive in other habitats. They are also critical for water management as they absorb and store vast quantities of storm water, helping reduce floods and recharge aquifers. Not only do wetlands store water like sponges, they also filter and clean water as well, absorbing toxins and other pollutants. Wetlands are often found in floodplains and topographically depressed areas of a watershed.

The coast of Georgia comprises a vast array of wetlands ranging from freshwater non-tidal and tidal wetlands to estuarine wetlands, or saltmarshes. With approximately 100 linear miles of coastline, Georgia boasts approximately 348,000 acres of estuarine tidal marsh. These marshes are ecologically significant as habitat for aquatic organisms, including fish, shellfish, waterfowl, and other wildlife species. In addition to serving as habitat for specific organisms, saltmarshes also function as feeding grounds for terrestrial vertebrates, as a buffer to protect against coastal storm surge, and as a natural filtration system to improve water quality, transform nutrients and retain sediment. Table 2.1 and Figure 2.4 detail the types and acreage of wetlands that exist within Chatham County.

Table 2.1 – Wetland Acreage

Class	Total Acreage	Percent
Estuarine - Open Water - Intertidal	76,441.29	59%
Estuarine - Open Water - Subtidal	25,155.34	20%
Lacustrine - Open Water - Limnetic	330.51	0%
Marine - Open Water - Intertidal	173.59	0%
Marine - Open Water - Subtidal	14.27	0%
Palustrine - Aquatic Bed	15.58	0%
Palustrine - Emergent Wetland	5,987.08	5%
Palustrine - Forested Wetland	13,788.25	11%
Palustrine - Scrub-Shrub Wetland	1,680.85	1%
Palustrine - Unconsolidated Bottom	866.30	1%
Palustrine - Unconsolidated Shore	18.83	0%
Riverine - Aquatic Bed	19.71	0%
Riverine - Open Water	2,002.95	2%
Not Classified	2,326.95	2%

Figure 2.4 – Wetlands



2.3 WATERWAYS

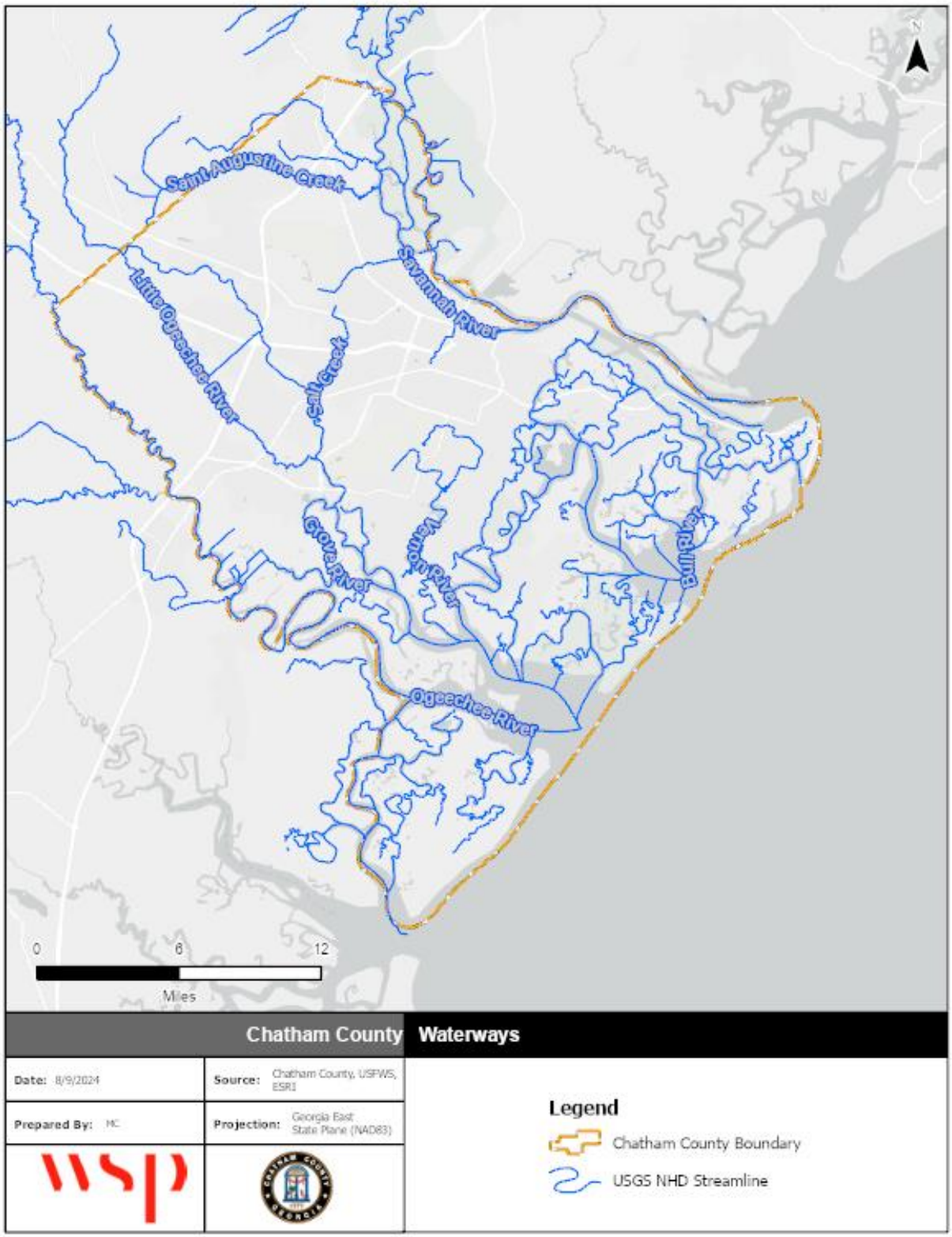
A stream can be defined as a body of concentrated flowing water in a natural low area or natural channel on the land surface. There are three stream types: ephemeral, intermittent, and perennial.

Ephemeral streams are features that only carry stormwater in direct response to precipitation. They may have a well-defined channel and they typically lack the biological, hydrological, and physical characteristics commonly associated with intermittent or continuous conveyances of water. These features are typically not regulated.

Intermittent streams have a well-defined channel that contains water for only part of the year (typically during winter and spring). The flow may be heavily supplemented by stormwater. When dry, they typically lack the biological and hydrological characteristics commonly associated with continuous conveyances of water. These features are typically regulated by State and Federal agencies.

Perennial streams have a well-defined channel that contains water year-round during a year with normal rainfall. Groundwater is the primary source of water, but they also carry stormwater. They exhibit the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water. These features are regulated by State and Federal agencies. Perennial and intermittent watercourses are typically identified through site inspection and US Geological Survey (USGS) maps. Perennial streams are those which are depicted on a USGS map with a solid blue line and are shown on the following page in Figure 2.5.

Figure 2.5 – USGS Waterways



2.4 THREATENED & ENDANGERED SPECIES

According to the U.S. Fish & Wildlife Service (USFWS) Information Planning and Conservation (IPaC) System and the FEMA Flood Risk and Endangered Species Habitat (FRESH) Map, there are 24 threatened, endangered, or candidate species that are known or suspected to occur within Chatham County based on the species' current range and/or critical habitat defined by USFWS and the National Marine Fisheries Service (NMFS) as shown in Table 2.2 below.

Table 2.2 – Chatham County Threatened and Endangered Species

COMMON NAME	SPECIES NAME	STATUS	LISTING AGENCY
Amphibians			
Frosted Flatwoods Salamander	Ambystoma cingulatum	Threatened	USFWS
Birds			
Eastern Black Rail	Laterallus jamaicensis ssp. jamaicensis	Proposed Threatened	USFWS
Piping Plover	Charadrius melodus	Endangered	USFWS
Red Knot	Calidris canutus rufa	Threatened	USFWS
Red-cockaded Woodpecker	Picoides borealis	Endangered	USFWS
Wood Stork	Mycteria americana	Threatened	USFWS
Black-capped Petrel	Pterodroma hasitata	Proposed Threatened	USFWS
Fishes			
Shortnose Sturgeon	Acipenser brevirostrum	Endangered	NMFS
Atlantic Sturgeon	Acipenser oxyrinchus	Endangered	NMFS
Smalltooth Sawfish	Pristis pectinate	Endangered	NMFS
Trispot Darter	Etheostoma trisella	Threatened	USFWS
Insects			
Monarch Butterfly	Danaus plexippus	Candidate	USFWS
Mammals			
Northern Long-eared Bat	Myotis septentrionalis	Endangered	USFWS
Tricolored Bat	Perimyotis subflavus	Proposed Endangered	USFWS
West Indian Manatee	Trichechus manatus	Threatened	USFWS
Reptiles			
Eastern Indigo Snake	Drymarchon corais couperi	Threatened	USFWS
Green Sea Turtle	Chelonia mydas	Threatened	USFWS
Kemp's Ridley Sea Turtle	Lepidochelys kempii	Endangered	USFWS
Leatherback Sea Turtle	Dermochelys coriacea	Endangered	USFWS
Loggerhead Sea Turtle	Caretta	Threatened	USFWS
Hawksbill Sea Turtle	Eretmochelys imbricata	Endangered	USFWS
Flowering Plants			
Pondberry	Lindera melissifolia	Endangered	USFWS
American Chaffseed	Schwalbea americana	Endangered	USFWS
Canby's Dropwort	Oxypolis canbyi	Endangered	USFWS

Source: USFWS IPaC and FEMA FRESH Map

The FEMA FRESH Map was used to evaluate the ranges of all species with available data. However, all evaluated species ranges are at least county-wide, with many extending to a much larger region. Because all species ranges overlap with the entire area of Chatham County, mapping and analysis of the overlap of species ranges with the County's floodplain and open space was not completed.

The FEMA FRESH Map and the USFWS IPaC System were used to identify critical habitat areas for applicable species. USFWS has designated critical habitat areas within Chatham County for the Loggerhead Sea Turtle and the Piping Plover and has proposed critical habitat areas for the Rufa Red Knot. The NMFS has designated critical habitat in the Savannah River and Ogeechee River for the Atlantic Sturgeon. Critical habitat areas are shown in Figure 2.6 through Figure 2.9 on the following pages. As can be seen in these maps, critical habitat areas are concentrated in the major rivers, along oceanfront areas, and in coastal estuarine areas.

