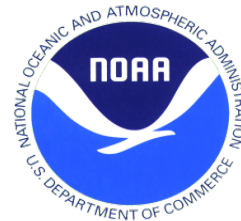
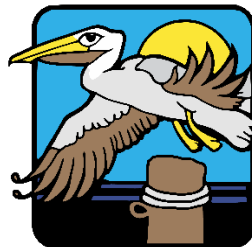


Weeks Bay National Estuarine Research Reserve



Management Plan 2026 - 2031



ACKNOWLEDGEMENTS

This management plan has been developed in accordance with NOAA regulations, including all provisions for public involvement. It is consistent with the congressional intent of Section 315 of the Coastal Zone Management Act of 1972, as amended, and the provisions of the Alabama Coastal Area Management Program (ACAMP).

The revision of the 2017 Weeks Bay National Estuarine Research Reserve (Reserve or NERR) Management Plan was made possible through the cooperative efforts of the Alabama Department of Conservation and Natural Resources, State Lands Division (including its Reserve and ACAMP staff) the Weeks Bay Advisory Committee, and the National Oceanic and Atmospheric Administration, Stewardship Division staff.

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This publication is available for downloading at
<https://coast.noaa.gov/nerrs/reserves/weeks-bay.html>
and www.weeksbayreserve.com.

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ABBREVIATIONS

ACAMP	Alabama Coastal Area Management Plan
ACNPCP	Alabama Coastal Nonpoint Pollution Control Program
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AHC	Alabama Historical Commission
ALDOT	Alabama Department of Transportation
AUMERC	Auburn University Marine Extension and Research Center
BIL	Bipartisan Infrastructure Law
BCC	Baldwin County Commission
BCBE	Baldwin County Board of Education
BMP	Best Management Practice
C-CAP	Coastal Change Analysis Program
CDMO	Central Data Management Office
CoCoRaHS	Community Collaborative Rain, Hail & Snow Network
CO-OPS	NOAA Center for Operational Oceanographic Products and Services
CTP	Coastal Training Program
DISL	Dauphin Island Sea Lab (see also Marine Environmental Sciences Consortium)
DRC	Disaster Response Center
DRP	Disaster Response Plan
EPA	Environmental Protection Agency
ESC	Environmental Studies Center
FEMA	Federal Emergency Management Agency
FWLT	Alabama Forever Wild Land Trust
GCOOS	Gulf of Mexico Coastal Ocean Observing System
GIS	Geographic Information System
GOAA	Gulf of America Alliance
GOMESA	Gulf of Mexico Energy Security Act
GPS	Global Positioning System
GSA	Geological Survey of Alabama
HABs	Harmful Algal Blooms
HBCUs	Historically Black Colleges and Universities
HUC	Hydrologic Unit Code
IRA	Inflation Reduction Act
KEEP	K-12 Estuarine Education Program
MAM	Monitoring and Adaptive Management

MA/NA	Market Analysis/Needs Assessment
MASGC	Mississippi-Alabama Sea Grant Consortium
MESC	Marine Environmental Sciences Consortium (see Dauphin Island Sea Lab)
MOU	Memorandum of Understanding
MBNEP	Mobile Bay National Estuary Program
NERR	National Estuarine Research Reserve
NERRs	National Estuarine Research Reserves
NERRS	National Estuarine Research Reserve System
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRDA	Natural Resource Damage Assessment
OAW	Outstanding Alabama Water
OCM	Office for Coastal Management
ONRW	Outstanding National Resource Water
PAC	Procurement, Acquisition and Construction
PAA	Priority Acquisition Area
RAD	Resist-Accept-Direct
Reserve	Weeks Bay National Estuarine Research Reserve
RESTORE	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States
SALT	South Alabama Land Trust
SET	Surface Elevation Tables
SLD	State Lands Division
SLAMM	Sea Level Affecting Marshes Model
SoVi	Social Vulnerability Index
SWCD	Soil and Water Conservation District
SWMP	System-wide Monitoring Program
TNC	The Nature Conservancy
TOTE	Teachers on the Estuary
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
WBAC	Weeks Bay Advisory Committee
WTP	Wastewater Treatment Plant
YSI EXO	Yellow Springs Instruments Extended Operations Project

EXECUTIVE SUMMARY

The Weeks Bay National Estuarine Research Reserve (Reserve) was designated in 1986 and is one of 30 reserves established by the National Oceanic and Atmospheric Administration (NOAA) to promote informed management of the Nation's estuaries and coastal habitats. The National Estuarine Research Reserve System works with existing federal and state authorities to establish and operate research reserves and provide long-term conservation and stewardship of estuaries and their watersheds. The Alabama Department of Conservation and Natural Resources, State Lands Division is the lead state agency for the Reserve.

The Reserve is located along the eastern shore of Mobile Bay in Baldwin County, Alabama, between the major metropolitan areas of Mobile, Alabama, and Pensacola, Florida. At designation, the Reserve occupied 3,042 acres of land and water bottoms. The Reserve boundary established under the 2017-2022 management plan includes 9,317 acres of land and water habitat that supports a wide variety of plant and animal species. The Reserve proposes to expand the boundary to add 11 tracts acquired by the Alabama Department of Conservation and Natural Resources, State Lands Division and the State of Alabama Forever Wild Land Trust Program (FWLT) since 2017. The parcels proposed for addition consist of 690.55 acres of land and 868 acres of water bottoms adjacent to the newly acquired land, which would expand the Reserve boundary to 10,884.55 acres (Figure 1).



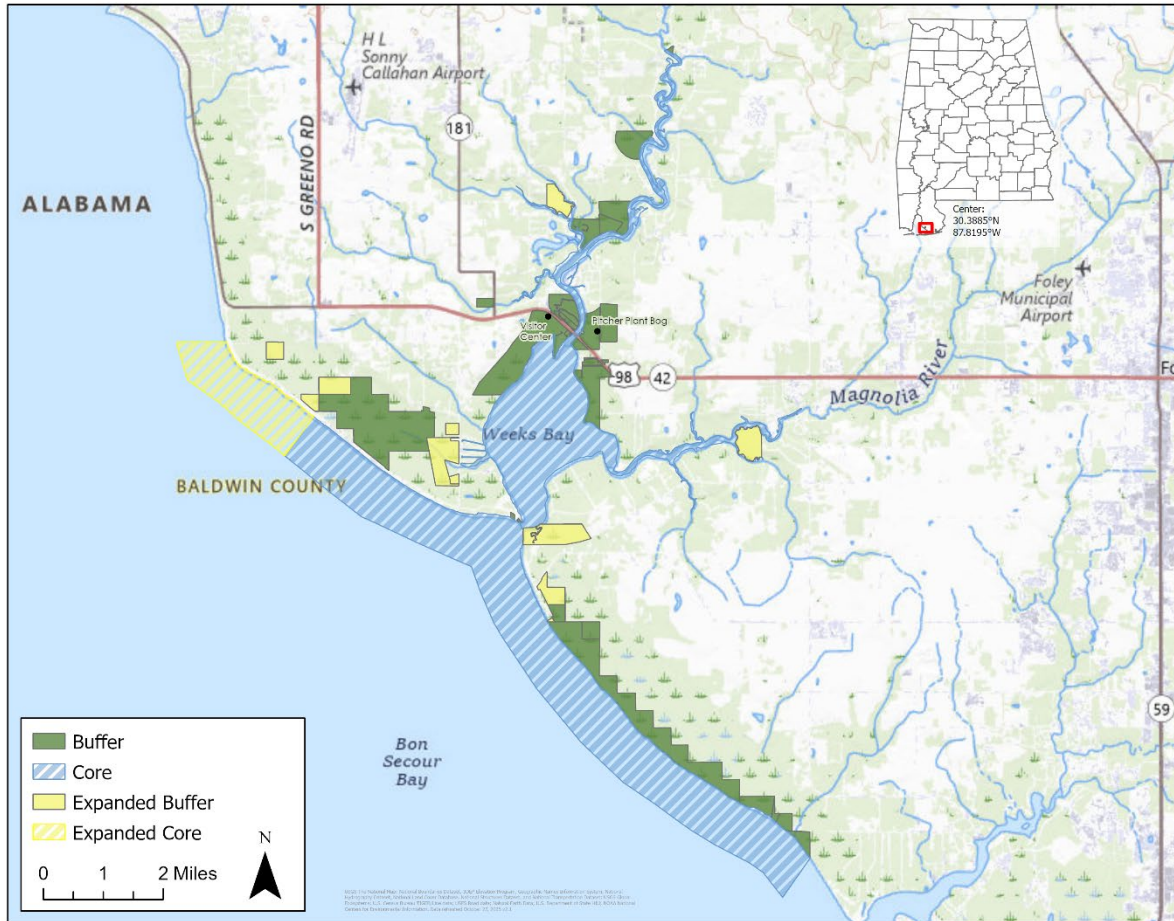


Figure 1. Weeks Bay Reserve Boundary (current and proposed expansion).

Weeks Bay and the land areas with rivers and creeks that drain into the bay (watershed) are compact. The area is representative of larger estuarine systems, particularly within the Louisianan region (see Figure. 5) and is a location for conducting the scientific investigation needed to help resolve management issues. Ecological stressors experienced in Weeks Bay and its watershed center around two general issues: land use change and ecosystem stressors. The effects of ecosystem stressors include alterations in weather patterns, fluctuations in tides and stream flow, rising sea levels and increasing severity of tropical events. The Reserve Management Plan identifies these stressors as priorities worthy of research and study. The Reserve uses accumulated science and monitoring data to manage property within its boundary and develops education and training for communities and resource managers to guide better decisions on use of coastal resources.

A comprehensive management plan provides a foundation for addressing the challenges of protecting and managing a reserve. This 2026-2031 Management Plan will be used to:

- Provide the vision and framework to guide Reserve activities during the five-year period.

- Facilitate discussion on Reserve niche and strategic collaborations with partners.
- Communicate how the reserve will address priority coastal management issues.
- Highlight reserve priorities and staff capabilities to address those priorities.
- Demonstrate how Reserve System programs are locally relevant and nationally significant.
- Enable the reserve and NOAA to track progress and realize opportunities for growth.
- Secure funding for land acquisition and stewardship as well as facility enhancements and maintenance.

The **mission** of the Reserve is to advance understanding and management of coastal Alabama's lands and waters to foster resilient communities and healthy habitats. This plan sets forth four programmatic goals and several objectives in support of the mission. The goals are:

- GOAL 1: Biologically diverse and resilient ecosystems within the Weeks Bay watershed serve as a model to other coastal ecosystems.
- GOAL 2: Understanding of coastal ecosystems through science and monitoring informs decisions affecting estuaries and coastal watersheds.
- GOAL 3: Improved ecological appreciation to advance coastal literacy, conservation, and resiliency.
- GOAL 4: Enhanced community sense of stewardship and appreciation of the local ecosystems.

Integration of activities within the Reserve's core programs of research, stewardship, training, and education, along with assistance from partners, enable staff to work towards these goals. Over the next management period, research and stewardship priorities include land use effects on water quality and watershed hydrology and the effects of sea level rise and wetland loss on habitat change and biodiversity. Cultural resource protection is a priority when undertaking restoration and land management activities. Training priorities include low impact development and alternative shorelines, coastal resilience for communities, and methods to reduce effects of flooding. Education efforts include continued inclusion of Reserve research priorities of water quality, ecosystem stressors, and sea level rise into student and teacher education with an emphasis on stewardship actions and increased community science involvement through the Reserve community science education program. All programs endeavor to work across sectors, increase partnerships and enhance volunteer participation. The Reserve will use this successful model to address ecosystem impacts and land use changes in the watershed to accomplish the **vision** of thriving Weeks Bay coastal habitats that are conserved, valued, and enjoyed by the community.

WEEKS BAY RESERVE MANAGEMENT PLAN

I. Introduction to the National Estuarine Research Reserve System

The National Estuarine Research Reserve System (NERRS) is a network of 30 protected estuarine areas that represent different biogeographic regions and estuarine types within the United States (Figure 2). Reserves are protected for long-term research, monitoring, education, and coastal stewardship. The Reserve System, created by the Coastal Zone Management Act of 1972, currently protects over one million acres of estuarine lands and waters. The system is managed in accordance with federal regulations at 15 CFR Part 921 and 15 CFR Part 921.15.

Each reserve has a unique boundary based on the nature of its ecosystem. The boundaries include the land and water areas needed to protect an intact ecological unit. Reserves classify their land and water areas as either “core” or “buffer”, which determines the level of conservation, and the types of activities allowed within each area. Each reserve develops the programming most appropriate for its location while also delivering required system-wide programs focused on research and monitoring, education, training, and stewardship.

The Reserve System is a partnership program between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states. NOAA provides funding, national guidance, and technical assistance for reserve operations and system-wide programs, facilities construction and land acquisition, graduate fellowships, and collaborative science projects. The state partner manages the reserve on a daily basis and works collaboratively with local and regional partners. NOAA also leads projects that integrate data or support decision-making at the national level.



NATIONAL ESTUARINE RESEARCH RESERVES

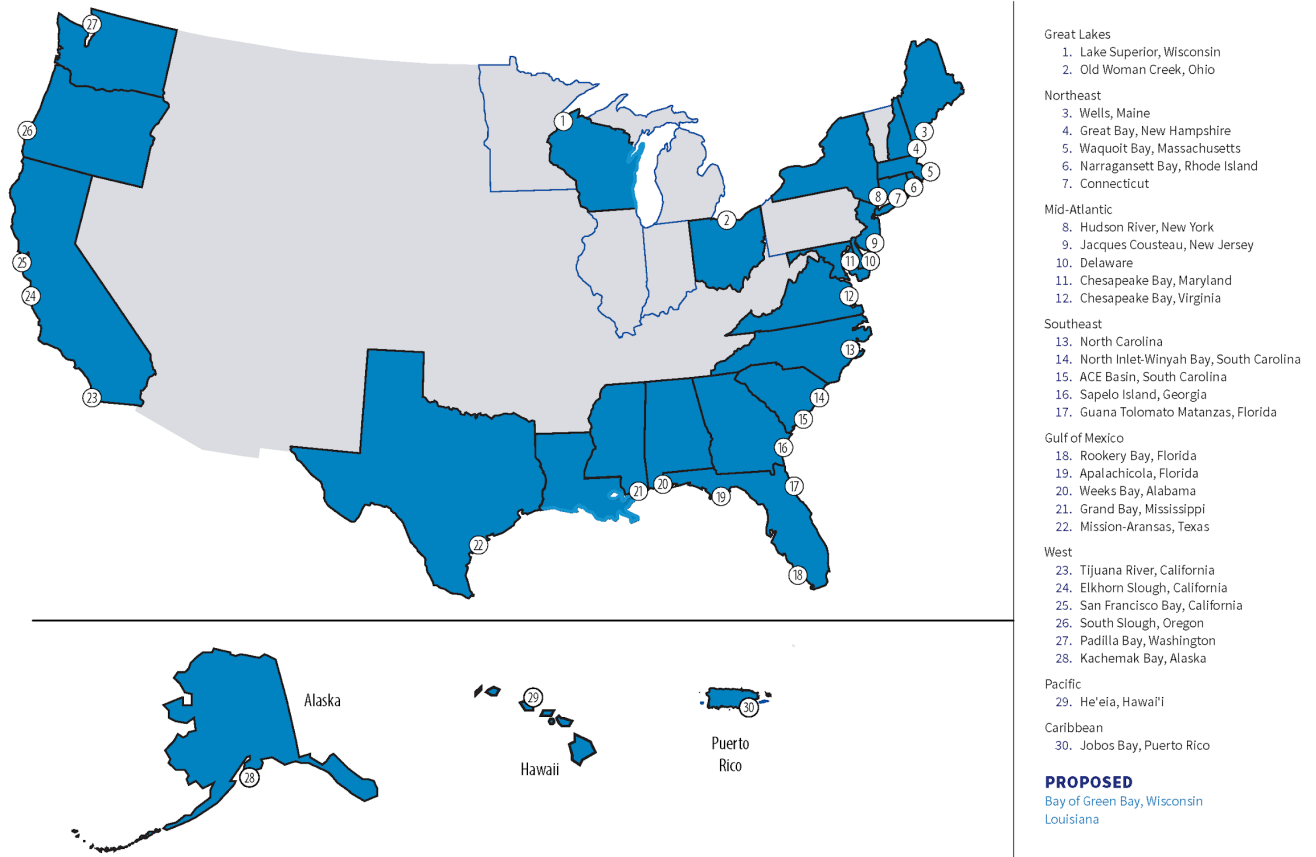


Figure 2. Map and List of Reserves in the National Estuarine Research Reserve System.

Each reserve is required to develop a management plan that contains the goals, objectives, and strategies for that reserve. Management plans are updated every five years and must be approved by NOAA. These plans enable the reserves and NOAA to track progress and realize opportunities for growth. Each plan describes how the reserve will carry out its foundational research, education, and training programs. Each plan also outlines administration, resource conservation, public access, land acquisition, and facility plans, as well as restoration and resource manipulation plans if applicable. The plans also incorporate strategies designed to help the reserve contribute to the system's national goals. NOAA periodically evaluates reserves for compliance with federal requirements and their approved management plan.

The most recent strategic plan for the National Estuarine Research Reserve System can be found at coast.noaa.gov/data/docs/nerrs/StrategicPlan.pdf. The 2017-2022 NERRS strategic plan describes the following goals for the system:

1. **Protecting Places:** Enhance and inspire stewardship, protection, and management of estuaries and their watersheds in coastal communities through place-based approaches.
2. **Applying Science:** Improve the scientific understanding of estuaries and their watersheds through the development and application of reserve research, data, and tools.
3. **Educating Communities:** Advance environmental appreciation and scientific literacy, allowing for science-based decisions that positively affect estuaries, watersheds, and coastal communities.

II. Introduction to the Reserve

History and Local Management

The history of Weeks Bay Reserve dates to the late 1970's when The Nature Conservancy (TNC) purchased 615 acres of coastal land with the intent of donating it for inclusion in the Bon Secour National Wildlife Refuge. After the donation was declined, in 1980 TNC agreed to donate the land to the state of Alabama if it was designated as a National Estuarine Sanctuary, NOAA's precursor designation to the National Estuarine Research Reserve System.

Over the next five years, the State of Alabama and NOAA worked to establish the Sanctuary, culminating in final approval of the Sanctuary's management plan in November 1985. During this five-year period, the Sanctuary's boundaries were expanded when the State purchased additional acreage and TNC donated more land. On February 19, 1986, Weeks Bay was officially designated as the Nation's 16th National Estuarine Sanctuary, with a total of 3,042 acres including water bottoms. In April of 1986, the name of the Sanctuary was changed to the Weeks Bay National Estuarine Research Reserve to be consistent with NOAA designation system.

NOAA currently provides leadership and support for three system-wide programs including the System-Wide Monitoring Program (SWMP), the K-12 Estuarine Education Program, and the Coastal Training Program (CTP), as well as the NERRS Science Collaborative and Margaret A. Davidson Fellowship. They also provide support for initiatives focused on the Reserve System's priorities: Environmental Change, Water Quality and Habitat Protection.

The NERRS operates as a federal/state partnership. The Alabama Department of Conservation and Natural Resources (ADCNR), State Lands Division (SLD) is the cooperating state agency and provides the administrative framework for operation of the Reserve (Figure 3). ADCNR SLD is responsible for managing the Reserve on a daily basis, implementing programs locally, and providing funds to match the federal investment.

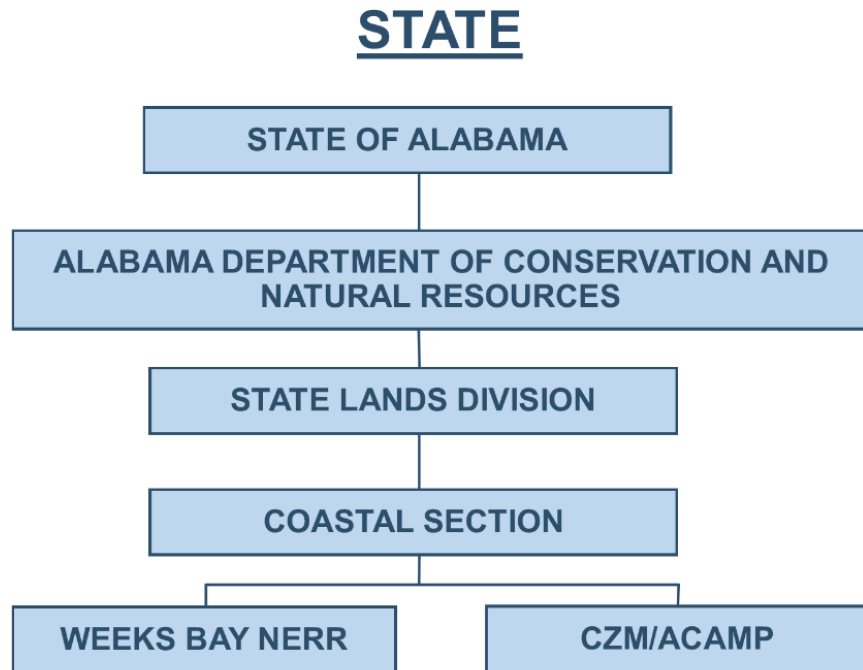


Figure 3. Weeks Bay Reserve State Administrative Framework.

Ecological Characteristics

Coastal Alabama rests within two major physiographic provinces, the East Gulf Coastal Plain section of the Coastal Plain province, and the Mississippi-Alabama shelf section of the Continental Shelf province. Land areas in coastal Alabama are within the Southern Pine Hills and the Coastal Lowlands subdivisions of the East Gulf Coastal Plain section. The Southern Pine Hills encompasses portions of eastern and western coastal Alabama with elevated or rolling topography. The Coastal Lowlands are a flat to gently undulating plain extending along the coast adjacent to the Mississippi Sound and along the margins of Mobile, Bon Secour, and Perdido Bays. The lowlands are indented by many tidal creeks, rivers, and estuaries fringed by tidal marshes which are subject to inundation at high tide. These topographies, high bluffs and coastal lowlands are unique to the Gulf of America region.

Weeks Bay is an estuarine system located along the eastern shore of Mobile Bay in Baldwin County, Alabama, between the major metropolitan areas of Mobile, Alabama, and Pensacola, Florida (Figure 4). Weeks Bay is a small, shallow, microtidal, tributary estuary within the larger Mobile Bay estuary. It is nearly diamond shaped with a surface area of approximately $7.0 \times 10^6 \text{ m}^2$ (1718 acres). It has a 3.4 km longitudinal axis running north-south from the head of the bay where Fish River flows in, to its mouth, where it exchanges water with Mobile Bay, which serves as the adjacent “coastal ocean”. Its lateral axis is oriented east-west, the widest section, 3.1 km, occurring in the central region where the Magnolia River discharge enters along the eastern shore (Miller-Way et al. 1996). The Weeks Bay watershed drains approximately 200 mi^2 within Baldwin County.

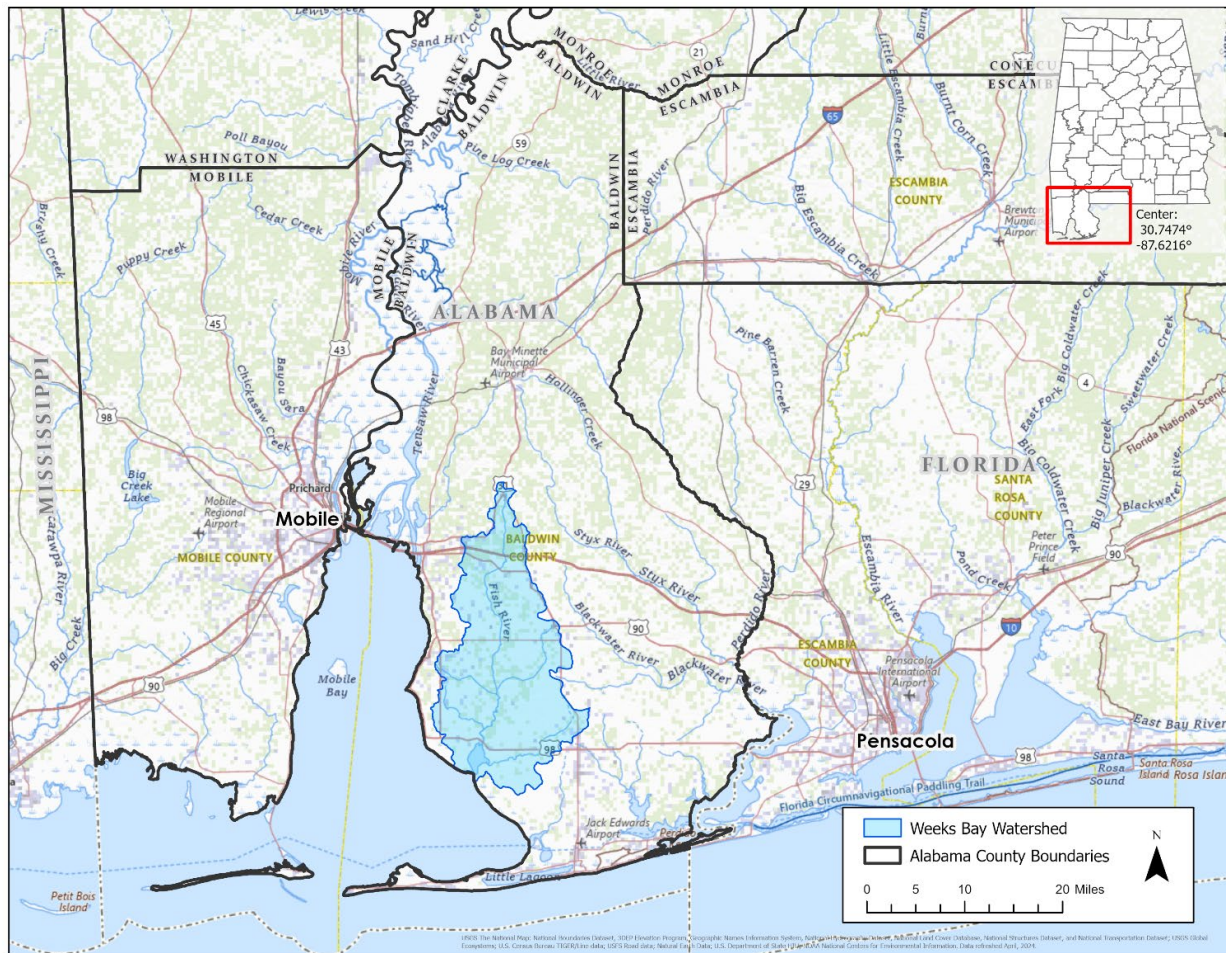


Figure 4. Weeks Bay Metropolitan Area.

The Weeks Bay embayment was believed to have been formed at least 11,000 years ago during the Pleistocene Epoch (Smith 1986). Benthic sediments within Weeks Bay are a combination of silts and clays found throughout most of the interior of the bay and relatively clean quartz sands found in three areas of the bay system (Haywick et al. 1994). The source of the silt and clay material, as well as the sand, is principally from Fish and Magnolia Rivers that drain interior uplands of Baldwin County. However, the sands around the periphery of the bay are mostly the result of erosional processes along the shoreline. The sands in the vicinity of the inlet at the mouth of the bay are likely derived from bedload inputs from the rivers, shoreline erosion within the bay, and material transported into Weeks Bay from Mobile Bay.

With the approved boundary expansion, Weeks Bay National Estuarine Research Reserve will contain over 10,884.55 acres of land and water habitat which supports a wide variety of plant and animal species. Reserve lands and waters are representative of the greater Mobile Bay system and the Mississippi Delta subcategory of the Louisianan Biogeographic Province. The Reserve is one of five (5) NERRs in the Gulf of America region (Figure 5).

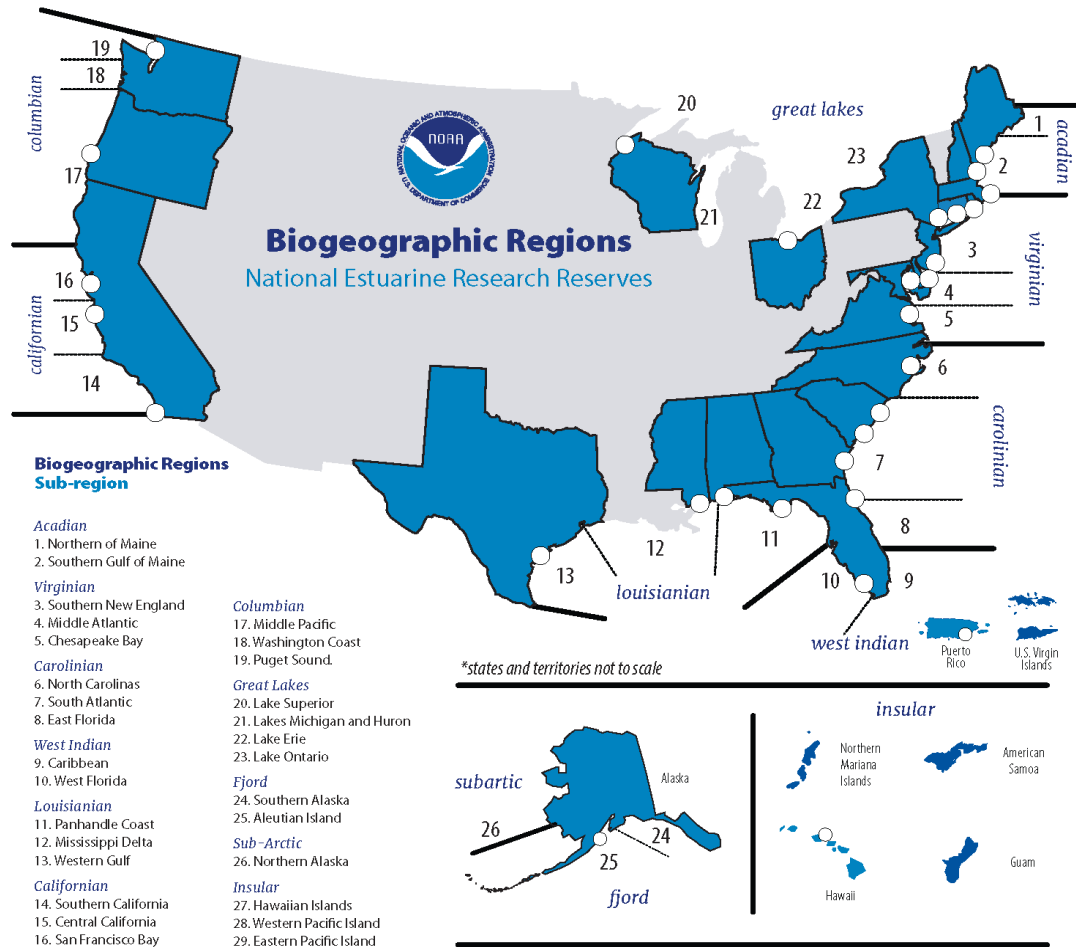


Figure 5. Map of the National Estuarine Research Reserves by Biogeographic Region.

The Reserve lies in the humid sub-tropical climate region (Trewartha and Horn 1980) that dominates the Gulf Coast states and Florida Peninsula. Summers are warm, with an average high of 88° F while winters are relatively mild, averaging 64° F with occasional cold waves (NOAA/NERRS 2022). In the contiguous United States, the Gulf Coast leads the nation in highest annual average rainfall (<https://en.climate-data.org> 2022). Weeks Bay, Alabama, receives precipitation from a combination of winter storms, thunderstorms, and tropical systems with an average annual accumulation of 58 inches (NOAA/NERRS 2022). El Niño and La Niña weather patterns can also affect yearly weather at the Reserve. In El Niño years, the Gulf Coast experiences wetter than usual seasons which can lead to increased flooding. In La Niña years, winter temperatures are warmer than normal with less rainfall for the year. However, La Niña can lead to a more severe hurricane season.

Species of Concern

Within the Reserve is located a suite of natural communities of great importance to the eastern Mobile Bay system. Natural communities include tidal wetlands and swamps, salt marshes,

submerged aquatic vegetation, pine flatwoods, pitcher plant bogs and benthic estuarine sediments (Figure 6).

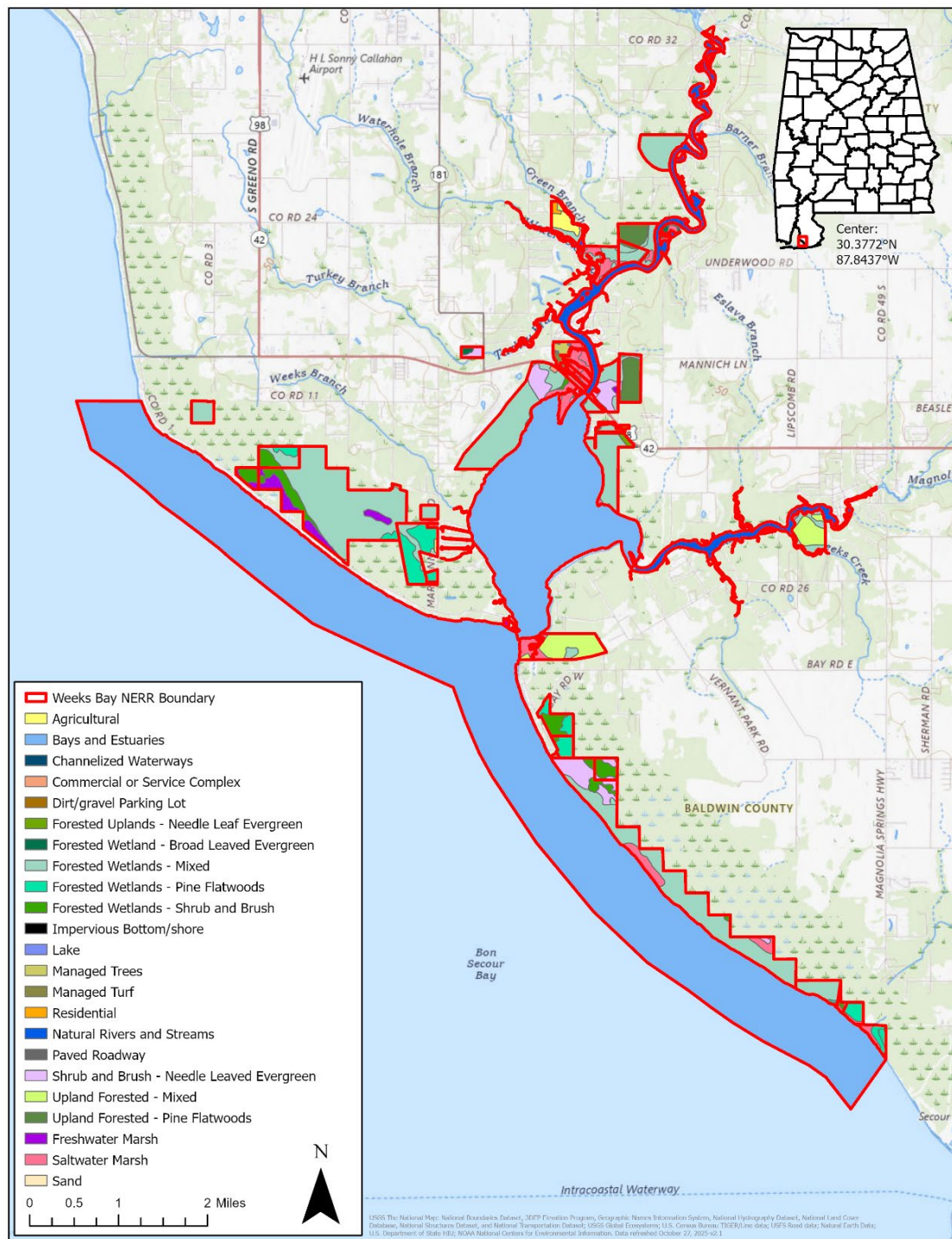


Figure 6. Habitat Types within the Reserve.

These habitats support abundant flora and fauna. A query of the SLD Natural Heritage Section database, the Alabama Natural Heritage Program of Auburn University, and the U.S Fish and

Wildlife Service's Environmental Conservation Online System reveals federally listed threatened and endangered species, state protected species, and rare species that occur or have ranges and habitat requirements which indicate they may occur within the Reserve. For a full list of species of concern, refer to Appendix E.

Weeks Bay and surrounding marshes are highly productive areas that serve as a nursery for commercially important shellfish and finfish. Additionally, the location acts as a filter for pollutants, provides shoreline stabilization, and offers recreational and educational opportunities for people on the coast. Weeks Bay has received designation as an Outstanding National Resource Water (ONRW), the highest such water quality designation in the State of Alabama.

This designation limits point source discharge into such waters and promotes best management practices for nonpoint source discharges into waters flowing into the ONRW. The designation process was initiated in 1990 with efforts from members of the Weeks Bay Advisory Committee and the Weeks Bay Foundation, now the South Alabama Land Trust (SALT).

Magnolia River, one of the two tributaries of Weeks Bay, is designated as an Outstanding Alabama Water (OAW) by the Alabama Department of Environmental Management (ADEM 2022). The designation is considered by the U.S. Environmental Protection Agency to be consistent with the "fishable/swimmable" goal and, therefore, provides for protection of aquatic life and human health by setting effluent and discharge restrictions/limitations. For more information on ecological characteristics of Weeks Bay Reserve, see WBNERR: An Estuarine Profile and Bibliography (Miller-Way et al. 1996).

Socioeconomic Attributes

Tourism and recreation help drive the coastal economy, with over 8.3 million visitors to Baldwin County in 2022, 30% of the total number of tourists that visited Alabama (Alabama Tourism Department 2022). Those tourists spent close to \$8 billion and directly supported 44,370 jobs in Baldwin County. The total coastal economy for Baldwin County accounts for approximately 4% of the total employment in the state, contributing \$3 billion in wages and \$7 billion to the gross domestic product (NOAA Coastal County Snapshots). Trade, transportation, and utilities lead as the main employers in the county, followed by education and health services, then leisure and hospitality services.

Unemployment in the county fluctuated between 3-6% from 1990 to early 2008. However, the economy in Baldwin County was negatively impacted by the 2008 recession and subsequently the Deepwater Horizon Oil Spill in April of 2010. A report by the University of Alabama (Addy and Ijaz 2010) suggests that the oil spill alone may have reduced Alabama's economic output by \$1.0 billion in 2010 and involved losses of \$284 million to \$971 million in earnings and 13,600 to 49,000 jobs. Baldwin County hit a record high for unemployment in April 2020 (15.4%) during the Covid-19 pandemic, but has recovered quickly and currently sits at 1.6%

unemployment as of April 2023 (<https://data.pnj.com/unemployment/baldwin-county-al/CN01003000000000/>).

Population Demographics

As far back as 10,000 years ago, Native Americans dwelling in southwest Alabama lived around the bay, drawn to the abundance of its natural resources and incredible range of navigable waters. The People of the Shell Mounds used the materials found around them for food, shelter and tools. They consumed such an abundance of shellfish that their middens formed hills around the coastal areas. There was a transition of Native Americans in this region of the northern Gulf Coast to a Mississippian Culture during the years 400-1200 AD (Fundaburk and Foreman 1957). This culture was known for building large, earthen platform mounds. It was composed of a series of urban settlements and satellite villages linked together by loose trading networks.

The modern day American Indian tribes are believed to have descended from the overarching Mississippian Culture. In portions of what is known today as southern Alabama, there was a rich and well documented history of Alabama Choctaw and Creek tribes. This continued well into the eighteenth century with Native Americans using Alabama rivers for travel corridors and living, for example, in what today is known as Baldwin County in the Tensaw Lake area near Stockton (Stiggins 1989). Today, the only living, federally recognized Native American tribe in Alabama is that of the Poarch Band of Creek Indians living in the Atmore area of Baldwin County approximately sixty (60) miles north of the Reserve (<https://pci-nsn.gov/>).

The population of Baldwin County is predominantly white (87%) with 8.6% responding as black and 4.8% Hispanic. Education levels for adults fall between the state (26%) and national average (41%) with 32% of adults 25 and older in Baldwin County having obtained a bachelor's degree or higher (US Census Bureau). The median income in the county is approximately \$64,000 with 11% of the population living in poverty, less than the state average of 16% (US Census Bureau). Communities with residents at lower income and/or education levels are particularly vulnerable to ecosystem hazards. Baldwin County ranks medium on the 2010-2014 Social Vulnerability Index (SoVi) compared with other counties across the country. Social vulnerability measures the degree to which communities are anticipated to be more susceptible to and less able to cope with the occurrence of a natural disaster.