Figure 2.6 – Loggerhead Sea Turtle Critical Habitat

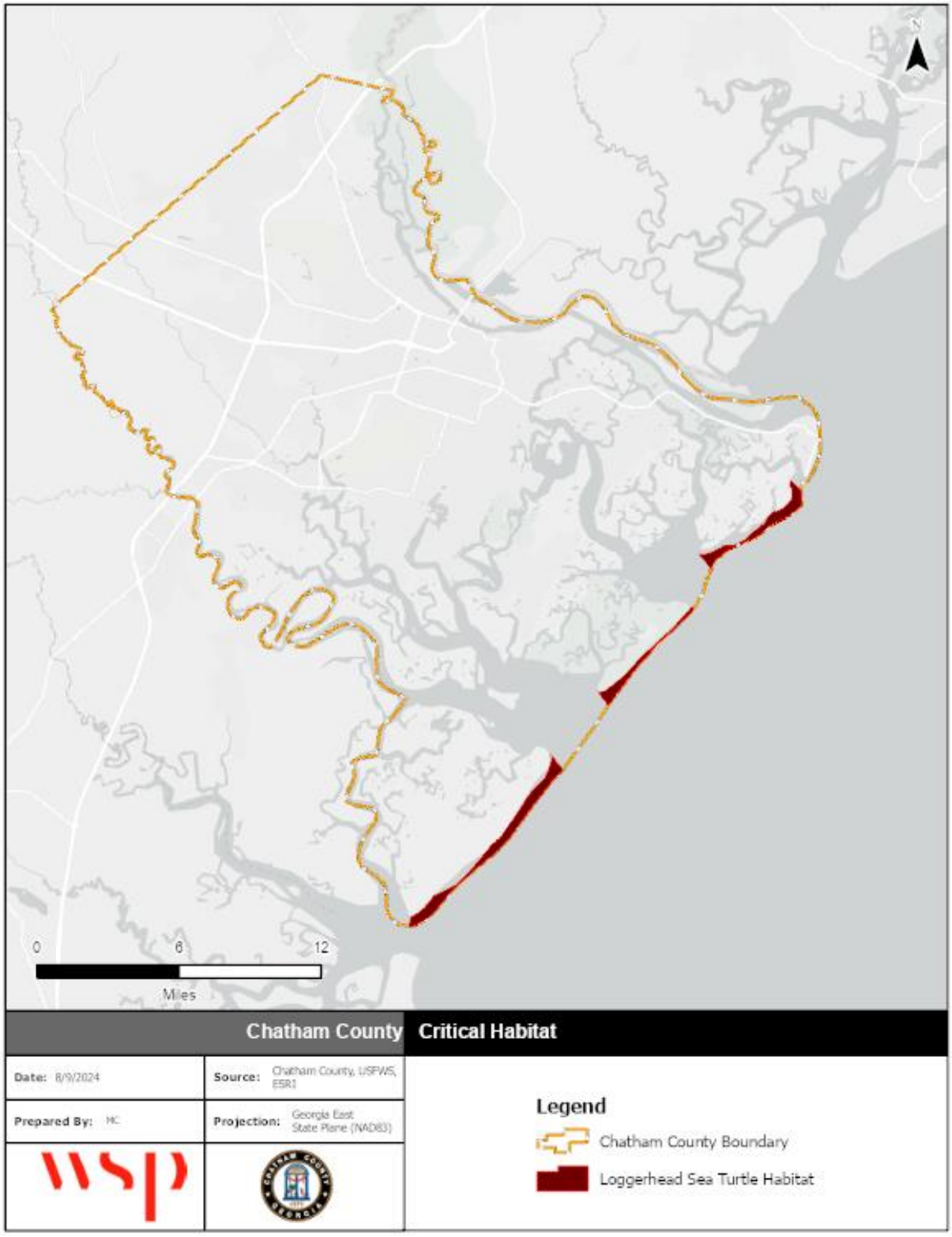


Figure 2.7 – Piping Plover Critical Habitat

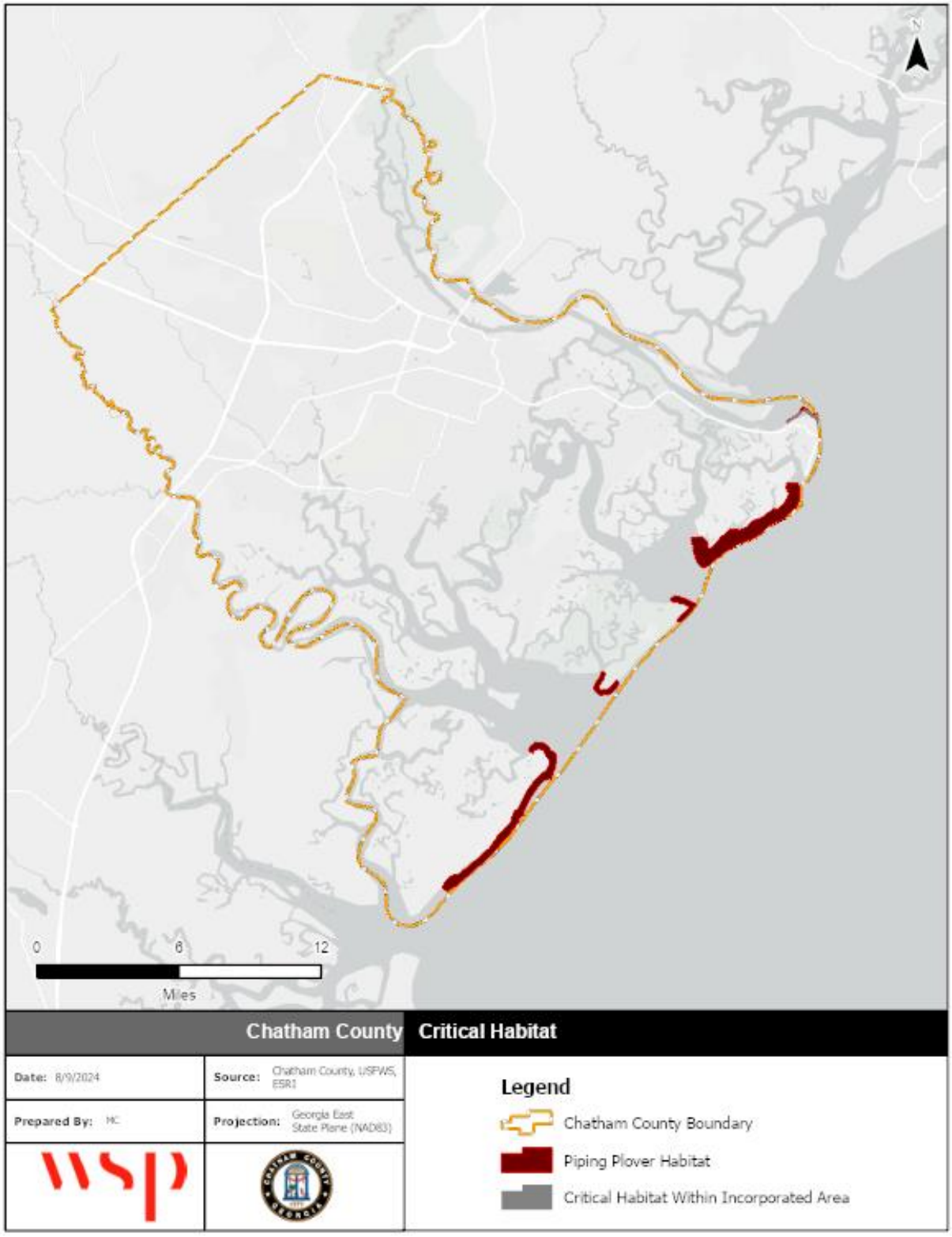


Figure 2.8 – Rufa Red Knot Critical Habitat

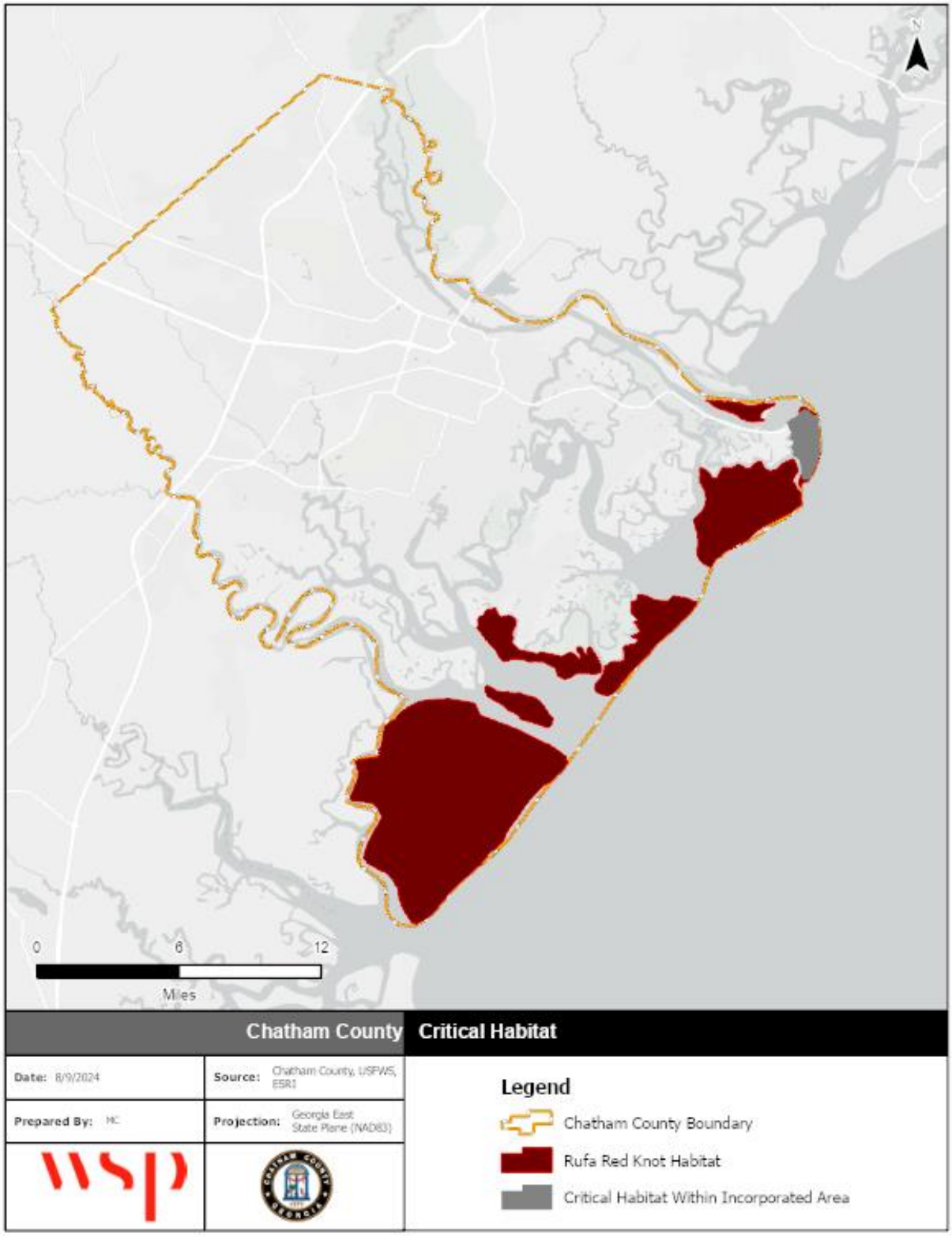
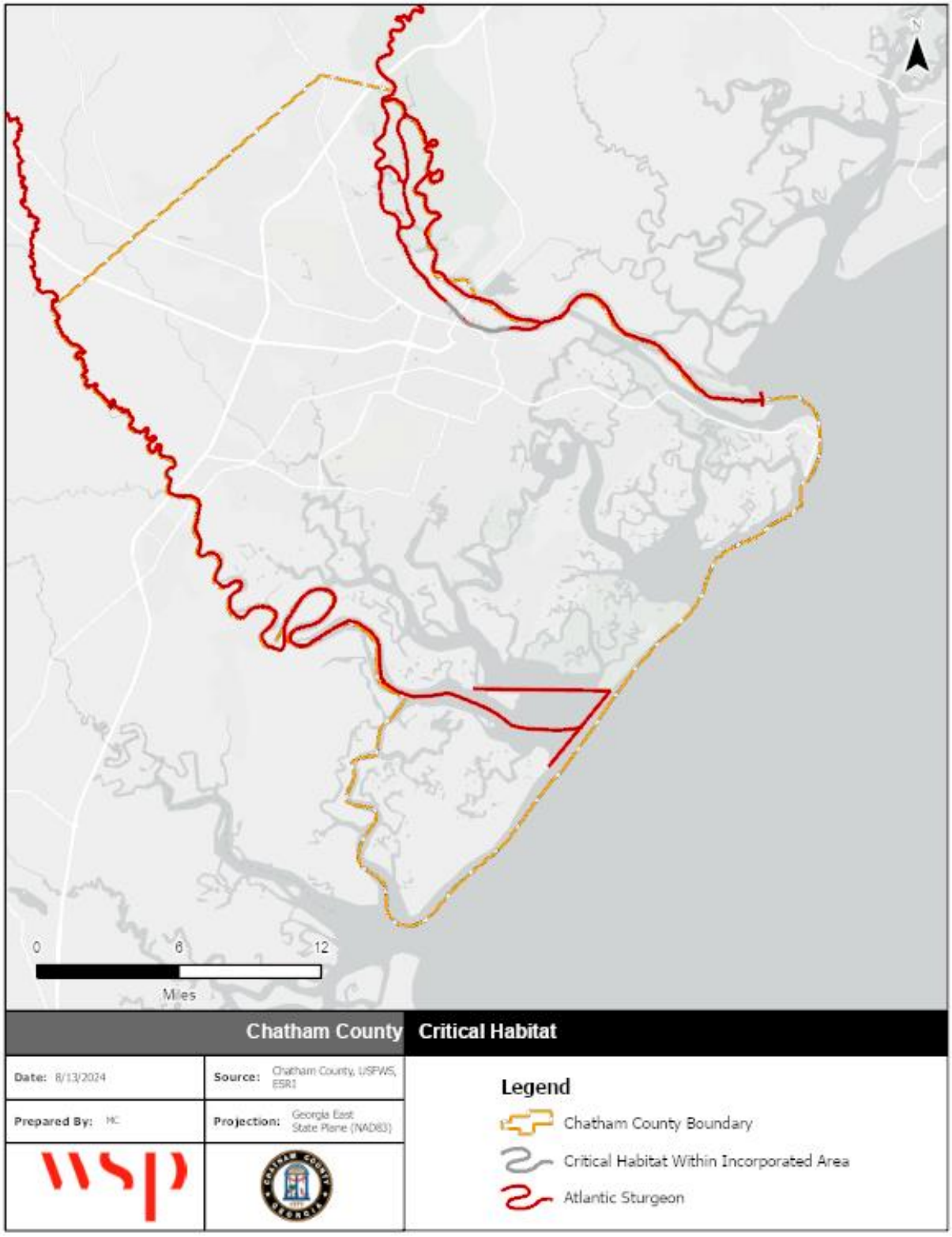