Further, coastal areas like Baldwin County are experiencing greater increases in population, compromising the conservation of ecosystems, and increasing community vulnerability to hazards. Baldwin county has been the fastest growing county in Alabama since 2010 and in 2020 became the 4th largest county by population in the state, more than doubling from 98,280 in 1990 (AREREC 2005) to an estimated 246,435 in 2022 (U.S. Census Bureau). Additionally, the Daphne-Fairhope-Foley (Figure 7) area ranks as the 7th fastest-growing metro statistical area nationwide in the 2020 Census.

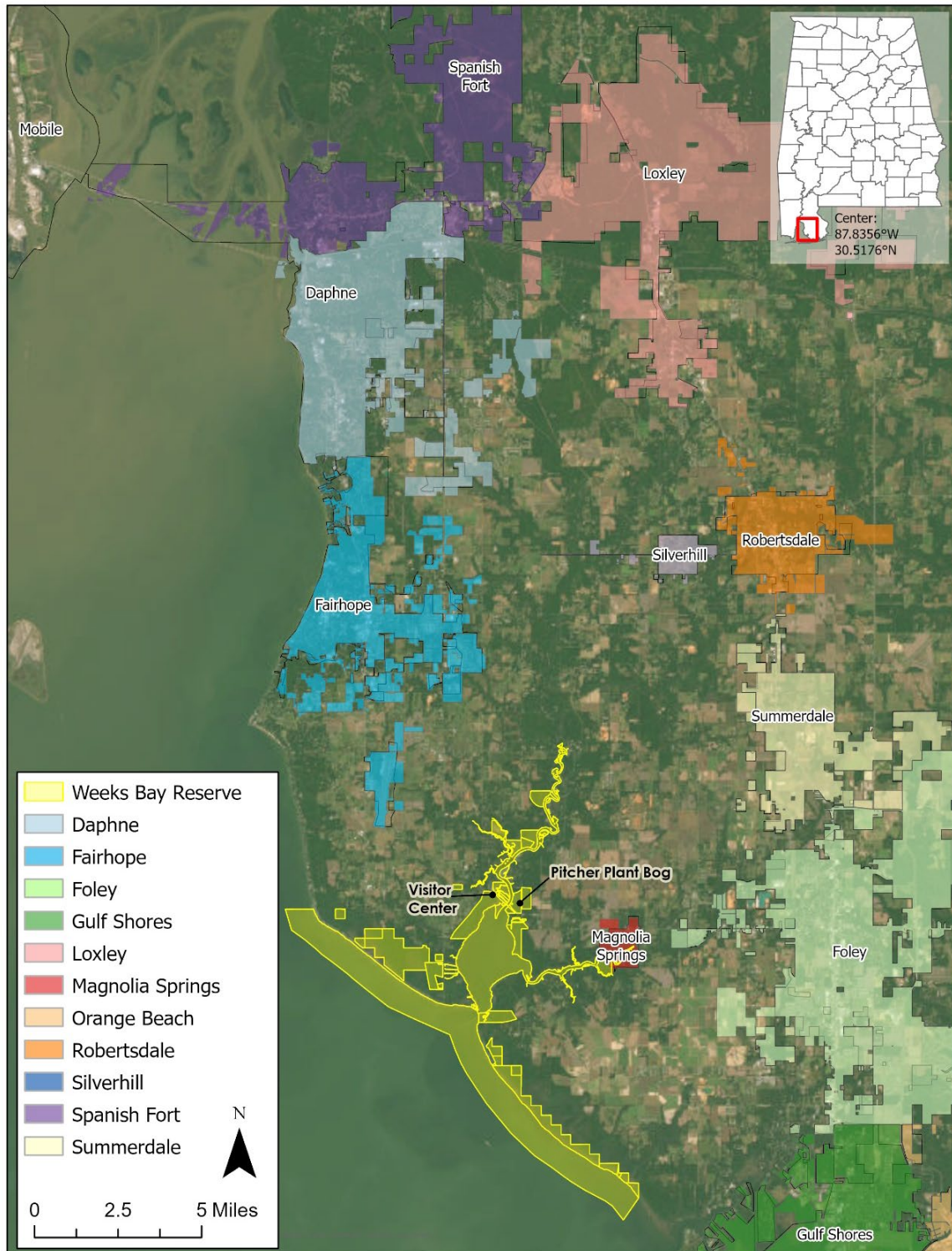
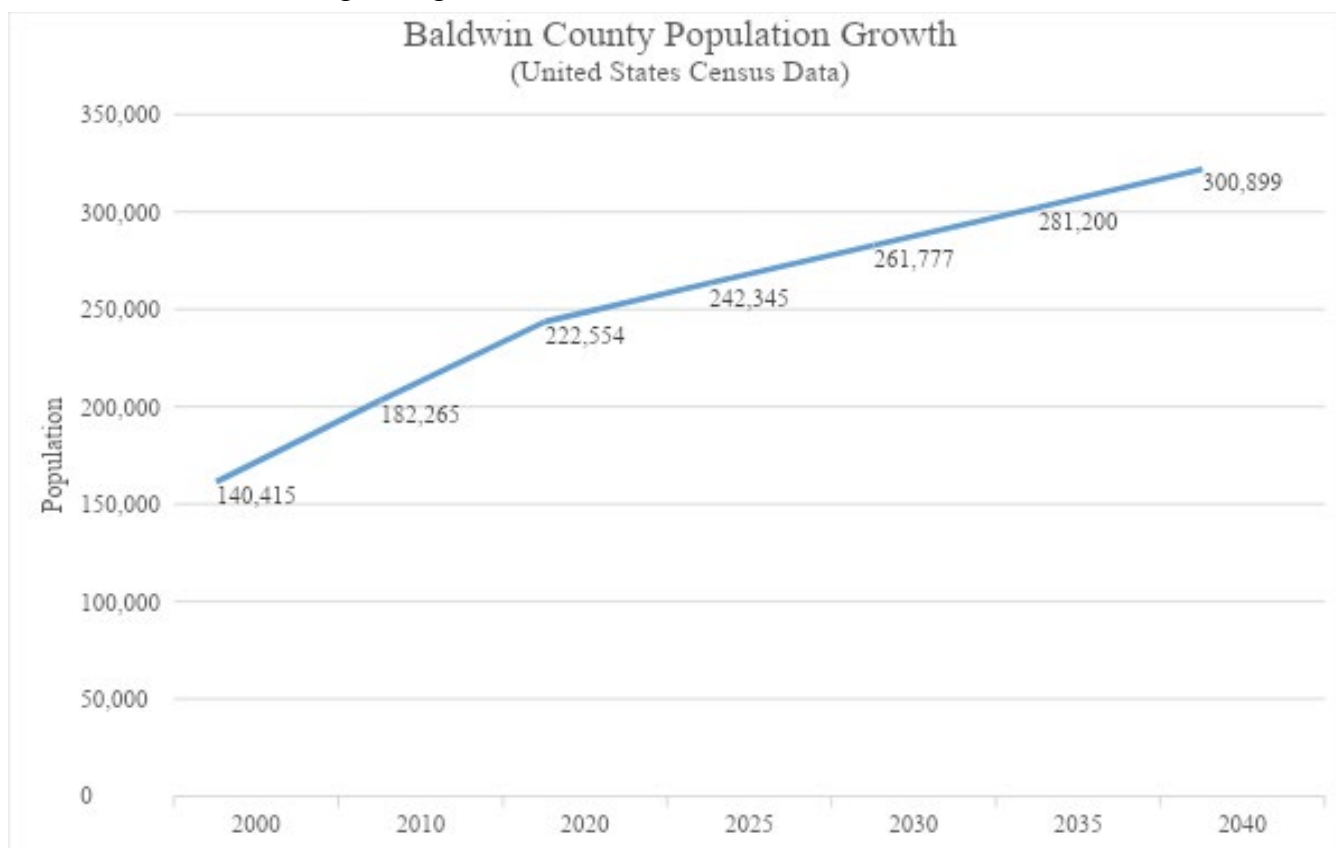


Figure 7. Weeks Bay Reserve and Surrounding Cities.

Such continued growth will lead to increases in vulnerabilities in Baldwin County communities as well as changes in land use in the Weeks Bay watershed. Land use changes result in loss of habitat and polluted runoff from urbanized areas that impacts water quality. The projection for the 2040 population is 300,899 individuals, a 65.1% increase from 2010. (U.S. Census Bureau and Center for Business and Economic Research at The University of Alabama 2022) (Figure 8). This population increase has the potential to detrimentally affect Weeks Bay and may be the ultimate issue affecting management of the Reserve.



Threats and Stressors

Reserves are designated under the premise that they are relatively pristine and representative estuarine ecosystems. However, they are anticipated to be increasingly exposed to human and ecosystem stressors that must be understood in order to be effectively managed. Baldwin County has been home to intensive agriculture and silviculture for nearly two centuries. Development in the watershed is increasing rapidly with forests being converted into row crops then later into residential or commercial development. The consequences of this rapid change places stressors on the ecology and ecosystems of Weeks Bay.

Natural and Man-Made Stressors that affect Weeks Bay include:

- Change in Land Use – potential degradation of coastal habitats and increased polluted runoff, flooding, and erosion.

- Polluted Stormwater Runoff – the dominant source of water pollution in the coastal area as land use changes from forested land to a more urban setting.
- Coastal Development – increased residential and commercial development throughout the coastal area destroying habitat and reducing groundwater recharge.
- Ecosystem stressors – sea level rise, potential habitat loss, altered rainfall patterns, increased storm surge severity, and changed natural community structure and dynamics.
- Invasive Species – numerous non-native invasive species are present in the Reserve and pose a significant threat to the integrity and community structure of Reserve habitats (Table 1).

Invasive Terrestrial Species	Invasive Aquatic Species
<i>Triadica sebifera</i> – popcorn or tallow tree	<i>Eichhornia crassipes</i> – water hyacinth
<i>Imperata cylindrica</i> – cogongrass	<i>Salvinia minima</i> – water spangles
<i>Lygodium japonicum</i> – Japanese climbing fern	<i>Pistia stratiotes</i> – water lettuce
<i>Cinnamomum camphora</i> – camphortree	<i>Hydrilla verticillata</i> – waterthyme
<i>Colocasia esculenta</i> – elephant ear	<i>Myriophyllum spicatum</i> – Eurasian watermilfoil
<i>Vernicia fordii</i> – Tung Oil Tree	
<i>Pueraria montana</i> – kudzu	
<i>Ligustrum sinense</i> – Chinese privet	
<i>Sus scrofa</i> – Feral pig	
Both Aquatic and Terrestrial	
<i>Panicum repens</i> – torpedo grass	
<i>Alternanthera philoxeroides</i> – alligatorweed	

Table 1. Notable Invasive Species for Weeks Bay, Alabama.



Physical Environment and Related Impacts

Data shows that the Gulf of America sea surface temperature has risen at a rate twice that of global ocean temperatures between 1970-2020 (Wang et al. 2023), and consequently, local sea levels in the greater Mobile Bay system, including Weeks Bay, has risen higher than the global sea level (Thompson Engineering 2017). Mean sea level data recorded at NOAA's nearest long-term monitoring gauge (#8735180) located at Dauphin Island, approximately 17 miles southwest of the mouth of Weeks Bay, show that mean relative sea level at this location has risen approximately 4.37mm/year (0.172 inches/year) from 1966-2025, totaling 257.83mm (10.15 inches) of sea level rise in the past 59 years (Figure 9).

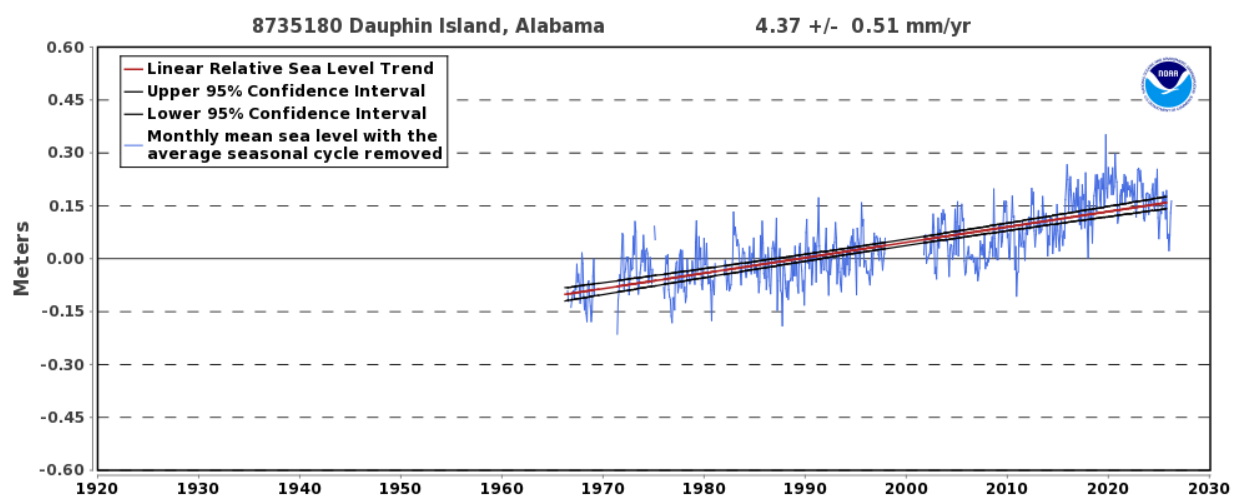


Figure 9. Mean Sea Level Trend at NOAA's Dauphin Island Tide Station
https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=8735180

There is still a large degree of uncertainty when it comes to the actual rate at which sea level will rise in the future. However, it is predicted by some researchers that sea level is anticipated to rise on average as much over the next 30 years (2020-2050) as it has over the last 100 years (1920-2020) estimated at 14-18 inches for the Gulf Coast (Sweet et al. 2022). NOAA predicts a minimum change in sea level at Dauphin Island to result in an increase of 1.1 ft by 2100, with the highest possible predicted change to be between 5.5-7.1 ft.

Projected sea level rise poses widespread and continuing threats to both natural and built environments in coastal Alabama. The Reserve may see impacts such as coastal squeezing of marshes, where estuarine shorelines migrate inland but are blocked by human development, such as highways or seawalls. A Sea Level Affecting Marshes Model (SLAMM) was produced for the Weeks Bay Watershed Management Plan (Thompson Engineering 2017) and predicts Weeks Bay Watershed will experience a conversion of wetland habitats by 2100, as these habitats are inundated and convert to open water. The amount of area predicted to convert into open water is approximately 155 acres for the 1.5-foot SLR scenario, 320.5 acres for 3-foot scenario, and 1,057.8 acres for 6-foot scenario.

Local communities within low lying areas may become inaccessible for parts of the year due to increased coastal flooding. In addition, tide and storm surge heights may increase adding greater risk to coastal infrastructure, communities, and ecosystems. According to NOAA's Coastal County Snapshot for Baldwin County, 711 businesses are affected by current flooding and 323 businesses may be affected by future flooding with 6 feet of sea level rise.

Understanding changes to the physical environment and related impacts is necessary for effective management of coastal resources and communities. The Reserve implements strategies and actions to mitigate the impacts of stressors to the physical environment. Ongoing research at the Reserve has addressed the effects of fire as a management tool to induce migration of marsh grass species upslope. Application of prescribed fire has indeed caused marsh migration in the Weeks Bay marshes. Continuing research into the effects of these prescribed fires on invasive species and on groundwater nutrient loading will serve to improve the effects of fire as a management tool. Community knowledge regarding physical stressors such as sea level rise and the benefits of fire as a management tool will be bolstered through CTP and Education workshops and programming. Additionally, CTP, in collaboration with the Research Coordinator, will share the results of research conducted at the Reserve with coastal decision makers to promote effective coastal resource and community management.

Reserve Boundary

NOAA boundary requirements are outlined in the Federal Register (915 CFR 921.11). The original boundary concept of Weeks Bay Reserve encompassed tracts of land owned by the State of Alabama and designated as the Reserve. The water bottoms that include the intertidal area up to the mean high tide line of Weeks Bay, portions and tributaries of Fish and Magnolia Rivers, and Bon Secour Bay link the tracts together. The original boundary was delineated in 1985 in the Final Environmental Impact Statement (EIS) and Management Plan for the Proposed Weeks Bay National Estuarine Sanctuary. In 2007 and 2017, the boundary was expanded in federally approved Reserve Management Plans. Currently, the Reserve proposes to expand its boundary through an addition of 690.55 acres of land (buffer) and 868 acres of water bottoms (core) for a total boundary of 10,884.55 acres. The expanded Reserve boundary would include a total of 32 tracts of State-owned land (Figure 10). Tract acreages are listed in Table 2.

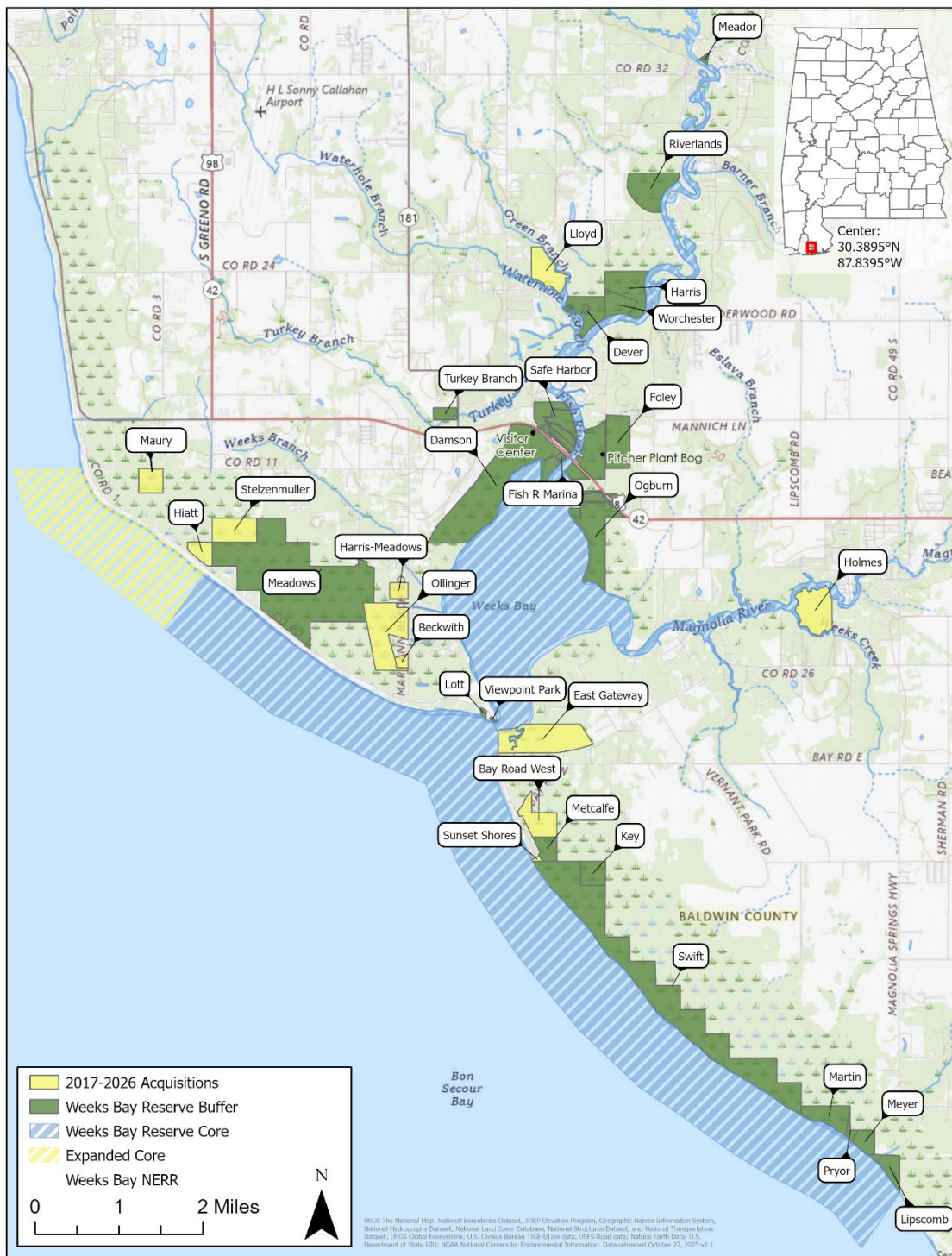


Figure 10. Weeks Bay Reserve Properties (current and proposed).