Figure 2.9 – Atlantic Sturgeon Critical Habitat

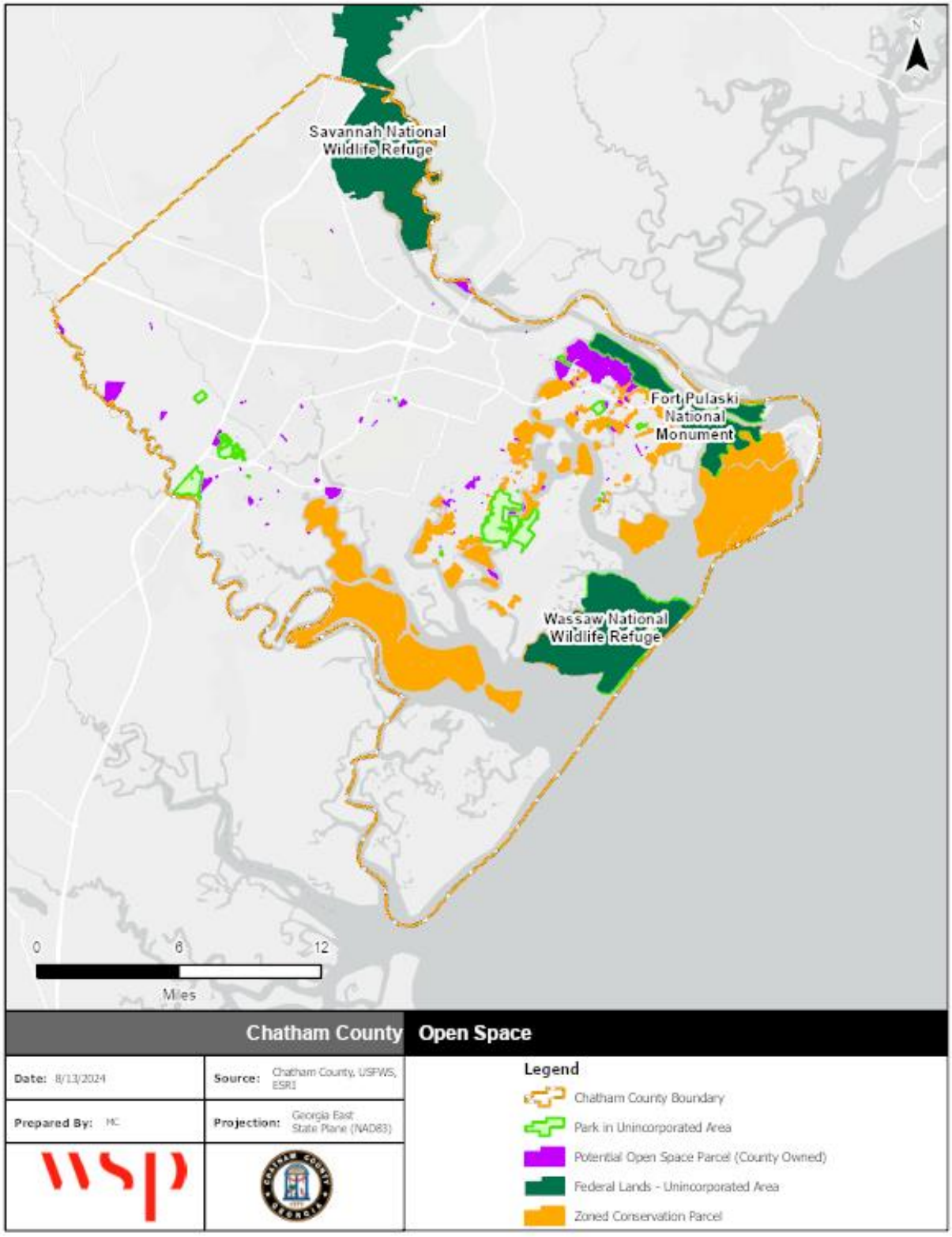


2.5 OPEN SPACE

Open space preservation is key to the protection and restoration of threatened and endangered species and their habitat. Existing open space in the county includes many county parks, federal lands, parcels zoned for conservation, and other County owned parcels. Federal lands include Savannah National Wildlife Refuge, Fort Pulaski National Monument, and Wassaw National Wildlife Refuge, all of which are largely comprised of floodplain areas. County parks include nature preserves like Bungard Conservation Area, Frank O. Williamson Lake, Whitemarsh Preserve, and Blue Sky Preserve as well as community and neighborhood parks with some recreation facilities.

Open space areas in unincorporated Chatham County are shown in Figure 2.10.

Figure 2.10 – Open Space



3 CONSERVATION & RECOVERY CAPABILITY ASSESSMENT

Prevention measures like planning, land acquisition and regulations help modify development in floodplains to reduce susceptibility to flood damage and protect natural floodplain functions, including threatened and endangered species habitat. Comprehensive and Capital Improvement Plans can be used to identify floodplain and wetland areas to be preserved by zoning, acquisition and other means. A Comprehensive Plan, in broad terms, is a policy statement that guides a community's growth and development. It is the basis for a community's zoning, subdivision and design regulations and a community's official maps and amendments to the zoning, subdivision and design ordinances. A Capital Improvement Plan (CIP) is a community planning and fiscal management tool used to coordinate the location, timing and financing of capital improvements over a multi-year period.

Planning and zoning activities should direct development away from floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation. Planning and zoning activities can also provide benefits by simply allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

3.1 LOCAL PLANNING MECHANISMS

METROPOLITAN PLANNING COMMISSION

The Metropolitan Planning Commission is a joint planning agency for the City of Savannah and Chatham County. Each governmental body appoints seven members to the board. Two of these members are the City and County Managers. These fourteen members serve without pay and represent government, private enterprise, and citizens' interest groups. Commissioners are appointed for three-year overlapping terms. The MPC meets every three weeks to consider matters of zoning and land use, as well as other studies and issues for which it has responsibility. Planning Meetings are held as needed to discuss planning issues.

The Chatham County – Savannah Comprehensive Plan, Plan 2040, was developed by the MPC and adopted in 2021. The next update will be done in 2026.

CAPITAL IMPROVEMENT PROGRAM

The Chatham County Department of Engineering manages and administers a Capital Improvement Program, which is funded by the 1% Special Local Option Sales Tax (SPLOST). The includes but is not limited to project design, environmental permitting, utility relocation, right-of-way acquisition, and construction management. The department also coordinates projects with local, state, and federal agencies.

COASTAL GEORGIA REGIONAL COMMISSION

The Coastal Georgia Regional Commission (CRC) is a multi-county planning and development agency that serves municipal and county governments. The CRC serves 10 counties and 35 cities and encompasses the six coastal counties in Georgia. The CRC provides local and regional comprehensive planning services as well as specialized planning services in transportation, water resources, and historic preservation.

COASTAL GEORGIA INDICATORS COALITION

The Coastal Georgia Indicators Coalition is comprised of community members and advocates working together through a comprehensive, coordinated approach for planning and accountability and serves as a resource for agencies addressing overall health and well-being while leveraging resources for community initiatives. The purpose of the Coalition is to improve community well-being by engaging and leading the

community to work collectively in its development of strategic priorities that guide policy, programs, and resource allocation.

COMMUNITY RATING SYSTEM CREDIT FOR CONSERVATION AND RECOVERY

The Community Rating System (CRS) credits several conservation and recovery actions that can be implemented by local governments. The CRS provides reduced flood insurance premiums in communities that undertake activities to prevent or reduce flood losses and protect natural floodplain functions.

Chatham County is implementing several activities to improve its CRS Class, saving floodplain residents and businesses money spent on their insurance premiums each year. Implementing more activities, such as threatened and endangered species recovery actions, could help the County move to a better class.

Table 3.1 reviews general CRS-credited actions that support the protection of threatened and endangered species and their habitats. The "Doing" column identifies whether the County is implementing what is or could be a CRS credited activity. If the County is getting credit, the "Credited" column shows the current CRS credit points and the maximum credit available. The "Feasible" column identifies if it would be feasible to implement an activity or increase the credit points.