Tract Name	~Acres	Deed Year
Within Current Boundary:		
Ogburn	157	1984
Foley	187	1985
Swift	615	1985
Damson	360	1988
Viewpoint Park	2	2001
Riverlands	90	2002
Turkey Branch	20	2002
Safe Harbor	81	2002
Fish River Marina	22	2002
Harris	64	2004
Worcester	49	2004
Pryor	11	2004
Meador	4	2005
Lott	3	2005
Key	40	2009
Dever	64	2010
Meadows	685	2012
Metcalf	30	2012
Martin	63	2014
Lipscomb	40	2014
Meyer	29	2015
Proposed Additions:		
Ollinger	142.5	2017
Wood-Hiatt	28	2017
Stelzenmuller	69	2017
Bay Road West	64	2017
Sunset Shores	2.75	2017
Harris - Meadows	19.7	2019
Beckwith	10	2019
East Gateway	163.6	2019
Holmes	91	2020
Lloyd	60	2022
Maury	40	2026

Table 2. Tract Name, Acreage and Year of Acquisition.

The Weeks Bay Coastal Area is the geographic location of special concern and focus for the Reserve. The majority of the Reserve boundary falls within the Weeks Bay Coastal Area (Figure 11). Reserve staff assesses impacts of various activities and responds to citizen concerns related

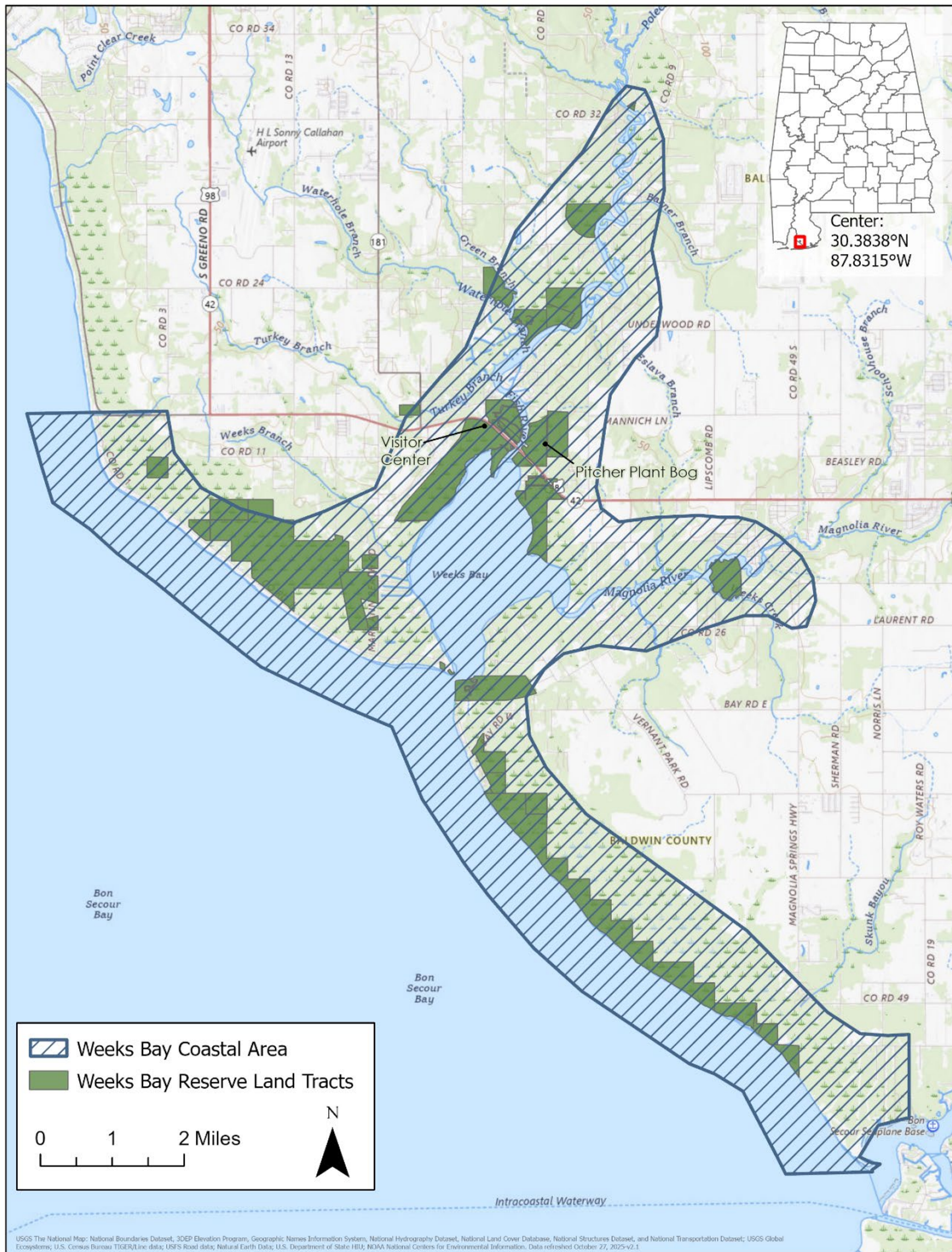


Figure 11. Weeks Bay Coastal Area.

to water quality, wildlife, fisheries, and wetlands within the area. Reserve staff concentrates land acquisition and resource management activities as required for designation as a National Estuarine Research Reserve within the Weeks Bay Coastal Area.

The broader Alabama coastal area as delineated in the Alabama Coastal Area Management Program (ACAMP) established under the Coastal Zone Act of 1972, as amended, consists of that land seaward of the continuous ten (10) foot elevation contour to the limits of the State's territorial waters. The Weeks Bay Coastal Area is that portion of the Alabama Coastal Area surrounding Weeks Bay, reaching up Fish River to the County Road 32 bridge, reaching up Magnolia River to the County Road 49 bridge, and extending from the mouth of Bon Secour River to the intersection of US Highway 98 Alternate and County Road 1.

Weeks Bay Core and Buffer Area

Weeks Bay Reserve establishes geographic areas dedicated to education, training, research, stewardship, and resource conservation subject to the management strategies of the Reserve as set forth in the Management Plan. The Weeks Bay Core and Buffer areas make up the Reserve boundary and fulfill required descriptions of the Reserve components as part of the designation as a National Estuarine Research Reserve. The water bottoms within the Reserve, up to mean high tide, are considered critical habitat that influence the integrity of the Core area. This area includes: 1) the water bottoms of Weeks Bay, Fish and Magnolia Rivers, and their tributaries, to the mean high tide line and to the termination of tidal influence, and 2) the water bottoms of Bon Secour Bay adjacent to the Swift Tract with additions and north across the mouth of Weeks Bay parallel to the Meadows Tract up to the mean high tide. All other lands within the Reserve boundary serve as a buffer to protect the Core and provide additional habitat for estuarine-dependent species including those that are rare or endangered. Buffer areas may also include areas necessary for future facilities to be utilized for research and interpretation. Additionally, buffer areas are identified to accommodate a shift of the Core area resulting from biological, ecological, or geo-morphological change which are reasonably expected to occur.

Land Ownership, Targeted Watershed, and Land Use Changes

Understanding land ownership and land changes within the Reserve boundary and targeted watershed can help inform management and conservation measures. Lands that comprise the Reserve are a mixture of ADCNR State Lands and Alabama Forever Wild Land Trust Program owned properties. Land within the Reserve is used for research, education, stewardship, and public recreation. Land ownership adjacent to the Reserve core and buffer components are owned and managed by a combination of state, municipal, and private entities (Figure 12).

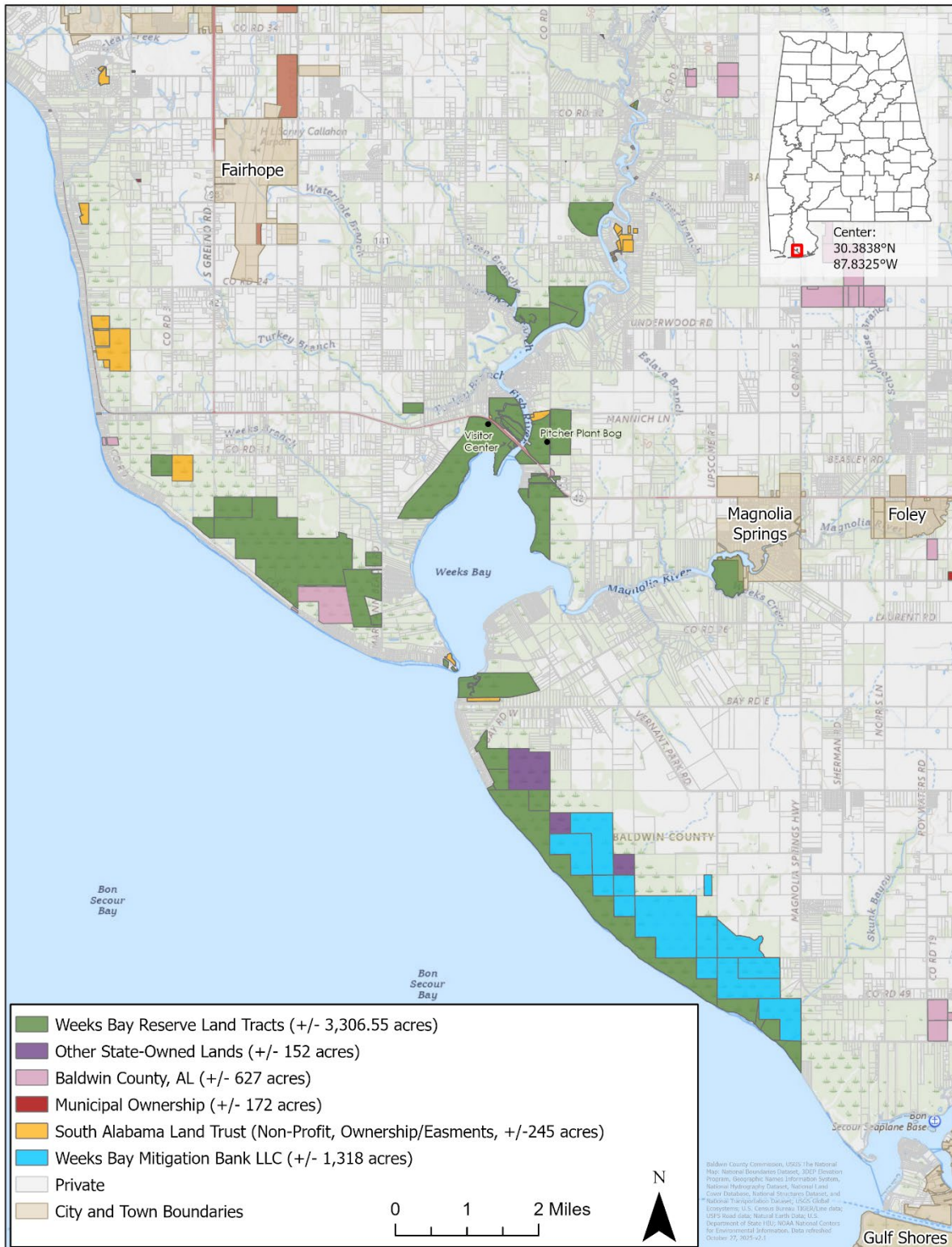


Figure 12. Land Ownership Within and Adjacent to the Reserve Core and Buffer.

The targeted watershed boundary for the Reserve encompasses the entire Weeks Bay watershed (130,000 acres) located in southwest Baldwin County. The Weeks Bay watershed is comprised of the following four USGS 12-digit Hydrologic Unit Code (HUC) areas: Upper Fish River (HUC 031602050201), Middle Fish River (HUC 031602050202), Lower Fish River (HUC 031602050204), and Magnolia River (HUC 031602050203). Portions of nine municipalities lie within the Weeks Bay Watershed: Fairhope, Daphne, Spanish Fort, Loxley, Silverhill, Robertsdale, Summerdale, Foley, and Magnolia Springs (Figure 13).

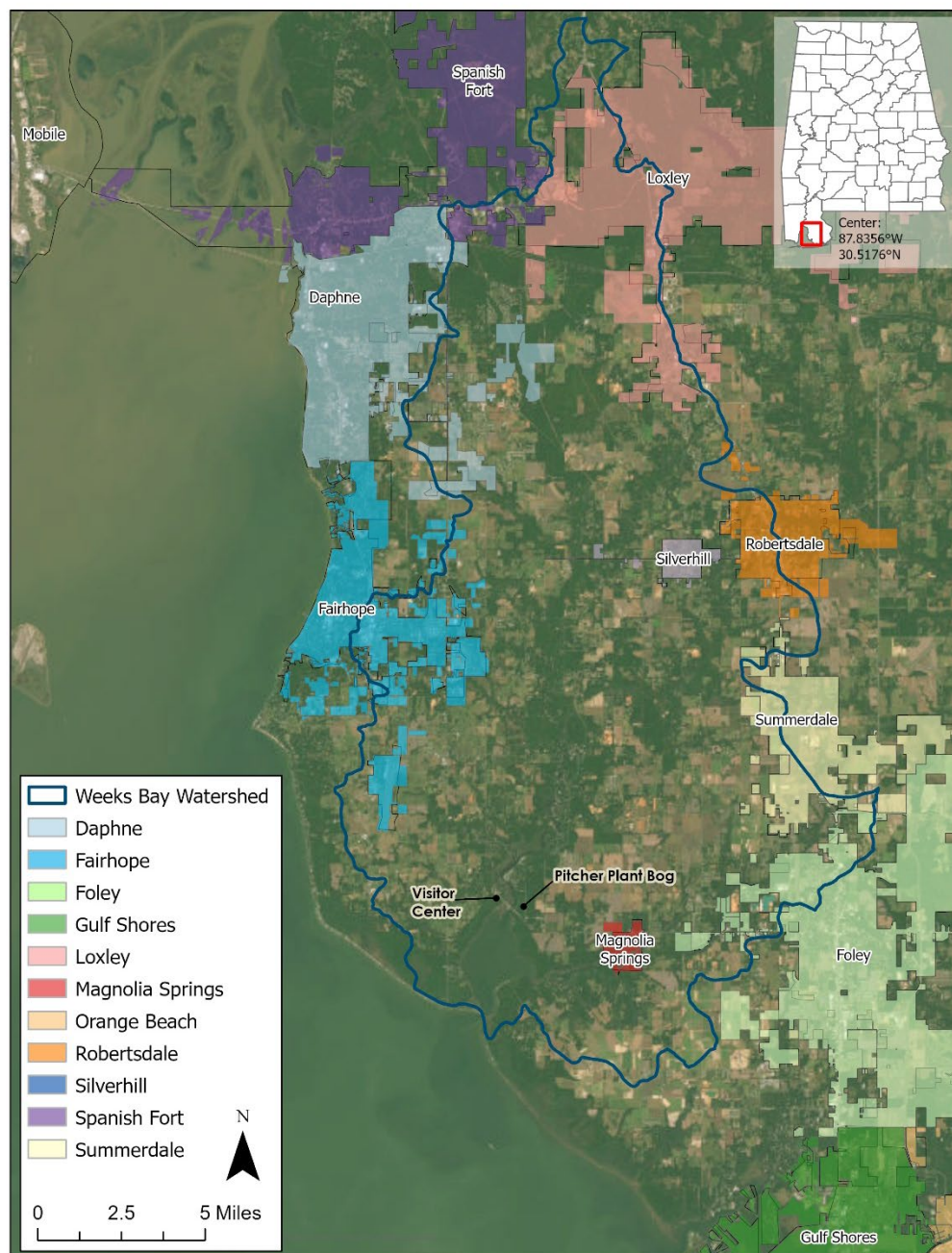


Figure 13. Targeted Watershed Boundary Map.

The Weeks Bay Watershed Management Plan (Thompson 2017) studied land use and land cover changes within the Weeks Bay watershed. Agriculture remains a large portion of land use within the Weeks Bay watershed as well as adjacent to the Reserve boundary (Figure 14).

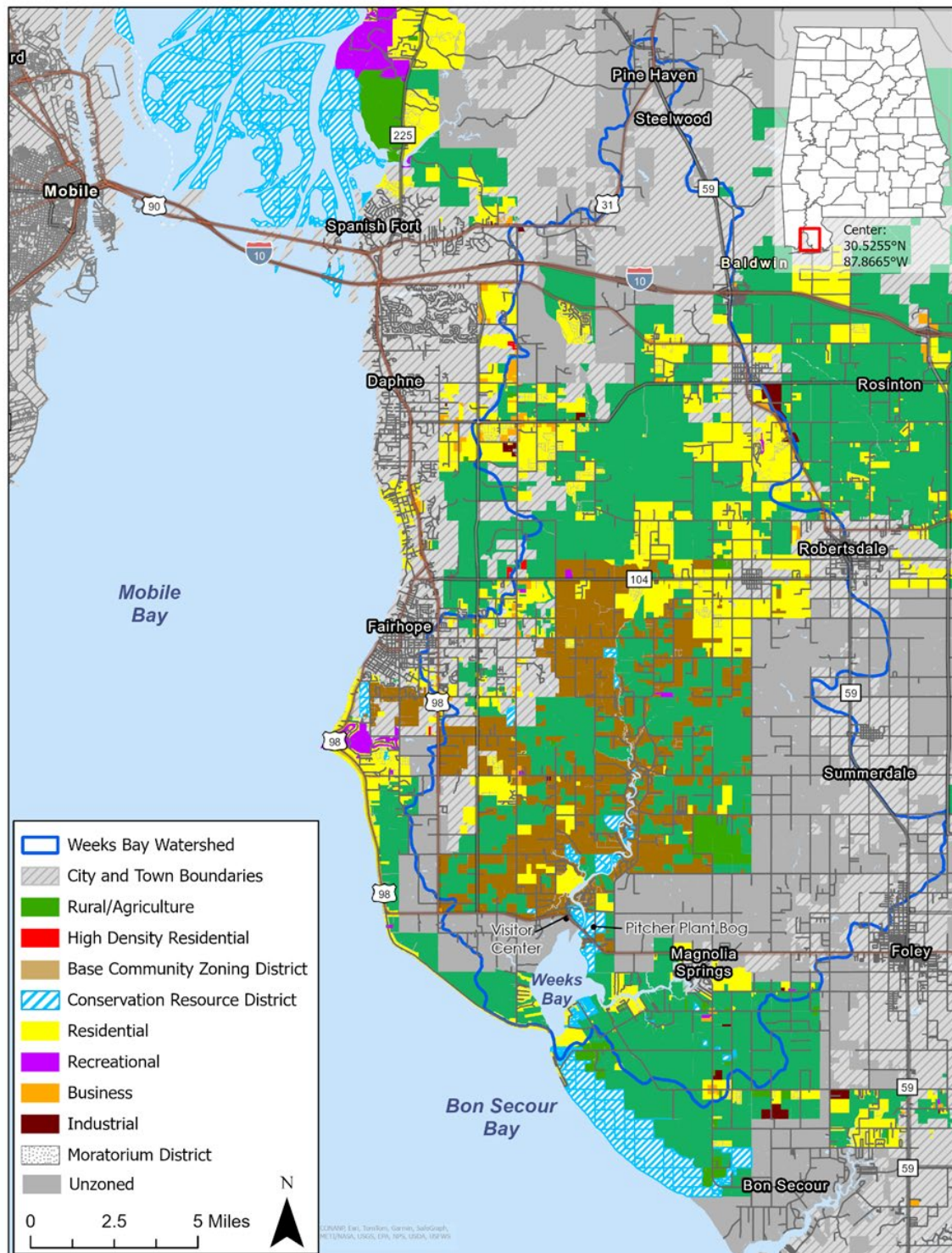


Figure 14. Baldwin County Zoning within the Weeks Bay Watershed.

However, land use/land cover trends are projected to follow historic trends with losses in agricultural and forest lands as a result of increased developed land areas (Figure 15).