Table 3.1 – CRS Credited Conservation and Recovery Actions

ACTIVITY/ELEMENT	DOING?	CREDITED?	FEASIBLE?
300 Public Information Activities			
Providing information on areas that serve natural floodplain functions, such as wetlands (MI7)	Yes	90/90	
Outreach projects (OP) with messages on protecting natural functions	Yes	200/200[2]	Yes, the County is receiving full credit but could update projects to include messages on protecting natural functions
Designing and disseminating messages on protecting natural floodplain functions in a program for public information (PPI)	No	0/100	Yes, the County could develop a PPI with messages on protecting natural floodplain functions
Having materials in the local public library (LPD) on protecting local natural floodplain functions	Yes	8/10[2]	Yes, materials with appropriate messages could be added
Having materials on protecting local natural floodplain functions in the community's website (WEB)	Yes	67/77[2]	Yes, appropriate messages and links could be added
420 (Open Space Preservation)			
Preserving open space in the floodplain (OSP)	Yes	812/1,450	No more to be done for now
Preserving open space in the floodplain in its natural state (NFOS)	Yes	38/350	No more to be done for now
Preserving open space on eroding shorelines (CEOS[1])	No	0/750	No more to be done for now
Offering incentives to developers to keep the floodplain open (OSI)	No	0/250	Yes, this could be done with ordinance amendments
Zoning flood prone areas for large lot sizes to preserve low density uses (LZ)	No	0/600	Yes, this could be done with ordinance amendments
Preserving stream banks and shorelines in their natural state (NSP)	No	0/120	Yes, this could be done with ordinance amendments

430 (Higher Regulatory Standards)			
Prohibiting filling in the floodplain (DL1a)	No	0/280	Yes, this would require ordinance amendments
Regulating development in areas subject to coastal erosion (CER[1])	No	0/370	Yes, this would require ordinance amendments
Other regulations to protect natural floodplain functions not specifically listed in the *Coordinator's Manual*	No	0/100	Nothing to be done for now.
450 (Stormwater Management)			
Requiring new developments in the watershed to account for the total volume of runoff released (SMR-DS)	No	50/225	Yes, this would require ordinance amendments
Requiring new developments to use low impact development techniques (SMR-LID)	Yes	20/25	No, the County requires LID techniques for all regulated development
Setting stormwater management standards based on an overall plan for the watershed (WMP)	No	0/315	Yes, the County could consider developing a plan for the watershed
510 (Floodplain Management Planning)			
Adopting one or more plans that address protecting natural floodplain functions (NFP)	Yes	100/100	Yes, will continue to receive credit and address natural floodplain protection with this plan
540 (Drainage System Maintenance)			
Having a habitat-friendly program to clear debris in drainageways (CDR)	Yes	20/200	Yes, the County could expand the area where maintenance is performed and ensure habitat-friendly practices are used

[1]These elements are appropriate only for species dependent on beaches, such as sea turtles and shore birds.
[2]Elements are being implemented by the County; however, the messages and materials currently do not address threatened and endangered species but may be amended to do so.

SUMMARY OF CRS ACTIONS

Series 300 (Public Information Activities): The County is implementing most of the public information activities and elements listed in Table 3.1. It would not take much work to adjust ongoing actions to better address threatened and endangered species. The County receives credit for furnishing inquirers with basic flood zone information from the latest FIRM, as well as information about problems not shown on the FIRM, flood depth data, special flood related hazards, historical flood information, and natural floodplain functions.

The county's outreach projects and library and web references could be revised or expanded to provide more information on protecting threatened and endangered species. Relevant agencies and organizations may have outreach materials and recommended messages that the county could disseminate.

Activity 420 (Open Space Preservation): The County currently receives credit for preserving 70% of the Special Flood Hazard Area as open space. The County protects open space with deed restrictions, preserves open space land in a natural state, and has regulations and incentives that minimize development in the SFHA. The County could receive more NFOS credit by documenting the natural floodplain functions served by preserved open areas.

Activity 430 (Higher Regulatory Standards): The County receives credit for enforcing regulations that require development limitations, freeboard for new construction and substantial improvement, cumulative substantial improvement, protection of critical facilities, and enclosure limits. Credit is also provided for the enforcement of building codes, and a Building Code Effectiveness Grading Schedule (BCEGS®) Classification of 5/4. The County could enact regulations to prohibit filling in the floodplain or set other higher standard(s) for development in the floodplain that could benefit natural floodplain functions.

Activity 450 (Stormwater Management): The County enforces regulations for stormwater management and soil and erosion control.

Activity 510 (Floodplain Management Planning): The County receives credit for a Floodplain Management Plan, Repetitive Loss Area Analysis, and will receive natural floodplain functions plan (NFP) credit for this plan once completed.

Activity 540 (Drainage System Maintenance): A portion of the county's drainage system is inspected regularly and maintenance is performed as needed. Credit is also provided for problem site maintenance and for implementing an ongoing Capital Improvements Program. The County enforces regulations prohibiting dumping in the drainage system and annually publicizes this regulation, which support natural floodplain functions.

3.2 LOCAL PRESERVATION INITIATIVES

SAVANNAH TREE FOUNDATION

The Savannah Tree Foundation promotes, through direct action and education, an awareness of trees as vital environmental resources and an important part of cultural heritage.

CHATHAM COUNTY – SAVANNAH COMPREHENSIVE PLAN, PLAN 2040

Relevant land use objectives and natural resource protection objectives identified in Plan 2040 are as follows:

- Prioritize land acquisition for open space and conservation
- Decrease development pressures on environmentally sensitive lands
- Inventory existing tree canopy in each jurisdiction and establish programs to ensure a minimum tree canopy is maintained countywide.
- Engage with property owners to educate on the importance of trees to the community and their role as private property owners to protect the region's tree canopy.
- Evaluate existing policies, plans, and regulations to ensure that they encourage low impact development principles and are consistent with best management practices in regards to stormwater runoff.
- Identify funding sources and other mechanisms to conserve properties in open space as part of the community stormwater management system.

COASTAL MARSHLANDS PROTECTION ACT

In 1970, the State of Georgia established the Coastal Marshlands Protection Act (CMPA) to protect the marsh and estuarine areas, and to regulate the activities within these public trust lands that are held for the citizens of Georgia. Through the Georgia Department of Natural Resources, Coastal Resources Division (GADNR-CRD), the CMPA is enacted to protect the estuarine area. Activities and structures in the coastal marshlands are regulated to ensure that the values and functions of the coastal marshlands are not impaired. GADNR-CRD allows for the sustainable use of the estuarine area through permits and other methods of authorization that will preserve the condition of the marsh while still allowing for its enjoyment.

COASTAL GEORGIA REGIONAL COMMISSION

The Coastal Georgia Regional Commission prepared a Regional River Corridor Protection Plan that describes the ten local governments and the associated rivers that are affected by the River Corridor Protection Act, and puts forward a regional plan for the protection of river corridors. The plan provides for construction of road crossings, acceptable uses of river corridors, maintenance of a vegetative buffer along rivers for a minimum of 100 feet from the river's edge (residential structures are allowed within the buffer zone), timber production standards, wildlife and fisheries management, recreation, and other uses. Chatham County is one of the eight coastal counties affected by the River Corridor Protection Act and therefore, as required, has adopted a Regional River Corridor Protection Plan for the Savannah River. The maintenance of a 100-foot natural vegetative buffer, often referred to as a "riparian buffer", on both sides of any protected river is required under the River Corridor Protection Act. Similarly, under the State of Georgia Erosion and Sedimentation Act, one provision requires that land-disturbing activities shall not be conducted within 25 feet of the banks of any State waters, thus mandating a riparian buffer 25 feet in width.

STORMWATER ORDINANCE

Chatham County's Stormwater Management Ordinance requires that all stormwater management systems be designed to comply with the requirements of the latest Local Design Manual and comply with the latest edition of the Coastal Stormwater Supplement to the Georgia Stormwater Management Manual. The County's Local Design Manual requires stormwater runoff reduction and stormwater water quality BMPs. Post-construction stormwater management and site planning and design criteria must be applied to all new development and redevelopment activities that are subject to the Stormwater Management Ordinance. The criteria include a natural resources inventory, use of Green Infrastructure/Low Impact Development practices, stormwater runoff reduction, stormwater quality management and protection, aquatic resource protection and energy dissipation, overbank flood protection, and extreme flood protection.

NATURE CONSERVANCY

The Nature Conservancy is the leading conservation organization working to protect ecologically important lands and waters for people both nature and people. One important attribute is the Private Lands Conservation Program as the Nature Conservancy works with landowners, communities, cooperatives and businesses to establish local groups who can protect land. Some of the tools include Land Trusts, conservation easements, private reserves and incentives. The Nature Conservancy has helped to protect more than 21 million acres in the United States alone. One of the primary conservation areas in the state of Georgia is in the Savannah River Basin which runs throughout Chatham County. Some of the Nature Conservancy lands that are protected are in Chatham County.

3.3 RELEVANT AGENCIES AND ORGANIZATIONS

There are several federal and state agencies and private organizations that have goals and programs to protect and threatened and endangered species and help them recover. The following organizations were contacted to help the County define appropriate activities and provide guidance on implementation. A copy of the outreach letter sent to stakeholders is shown in Figure 3.1.

U.S. Fish and Wildlife Service HQ ESA
5275 Leesburg Pike
Falls Church, VA 22041-3803

NMFS HQ ESA
1315 East-West Hwy, F/ST1
Silver Spring, MD 20910

FEMA HQ NFIP ESA Team

U.S. Fish and Wildlife Service
Townsend / Coastal GA Field Office
4890 Wildlife Drive NE
Townsend, GA 31331
(706) 613-9493

Savannah Tree Foundation
P.O. Box 8880
Savannah, GA 31412
(912) 233-8733

Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive SE,
Suite 1456, East Tower
Atlanta, GA 30334
(404) 463-1511

Georgia Department of Natural Resources
Wildlife Resources Division
One Conservation Way, Suite 310
Brunswick, GA 31520
(912) 264-7355

South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405
(843) 571-4366

NOAA Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149
(305) 361-4200

FEMA Region IV
3303 Chamblee Tucker Road
Atlanta, GA 30341

Metropolitan Planning Commission
110 East State Street
Savannah, GA 31401
(912) 651-1440

Coastal Georgia Regional Commission
1181 Coastal Drive SW
Darien, GA 31305
(912) 514-1593

The Nature Conservancy
Southeast Georgia Field Office
P.O. Box 484
Darien, GA 31305
(470) 316-3240

Birds Georgia
825 Warner Street SW, Suite B
Atlanta, GA 30310
(678) 973-2437

Figure 3.1 – Agency and Organization Outreach Letter

CHATHAM COUNTY DEPARTMENT OF ENGINEERING

124 Bull Street, Room 430
P.O. Box 8161
Savannah, Georgia 31412-8161
FAX 912-652-7818

Suzanne V. Cooler, P.E.
County Engineer

912-652-7800

Nathaniel Panther, P.E.
Assistant County Engineer

August 20, 2024

RE: Chatham County Natural Floodplain Functions Plan

Chatham County is updating its Natural Floodplain Functions Plan (NFP), which identifies potentially endangered and threatened species and evaluates ways to protect and recover the species and their habitats. The primary aim in developing this plan is to identify specific actions the county can pursue to support conservation and recovery of the species and habitats throughout Chatham County.

The NFP follows the guidance under the Community Rating System (CRS) 2017 Coordinator's Manual and 2021 Addendum to meet the requirements of the Community Rating System (CRS) of the National Flood Insurance Program (NFIP). This CRS project encourages and recognizes community actions taken to protect species, and their critical habitats, listed pursuant to the Endangered Species Act.

Our objective in reaching out to additional agencies and stakeholders is to coordinate with those who may bring additional information to the planning process regarding species and habitat protection. Any information or feedback that may help us refine the species assessment, identify conservation and recovery actions, or otherwise improve the plan would be welcomed. Your review of the identified species would be most helpful. Below is a list of general guiding questions:

1. Is the list of threatened and endangered species in Section 2.4 of the plan appropriate? Are there any species that the county should not spend time on?
2. For the species that deserve attention from the county, do you have additional information on their habitats and threats?
3. Are there any specific recovery actions that should be considered?

If you have any feedback or would like to submit comments or questions for consideration, please forward it to my attention via email at acbliss@hathamcounty.org. You may also contact our planning consultant, Abby Moore with WSP, at abigail.moore@wsp.com. Please send all comments by Tuesday, September 10th. If you would like to discuss your comments in more detail, we will hold a conference call on Microsoft Teams on Wednesday, September 11th at 10am ET. Please RSVP to Abby Moore at abigail.moore@wsp.com for a link to attend. We thank you for your support of this important planning process and look forward to hearing from you.
Sincerely,

Dr. Angela C. Bliss, CFM
Floodplain Administrator / CRS Program Manager

4 FEEDBACK

In response to the request for input on relevant species and recovery actions, the USFWS Georgia Ecological Services Field Office provided the following detailed feedback and linked resources:

- The trispot darter is endemic to the Conasauga and Coosawattee river drainages in the upper Coosa River system of Tennessee and Georgia. It is not found on the Georgia coastal plain or Chatham County.
- The black-capped petrel is a pelagic bird, commonly found over the gulf stream and not commonly found in coastal Georgia.
- The northern long-eared bat is currently not IPaC listed for Chatham County, Georgia. It is listed for the adjacent county in South Carolina, but has not been detected in Chatham County, so it does not need to be considered.
- There are no recent detections of the eastern black rail. Surveys were conducted in 2016 and 2017 in coastal and South Georgia. A total of 1,827 individual play-back surveys were conducted. There were no detections of the bird. The USFWS considers that Chatham County may have habitat suitable for the bird, but no detections.
- The red-cockaded woodpecker requires 200+ acre tracts of large old pine trees with an open, fire-maintained understory. This habitat occurs on Fort Stewart in Bryan County west of Chatham County. As far as we know this habitat does not occur in Chatham County.
- Sea turtles and shorebird species utilize the beach fronts and ends of the islands in Chatham County. Minimize disturbance to all species by observing laws concerning dogs and wildlife. Lighting can disorient sea turtles on the beach as well as create sky glow that may affect all species especially migratory birds. Follow lighting ordinances, mount lights as low as possible, minimize light intensity, fully shield and downward direct lights, use bulbs that produce only long wavelength light (560 nm or greater). https://myfwc.com/wildlifehabitats/wildlife/sea-turtle/lighting/. At inland locations minimize sky glow by following the above with LED bulbs with a wavelength of 2,700 Kelvin or less.
- Set aside and leave areas in a natural state and/or plant native wildflowers. Some areas are appropriate to grow species of milkweed, a plant utilized by the monarch butterfly. https://botgarden.uga.edu/wp-content/uploads/2021/02/milkweed-2024.pdf.
- Keep sediment and pollutants including lawn chemicals and fertilizer, and roadway oils and other chemicals from entering wetlands by preserving buffers for the wetlands in the adjacent uplands, preferably natural buffers.
- Our tidal marshes are part of and contain a complex food web, run-off from uplands can impact the function of the marshes. The marshes are important to our shrimp, fish, and manatees.
- Properly dispose of all trash and debris. It can pose a hazard to wildlife, especially one-use plastic bags.
- Erosion control products that include plastic netting are an entanglement hazard for wildlife. Where erosion control products are necessary, encourage the use of environmentally friendly, biodegradable erosion control materials, aka wildlife friendly plastic-free netting in erosion and sediment control products. https://www.fws.gov/initiative/protecting-wildlife/make-change-wildlife-friendly-erosion-control-products and https://www.fws.gov/sites/default/files/documents/WLfriendlyErosionControl__final.pdf.
- Educate the public concerning the eastern indigo snake by using our eastern indigo snake website: https://www.fws.gov/story/eastern-indigo-snake-conservation. The indigo snake is protected by state and federal laws. Instead of harassing snakes or any wildlife to encourage it to leave, allow it to leave on its own to minimize chance of harm to it or you.
- To protect the tricolored bat, avoid tree clearing during the non-volant pup season when newborn bats (pups) may be in trees unable to fly; May 1 until July 15.

The Chatham County – Savannah Metropolitan Planning Commission provided the following comments.

- Include information on the current comprehensive plan, Plan 2040, adopted in 2021 and the next update is 2026.
- The County's Environmental Overlay District was last updated in 2010 to include additional 10 ft riparian buffer.

Based on the above reviewer comments, aspects of the Conservation & Recovery Capability Assessment in Section 3 were revised, and Chatham County developed a Floodplain Species Plan presented in Section 5. Reviewer comments were used to revise the inventory of threatened and endangered species to focus on selected species, as detailed in Section 5.1. Additionally, reviewer input on recommended recovery actions was used to develop the action plan presented in Section 5.3.

5 FLOODPLAIN SPECIES PLAN

5.1 SELECTED SPECIES

Threatened and endangered species identified by the USFWS IPaC System and the FEMA FRESH Map, discussed in Section 2.4, were evaluated for inclusion in this plan. Input from stakeholders, including the USFWS Georgia Ecological Services Field Office, summarized in Section 4, helped to narrow the focus of this plan by removing some species that are not found in Chatham County. Species with defined critical habitat areas in Chatham County were identified as priority species because they are known to occur in the County.

Further research on each species was conducted and the feedback from relevant agencies and organizations, discussed in Section 4, was used to identify other priority species. The results of that evaluation are summarized in Table 5.1 below. The priority species list was used to evaluate opportunities for species conservation.

Table 5.1 – Summary of Species Evaluation

SPECIES	SELECT FOR CONSERVATION AND RECOVERY ACTIONS?
Amphibians	
Frosted Flatwoods Salamander	Yes
Birds	
Eastern Black Rail	No – Per USFWS Georgia Ecological Services Field Office input, there are no recent detections of the eastern black rail. Surveys were conducted in 2016 and 2017 in coastal and South Georgia. A total of 1,827 individual play-back surveys were conducted. There were no detections of the bird. The USFWS considers that Chatham County may have habitat suitable for the bird, but no detections.
Piping Plover	Yes
Red Knot	Yes
Red-cockaded Woodpecker	No – Per USFWS Georgia Ecological Services Field Office input, the red-cockaded woodpecker requires 200+ acre tracts of large old pine trees with an open, fire-maintained understory. This habitat occurs on Fort Stewart in Bryan County west of Chatham County. As far as we know this habitat does not occur in Chatham County.
Wood Stork	Yes
Black-capped Petrel	No – This species is primarily found at sea and only comes to shore for nesting which does not occur in Chatham County.
Fishes	
Shortnose Sturgeon	Yes
Atlantic Sturgeon	Yes
Smalltooth Sawfish	No – Current U.S. population of this species only occurs on the Southwest coast of Florida.
Trispot Darter	No – Per USFWS Georgia Ecological Services Field Office input, the trispot darter is endemic to the Conasauga and Coosawattee river drainages in the upper Coosa River system of Tennessee and Georgia. It is not found on the Georgia coastal plain or Chatham County.
Insects	
Monarch Butterfly	Yes

SPECIES	SELECT FOR CONSERVATION AND RECOVERY ACTIONS?
Mammals	
Northern Long-eared Bat	No – Per USFWS Georgia Ecological Services Field Office input, the northern long-eared bat has not been detected in Chatham County.
Tricolored Bat	Yes
West Indian Manatee	Yes
Reptiles	
Eastern Indigo Snake	Yes
Green Sea Turtle	Yes
Kemp's Ridley Sea Turtle	No – This species feeds along the coastline of Georgia but will not come to shore as they only nest in the Gulf of Mexico.
Leatherback Sea Turtle	Yes
Loggerhead Sea Turtle	Yes
Hawksbill Sea Turtle	No – This species does not nest in Chatham County and is rarely found along the coastline.
Flowering Plants	
Pondberry	Yes
American Chaffseed	Yes
Canby's Dropwort	Yes

5.1.1 SPECIES SUMMARY REPORTS

Details on all species selected for conservation and recovery actions are provided below. The information for these species summaries comes directly from the National Parks Service, the U.S. Fish and Wildlife Services, NOAA Fisheries, and the U.S Forest Service.

AMPHIBIANS

FROSTED FLATWOODS SALAMANDER

The frosted flatwoods salamander is a moderately-sized salamander with a slender black body covered in fine and irregular gray lines or specks. This species was listed as threatened in 1999.

Life Cycle: According to the FWS, this species of salamander has a complex life cycle as they breed and deposit eggs in wetlands that will inundate with water and help the embryos develop before they hatch into larvae.

Source: FWS (Photo Credit: Mark Mandica/The Amphibian Foundation)

Habitat: The frosted flatwoods salamander is endemic to pine-dominated flatwoods where the dominant overstory species is longleaf pine.

Threats: Some of the largest stressors or threats to this species come from low-quality breeding habitat as the wetlands they breed in are impacted from drought and storm surges. Additionally, habitat loss from commercial development, pond alterations, and fire suppression have posed serious threats.

Recovery Measures: In 2009, the U.S. Fish and Wildlife Service (FWS) designated over 22,000 acres of protected

critical habitat to the frosted flatwoods salamander. Current restoration efforts aim to help restore pond and wetland habitats and facilitate population growth through research and proper management practices with different stakeholders from communities in the Southeast region of the U.S.

BIRDS

PIPING PLOVER

The piping plover is a small shorebird that has been federally listed as a threatened species.

Life Cycle: Diet of this species consists of insects, crustaceans, and marine worms. Nesting occurs in May and June when a female can typically lay up to four eggs that will be incubated for 31 days before hatching. Young piping plovers can forage with their parents soon after hatching and will fledge at 30 days old.

Habitat: Piping plovers inhabit sandy beaches, sand flats, and mudflats along coastal areas.

Source: NPS

Threats: Habitat loss is the greatest threat to the piping plover population in Florida. High levels of development and human disturbances on beaches has reduced the amount of suitable habitat. Raccoons, skunks, and foxes also prey on the piping plover.

Recovery Measures: Throughout the state of Georgia, local volunteers and partners from FWS, Department of Defense, NPS, Georgia Shorebird Alliance, and GA Department of Natural Resources have collaborated together to help gather research and provide outreach and education to local municipalities about the piping plover. Signs may be posted near the habitat for wintering areas used by the piping plovers in order to protect them from further disturbance.

RED KNOT

The red knot is a small robin-sized shorebird that is known for its long-distance migratory patterns. The red knot travels from the far north regions of the Canadian Arctic down south into South America. They were officially listed as threatened in 2015 when the population began to decline.

Life Cycle: According to the FWS, red knots begin their life cycle as eggs laid in the Arctic Tundra. The chicks will hatch within 3 weeks and will fledge once they are 20 days old. The young red knots will then migrate south along the coastlines. Assessments show that the average life span is approximately 7 years old.

Source: American Bird Conservancy

Habitat: While migrating red knots will live in coastal marine habitats such as tidal flats, sandy coastal areas, bays and estuaries. They require sparse vegetation within these habitats to avoid predation. Red knots feed on bivalves and crustaceans.

Threats: According to the NPS, the red knot population has declined by 75% since the 1980's. Main threats to the red knots are loss of habitat due to climate change, unregulated hunting, and overharvesting of horseshoe crabs for medical research as the red knots rely on their eggs for food.

Recovery Measures: The red knot is protected under the Migratory Bird Treaty Act of 1918, which prohibits the capturing, selling, trading, and transport of the red knot without authorization from FWS. In 2021, a proposal was released to help designate critical habitat in stop-over areas along their migratory route.

WOOD STORK

The wood stork is a large wading bird that feeds on fish, crayfish, amphibians, and reptiles. This species of stork was federally listed as threatened in 1984.

Life Cycle: The wood stork is the only species of stork that breeds in the U.S. and will nest together in large colonies of 100-500. Research has shown that some wood storks are moving out of south Florida and are forming nesting colonies in wetlands throughout the Southeast. Incubation period lasts about 30 days and young wood storks will be able to fly 10-12 weeks after hatching. Wood storks will typically live between 11-18 years old in the wild.