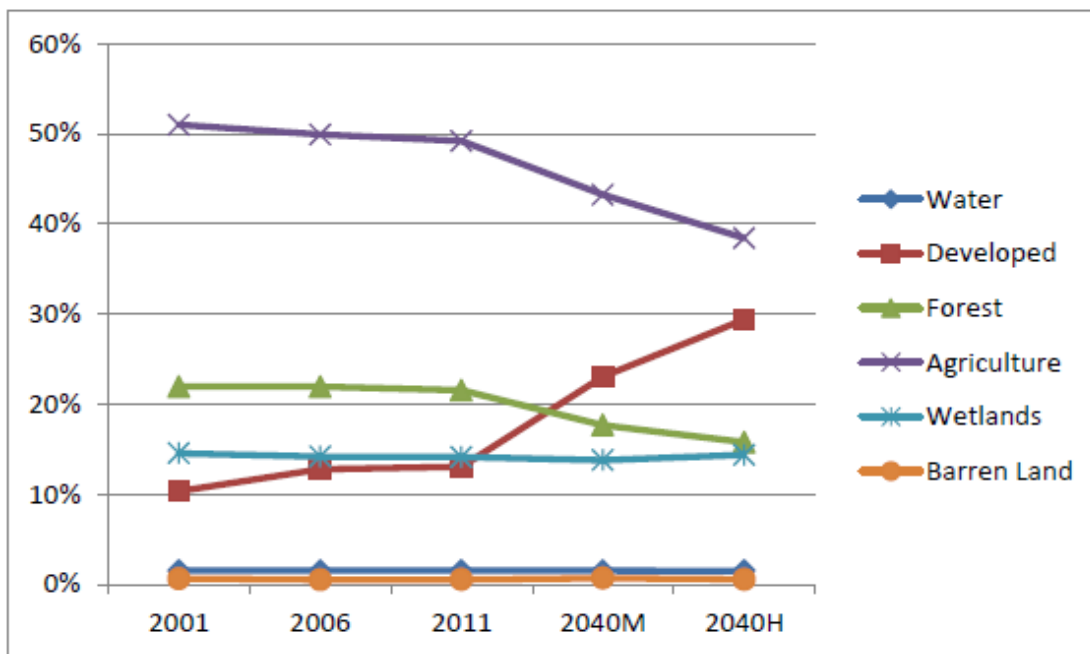


Figure 15. Weeks Bay Watershed Historic (2001-2011) and Future Projected Land Cover Changes for Year 2040 using Medium (M) and High (H) Growth Scenarios (Thompson 2017).

The Upper Fish River subwatershed is anticipated to experience the largest expansion of developed land use, going from about 15% developed in 2011 to a projected 33% for the 2040 Medium scenario, and 45% for the 2040 High scenario (Thompson 2017). Land use and land cover changes can have significant impacts on habitat composition, hydrological processes, and water quality within a watershed. The extent of impervious cover in a watershed is closely linked to the specific land cover types that reflect intensive land uses traditionally associated with urban growth. NOAA Coastal Change Analysis Program (C-CAP) data shows the extent of developed, impervious surface change within the watershed from 2015 to 2021 (Figure 16). The Weeks Bay Watershed Management Plan estimates impervious cover (expressed as a percentage of developed area) to expand from 17% (2001) to 34% (2040 Medium scenario) and as much as 44% (2040 High scenario) (Thompson 2017).

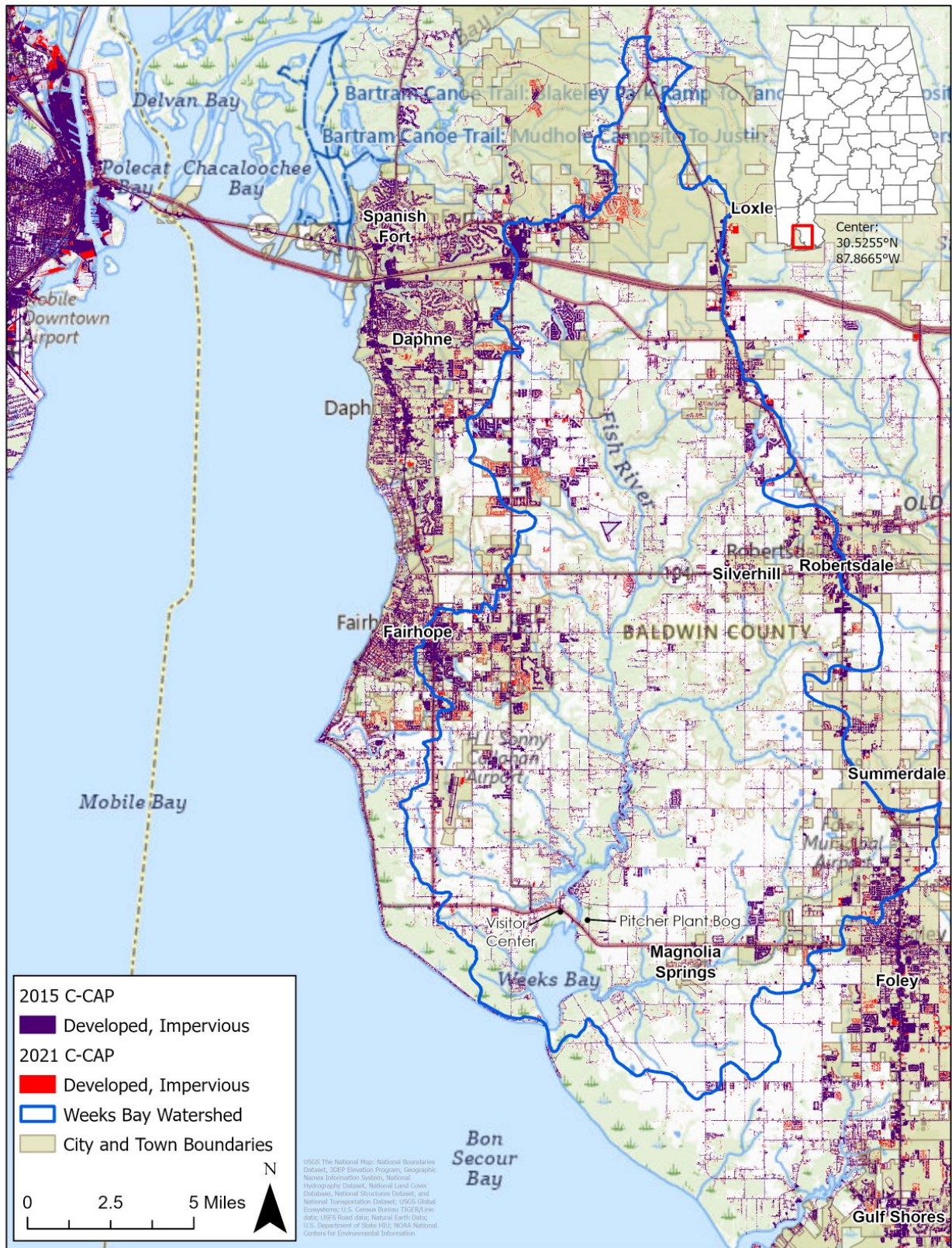


Figure 16. Comparison of Developed, Impervious Areas within the Weeks Bay Watershed 2015 and 2021 (NOAA C-CAP).

Degradation of aquatic ecosystems can occur when the hydrology of a watershed is altered by large increases in impervious area as projected. The changes in imperviousness increase runoff even during small precipitation events, producing higher sediment and pollutant loads which can degrade water quality in the bay.

The Reserve will continue to use accumulated science and monitoring data to develop education and training for communities and resource managers to better guide decisions on use of coastal resources. Additionally, the Reserve will continue willing seller acquisition of lands within the boundary to mitigate impacts of increased development within the watershed.

Proposed Boundary Modifications

The Reserve is proposing to expand its boundary to encompass additional core areas and buffer properties currently owned by the ADCNR SLD and Alabama Forever Wild Land Trust (FWLT) (Figure 17).



Figure 17. Proposed Expanded Weeks Bay Reserve Core and Buffer.

The expanded Reserve boundary would include over 10,884.55 acres of land and water habitat which supports a wide variety of plant and animal species. Table 3 below lists lands acquired for addition to the Reserve since the 2017 management plan update, their prior use, importance to the Reserve and anticipated use. The acquisitions added 690.55 acres of unique and valuable wetland and upland habitat to the Reserve buffer. The Reserve core will continue from west of the Meadows Tract in Bon Secour Bay to the latitude of the northern extent of the Maury Tract along County Road 1, an increase of 868 acres.

NAME	Buffer or Core	Acres	Prior Use	Importance of property to Reserve	Anticipated Use
Ollinger	Buffer	142.5	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Wood-Hiatt	Buffer	28	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Stelzenmuller	Buffer	69	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Bay Road West	Buffer	64	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Conservation and invasive species management
Sunset Shores	Buffer	2.75	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Conservation and invasive species management
Harris	Buffer	19.7	Natural state, unmanaged	Purchase of additional parcel would create contiguous habitat, provides development buffer	Conservation and invasive species management
Beckwith	Buffer	10	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
East Gateway	Buffer	163.6	Natural state,	Riparian protection, significant emergent	Shoreline restoration, site

			unmanaged	habitat, accessible for educational and recreational kayak tours	for education and outreach programs
Holmes	Buffer	91	Natural state, unmanaged	Extensive shoreline, significant riparian buffer, protects from upland development,	Restoration of longleaf pine habitat, possible visitor access via small vessel landing area
Lloyd	Buffer	60	Partial natural state unmanaged; Partial agriculture	Extensive shoreline, significant riparian buffer, healthy cedar dominated bottomland, protects from upland development	Restoration of longleaf pine habitat via return of natural fire regime and possible plantings
Maury	Buffer	40	Natural state, unmanaged	Protection of critical pine flatwoods/savanna habitat within the Meadows management unit	Restoration of pine flatwoods habitat via return of natural fire regime
Water bottoms	Core	868	Natural state, unmanaged	Conservation of ecological function, recreational fishing, commercial fishing	Conservation

Table 3. Acquisitions Added to the Reserve Since the 2017 Management Plan Update.

The proposed boundary expansion supports the goals of the NERRS as established in the Federal Regulations (15 CFR part 921.1(b)). The regulation states that reserves will promote long-term protection of estuaries, address management issues, and encourage stewardship, research, education, and training. The proposed boundary expansion will offer greater protection of the Weeks Bay estuarine system and Alabama coastal area, promoting conservation of coastal resources. Greater conservation and management of these expanded areas enhances habitat resulting in long-term biological benefits.

The Reserve intends future boundary expansions within Priority Acquisition Areas as identified in the Land Acquisition Plan (see section IX). These will include only willing-seller acquisitions of tracts that are geographically significant and contribute to the overall ecological integrity of the Weeks Bay estuarine system. The Reserve will seek to acquire acreage that includes key land and water portions of the estuary and adjacent transitional areas and uplands constituting, to the extent feasible, a natural unit. The Reserve utilizes strategies that support management of threatened, endangered, rare, or recovering species and ecologically important habitats (see sections IXVII. Resource Conservation Plan, IX. Land Acquisition Plan, and X. Restoration Plan for additional information).

III. Weeks Bay Reserve Strategic Plan

Reserve Vision and Mission

All National Estuarine Research Reserves (NERRs) undergo strategic planning to provide direction and structure for local reserve activities to meet goals and objectives in concurrence with federal regulations, state requirements, and local priority issues. The Weeks Bay National Estuarine Research Reserve established the following vision and mission:

The **VISION** of the Weeks Bay National Estuarine Research Reserve is to support thriving Weeks Bay coastal habitats that are conserved, valued, and enjoyed by the community.

The **MISSION** of the Weeks Bay National Estuarine Research Reserve is to advance understanding and management of coastal Alabama's lands and waters to foster resilient communities and healthy habitats.

Priority Coastal Management Issues

The goals, objectives, and actions listed in this plan are designed to address priority coastal management issues. In June 2021, Weeks Bay National Estuarine Research Reserve (Reserve) staff worked with the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management (OCM) to engage Reserve stakeholders and partners in determining key coastal management issues and research gaps within coastal Alabama. From these meetings, staff developed management needs statements for the Science Collaborative and Davidson Fellowship competitions which began in 2022. The management needs identified are being used as guidance for this management plan but will be reviewed yearly to determine whether they remain applicable.

Research and monitoring linked to the biophysical processes, economic factors, ecosystem stressors, and coastal development impacts were identified as needed to inform coastal management practices. This includes researching impacts of overwater structures on benthic primary productivity within Weeks Bay; identifying ecosystem models to better inform habitat management actions; and further understanding of prescribed fire in managing marsh migration in the context of sea level rise.

The Coastal Training Program priority issues include collaborative social science focused on conservation-related change initiatives and technical training for coastal decision-makers. The goal of these efforts is to transfer current management science regarding coastal challenges such as mitigating the effects of ecosystem stressors and sea level rise, managing stormwater runoff and water quality impacts, invasive species control and the promotion of native landscapes, and implementing habitat best management practices for an increasingly urbanized area.

For the Reserve's Education program, it was determined that preK-12 education, teacher professional development, and family/community education will be the focus for 2026-2031. Educational priorities identified to support this focus include providing opportunities that connect children and nature; offering outdoor education programs for preK-12 and family audiences; enhancing understanding of weather impacts and potential effects on coastal environments; promoting conservation, restoration, and sustainable use of resources; knowledge of Alabama coastal ecology and habitat diversity; increasing knowledge of marine debris and resulting impacts within the coastal environment; and encouraging stewardship of estuary and coastal resources.

Goals, Objectives, and Actions

The following outlines the Strategic Plan (strategic goals, objectives, and actions) developed to guide each Reserve program in fulfilling the Vision and Mission. This Management Plan illustrates how the Strategic Plan is implemented. Goals help focus the direction of the Reserve over the next five years. Objectives lead to implementing measurable actions designed to achieve goals. Evaluation metrics developed as part of the routine federal evaluation process (per section 312 of the CZMA) will be used to assist evaluation of core programs. The Reserve will revise and update future metrics in accordance with OCM guidelines. Required program 312 evaluation metrics are footnoted in Table 4 to show their correlation.

There are four **GOALS** identified that support the Reserve Mission:

GOAL 1: Biologically diverse and resilient ecosystems within the Weeks Bay watershed serve as a model to other coastal ecosystems.

GOAL 2: Understanding of coastal ecosystems through science and monitoring informs decisions affecting estuaries and coastal watersheds.

GOAL 3: Improved ecological appreciation to advance coastal literacy, conservation, and resiliency.

GOAL 4: Enhanced community sense of stewardship and appreciation of the local ecosystems.

GOAL 1: Biologically diverse and resilient ecosystems within the Weeks Bay watershed serve as a model to other coastal ecosystems.

Objective 1-1: Reserve administration and financial management activities facilitate implementation of Reserve projects that support ecosystem health and biological diversity.

Action 1

ADCNR writes grants to secure funding in support of habitat restoration, land acquisition and biological diversity within the Reserve.

Action 2

ADCNR provides grant administration support to ensure that funds are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology and equipment and expand resources and partnerships to meet the needs of land management programs of the Reserve.

Action 4

Reserve uses practices where possible in infrastructure development that have a low impact on the ecosystems.

- a. Balance development and restoration.
- b. Mitigate light pollution.
- c. Implement storm water sensitive site design and stormwater pollution mitigation practices.
- d. Retrofit existing facilities and use native landscaping to reduce water use.
- e. Use energy efficient fixtures, appliances, and HVAC in new construction and retrofits.

Objective 1.2: By 2025 Reserve staff will develop a framework document to guide future habitat management actions.

Action 1

Reserve staff initiate workshop development for identifying and prioritizing habitat management actions.

Action 2

Reserve staff compile workshop information packages for participants.

Action 3

Reserve staff solicit workshop(s) participation commitments from local and regional experts and stakeholders.

Action 4

Reserve facilitates workshops and on-site field excursions as helpful to gather participant feedback regarding identification and prioritization of habitat management actions.

Action 5

State Lands staff review and synthesize workshop recommendations to create a habitat management guidance document with an action plan that considers current capacity, potential partnerships, and opportunities to leverage funding.

Objective 1.3: Staff take action to maintain and restore native habitat diversity and function on reserve managed lands.

Action 1

Work with State Lands staff to develop or update habitat management plans incorporating guidance from completion of objective 1.2.

Action 2

Seek funding to implement at least two priority habitat management actions identified in the developed/updated management plans.

Action 3

Implementation of prescribed fire as a management tool with emphasis on incorporating burns on the Damson, Safe Harbor and Foley Tracts and conducting a fuel reduction fire on the Holmes Tract.

Action 4

Continue invasive species suppression efforts to support maintenance and restoration of natural communities using mechanical and approved chemical methods with a focus on reducing exotic flora species on the Ogburn Tract.

Action 5

Work with State Lands field staff and partners to continue feral hog control efforts on Reserve lands.

Action 6

Implement and evaluate alternative habitat monitoring methods that improve efficiency and mitigate impacts to habitat.

Action 7

Conduct hydrological study and restoration design plans for Foley and Damson Tracts upon successfully securing funding.

Action 8

Liaison with NOAA project team and contractors implementing the Connecting Coastal Waters Fish River and Weeks Bay Marsh restoration project.

Action 9

Liaison with ADCNR staff and engineering firm to design a living shoreline restoration for the East Gateway Tract.

Objective 1.4: Transfer knowledge of stewardship and management practices to promote better informed coastal decision-making by regional partners.

Action 1

Develop Geographic Information Systems (GIS) derived products that inform ecosystem management practices and coastal decision-making.

Action 2

Locate or create maps that convey abiotic and biotic information pertinent to informing management and restoration decisions.

Action 3

Share the Reserve's understanding of economically and demographically driven ecosystem stressors that may impact ecosystem management decisions.

Action 4

Reserve staff collaborate to develop products and training materials that are used to support decision-maker and partner training and engagement opportunities.

Action 5

Provide field-based and experiential opportunities to demonstrate successful habitat management practices on Reserves lands for technical audiences.

Action 6

Share technical knowledge and experience in native habitat management and restoration at regional venues with peers.

Objective 1.5: Reserve encourages responsible and safe use of public lands.

Action 1

Work with State Lands Conservation Law Enforcement personnel to clearly delineate allowable public use on Reserve properties through updated and improved signage and access control devices (gates, bollards, etc.).

Action 2

Communicate law enforcement needs to State Lands Conservation Law Enforcement and Baldwin County Sheriff personnel.

Action 3

Reserve staff seek funding for public access planning and design activities that addresses potential enhancements, improves access opportunities for visitors including those with disabilities, minimizes habitat disturbance, and discourages illegal activities.

Action 4

Reserve staff develop or promote outreach materials for researchers seeking to use reserve lands and waters.

Action 5

Reserve staff develop online resources that educate the public and researchers about site access and activities available.

Action 6

Reserve staff will review the disaster response plan annually to maintain staff proficiency and update critical components (i.e. emergency contacts) as needed.

GOAL 2: Understanding of coastal ecosystems through science and monitoring informs decisions affecting estuaries and coastal watersheds.

Objective 2-1: Reserve administration and financial management activities facilitate coastal management research and the transfer of scientific information to coastal decision-makers.

Action 1

Reserve administration invests staff capacity to seek external funding in support of emerging research and monitoring projects, leveraging SWMP or other existing infrastructure as possible.

Action 2

ADCNR provides grant administration to support staff ensuring funding resources are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology, equipment, personnel, and facilities in support of reserve research and monitoring programs.

Objective 2.2 System-Wide Monitoring Program (SWMP) data improves our understanding of short and long-term changes in the Weeks Bay ecosystem.

Action 1

Collect abiotic and biotic elements of SWMP including water quality, meteorological, and nutrient data according to appropriate quality control standards and deliver to CDMO as per NERR system protocols.

Action 2

Implement vertical control efforts in accordance with OCM NERRS guidance including the following:

- a. Update Wetlands and Water Levels Plan.
- b. Complete vertical survey of Surface Elevation Tables (SETs).
- c. Investigate vegetative and marsh elevation data collection methods that minimize impact to habitat.
- d. Update habitat map for the Reserve and complete habitat-type change analysis.
- e. Complete Global Positioning System (GPS) surveys of SWMP stations.

Action 3

Ensure the Reserve has the resources to maintain and improve the hazard resilience of the SWMP infrastructure.

Action 4

Collaborate with other NERRs and partners to implement biological research and monitoring projects.

Objective 2.3: Coastal resource managers and scientists have access to baseline data on habitats and water quality to support management actions for future conditions.

Action 1

Create and update project data that include information on habitats and water quality making these available to entities outside of the Reserve.

Action 2

Create and update georeferenced data layers based on habitat and water quality data sets.

Action 3

Incorporate data collected through the SWMP into site-specific GIS formats.

Action 4

Access and provide GIS training for Reserve Staff.

Action 5

Create products such as Story Maps, charts, graphs, training materials, etc., for various user groups including CTP, Stewardship, and Education programs.

Objective 2.4: A minimum of seventeen applied research and monitoring projects will be implemented by 2028 to improve methods of natural resource conservation. ³

Action 1

Evaluate priority Reserve research management needs and monitoring themes and update annually to be consistent with the goals of the Reserve and share the updated priorities with OCM and the NERRS Science Collaborative.