Source: FWS (Photo Credit: Mark Cook)

Habitat: Wood storks nest in mixed hardwood swamps, sloughs, mangroves, and cypress domes. They will forage from both freshwater and estuarine marshes.

Threats: Currently, the biggest threat to wood storks comes from drainage of cypress stands that will prevent wood storks from nesting. Normal flooding cycles are necessary for the wood storks to have access to their food source.

Recovery Measures: The main source of recovery comes from the wood storks being listed under the Federal Endangered Species Act as a threatened species. After being federally listed, the FWS and state wildlife agencies were prompted to collaborate with conservation groups, government agencies, and private landowners to help restore and build back wood stork habitat. Since 2005, private landowners located in the southeast United States have helped restore 6,254 acres of habitat in 179 projects that have benefited wood storks and other wildlife living in the region.

FISHES

SHORTNOSE STURGEON

Shortnose sturgeons are yellowish-brown colored fish that can grow to approximately 4.5 feet long and up to 60 pounds. This species has been federally listed as endangered since the inception of the Endangered Species Act in 1973.

Source: NOAA Fisheries (Photo Credit: Robert S. Michelson)

Life Cycle: According to NOAA Fisheries, this species will hatch in freshwater rivers and spend most of their time in the estuaries of these rivers. They will ultimately spend very little of their life in the ocean, and if they do, they will generally stay close to the shore.

Habitat: Shortnose sturgeon live in rivers and coastal waters along the east coast. Within Chatham County, Georgia this species can be found in the Ogeechee River and the Savannah River.

Threats: The largest threat to shortnose sturgeon are dams that block access to spawning areas within rivers. Additionally, habitat degradation through dredging, groundwater pumping, and urban industrialization has lowered the water quality of these habitats.

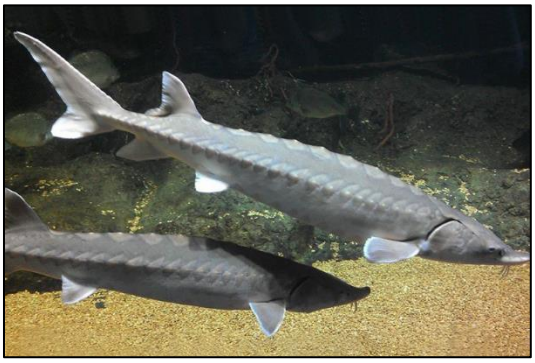
Recovery Measures: In 1988, NOAA Fisheries approved the shortnose sturgeon recovery plan which has helped implement recovery measures such as removing barriers such as old dams and providing more research on breeding habits and movements. Ultimately, the main source of protection comes from the shortnose sturgeon being protected under the Endangered species Act.

ATLANTIC STURGEON

Atlantic sturgeons are bluish-black fish with a white belly that are covered in bony plates along the entire length of their body. This species was federally listed as endangered in 2012.

Life Cycle: Atlantic sturgeon are a slow-growing species that has been recorded reaching up to 14 feet in length and up to 60 years of age, according to NOAA Fisheries. This species hatches in freshwater rivers and then head out to sea as sub-adults and then return to their place of birth to lay eggs once they reach adulthood.

Habitat: Atlantic sturgeon live a majority of their lives as adults in the ocean and will migrate into coastal estuaries and rivers to spawn. Within Chatham County, Georgia this species can be found in the Ogeechee River and the Savannah River.



Source: NOAA Fisheries

INSECTS

MONARCH BUTTERFLY

As one of the most recognizable butterfly species in North America, the monarch butterfly has a deep orange color with black borders and white spots. They are one of the few migratory insect's species and was federally listed as endangered in 2020.

Source: FWS

Life Cycle: According to the USDA, the monarch butterfly will develop from an egg to an adult in approximately 22 to 37 days. Monarchs have up to four generations each summer. During the summer breeding season, monarch butterflies will live 2-5 weeks while the last generation will migrate to Mexico before winter.

Habitat: Monarch butterflies will live in many different habitat types but are dependent on milkweed as their host plant. They will feed on the nectar from many flowers but can only lay their eggs on milkweed plants.

Threats: The primary drivers affecting the monarch butterfly are the changes in breeding and migratory habitats. Additionally, insecticides and effects of climate change have also negatively impacted the population.

Recovery Measures: Currently the main source of recovery comes from the monarch butterfly being listed under the Federal Endangered Species Act as an endangered species. Additionally, the FWS approved a candidate conservation agreement (CCA) known as the monarch agreement in all 48 contiguous states. This

agreement specifically helps with the habitat necessary for monarchs and their host plant along existing rights-of-way.

MAMMALS

TRICOLORED BAT

The tricolored bat is known for its tricolored fur that appears dark at the base and lighter in the middle and dark at the tip. This species was federally listed as endangered in 2022.

Source: FWS (Photo Credit: Pete Pattavina)

Life Cycle: According to the FWS, tricolored bats mate in the fall, hibernate in the winter, and emerge in the spring where females form maternity colonies and typically give birth to two pups. Life span of these species is estimated to be up to 14 years old.

Habitat: During the spring, summer, and fall tricolored bats can be found roosting among live and dead leaf clusters of deciduous hardwood trees. During the winter, this species will hibernate in caves or mines.

Threats: Like the northern long-eared bat, white-nose syndrome has led to 90-100% declines in tricolored bat winter colony abundance and is the largest threat to this species. Additional threats include wind turbines, shifting temperatures and precipitation events, and habitat loss from urban development.

Recovery Measures: Currently the main source of recovery comes from the tricolored bat being listed under the Federal Endangered Species Act as an endangered species. Additional conservation and data collection efforts are currently focused on reducing the symptoms and impacts of the white-nose syndrome.

WEST INDIAN MANATEE

According to The U.S. FWS, manatees were listed as endangered in 1967 and later downlisted to threatened in 2017. At the end of 2023, FWS announced a petition to uplist and reclassify the West Indian Manatee as endangered and began a comprehensive review of data concerning the manatee population.

Source: NPS

Life Cycle: There is no specific breeding season for manatees. Females will reach sexual maturity between 3 and 10 years of age and will give birth to one or two calves every two to five years. Calves will stay with their mother for up to two years. The average lifespan is 30 years.

Habitat: West Indian manatees prefer shallow, slow-moving waters and can move between fresh water and saltwater habitats. They are found primarily along the coast of Florida, the Gulf Coast, and the Caribbean during the winter months as they have little tolerance for cold water but have been found as far north as North Carolina during summer months. Their diet consists primarily of aquatic plants and they will spend about five to eight hours eating each day.

Threats: Manatees have no natural predators. Today the primary cause of death for manatees is accidental collisions with boats as they live in shallow waters. Additionally, their low reproductive rates and a decline in suitable habitat have led to them remaining a threatened species.

Recovery Measures: The FWS created the initial Manatee Recovery Plan in 1980. In Georgia, the Department of Natural Resources works closely with the U.S. Fish and Wildlife Service and the Florida

Fish and Wildlife Conservation Commission to monitor impacts to manatees, including watercraft mortalities and helps educate boaters how to proceed when in close proximity to manatees. Other conservation actions in Georgia include documenting manatee sightings and habitats, protecting tidal marshlands, flying aerial surveys and photographing scarred manatees.

REPTILES

EASTERN INDIGO SNAKE

The eastern indigo snake is both nonvenomous and docile in nature. They are one of the largest snakes in North America, growing up to 9 feet long. The eastern indigo was federally listed as threatened in 1978 following a dramatic population decline.

Source: FWS (Photo Credit: Dirk Stevenson)

Life Cycle: The FWS reports that the eastern indigo snake will lay between 4-12 eggs between April and June which will hatch after a 90-day incubation period. Their best chance for survival is after they are at least 18 months old.

Habitat: The Eastern Indigo snake inhabits pine flatwoods, hardwood forests, oak scrub, dry prairie, tropical hardwood hammocks, and freshwater and saltwater marshes and swamps. They will use gopher tortoise burrows for shelter during winter and for nesting.

Threats: Currently, the main threats are habitat destruction, fragmentation, and degradation. An increase to road development has separated their habitats into smaller sections that have divided the population and increased the amount of vehicle strikes.

Recovery Measures: The main source of recovery comes from the Eastern Indigo snake being listed under the Federal Endangered Species Act as a threatened species. Additionally, the Georgia DNR conducts annual mark-recapture monitoring across the eastern indigo snake range in Georgia and the state has acquired more than 90,000 acres of conservation easements that protect more than 60 gopher tortoise populations.

GREEN SEA TURTLES

Green sea turtles are the largest hard-shelled sea turtle and are known for their greenish color that comes from them eating primarily seagrasses and algae. The green sea turtle was first listed under the Endangered Species Act in 1978.

Source: NOAA Fisheries (Photo Credit: Dave Burdick)

Life Cycle: According to NOAA Fisheries, green sea turtles could live for at least 70 years or more with female green turtles reaching maturity at 25 to 35 years. In the United States, breeding season begins in late spring and each female will lay about 110 eggs per nest.

Habitat: Green sea turtles are found worldwide in subtropical and temperate regions. In the United States, green turtles are found in inshore and nearshore waters from Texas to Maine.

Threats: One of the primary threats to green sea turtles is their unintended capture in fishing gear. Additionally, coastal development and rising sea levels from climate change have led to the degradation of nesting habitat.

Recovery Measures: In 2023, NOAA Fisheries has proposed to designate new areas of critical habitat for the green sea turtles along the Atlantic coast of the United States. Additionally, the U.S. FWS has developed and implemented recovery plans which contain actions of conservation in different regions. Additionally, a network of 200 volunteers, researchers, and agency employees called the Georgia Sea Turtle Cooperative that helps protect sea turtle nests along the coast of Georgia.

LEATHERBACK SEA TURTLE

The leatherback sea turtle is the largest turtle in the world, and they are the only species of sea turtle that lacks scales and a hard shell. The leather back turtle was federally listed as endangered in 1970.

Life Cycle: According to NOAA Fisheries, leatherback turtles grow fast when compared to hard-shelled turtles. Their lifespan estimates a range of 45 to 50 years old or more. Female leatherbacks nest every 2-4 years and lay clutches of approximately 100 eggs.

Source: NOAA Fisheries

Habitat: The leatherback turtle has the widest global distribution of any reptile and is found in the Atlantic, Pacific, and Indian Oceans. Leatherback turtles will remain at sea only coming to shore when it is time to nest.

Threats: One of the primary threats to leatherback sea turtles is their unintended capture in fishing gear. Additionally, coastal development and rising sea levels from climate change have led to the degradation of nesting habitat.

Recovery Measures: The main source of recovery comes from the leatherback sea turtle being listed under the Federal Endangered Species Act as an endangered species. The U.S. FWS has developed and implemented recovery plans which contain actions of conservation in different regions. Additionally, a network of 200 volunteers, researchers, and agency employees called the Georgia Sea Turtle Cooperative that helps protect sea turtle nests along the coast of Georgia.

LOGGERHEAD SEA TURTLE

Loggerhead turtles are known for their large heads and powerful jaws that help them eat hard-shelled prey and was federally listed as threatened in 1978.

Life Cycle: According to NOAA Fisheries, loggerhead sea turtles can live 70 to 80 years or more. Female loggerheads reach maturity at about 35 years of age and will mate every 2 to 3 years. Each nest contains about 100 eggs and a single female will lay three to five nests during nesting season.

Source: North Carolina Wildlife Resources Commission (Photo Credit: M. Godfrey)

Habitat: Loggerhead sea turtles are found worldwide in subtropical and temperate regions. Juvenile and adult loggerheads live in U.S. coastal waters and only come to shore when its time to nest. The loggerhead turtle is the only sea turtle species that regularly nests on Georgia beaches.