Action 2

Seek outside research and monitoring collaborators or initiate internal applied research and monitoring projects that align with priorities.

- a. Engage with colleges and universities within the state to introduce Reserve research facilities and opportunities, including the Margaret A. Davidson Fellowship and Hollings Scholarship.
- b. Seek partnerships with universities and colleges to support the Reserve research program in data management and applied research.
- c. Produce outreach materials and presentations to recruit student researchers.
- d. Engage with regional partners (Gulf of America NERRs, Gulf of America Alliance, etc.) to develop collaborative science proposals that inform management actions.

Action 3

Seek funding and recommendations from internal NERR System and external sources to acquire water flow monitoring equipment that can facilitate accurate modeling of watershed hydrologic variables.

Objective 2.5: Independent researchers are supported through available Reserve resources including staff assistance and data to foster research projects within the Reserve and associated areas.

Action 1

Evaluate research proposals for consistency with Reserve goals to ensure proposed research will not interfere with other research or activities at the Reserve.

Action 2

Provide available information and data housed at the Reserve to researchers, if requested, to assist research, including maps, species lists, charts, etc.

Action 3

Provide access to research locations, boats, field gear, lodging, laboratory, equipment, etc., as staff time allows.

Objective 2.6: Government agencies, scientists, coastal decision makers, community members and other Reserve partners benefit from the translation and dissemination of Reserve data.

Action 1

Reserve staff, with the support of partners, collect and translate reserve scientific data in support of programs that engage with targeted adult and student audiences.

Action 2

Host and sustain a Weeks Bay NERR Symposium biennially that focuses on applied science, restoration, resource management, and outreach work being conducted within the Weeks Bay watershed.

Action 3

Produce outreach graphics and publish articles in print media, social media, and digital newsletters outlining research and monitoring data and efforts.

Action 4

Present research and monitoring data at local, regional or national meetings (e.g., Alabama Water Resources Conference, Bays and Bayous Symposium, Gulf of America Alliance, NERRS Fall Meeting) or appropriate public events.

GOAL 3: Improved ecological appreciation to advance coastal literacy, conservation, and resiliency.

Objective 3-1: Adequate administrative staffing and facilities support implementation of Reserve training and education programs.

Action 1

ADCNR assists with education, training and outreach efforts as needed.

Action 2

ADCNR writes grants to secure funding for programmatic support and provides grant administration support to ensure funds are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology and equipment to support education and training programs.

Action 4

Reserve staff leverages agency capabilities to meet the needs of Reserve programs through better coordination and communication of essential gaps to be addressed or filled.

Action 5

ADCNR works to improve existing infrastructure to enhance Reserve programs and visitor experience. This will proceed with implementation of the Facility Master Plan as resources allow.

- a. Provide signage and educational markers to delineate boundaries of Reserve and increase visitor awareness of Reserve public access points and facilities.
- b. Rework existing parking area at the Visitor to provide delineated parking while reducing runoff from the site.
- c. Revise visitor flow in the Reserve Visitor Center to enhance guest experience.
- d. Design new exhibits and interpretive signage to better engage audiences of all ages and abilities.

Objective 3.2: Staff facilitate science-based field trips and learning opportunities for a minimum of 4200 students over 5 years to increase awareness of ecosystem health and biological diversity at the Reserve. ¹

Action 1

Update educational marketing and promotional materials to improve Reserve outreach to preK-12 audiences.

Action 2

Update and utilize results from the preK-12 program market analysis and needs assessment and teacher satisfaction surveys to improve field experiences for preK-12 programs.

Action 3

Continue to update and supplement the preK-12 curriculum incorporating new knowledge and technology to meet the needs of students.

Action 4

Provide hands-on learning activities for students to learn real world stewardship practices focused on opportunities for career development.

Action 5

Provide opportunities for the Reserve education staff to attend professional development programs and trainings.

Action 6

Provide offsite education opportunities involving presentations for schools, activities in formal classroom settings including afterschool groups, and presentations at public sites such as libraries.

Action 7

Provide accessible online education materials, including virtual fieldtrips and programs for preK-12 classes.

Objective 3.3: Annually, host a minimum of one Teachers on the Estuary training to increase audience knowledge of current issues affecting estuaries.

Action 1

Emphasize NERRS research, data availability and visualizations on water quality, habitat conservation and ecosystem-related stressors in teacher trainings.

Action 2

Reserve staff collaboration ensures teachers understand the current impacts on coastal resources, communities, and infrastructure and the challenges of adapting to and mitigating these impacts in the future.

Action 3

Provide teachers with the resources and guidance they need to educate their students about water quality, habitat conservation, and ecosystem impacts.

Action 4

Utilize the results of the preK-12 program market analysis and needs assessment and teacher professional development evaluations to improve future trainings.

Objective 3.4: Implement at least 5 community education events per year to increase knowledge of the Reserve and conservation of estuarine ecosystems and biodiversity.

Action 1

The Reserve conducts interpretive boat tours, nature walks, and seminars for community groups.

Action 2

The Reserve leads community paddling trips for events such as Earth Day and National Estuaries week.

Action 3

Reserve staff participate in local community events and meetings such as the Alabama Coastal BirdFest and Dauphin Island Discovery Day.

Objective 3.5: The Reserve conducts at least 2 community science projects per year.

Action 1.

Emphasize NERRS research on water quality, habitat conservation, and coastal stressors in community science programs and the value of community science data.

Action 2.

Host trainings for Reserve community science programs, such as Alabama Water Watch, Gulf Coast Phenology Trail, and the Community Collaborative Rain, Hail, and Snow Network.

Action 3.

Ensure participants in programs understand the current impacts on coastal resources, communities, and infrastructure and the challenges of adapting to and mitigating impacts in the future.

Objective 3.6: Reserve expands audience reach through marketing and online platforms.

Action 1

Improve and maintain an active online presence, including ADCNR Reserve website, social media, and virtual programming, to support audience access to education and training resources, programmatic information, and scheduled events.

Action 2

Utilize departmental expertise to design and update Reserve marketing and promotional materials to better reach targeted audiences.

Action 3

Promote research, education, stewardship, and training through exhibiting at local, regional, and national conferences and events (e.g. Bays and Bayous, GOAA, Environmental Education Association of Alabama, etc.).

Objective 3.7: CTP staff conduct a minimum of eight initiatives and/or projects that provide learning opportunities, technical assistance, and/or collaborative research each year that meet the needs of decision makers in coastal Alabama. ²

Action 1

Update and distribute a market analysis and needs assessment survey to help inform training gaps and needs.

Action 2

Develop initiatives and/or projects with partners based on CTP needs assessment, Reserve priority issues, and other Reserve sector needs and knowledge.

Action 3

Use initiative and/or project surveys to evaluate learning opportunity, technical assistance, and/or collaborative research success and help inform additional Coastal Decision Maker needs that can be served by the Coastal Training Program.

Action 4

Assess yearly management needs and identify additional trainings, technical assistance, and collaborative opportunities with local and regional partners (e.g. GOAA, Gulf CTP Coordinators, GCOOS, MBNEP, etc.).

Objective 3.8: Reserve conserves cultural resources and provides information on anthropogenic uses of Weeks Bay and surrounding lands.

Action 1

Reserve staff will work to conserve and protect cultural resources.

Action 2

Reserve staff will incorporate cultural information to support Reserve education and outreach efforts.

GOAL 4: Enhanced community sense of stewardship and appreciation of the local ecosystems.

Objective 4.1: Administrative staff help sustain existing and build new partnerships and community outreach efforts that strengthen public appreciation of Reserve.

Action 1

ADCNR facilitates partnerships with local community organizations to support Reserve programs.

Action 2

ADCNR assists with coordination and implementation of community outreach efforts including representing the Reserve at community events.

Action 3

ADCNR writes grants to secure funding for programmatic support.

Action 4

ADCNR provides grant administration support to ensure funds are managed efficiently.

Objective 4.2: Encourage community volunteerism in Reserve activities.

Action 1

Reserve staff offer annual volunteer recruitment and training event.

Action 2

Volunteers are offered opportunities to participate in conservation management activities.

Action 3

Volunteers are offered specialized training to participate in, and collect data for, community science projects.

Action 4

Volunteers are offered training to assist education staff with field trips and outreach programming.

Action 5

Volunteers are offered training to assist with guest services at the Visitor Center.

Action 6

The Reserve will seek opportunities to create a Volunteer Coordinator position.

Objective 4.3: Reserve staff show appreciation for contributions of volunteers.

Action 1

Social media posts, Outdoor Alabama articles and other media avenues highlight volunteerism at the Reserve.

Action 2

The Reserve hosts annual volunteer appreciation day.

Objective 4.4: Reserve staff engage in at least six community events per year.

Action 1

Staff attend and showcase Reserve programs at local festivals and outreach events.

Action 2

Staff participate in annual holiday community boat parades.

Action 3

Staff host annual open house event for the community.

1, 2, 3 Correlate with approved Section 312 Evaluation Metrics	
1	From 2022-2027, Reserve staff will reach 4,200 P-12 students through education programs.
2	From 2022-2027, 40 coastal training events held by the Reserve.
3	From 2022-2027, 17 new research projects being carried out within the Reserve that investigate the dynamics and function of estuaries.

Table 4. 2022-2027 Section 312 Evaluation Metrics.



IV. Program Foundations

Research and Monitoring

National Estuarine Research Reserves are created to provide a stable platform for long-term research on estuarine conditions and relevant coastal management issues. The national System-Wide Monitoring Program (SWMP) delivers standardized measurements of short-term variability and long-term changes in water quality and biological systems, and maps land use and land cover characteristics across all reserves. The effort is focused on three ecosystem characteristics: abiotic characteristics (water temperature, salinity and quality, and weather); biotic characteristics (habitat types and species); and watershed and land use characteristics (land cover and elevation changes). Reserve-generated data meet Federal geographical data standards and are available via the Reserve System's Centralized Data Management Office. Reserves also serve as sites for observing how coastal habitats respond to changing water levels. This program is guided by the *reserves' System-wide Monitoring Program Plan*, (NOAA/NERRS 2011), the *Reserve Habitat Mapping and Change Plan* (NOAA/NERRS 2015), and guidance for monitoring *Coastal Habitat Response to Changing Water Levels* (NOAA/NERRS 2016).

The Reserve System also supports applied research through its Science Collaborative program and the Margaret A. Davidson Graduate Fellowship program. The Science Collaborative funds competitive research projects that engage end-users in the project design and address system-wide NERRS research and management needs. The goal of the Davidson Fellowship is to build the next generation of leaders in estuarine science and coastal management. The fellowship provides opportunities for graduate students to conduct research within a reserve under the guidance of a mentor who also supports their professional development.

The *Reserve System Strategic Plan* outlines research objectives to maintain and expand biophysical and socioeconomic monitoring to track ecosystem change, increase the use of collaborative research to address decision-maker needs, and ensure that scientific, education, and management audiences can use the data, research results, and tools developed by the system.

Research Program Context

The geographic scope of the Reserve Research Program is concentrated within the management boundaries of the Reserve as well as the watershed of Weeks Bay. The Weeks Bay watershed is rapidly urbanizing. This watershed drains directly into the Weeks Bay estuary. The population of the region has increased substantially, doubling in less than 30 years with a current growth estimate of approximately 3% per year (U.S. Census Bureau). This rapid urbanization results in land use changes and water quality threats to the Weeks Bay watershed in the form of increased nutrient concentration, increased incidence of hypoxia, and harmful algal blooms (HABs) (Murrell et al. 2002; Lehrter 2006; Mortazavi et al. 2012; Novoveska and MacIntyre 2019). Reserve data collected by SWMP and from previous research show high nutrient loading of the estuary and a high trophic transfer of secondary productivity. Increased residence time during

dryer periods results in increased incidence of HABs. During 2017 and 2019 (two recent low rainfall years) there were HABs and hyperoxic/hypoxic periods resulting in fish kills. This response indicates Weeks Bay may be near trophic thresholds (Murrell and Caffrey 2005; Mac Nally et al. 2014; Fung et al. 2022). Continuing research to provide answers regarding HABs and trophic thresholds will be critical to informing those responsible for management of the northern Gulf of America coastal communities.

Hydrologic changes within the watershed compounded by sea level rise increase flooding events and shoreline erosion (Alizad et al. 2018). The incidence of nuisance flooding has increased in the last decade. SWMP data for 2012 shows 4 incidents of nuisance flooding while 2022 data indicate that there were 12 incidents of nuisance flooding within Weeks Bay that year. Models of the Weeks Bay watershed indicate that the incidence of nuisance flooding and more damaging flood events will increase (Bilskie et al. 2020; Bilskie et al. 2022).

Increased disturbance of shoreline habitat results in a loss of native plant species and vulnerability to invasive species (Shirley and Battaglia 2008; Pivovarovoff et al. 2015; Paudel and Battaglia 2020). Plant communities subjected to ecosystem stressors such as fluctuations in resource availability, drought and flooding events, storm damage and saltwater intrusion become more susceptible to invasion by exotic species and loss of more specialized native species. The resulting loss of native diversity in turn decreases resilience to the stressors. The threat of invasive exotic species and the potential loss of native species is linked to coastal nutrient loading, habitat loss due to changes in land use, land cover and urbanization, and ultimately to anthropogenic stressors. Healthy coastal habitats such as marshes and maritime forests are caught between sea level rise and encroaching development (Fruchter 2012; Cherry and Battaglia 2016). Effective management of these coastal habitats such as the use of prescribed fire is made more difficult by that same development.

In the face of these threats, the Reserve's Research and Monitoring Program seeks to determine best management practices for Alabama's valuable coastal and estuarine habitats through careful monitoring of biotic and abiotic conditions and through applied research. The Reserve Research Program utilizes this information to assist management decisions that address a variety of issues; however, increasing urbanization makes it imperative that Weeks Bay staff understand the interaction of these management practices and the surrounding human population. Human dimension research is of rapidly increasing necessity.

Reserve partners are essential for the Research and Monitoring program mission. The Reserve staff both support and rely on partners in collaborative science and monitoring efforts. Organizations who frequently partner with the Reserve Research and Monitoring Program are the Grand Bay (NERR, the Dauphin Island Sea Lab, University of Alabama, University of South Alabama, Auburn University, and Texas A&M University, and GulfCorps program. Research

staff at the Reserve intends to continue with these partnerships and build new collaborations with the Geological Survey of Alabama (GSA), the Alabama Department of Transportation and other entities.

Establishment of the Wetlands and Water Levels program (formerly SSAM 1- Sentinel Sites) (NOAA/NERRS 2016), working with research institutions on key issues, continuing SWMP monitoring, and coordinating with agency partners assisting in applying science to management. Research and monitoring at the Reserve provide a baseline and measure of both biotic and abiotic factors that contribute to the health of the ecosystem. It is the science of the Reserve that can assist in making the best decisions for the future. The role of the Reserve is essential in making the critical decisions that must be used to best manage coastal resources.

Priority Issues

Scientific studies at the Weeks Bay Reserve, combined with growing ecological stressors throughout the watershed, highlight a broad set of research needs that must be addressed to protect the system's long-term health. The most pressing research issues at Weeks Bay Reserve are:

- The effects of nutrient enrichment on primary and secondary production, trophic interactions, HABs, the carbon cycle, and trophic thresholds.
- Research investigating the interactions of key estuarine assemblages (nekton, plankton, benthos, submerged and emergent vegetation).
- Long-term monitoring and management strategies of both impacted and restored habitats.
- Effects of land use/land cover practices that affect or alter hydrologic processes.
- Regularly updated surveys of land use that can be compared to previous surveys to produce long-term monitoring of land use within the watershed.
- Accurate, continuous flow data for the entire watershed and the mouth of Weeks Bay coupled with rainfall monitoring at the sub-watershed level for the Weeks Bay watershed.
- Ecosystem stressors including sea level rise and corresponding effects on coastal resilience.

Priority Audiences

The Weeks Bay Reserve Research and Monitoring Program's priority audiences are scientists and natural resource managers. Locally, these consist of university research programs including the Dauphin Island Sea Lab (DISL), University of South Alabama, and University of West Florida; federally funded organizations such as the United States Fish and Wildlife Service (USFWS), Mobile Bay National Estuary Program (MBNEP) and Mississippi Alabama Sea Grant Consortium (MASGC); State agencies such as Alabama Department of Conservation and Natural Resources (ADCNR), Alabama Department of Environmental Management (ADEM), and the GSA, Alabama Department of Transportation (ALDOT); regional organizations such as Gulf of America Alliance (GOAA); and various nonprofit organizations such as The Nature

Conservancy and the South Alabama Land Trust (SALT). Weeks Bay Reserve works in collaboration with and/or in support of this community. Research and monitoring data from the Reserve and from these partner organizations supports the Education community both at the University level and the preK-12 education program level. Weeks Bay Coastal Training and Education sections use these data in their programs to deliver valuable place-based information to educators, students, coastal managers, and other coastal decision makers. The aim of these collaborations and the support of these programs at the Reserve is to increase the knowledge of coastal ecosystem form and function to allow for better conservation and management of these valuable assets for the State of Alabama.

Research Program Capacity

The Reserve Research Program is staffed by the Research Coordinator, a Research and Monitoring Technician shared with Stewardship and a part-time Davidson Fellow; however, other staff are often involved with research falling within areas of expertise. The Research Coordinator oversees implementation of the Research program and interacts with academic institutions and partners to fulfill the research objectives of the Reserve. The Research Coordinator is also responsible for quality assurance/control and submission of SWMP data. The Research and Monitoring Technician is responsible for implementation of SWMP, including all field work, calibration, and maintenance of equipment. This position also assists with additional research and monitoring projects as needed.

The Stewardship Coordinator promotes, supports, and initiates research in the areas of restoration ecology and invasive species management. The Research Coordinator and Stewardship Coordinator often collaborate with the Coastal Training Program and the Education Staff on projects involving public outreach, training, and community science. The Reserve Geographic Information System (GIS) Specialist works with the Research Coordinator and other staff on projects involving remotely sensed imagery and mapping. This integration among Reserve staff best supports the mission and goals of the Reserve and the NERR System as a whole.

Monitoring infrastructure at the Reserve includes (4) water quality monitoring sites, a weather station, and (12) surface elevation tables (Figure 18). Additionally, the Reserve plans to install a flow meter at the mouth of Weeks Bay to measure the velocity of water flowing into and out of the bay (Figure 18).

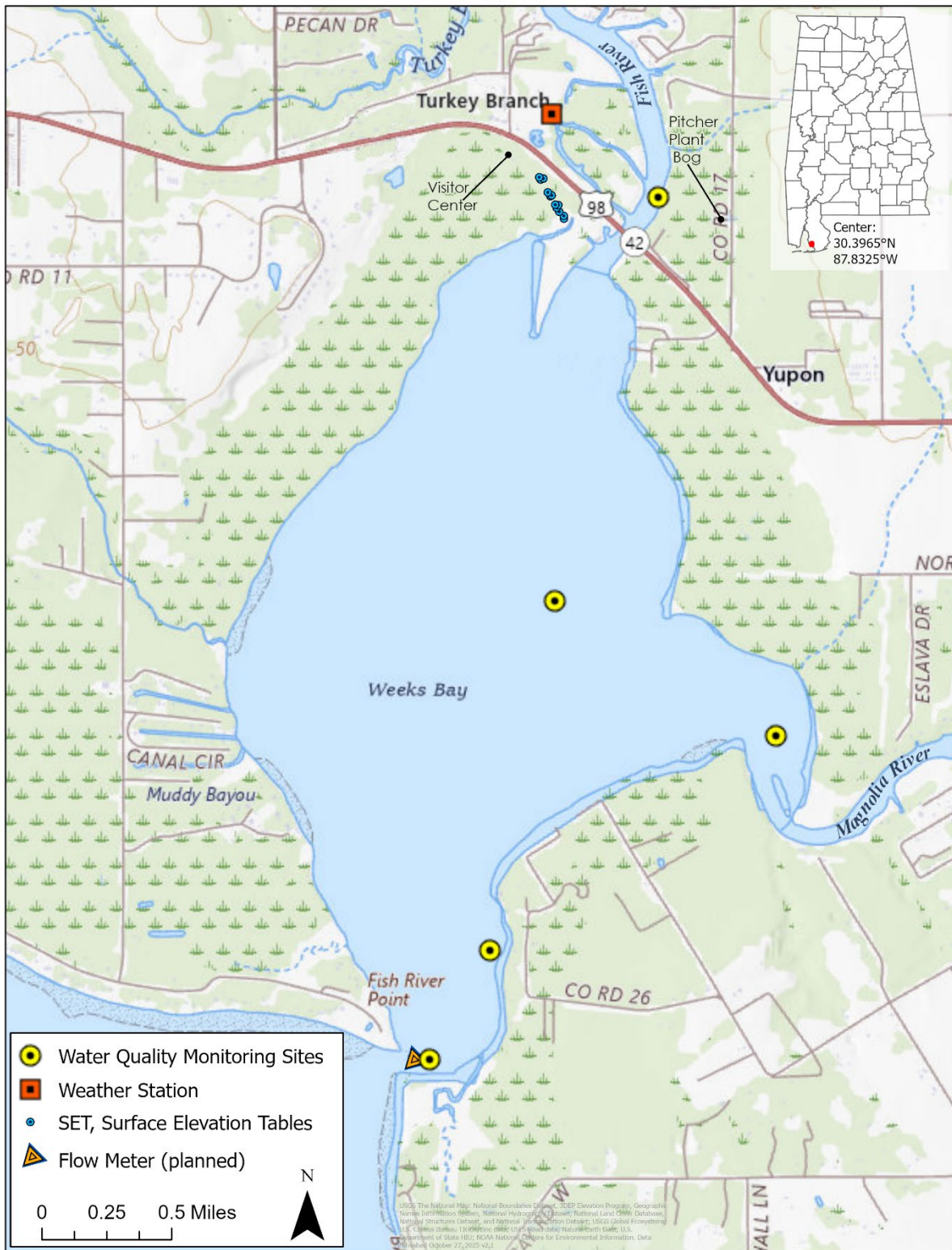


Figure 18. Monitoring Infrastructure at Weeks Bay Reserve.