Threats: One of the primary threats to loggerhead sea turtles is their unintended capture in fishing gear. Additionally, coastal development and rising sea levels from climate change have led to the degradation of nesting habitat.

Recovery Measures: The main source of recovery comes from the loggerhead sea turtle being listed under the Federal Endangered Species Act as a threatened species. The Georgia Department of Natural Resources coordinates sea turtle conservation efforts in the state as their efforts aim to protect loggerhead turtle nests from predation, poaching, and habitat destruction. Additionally, a network of 200 volunteers, researchers, and agency employees called the Georgia Sea Turtle Cooperative that helps protect sea turtle nests along the coast of Georgia.

FLOWERING PLANTS

PONDBERRY

Source: FWS

The pondberry is a deciduous shrub that grows between 1 to 6 feet in height and produce yellow flowers in early spring prior to leaf development. This species was federally listed as endangered in 1986.

Life Cycle: According to FWS, reproduction for the pondberry plant is primarily vegetative through stolons, which are horizontal stems or runners that take root to form new plants. Mature fruits are found in October and the seeds are only viable for a short period of time.

Habitat: The pondberry is often associated with wetland habitats and are often found around the margins of sinks, ponds, and other depressions along the coast. This species of plant are often found in shaded areas but can also be found in full sun.

Threats: One of the biggest threats to the pondberry is habitat degradation and altered hydrology of the landscape. Additionally, disease and predation have spread among existing populations.

Recovery Measures: The main source of recovery comes from the pondberry being listed under the Federal Endangered Species Act as an endangered species. Additionally, the pondberry receives some protections under state laws and regulations through the Georgia Wildflower Preservation Act of 1973.

AMERICAN CHAFFSEED

The American chaffseed is a perennial herb that produces five-lobbed reddish-purple flowers and was federally listed as endangered in 1992.

Source: FWS (Photo Credit: Robert Sincliar)

Life Cycle: According to the FWS, American chaffseed are not capable of long-term dormancy within soil as the seeds will remain viable in the soil for at least one year. Soil disturbance through fire is necessary to help expose bare soil for the seeds to grow in.

Habitat: American chaffseed occurs in longleaf pine flatwoods and savannas that are fire-maintained. They are often found in ecotonal areas between peaty wetlands and sandy soils.

Threats: The major threat to American chaffseed is habitat deconstruction and fragmentation due to urbanization. Additionally, fire suppression, disease, and predation have threated the current population of this species.

Recovery Measures: The main source of recovery comes from the American chaffseed being listed under the Federal Endangered Species Act as an endangered species. Additionally, the American chaffseed

receives further protections under state laws and regulations through the Georgia Wildflower Preservation Act of 1973.

CANBY'S DROPWORT

The Canby's dropwort is a perennial herb that belongs to the mint family and was federally listed as endangered in 1986.

Source: U.S. Forest Service (Photo Credit: Marjorie Boyer)

Life Cycle: According to the FWS, the Canby's dropwort seed germination can take approximately one year or more. This species reproduces asexually through lateral underground rootstocks.

Habitat: The Canby's dropwort inhabits coastal plain communities and wetlands such as pond cypress savannahs, sloughs, and wet pine savannahs.

Threats: The largest threat to Canby's dropwort is habitat deconstruction and fragmentation due to urbanization as ditching and draining of wetlands has occurred.

Recovery Measures: The main source of recovery comes from the Canby's dropwort being listed under the Federal Endangered Species Act as an endangered species. Additionally, this flowering plant species receives further protections under state laws and regulations through the Georgia Wildflower Preservation Act of 1973.

5.2 HABITAT PRESERVATION

5.2.1 LONGLEAF PINES

The longleaf pine ecosystem provides habitat for amphibians, reptiles, and plants including the frosted flastwoods salamander, the eastern indigo snake, and the American chaffseed. The longleaf pine ecosystem is characterized by open-canopied stands of stately pines covering a carpet of grasses and other herbaceous vegetation. The longleaf pine ecosystem exists throughout Chatham County except for in the tidal estuarine wetlands. However, there are specific areas in the County where the longleaf pine is more concentrated.

Suitable habitat requires ample herbaceous ground cover, open canopy conditions, and relatively low basal area (timber density) in merchantable stands. These key habitat parameters can be influenced by tree stocking rates, prescribed fire, pre-commercial and commercial thinning, and chemical control of hardwood vegetation where necessary.

Options for conserving habitat include establishment of a conservation bank, financial incentives to protect existing habitat, and on-site mitigation. A conservation bank could serve to mitigate loss and destruction of habitat that occurs in the County by requiring developers to contribute funds to the purchase of preserve areas. An alternative to the conservation bank is to offer financial incentives to private landowners with tracts containing habitat or habitat that is readily restorable. Federal entities and non-profits may have funding available that could be directed to this purpose. A third alternative is to require on-site mitigation on the parcel where habitat loss occurs. The County could work with the Savannah Tree Foundation to encourage the preservation of the longleaf pine for protection of this habitat.

The County can also consider setbacks and buffers as protective measures for this habitat. All development permits should conform to local and federal requirements including USFWS habitat conservation requirements.

RECOMMENDATIONS

The following recommendations could lead to both habitat preservation and an increase in the number of long-leaf pines within Chatham County. These recommendations are incorporated as detailed actions later in the plan:

1. Consider creating a conservation bank to replace the taking of habitat or consider financial incentives for private landowners with tracts containing habitat.
2. Work with the Savannah Tree Foundation for protection of the longleaf pine.
3. Expand riparian impervious surface setbacks.
4. Work with the Nature Conservancy to find willing participants to dedicate land to the "Private Lands" database to ensure parcels are maintained and not further developed.

5.2.2 WETLANDS AND COASTAL MARSHES

Wetlands and coastal marshes provide habitat for the wood stork, the pondberry, and Canby's dropwort, and they are important to many species that reside in coastal waters, discussed in more detail below. Mere preservation of wetland acreage does not necessarily preserve the complex processes that create and make available the abundance of food required by the species that depend on wetlands. Wetlands must be managed to maintain or recover these dynamic processes. Threats to species in wetlands and coastal marshes include loss of feeding habitat, water level manipulations affecting drainage, predation and/or nest tree regeneration, human disturbance, and pesticides or other chemical pollutants.

The County should develop a prioritization scheme to focus preservation efforts on sites with the greatest degree of threat. Property owners of priority sites should also be informed and encouraged to comply with regulatory mechanisms. Educational materials could be developed for property owners and for use in schools and to educate policymakers and elected officials on the importance of maintaining and protecting wetland habitats.

Chatham County should continue to acquire land for habitat preservation or restoration, focusing on sites with the greatest potential. Nesting habitat should be protected from disturbance and human alteration. The County should also work with the Savannah Tree Foundation to encourage the preservation of the tree canopy for protection of this habitat.

RECOMMENDATIONS

These following recommendations could support preservation of wetlands and coastal marshes:

1. Expand riparian impervious surface setbacks including a 35' setback on coastal marshland and wetlands to keep sediment and pollutants including lawn chemicals and fertilizer, and roadway oils and other chemicals from entering wetlands.
2. Work with the Metropolitan Planning Commission on the Chatham County Greenway Master Plan to direct trails and recreation activity away from threatened or endangered species habitat.
3. Work with the Savannah Tree Foundation for protection of the tree canopy.
4. Work with the Nature Conservancy to find willing participants to dedicate land to the "Private Lands" database to ensure parcels are maintained and not further developed.

5.2.3 BEACH FRONTS AND COASTAL WATERS

Several species of birds, fish, and turtles and the West Indian manatee use the sandy beaches, sand flats, and/or coastal waters of Chatham County for habitat. These areas encompass the critical habitat areas delineated for the piping plover, red knot, Atlantic sturgeon, and loggerhead sea turtle.

Beach fronts and shallow coastal waters are affected by human activities. Dredge and fill activities, polluted runoff, propeller scarring, and other actions result in the loss of vegetated areas and springs. Quiet backwaters have been made more accessible to human activities and increasing levels of vessel traffic make manatees increasingly vulnerable to boat collisions in travel corridors. Shorebirds and turtles can be disturbed by people and dogs. Additionally, lighting can disorient sea turtles on the beach and create sky glow that may affect all species, especially migratory birds.

The first component of preserving manatee habitat is to first identify where manatees are roaming. In coordination with GADNR who has ample material on Manatee protection and conservation, the County should create outreach materials directing residents to report manatee sightings. The information will enhance knowledge of the endangered animal's distribution in the state. The County should also create outreach materials and signage urging boaters to slow down. Heeding low-speed and no-wake zones, particularly around docks where manatees eat algae growing on the structures, will reduce collision risks. Finally, the County should work in concert with GADNR and other agencies to identify lands that can be purchased and conserved as manatee habitat.

Habitat degradation or loss (resulting, for example, from dams, bridge construction, channel dredging, and pollutant discharges) and mortality (for example, from impingement on cooling water intake screens, dredging, and incidental capture in other fisheries) are principal threats to sturgeon survival. Water quality of the Savannah River and its tributaries along with responsible bridge construction and demolition projects can help to protect this habitat.

RECOMMENDATIONS

The following recommendations support the preservation and protection of beaches and coastal waters:

1. Create and disseminate outreach materials to educate residents on spotting and reporting of manatees.
2. Create outreach materials and signage educating residents on how boat speeds impact the manatee.
3. Identify restricted areas to keep boats and humans from interacting with the manatee population.
4. Create outreach materials and signage educating residents on laws concerning dogs and wildlife and the importance of minimizing disturbance to species.
5. Create outreach materials regarding the need to follow lighting ordinances, mount lights as low as possible, minimize light intensity, fully shield and downward direct lights, use bulbs that produce only long wavelength light (560 nm or greater), and use LED bulbs with a wavelength of 2,700 Kelvin or less at inland locations.
6. Work with the Nature Conservancy to identify critical paths and connectivity between freshwater and marine habitats and to protect lands to allow for rainwater recharge to help grow seagrass.
7. Where erosion control products are necessary, encourage the use of environmentally friendly, biodegradable erosion control materials, aka wildlife friendly plastic-free netting in erosion and sediment control products.

PRESERVED OR INCREASED HABITAT

The above recommendations, if implemented, may not necessarily preserve or increase habitat, but it could result in a safer habitat which may increase the survival rate of the manatee. One important way to preserve and/or increase the manatee population is to work hand-in-hand with the Nature Conservancy to protect lands to allow for rainwater to recharge springs which is critical to helping seagrass beds to survive and multiply since this is their primary source of food. Unrestricted and connected waterways between freshwater and marine habitats are necessary so that the manatee populations can survive.

5.2.4 OTHER HABITAT AREAS

The tricolored bat roosts in deciduous hardwood trees in spring, summer, and fall. It is important to protect roosts during spring and early summer when newborn bat pups are still unable to fly.

Monarch butterflies are dependent on milkweed, which can grow in a variety of areas. Leaving areas in a natural state and planting native wildflowers, including milkweed, will help to preserve monarch butterfly habitat.

Threats to these habitats include clearing and development and exotic pest plants. Conservation and management recommendations include protecting coastal forests from clearing and development, preserving open space, and planting native species.

RECOMMENDATIONS

The following recommendations are intended to protect these habitats:

1. Create outreach materials on the importance of avoid tree clearing from May 1 until July 15 when newborn bats (pups) may be in trees and unable to fly.
2. Set aside and leave areas in a natural state and/or plant native wildflowers, including milkweed, where appropriate.