The Reserve equips the laboratory for the determination of all typical water quality parameters including spectrophotometric and fluorometric measurements of chlorophyll and chemical nutrients. Equipment to produce type III distilled/deionized water is available along with the typical complement of basic benchtop laboratory tools such as a pH meter, Mettler balances, muffle furnace, drying oven, centrifuges, water bath, autoclave, vacuum pumps and filtration equipment. The Reserve maintains light, phase contrast and stereoscopic microscopes. The Reserve maintains logistical equipment for research including several boats ranging from small skiffs and canoes to a large pontoon boat, a 4-wheel drive truck equipped with a winch, and 4-wheel drive ATV. The Reserve maintains a research dormitory for short-term or extended lodging of visiting researchers and can handle groups of up to 24 people at a time. NOAA further supports the NERR system research programs with the Margaret A. Davidson Fellowship, funding a fellow for 2 years at each Reserve, and the Science Collaborative Program which makes funds available to Reserves and partners for research within the Reserve system on a competitive basis.

Research and Monitoring Program Delivery

The Reserve implements the NERR System-Wide Monitoring Program (SWMP). Reserve staff upgraded existing water quality stations to deployments designed to be more resilient to tropical storms. These deployments will be more stable and will allow for more accurate depth determinations. Reserve staff will use real-time kinematic global navigation satellite systems equipment to provide initial and ongoing accurate measurements of the tower installations. Reserve staff also replaced the existing meteorological station tower with a tower that is stronger and more resistant to storm damage. These improvements will increase our ability to maintain continuous data collection through tropical storms while reducing the costs associated with repairs following these storms.

The Research and Monitoring Technician will maintain YSI EXO2 water quality datasondes in order to maintain high quality data, repairing and purchasing sensors and supplies as needed. The Research Coordinator will maintain the meteorological station; purchasing and calibrating sensors as needed to maintain high quality data. Nutrient determination will be carried out by the Research and Monitoring Technician. The Research Coordinator will oversee the SWMP under the guidance of the Central Data Management Office (CDMO) standard operating procedures. Research and Monitoring Technician will oversee continued implementation of the Wetlands and Water Levels program under the supervision of the Stewardship Coordinator.

Local and regional visiting research support will be that which proposes to help address priority issues within the Reserve and the Alabama coastal area. Weeks Bay Reserve will continue to support research that increases the ability of the Reserve and its partners to effectively manage and conserve coastal ecosystems (objective 2.4, action 2).

Lodging, laboratory space and logistical equipment (boats, etc.) are provided to researchers

working in partnership with Reserve staff on priority projects within the Reserve. Staff and volunteer support are also available. The Reserve has an extensive GIS database, and skilled technical assistance will be available for visiting researchers.

The Reserve will provide baseline data from the SWMP, including Wetlands and Water Levels data, to visiting and collaborating researchers both directly and through the CDMO web portal. Reserve staff will collaborate on research where their expertise is complementary to the project. Weeks Bay research staff will serve on advisory boards, management application teams, interdisciplinary councils, etc., where their expertise will benefit partnerships.

Research Future Needs and Opportunities

The ability to monitor the planktonic algal assemblage within Weeks Bay would allow research staff to integrate SWMP abiotic monitoring with the trophic system. The interaction of changes to the hydrology of the watershed, nutrient loading, and food web dynamics is exhibited in the producer assemblage. Accurate long-term monitoring of this assemblage requires an investment in manpower and infrastructure. Reserve Research staff will pursue external funding working within the framework of SWMP Biological Monitoring Plan and in partnership with the Grand Bay NERR which also seeks to begin monitoring planktonic algae (objective 2.2, action 5).

Reserve staff will continue to work towards fulfilling full integration of the Wetlands and Water Levels Program by investigating and implementing alternative methods of flora and topographic data collection that are less damaging to sensitive marsh habitat. Research into alternative data collection methods has been conducted via a NERRS Science Collaborative funded catalyst grant, *A Protocol for Monitoring Coastal Wetlands with Drones* (NERRS Science Collaborative 2023). The data stream from WWL fills a large gap in monitoring data resulting in an increase in accuracy of sea level rise models. Accurate models using Reserve data help resource managers make better decisions and improve coastal resilience in the face of local impacts associated with ecosystem stressors.

Researchers currently use an estimation of the volume of hydrodynamic exchange to model processes within the Bay. For example, nutrient loading models for the Weeks Bay system estimate volume inputs using (2) United States Geological Survey (USGS) gauges in the upper Fish and Magnolia watersheds. These gauges represent only a small percentage of the actual watershed. Rainfall measured in the watershed varies greatly from sub-watershed to sub-watershed. The installation of an accurate flow metering station at the mouth of Weeks Bay and strategically placed rainfall monitoring gauges in the sub-watersheds feeding the Fish and Magnolia River would greatly increase our ability to estimate nutrient loading, the effects of ongoing hydrologic changes, and potential for flood prone areas. Flow meter monitoring will be accomplished with the support of the GSA. A comprehensive monitoring of rainfall across the watershed will be accomplished with citizen science volunteers through the Community Collaborative Rain, Hail & Snow Network (CoCoRaHS) (objective 3.5, action 1). The loss of

support for the NOAA Center for Operational Oceanographic Products and Services (CO-OPS) tide station at the Reserve re-created a need for tidal duration and accurate water level data. Reserve staff are investigating alternative methods for obtaining tidal duration and high-quality water level data (objective 2.4, action 3).

These above projects will require funding and manpower to accomplish. Reserve Research staff intends to address the above projects via partnerships with Grand Bay NERR, USGS, GSA, NOAA CO-OPS, local and regional universities, and the DISL.

In the next five years, the Reserve plans to use research to guide the restoration of coastal and estuarine holdings. Reserve research has been and will continue to be disseminated directly to coastal managers and decision-makers in dedicated workshops via the Coastal Training Program. Reserve research is made available to the wider research community via peer reviewed literature and technical reports (objective 2.6, actions 2, 3).

Weeks Bay Reserve staff will host biennial research symposia which are open to coastal resources managers and the community with active researchers presenting quality assured or peer-reviewed data from research and monitoring projects to highlight research within the Reserve. Researchers will also participate in local, regional, and national symposia to disseminate the results of their work (objective 2.6, action 1).

Program Monitoring and Evaluation

Current SWMP evaluation is accomplished through the efforts of the SWMP Oversight Committee with input from the CDMO. Research projects are entered into the NERRS research database. Reserve research staff hopes to accomplish the initiation of a minimum of seventeen new research projects over the next 5 years addressing the priority issues stated previously.

Education

The National Estuarine Research Reserve System seeks to enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation. The Reserve System increases estuary and scientific literacy among students, teachers, and the public through the K-12 Estuarine Education Program (KEEP) and Community Science programs.

The K-12 Estuarine Education Program helps educators bring estuarine science into the classroom through hands-on learning, experiments, fieldwork, and data explorations using grade-appropriate lessons, activities, and videos. Reserves also offer teacher development programs that use established coastal and estuarine science curricula aligned with state and national science education standards. Teachers on the Estuary (TOTE) workshops give teachers the opportunity to explore coastal habitats and conduct field investigations, learn how to integrate local and national monitoring data into the classroom, and gain hands-on experience using estuary science resources.

NERR education programs focus primarily on fostering and modeling actions that leads to resource conservation and advances the mission of the reserve. Such programs are specifically designed with the intention of fostering wise stewardship of estuaries. The ultimate goal is to help audiences make personal choices and take collective actions that conserve, protect, and restore our estuaries and associated watersheds. Target audiences include, but are not limited to, residents of the watershed and surrounding communities, and recreational users of the reserve. Participants in the reserve's coastal training program are not included in this category.

Reserves integrate research and monitoring into their educational and outreach efforts, providing a multi-faceted, locally focused approach aimed at engaging the community.

The *Reserve System Strategic Plan* outlines education objectives designed to increase the public's awareness of and participation in stewardship activities; improve educators' and students' understanding and use of the Reserve System and NOAA resources for place-based and inquiry-based learning; and grow and motivate the next generation of coastal professionals through access to programs and facilities that facilitate research, resource management, and educational opportunities.

Education Program Context

WBNERR education programs include both formal and informal student programs, as well as teacher professional development, adult education, and community science programs. Weeks Bay Reserve designs programs to teach participants about the importance of estuaries and demonstrate appropriate actions that individuals and communities can take to help conserve these valuable habitats. The Reserve integrates education across all sector programming, often relying on volunteers and partners to maximize effectiveness. The Reserve is committed to knowledge transfer and inspiring stewardship of coastal habitats with youth and adults.

As a result of COVID-19, Reserve staff pivoted to providing virtual programming for education audiences from Spring 2020 through Spring 2021. These included recurring Facebook Live Estuary Story Time, Virtual Fieldtrips for high school students, and "Teatime Talks" which covered a wide range of coastal topics for community audiences. Also, the Reserve partnered with the Eastern Shore Art Center to take the successful "Squeaky Sneakers" program, which combines estuary education and art, and produce virtual programs for students and adults to enjoy. Most of these live events and videos are available on the Reserve Facebook page and YouTube Channel for continued use. While virtual programming presented an initial challenge, it has resulted in enhanced variety of Reserve programming to be applied in future educational experiences (objective 3.6, action 1).

The Reserve engages preK-12 and adult populations mainly from Baldwin County, but also from surrounding counties within and outside of Alabama. The Baldwin County School District is the

fastest growing system in Alabama, educating over 30,000 students across 45 schools, half of which are classified as Title 1 schools serving low-income students (bcbe.org). According to a study by Landau et.al (2020), low-income communities are more likely to experience nature deprivation. One third of the Baldwin County community lives in apartments or other rental properties, including a third of families with children enrolled in public schools (NCES 2017-2021). With an abundance of natural beauty, resources, and a relatively stable and healthy economy, Baldwin County is the fastest growing county in the State of Alabama and the 7th fastest growing county in the country. As more of the natural landscape is cleared for commercial and residential infrastructure, it is important to also provide accessible areas for outdoor recreation and education.

Reserve staff work closely with teachers to provide no-cost, field-based trips to a minimum of 4,200 students over the next 5 years who otherwise might not have access to a place where they can explore Alabama's unique estuarine and coastal natural resources (objective 3.2). Since 2007, Weeks Bay Reserve has used program evaluations and follow-up surveys, along with a teachers' needs assessment to inform and improve educational programming. Staff conducted an updated needs assessment in 2022 for elementary and secondary science teachers to determine teachers' needs in relation to field trip programming and professional development. Staff will continue to update and utilize an education program market analysis and needs assessment in addition to employing methods of evaluation and follow-up to be adaptive in program delivery.

Our goal is to see students and adults develop an appreciation for the coastal environment and a desire to become more literal stewards of coastal natural resources. The Reserve receives walk-in visitation that reflects international, national, and local reach. Reserve programs are designed to encourage participants of various ages and abilities to immerse themselves in science through literature, art, technology, and real-world experience.

Nationally identified goals, priorities, and implementation strategies guide the implementation of education activities. Education programs, interpretive exhibits and community outreach programs integrate elements of NERR System science, research, and monitoring activities. This ensures a systematic, multi-faceted, and locally focused approach to fostering stewardship.

Local priority issues include habitat loss and fragmentation, species diversity, impacts of invasive plants and animals on ecosystems, nutrient loading in the estuary, marine debris issues, sea level rise, storm events, increased salinity, and community resilience. As much as practical, program delivery incorporates local and topical information.

Education Program Capacity

A full-time Education Coordinator oversees all aspects of educational programming at the Reserve. The Education Coordinator conducts teacher workshops as well as preK-12 programs for public, private, and homeschool groups who wish to schedule a program during the school

year. Additionally, the Coordinator leads summer and community programs. This individual's time is shared with the Alabama Coastal Area Management Program, where they conduct community outreach activities. Assisting the Education Coordinator with programming is an Education Assistant (shared with ADCNR 5 Rivers Delta Center), two part time laborers and the Research and Monitoring Technician. The Stewardship Coordinator supports community education and is responsible for facility displays, boardwalks, and signage. The Coastal Training Program (CTP) Coordinator assists with community engagement and professional development.

Reserve efforts are greatly enhanced through the support of numerous partners and local organizations that leverage learning opportunities. Partners include local organizations such as the Eastern Shore Arts Center, Baldwin County Public Library System, Alabama Regional In-service Centers, SALT, Alabama Coastal Foundation, GOAA, and other government and non-governmental organizations. These organizations provide supplies, volunteers, staff and monetary resources to preK-12, teacher, summer, and outreach programs. The Reserve works closely with other NERR staff on regional and national education initiatives (objective 3.2, action 7).

Facilities to support education and outreach at Weeks Bay Reserve include the Visitor Center, the Resource Center, Auditorium, two boardwalks, and a pontoon boat. Education programs use these resources to meet the needs of various audiences including walk-in visitors. Additionally, Reserve staff conducts education offsite which involves presentations for school assemblies, hands-on activities in formal classrooms and with after school groups, story-time at libraries, and lectures for adult audiences (objective 3.2, action 6).

Education Program Alignment and Delivery

Weeks Bay Reserve education staff will continue to implement NOAA programs, KEEP and TOTE. Both programs are mandated by NOAA and utilize the Estuary 101 curriculum, in addition to Reserve-specific activities aligned with state and national science education standards. Reserve educational programs and experiences are designed to advance literacy of estuary and marine systems within coastal Alabama and provide meaningful, hands-on educational experiences for adults, children, and teachers.

Reserve classroom preK-12 curricula is aligned with the Alabama Course of Study in science. Activities are grade-level specific and build upon each previous grade level. The Course of Study follows a logical learning progression that addresses the same disciplinary core ideas across multiple grade levels. While every core idea is not addressed in every consecutive grade, the core idea is taught through developmentally appropriate approaches with increasing rigor and sophistication in a continuous and progressive manner. In addition to science, education staff at Weeks Bay Reserve incorporate other cross-cutting concepts into programming including mathematics, reading, and art. Education staff periodically evaluate alignments to stay up to date with changes in the state course of study.

Additionally, as youth spend increasingly less time outdoors, many often feel a certain sense of unfamiliarity or even discomfort when led into natural surroundings. Being sensitive to this emerging issue, staff use methods designed to overcome such challenges. Students are led through experiences teaching them how to make observations in a discerning manner and then are taught to use tools such as binoculars, hand lenses, or seine and cast nets to aid in exploring the natural environment. They are given notebooks for sketching, taking notes of surroundings, and simply writing about their nature experience. Staff engage students in ways that are meaningful and memorable, allowing opportunities to experience and learn through cross-curricular methods.

In addition to formal preK-12 programs during the school year, Reserve staff offer summer programs for the community. The Education Coordinator leads the implementation, along with assistance from other staff. Since 2008, summer programs at the Reserve delivered experiential education to participants ranging in age from preschool to senior citizens with a variety of abilities and backgrounds. Reserve summer programs enhance ecological awareness and conservation among local communities.

Summer programs at the Reserve incorporate innovative teaching tools such as combining art, literature, and field studies to teach about local environments, encouraging participants to better appreciate and value coastal resources and their impact on the ecosystem. Participants are given the opportunity to better understand the role organisms play within the coastal ecosystem and make better informed decisions regarding marine debris, erosion, and nutrient enrichment in waterways. Additionally, the participants gain the confidence to share this knowledge with others.

Summer programs at the Reserve depend on many partnerships and volunteers to increase reach and effectiveness. This leveraging of resources and partnerships has produced a highly successful and sustainable program. Success of summer programs is measured in the total number of participants reached and their increased understanding of coastal topics. Increased knowledge is gauged with reflection activities, student writings and/or participant feedback. These activities give great insight into what participants are learning and how they currently value coastal resources.

Professional development for preK-college teachers is primarily facilitated through TOTE workshops. TOTE workshops are multi-day and include hands-on, science-based, field activities that engage teachers to increase their knowledge and appreciation of estuarine environments, as well as acquire the necessary skills to act as stewards of estuary resources. Workshops are cross-curricular, incorporating research and SWMP data generated at the Reserve and include established coastal and estuarine science activities aligned with state and national science education standards. Materials are provided for teachers to implement activities in the classroom,

thus furthering the reach of the workshop. Participants in TOTE programs at Weeks Bay NERR reside primarily in coastal areas of Alabama, Mississippi, and Florida. However, recent partnerships with University of South Alabama and Jacksonville State University In-service Centers have increased participation from other regions of Alabama.

The Reserve also develops community science and outreach programs to raise awareness and to foster actions that promote resource conservation. These programs work with audiences whose choices directly impact the integrity of estuaries and their associated watersheds. The audience includes walk-in visitors, volunteers, residents, civic organizations, senior citizen groups, religious organizations, youth organizations, lifetime learning classes, and non-governmental organizations (NGOs). Current NERRS research science and techniques, including SWMP and ecosystem stressor data, are incorporated into programs whenever possible. Core education, research, stewardship, and CTP staff jointly share responsibility for developing and implementing these programs.

Education Future Needs and Opportunities

Since 2018 the Reserve has hosted ten Teacher on the Estuary workshops, serving 140 teachers. According to the Reserve TOTE Evaluation Report (2018-2022), most teachers attend workshops at Weeks Bay because they want to expand their science curriculum. A common theme among teachers who attend is they change their approach to teaching, incorporating more hands-on activities centered around local topics, which is more “real” and applicable to their students. Additionally, teachers feel more comfortable incorporating science themes into other subjects such as math, reading, social studies, and art.

In addition to the TOTE Evaluation, Reserve education staff conducted a teacher needs assessment in 2022 to help guide professional development. Teachers expressed interest in attending professional development related to a variety of topics including human impacts to watersheds, oceans, ecosystems, sea level rise, coastal food webs, estuaries, and biodiversity. Of the 173 respondents, teachers provide instruction on weather (68%), ecosystem impacts to wildlife and fisheries (39%) ecosystem impacts to humans (43%), and effects of atmospheric gases (38%). This is because the Alabama Course of Study in Science follows a logical learning progression which addresses the same disciplinary core ideas across multiple grade levels. Beginning with kindergarten, students make observations on the effects of sunlight on the Earth’s surface, local weather patterns, and planning solutions to lessen human impact on the local environment. Concepts such as these build in rigor across grade levels. Once students reach secondary Environmental Science, natural resources, natural hazards, human impacts, and ecosystem stressor impacts are a main focus of the curriculum.

The Reserve will continue hosting at least one Teachers on the Estuary workshop per year. The estuarine ecosystem and the research and monitoring that the Reserve conducts serve as the perfect model to address the different topics on which teachers need training. The Education

sector will include other Reserve sectors in planning and implementing education training and will continue to incorporate up to date, local data to support meaningful engagement of these concepts. Additionally, the Reserve will provide teacher trainings at no-cost, as one factor that prevents teachers from participating in professional development are registration fees.