5.3 ACTION PLAN

This action plan is intended to protect the threatened and endangered species identified above as well as preserve open space and natural floodplain areas. The detailed actions summarize who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented.

It should be noted that the actions included in this plan are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The County is not obligated by this document to implement any or all of these projects. Rather this action plan represents the desires of the County to preserve and/or restore critical habitat and protect species within the floodplain.

PROJECT	BACKGROUND	TIMEFRAME	RESPONSIBLE PARTY	SUPPORTING AGENCIES	POTENTIAL FUNDING	SPECIES PROTECTED
1. Consider creating a conservation bank to replace the taking of longleaf pine habitat or consider financial incentives for private landowners with tracts containing longleaf pine habitat.	The longleaf pine ecosystem provides habitat for amphibians, reptiles, and plants. Suitable habitat requires ample herbaceous ground cover, open canopy conditions and relatively low timber density. Habitat areas should either be preserved through development restrictions or replaced in an alternate location when development does occur.	3-5 years	Chatham County - Savannah MPC	The Nature Conservancy	County operating budget and private funding	Frosted flatwoods salamander, eastern indigo snake, American chaffseed
2. Expand riparian impervious surface setback including a 35-foot setback on coastal marshlands and wetlands.	Expansion of the setback is an effort to protect the natural and beneficial functions of the saltwater marsh, wetlands, and floodplain. This setback would align with the County's 35' riparian buffer requirement on properties adjacent to the marsh in the Environmental Overlay District (EOD).	3-5 years	Chatham County - Savannah MPC		County operating budget	Frosted flatwoods salamander, eastern indigo snake, wood stork, all plant species
3. Work with the Savannah Tree Foundation on tree canopy preservation projects.	The longleaf pine ecosystem provides critical habitat for amphibians, reptiles and plants. Deciduous hardwoods provide nesting habitat for tricolored bats. The mission of the Savannah Tree Foundation is to preserve, protect and plant canopy trees in Chatham County. The Savannah Tree Foundation promotes, through direct action and education, an awareness of trees as vital environmental resources.	3-5 years	Chatham County - Savannah MPC	Savannah Tree Foundation	County operating budget	Frosted flatwoods salamander, eastern indigo snake, wood stork, tricolored bat, all plant species

PROJECT	BACKGROUND	TIMEFRAME	RESPONSIBLE PARTY	SUPPORTING AGENCIES	POTENTIAL FUNDING	SPECIES PROTECTED
4. Work with The Nature Conservancy to develop a private lands database and to protect and conserve environmentally sensitive lands. As part of this effort, identify critical paths and connectivity between freshwater and marine habitats to protect lands to allow for rainwater recharge to help grow seagrass.	Private lands conservation is a tactic that leverages the increasing interest of the private sector to take part in conservation. The Nature Conservancy works with landowners, communities, cooperatives and businesses to establish local groups that can protect land. Some of the main tools used to achieve these goals include land trusts, conservation easements, private reserves and incentives.	2-3 years	Chatham County - Savannah MPC	The Nature Conservancy	County operating budget and private funding	All species
5. Work with the Metropolitan Planning Commission on the Chatham County Greenway Master Plan to direct trails and recreation activity away from threatened or endangered species habitat.	Greenway plans provide natural and beneficial functions of the floodplain by protecting certain areas of the city from development. Connectivity of green space (open space) benefits both Savannah and Chatham County. Working together to provide for additional greenways or open space provides not only a recreation benefit but an ecological benefit of protected land from development and intrusion into sensitive areas. Trails and recreational spaces should be directed away from rare, threatened or endangered species habitat.	2-3 years	Chatham County - Savannah MPC	n/a	County operating budget and potential state funding; Rails to Trails Program	Frosted flatwoods salamander, eastern indigo snake, wood stork, tricolored bat, all plant species
6. Create and disseminate outreach materials to educate residents on spotting and reporting of manatees.	The first component of preserving manatee habitat is to identify where manatees are roaming which will enhance knowledge of the animal's distribution in the County. This information can inform additional efforts to restrict boat traffic around manatees.	1 year	Chatham County - Savannah MPC	Chatham County Engineering; GADNR	County operating budget	West Indian Manatee
7. Create outreach materials and signage educating residents on how boat speeds impact the manatee.	Manatees are vulnerable to boat collisions. Heeding low-speed and no-wake zones will reduce collision risks.	1 year	Chatham County - Savannah MPC		County operating budget	West Indian Manatee

PROJECT	BACKGROUND	TIMEFRAME	RESPONSIBLE PARTY	SUPPORTING AGENCIES	POTENTIAL FUNDING	SPECIES PROTECTED
8. Identify restricted areas to keep boats and humans from interacting with the manatee population.	Industrial warm-water discharge areas and deep-dredged areas are used as wintering sites and stormwater pipes and freshwater discharges in marinas provide manatees with drinking water. These areas should be monitored for manatee activity and restricted from human and boating activity.	2-3 years	Chatham County - Savannah MPC		County operating budget	West Indian Manatee
9. Create outreach materials and signage educating residents on laws concerning dogs and wildlife and the importance of minimizing disturbance to species.	Beach/coastal walking can have negative consequences on shorebirds that are using the area for rest, foraging, or nesting. Human disturbance is one of the most significant threats to shorebird populations. These threats can intensify as human use (coastal recreation, off-leash dogs) in these coastal areas increases, leading to an overall reduction in suitable, undisturbed habitats for shorebirds.	1 year	Chatham County - Savannah MPC		County operating budget	Piping plover, Red knot
10. Create outreach materials regarding the need to follow lighting ordinances, mount lights as low as possible, minimize light intensity, fully shield and downward direct lights, use bulbs that produce only long wavelength light (560 nm or greater), and use LED bulbs with a wavelength of 2,700 Kelvin or less at inland locations.	Lighting pollution is a threat to many types of wildlife. Sea turtles and migratory birds can be disoriented by artificial lighting.	1 year	Chatham County - Savannah MPC	USFWS	County operating budget	All bird and turtle species
11. Where erosion control products are necessary, encourage the use of environmentally friendly, biodegradable erosion control materials, aka wildlife friendly plastic-free netting in erosion and sediment control products.	Wildlife safe materials are those that are 100% biodegradable, made from natural fibers, and use a loose weave (often called leno weave) that allow animals to wiggle free. These methods will minimize wildlife entanglement and plastic debris pollution.	2-3 years	Chatham County - Savannah MPC		County operating budget	All birds, all fish, West Indian Manatee, all reptiles

PROJECT	BACKGROUND	TIMEFRAME	RESPONSIBLE PARTY	SUPPORTING AGENCIES	POTENTIAL FUNDING	SPECIES PROTECTED
12. Create outreach materials on the importance of avoid tree clearing from May 1 until July 15 when newborn bats (pups) may be in trees and unable to fly.	Habitat loss from urban development threatens the tricolored bat, which roosts among live and dead leaf clusters of deciduous hardwood trees.	1 year	Chatham County - Savannah MPC	n/a	County operating budget	Tricolored bat
13. Set aside and leave areas in a natural state and/or plant native wildflowers, including milkweed, where appropriate	Monarch butterflies will live in many different habitat types but are dependent on milkweed as their host plant.	2-3 years	Chatham County - Savannah MPC	The Nature Conservancy; University of Georgia	County operating budget	Monarch butterfly
14. Educate the public concerning the eastern indigo snake. USFWS has outreach materials available on this species.	The indigo snake is protected by state and federal laws. It is important to leave a snake on its own to minimize chance of harm.	1 year	Chatham County - Savannah MPC	USFWS	County operating budget	Eastern indigo snake
15. Use the Land Use Element of the Chatham County-Savannah Comprehensive Plan to direct development away from floodplains and wetlands.	Planning and zoning activities should direct development away from floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation.	2-3 years	Chatham County - Savannah MPC	n/a	County operating budget	All species
16. Conserve vacant low-lying/flood-prone/wetlands areas for open space through comprehensive planning, regulatory enhancements and future acquisitions. Develop a program for property acquisition within the floodplain.	Open space can provide valuable habitat and natural water management functions. Property acquisition followed by open space preservation can protect the natural and beneficial functions of the saltwater marsh, wetlands, and floodplain.	3-5 years	Chatham County - Savannah MPC	The Nature Conservancy	County operating budget	All species
17. Review the Floodplain Damage Prevention Ordinance to propose improvements regarding floodplain management.	Regulations help to control development in floodplains in order to reduce susceptibility to flood damage. The Flood Damage Prevention Ordinance can be used to limit development within the floodplain and ensure that development results in a minimal impact to habitat.	1-2 years	Chatham County Engineering Department	n/a	County operating budget	All species

PROJECT	BACKGROUND	TIMEFRAME	RESPONSIBLE PARTY	SUPPORTING AGENCIES	POTENTIAL FUNDING	SPECIES PROTECTED
18. Review the County's Local Design Manual to propose improvements that will increase the use of Green Infrastructure / Low impact design principles for development projects.	Green Infrastructure/Low Impact development results in more green space and less impervious area. Vegetation in the urban environment provides habitat for birds, mammals, amphibians, reptiles, and insects. By reducing erosion and sedimentation, green infrastructure improves habitat in small streams. Green Infrastructure also helps to facilitate wildlife movement and connect wildlife populations between habitats.	2-3 years	Chatham County Engineering Department	n/a	County operating budget	All species

6 PLAN ADOPTION

The purpose of formally adopting this plan is to secure buy-in from the Chatham County elected officials, raise awareness of the plan, and formalize the plan's implementation. The Chatham County Commission has adopted the Natural Floodplain Functions Plan by passing a resolution. A copy of the executed resolution is shown below.

Note to Reviewers: When this plan has been reviewed and approved, the adoption resolution will be signed and added here.

7 PLAN MAINTENANCE

Implementation and maintenance of the plan is crucial to the overall success of this Natural Floodplain Functions Plan. This section provides an overview of the strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan.

7.1 IMPLEMENTATION

Once adopted, the plan must be implemented in order to be effective. Implementation will be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the multi-objective, win-win benefits to each program and the community. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a sustainable community. Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. When funding does become available, the County will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

7.1.1 RESPONSIBILITY FOR IMPLEMENTATION OF ACTIONS

Officials appointed to head community departments and community staff are charged with implementation of various actions in the plan. During the annual review as described later in this section, an assessment of progress on each of the actions in the plan will be determined and noted. At that time, recommendations will be made to modify timeframes for completion of activities, funding resources, and responsible entities.

7.1.2 INCORPORATION INTO EXISTING PLANNING MECHANISMS

Another important implementation mechanism that is highly effective and low-cost is incorporation of the Natural Floodplain Functions Plan actions into other plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement actions. As described in this plan's capability assessment, the County already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Chatham County Pre- and Post-Disaster Mitigation Plans
- Chatham County – Savannah Comprehensive Plan
- Ordinances
- Flood/stormwater management/master plans
- Other plans, regulations, and practices with a mitigation focus

Those involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, etc., as appropriate. As described above, implementation and incorporation into existing planning mechanisms will be done through the routine actions of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;

- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this Natural Floodplain Functions Plan.

7.2 MAINTENANCE

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized.

7.2.1 MAINTENANCE SCHEDULE

The Chatham County Engineering Department is responsible for initiating plan reviews. In order to monitor progress, the County will revisit this plan annually. Furthermore, the plan must be updated at least once every 10 years. The update must include a review of any changes to conditions as well as progress made since the original plan was prepared. With this plan update anticipated to be fully approved and adopted in 2024, the next plan update for the County will occur in 2034. Any changes to the adopted plan must be approved by the County Commission.