Within the next 5 years, staff plan on building the capacity of the community science and outreach programs through recruitment of volunteers for community science projects such as Alabama Water Watch, the Weeks Bay Phenology Trail, and Baldwin County CoCoRaHS Network (objective 3.5, action 2). Evaluation measures will include the number of community members participating in a program after training. Post-event evaluations will be used to determine participant satisfaction with the training and program. Evaluation techniques will allow staff to modify programs to better meet the needs of the audience.

The Reserve Education sector will increase marketing of existing and new education programs using available communication tools in accordance with ADCNR communication and marketing policies (objective 3.6, action2). The Reserve Manager serves as the Gulf of America Alliance (GOAA) Education and Engagement Team Chair. Education staff plan to continue connecting with regional organizations like GOAA to increase the Reserve presence as an education and training leader in the community. Using existing Reserve resources like field sites, restoration sites, offsite outreach like the Watershed Wagon, summer programs and educational boat trips, Education staff will increase exposure to the community and attract additional participation.

While highly valued by teachers, students, and community members, the various educational programming requires a considerable investment in staff time across the sectors. The amount of programming offered can be impacted by staff capacity. To partially alleviate constraints as to increased education events at the Reserve, the Reserve will recruit volunteers and develop training designed to foster assistance with education programming (objective 4.2, action 4).

Facilities to support education and outreach at Weeks Bay Reserve include the Visitor Center, Auditorium Building and the Resource Center. The Visitor Center houses interpretive displays and exhibits. The Reserve Facility Master Plan identifies potential scenarios for adding space within the Visitor Center to support increased program capacity and better visitor flow. Education staff will continue to identify opportunities to update facilities as prescribed in the Facility Master Plan in accordance with program needs and available resources.

Coastal Training Program

The NERRS Coastal Training Program (CTP) provides up-to-date scientific information and skill-building opportunities to coastal decision-makers on relevant coastal management issues and facilitates collaboration among coastal communities and researchers. Audiences may vary for each reserve, but generally include local elected or appointed officials, managers of both public and private lands, natural resource managers, coastal and community planners, social

service providers, and coastal business owners and operators. They may also include such audiences as farmers, fishers and aquaculture professionals, watershed councils, professional associations, recreation enthusiasts, and interdisciplinary researchers.

The place-based nature of reserves makes them uniquely positioned to deliver pertinent information to these audiences. Each reserve tracks audience needs and partner strengths to identify how best to interact with audiences through virtual and in-person training, or the provision of technical assistance and engagement activities that focus on identifying how best to deliver relevant training on priority issues to their area.

Partnerships are integral to the program's success. Reserves work closely with a host of local partners, as well as several NOAA programs, to determine key coastal resource issues and the appropriate audiences and expertise needed to deliver relevant and accessible programs.

The Reserve System Strategic Plan outlines coastal training objectives designed to ensure that coastal decision-makers and environmental professionals understand and effectively apply science-based tools, information, and planning approaches that support resilient estuaries and coastal communities.

Coastal Training Program Context

The Reserve's location along the eastern shore of Mobile Bay in Baldwin County allows the Coastal Training Program to effectively serve lower Alabama and the Western Florida Panhandle. The geographically closest tribal community is the Poarch Creek Indians who reside in Atmore, AL. The ancestors of the Poarch Band of Creek Indians lived along the Alabama River, including areas from Wetumpka south to the Tensaw settlement (Poarch Band of Creek Indians, 2023). The Reserve service area, particularly Baldwin County, hosts an abundance of row crop agriculture, silviculture, and turf production. It has also experienced an immense population growth in recent years that has led to increased urbanization/residential development. The area is a popular tourist destination, attracting visitors from around the world and greatly impacting the economy. Other economic influencers include trade, transportation, and utilities; financial activities; education and health services; manufacturing; professional and business services; and construction. In addition to the primary service area, Weeks Bay CTP works through collaborative regional partnerships with the other four Gulf Coast NERRs to host initiatives and/or trainings that assist in meeting the needs of audiences in northwest Florida and coastal Mississippi. Weeks Bay Reserve CTP will continue efforts to partner with additional coastal organizations in the other Gulf Coast states as well, including any reserves that might be added to the NERRS.

A Market Analysis/Needs Assessment (MA/NA) will be completed during this management plan cycle to reassess CTP priorities (objective 3.7, action 1). Current priorities were established through collaboration with other Reserve sector leads, findings from the 2011 MA/NA, and

feedback gathered through post-workshop surveys. These priorities emphasize providing technical trainings that communicate up-to-date management science on coastal challenges and effective best management practices. Future trainings may focus on nature-based solutions that address weather related stressors and sea level rise, stormwater and water quality management, invasive species control, the use of native landscaping, and habitat best management practices suited to increasingly urbanized coastal ecosystems.

CTP serves all those whose activities affect coastal resources. This includes coastal decision-makers, resource managers, and professionals who advise or provide services to decision-makers, managers, and private organizations. Key audiences include elected officials, departmental staff, regulatory agency personnel, boards/commissions, realtors, developers, engineers, and consultants. Private entities represent an important audience as this sector largely forms the regulated community which can greatly benefit from professional development related activities tied to natural resource impacts. CTP will strive to reach such audiences through increased marketing of existing and new education programs using available communication tools in accordance with ADNCR communication and marketing policies.

Coastal counties in Alabama are changing rapidly. Development is altering local landscapes. With these changes can come the loss of wildlife habitat, filling of wetlands, flooding, and polluted runoff that degrades the health of local waterbodies. The Weeks Bay CTP develops workshops and technical support programs with its training partners to provide up-to-date scientific information and skill-building opportunities to coastal decision-makers on these and other relevant coastal management issues and facilitates collaboration among coastal communities and researchers. Additionally, CTP helps communities develop local plans and ordinances to address a changing landscape and organizes grant writing workshops that increase partner capacity to secure funds to implement necessary changes or restoration projects. CTP endeavors to bring together audiences with recognized experts in alternative practices that help communities protect coastal resources and benefit from strategic land use planning. To be effective in these endeavors, CTP integrates other NERR sectors and scientific research conducted at the NERR into training activities and workshops.

During this management plan period, CTP and the Research sectors will collaborate to host biennial symposia highlighting the research that has been conducted at the Reserve (objective 2.6, action 2) and CTP will use this research to help guide workshop topics, ensuring coastal decision makers have access to current scientific knowledge to encourage use of best management practices in coastal areas. Additionally, CTP will support the stewardship sector by hosting workshops related to habitat management such as the implementation of prescribed fire and the ecological importance of incorporating native species into residential and city/public landscapes (objective 3.7, action 2). CTP is assisting the volunteer program by helping to facilitate volunteer opportunities and training at the Reserve such as Alabama Water Watch

training and the implementation of a phenology trail within the Reserve (objective 4.2, action 3). This phenology trail will be part of the larger Gulf Coast Phenology Trail and depend greatly upon the participation of local volunteers.

CTP meets regularly with the Reserve Manager and program coordinators to ensure its efforts support the Reserve's goals and objectives. CTP training activities and workshops directly contribute to the system-wide effort of community education. CTP efforts help provide coastal decision makers with the knowledge and tools necessary to understand and adapt to the effects of land use practices and ecosystem stressors, improve water quality through reduction of pollution, enhance stormwater management, improve land conservation and management practices, and enhance coastal resilience and disaster response.

Coastal Training Program Capacity

The CTP is managed by a full-time coordinator. As necessary, the Coordinator calls upon other Reserve staff for assistance with training events. Training facilities both at the Reserve and in the CTP service area are numerous. The Reserve utilizes several onsite venues for workshops, including the Resource Center and Weeks Bay Auditorium. These venues have integrated audio and video capabilities as well as wireless internet access. Outside the Reserve are additional venues like AWF Delta and Bay Conservation Center (Spanish Fort, AL), Graham Creek Nature Preserve (Foley, AL), Red Cross (Mobile, AL), and NOAA Disaster Response Center (Mobile, AL) with convenient access to interstate highways. Using these locations and others like them reduces travel distances for CTP audiences not only in Alabama but also in Florida and Mississippi.

CTP forms solid partnerships with other NERR sectors, other Reserve training programs, and many agencies and groups around the northern Gulf Coast. Training partners include the other Gulf Coast Reserves, federal and state agencies, local governments, institutes of higher education, private businesses, and NGOs. Weeks Bay Reserve CTP Coordinator attends P.L.A.N. (Plan Lower Alabama Now) meetings. These meetings provide CTP with an ongoing analysis of issues and needs of common audiences and present opportunities to strengthen new and existing partnerships. Partners aid in the development of educational products/workshops, provide logistical assistance, contribute monetary support to meet training costs, secure adequate venues, and help obtain nationally recognized expert instructors.

Partnerships are integral to the success of the program. Reserves work closely with several other NOAA programs, as well as a host of local partners in determining key coastal resource issues, target audiences, and expertise to deliver relevant and accessible programs. Building and maintaining partnerships with other Gulf Coast NERRs; Federal, state, and local agencies; private firms; and nongovernmental organizations is essential to effectively address identified training needs and promote ongoing communication with workshop participants and decision-makers.

Coastal Training Program Delivery

CTP workshops are advertised using available communication tools in accordance with ADNCR communication and marketing policies. Many of the Reserve's partners also maintain listservs and have been supportive in advertising programming and helping CTP reach a larger audience.

Training activities and workshop format include lectures with integrated classroom and field-based exercises as well as collaborative sessions that strive to facilitate group discussion and participant feedback. When possible, programs will be held in locations such as the Weeks Bay Reserve Tonsmeire Resource Center and the Weeks Bay Auditorium that are both accessible to those with physical disabilities and require less travel time for staff. In instances when programming cannot be held at these Reserve-based locations and/or requires field time that is not fully accessible to all users, every effort will be made to include an accessible alternative. Additionally, use of virtual training remains a viable option when appropriate.

Coastal Training Future Needs and Opportunities

While post-workshop surveys and Reserve management needs inform CTP priority issues, a MA/NA will be conducted to ensure the needs of coastal resource managers and local communities are being met. During this management period, CTP will contract with a state approved consultant who specializes in assessment and evaluation techniques to develop and implement a MA/NA to better inform CTP programming and services (objective 3.7, action 1). CTP endeavors to expand training for coastal decision-makers focused on ecosystem stressors, habitat conservation, water quality, and topics identified in training needs assessments.

Training Related Objectives and Actions

The goals and objectives of CTP for the next five years are to improve the overall stewardship of Weeks Bay and its watershed by providing science-based training and technical assistance to professionals, officials, and community members who make decisions that impact the bay and its watershed. To meet the goals of the Reserve, the CTP sector establishes objectives and actions designed to improve the capacity and skills of coastal decision-makers to use and apply science-based information in decisions that affect estuaries and coastal watersheds. These goals, objectives, and actions are summarized below and further detailed in section III.

CTP will support the first goal outlined in the Strategic Plan of using the biologically diverse and resilient ecosystems within the Weeks Bay watershed as a model for other coastal ecosystems by assisting in the development of a framework document that will guide future acquisition, restoration, and conservation actions. CTP will host habitat management prioritization workshops to inform the development of the framework document. Additionally, CTP will support this goal by hosting workshops and collaborating with partners to develop products and training materials to share the Reserve's understanding of ecosystem stressors and successful habitat management practices with coastal ecosystem managers and technical audiences. Thus, promoting better informed coastal decision-making by regional partners.

CTP will also support the Reserve's second goal: to have the understanding of coastal ecosystems gained through science and monitoring inform decisions affecting estuaries and coastal watersheds. This will be achieved via collaboration with the Reserve's Research sector to establish and host a research symposium biennially and by assisting to produce outreach graphics and articles in various media outlining research and monitoring data and efforts. This translation and dissemination of Reserve data will benefit government agencies, scientists, coastal decision makers, community members, and other Reserve partners.

Additionally, CTP will support the Reserve's third goal outlined in the Strategic Plan: improved ecological appreciation to advance coastal literacy, conservation, and resiliency, by conducting at least two community science projects per year as part of the NERR's education programs and a minimum of eight training events each year that meet the needs of coastal decision makers in the Reserve's service area. Community science projects will emphasize NERRS research and the value of community science data while ensuring participants understand current environmental impacts on coastal areas and the challenges of adapting to and mitigating these impacts in the future. Coastal decision maker learning opportunities, technical assistance, and/or collaborative research will be conducted through collaboration with Reserve partners and informed by a market analysis and needs assessment survey as well as post-workshop surveys and yearly internal and partner assessment of management needs.

Finally, CTP will support the Reserve's fourth goal of enhanced community sense of stewardship and appreciation of the local ecosystems by encouraging and showing appreciation of community volunteerism in Reserve activities and contributing to Reserve engagement in at least six community events per year including community events and festivals and an annual open house event. To encourage volunteerism, a volunteer recruitment and training event will be offered annually, and specialized community science project training will be provided as needed. Reserve staff, including CTP, will show appreciation for volunteers by highlighting volunteerism at the Reserve on multiple media avenues and hosting an annual volunteer appreciation day at the Reserve.

Monitoring and Evaluation Strategies

Training events provide participants with knowledge, skills, and resources they can apply in their vocations to address coastal challenges. CTP evaluations focus on identifying the changes that emerge as a result of these training efforts. Changes include approval of ordinances to protect coastal resources, development of planning documents addressing coastal hazards and stormwater management, the effective use of best management practices, and the use of effective methods of land conservation to protect habitat. CTP conducts evaluations months and even years after training events to document these longer-term outcomes. Follow-up evaluations remain an ongoing practice, allowing CTP to track actions taken by participants and the results of related initiatives and/or projects over time.

Performance measures and program evaluation are important to CTP to track success and plan for the future. CTP uses tools developed by the NERRS and the national CTP. With the Grand Bay NERR CTP, CTP conducted formal training needs assessments in 2008 and 2011. Since the two programs routinely work together on training events and attract audiences from Florida, Louisiana, and Texas in addition to their home states, a joint needs assessment is beneficial and reaches a larger audience. Ongoing discussions with partners and questionnaires included on workshop evaluations accomplish informal monitoring of program training needs.

As new information becomes available, CTP evaluates, and revises plans like the strategic document to reflect the current training environment. The performance measures developed by the NERR CTP community enable CTP to monitor and evaluate training and technical assistance. CTP uses evaluation forms distributed to all training event attendees to determine overall satisfaction with training and establish training effectiveness. Evaluation results recorded in the CTP performance monitoring database assist the Reserve and NOAA Office for Coastal Management in determining effectiveness of initiatives and/or projects and to address any necessary changes.



V. Administrative Plan

Organizational Framework

Weeks Bay Reserve is a cooperative program between the National Oceanic and Atmospheric Association (NOAA) and the State of Alabama. The Alabama Department of Conservation and Natural Resources (ADCNR) administers the Reserve, as described in the Memorandum of Understanding (MOU) between NOAA and ADCNR State Lands Division (Appendix A). ADCNR administers all activities under an established framework for implementing and evaluating staff and programs, managing, and soliciting funds, and coordinating activities of the Reserve. The Administration framework (Figure 19) ensures that management activities are coordinated and encourages support for local and state user groups. Management of the Reserve is a collective effort involving administrative agencies, Reserve staff, local and state agencies, user groups and the Weeks Bay Advisory Committee (WBAC).



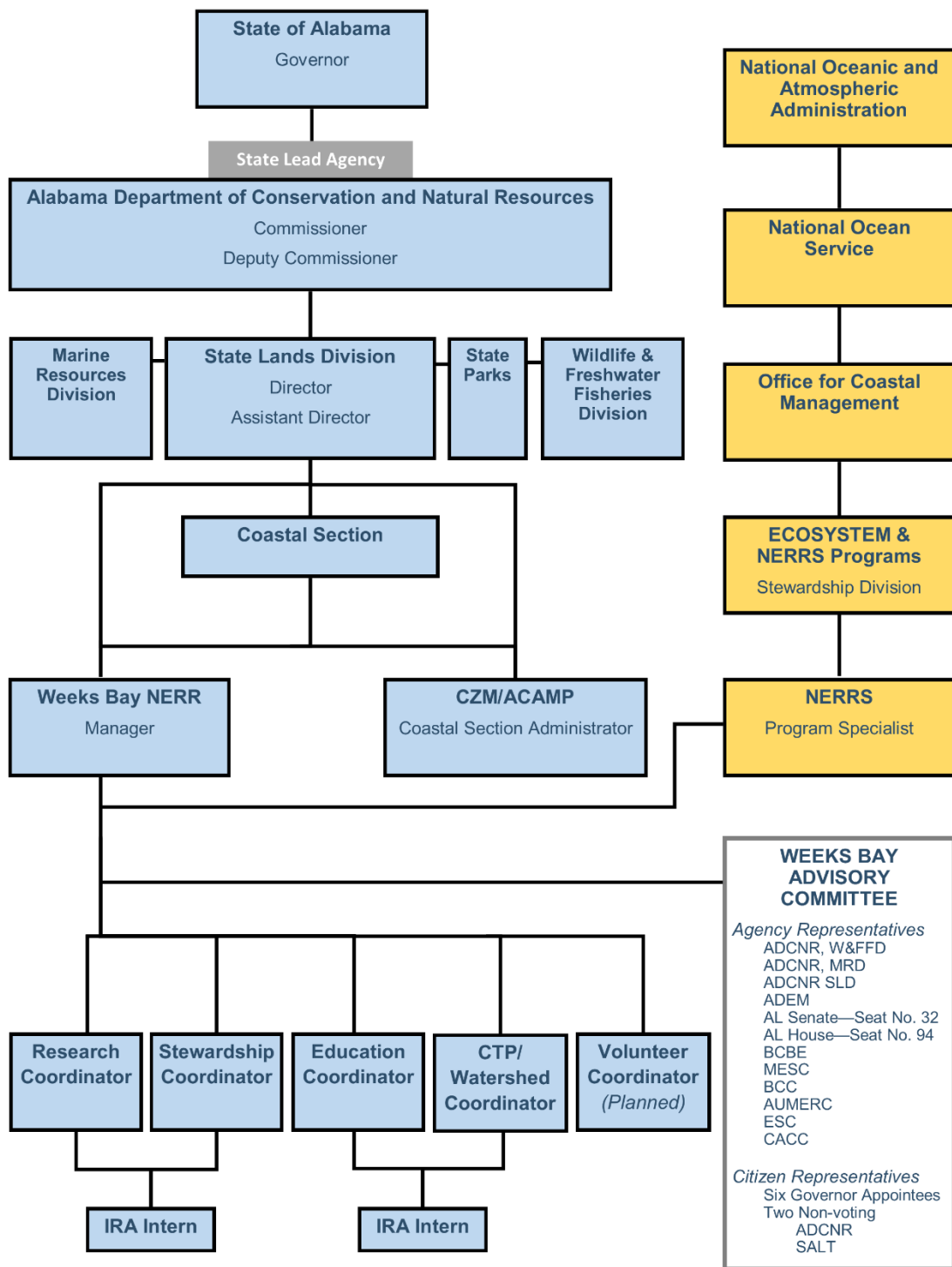


Figure 19. Administrative Framework for Weeks Bay Reserve Showing the Relationship among NOAA, ADCNR, and the WBAC. The Key Staff Positions (Coordinators) for the Primary Reserve Programs are also Shown.

State Agencies

Alabama Department of Conservation and Natural Resources is the cooperating lead state agency for the Reserve and an executive agency of the Alabama state government. The Commissioner of ADCNR is appointed by and reports directly to the Governor. The Reserve is an ADCNR State Lands Division (SLD) program. The ADCNR SLD also houses the Alabama Coastal Area Management Plan (ACAMP). Reserve staff are ADCNR SLD employees.

ADCNR provides administrative services for the Reserve including accounting for grants and other fiscal activities, personnel, purchasing, IT, communications, and legal counsel. These services are funded by an indirect cost charged to the Reserve program by ADCNR. SLD provides state matching and other state funds supporting Reserve operations and facilities.

The Department of Conservation and Natural Resources is an executive and administrative department of the State of Alabama created by statute. The Commissioner, appointed by the Governor and serving as a cabinet member, advises the Governor and Legislature on management of freshwater fish, wildlife, marine resources, state lands, state parks, and other natural resource issues. The Department has four statutory operating divisions including Marine Resources, State Lands, State Parks, and Wildlife and Freshwater Fisheries, as well as several administrative sections such as the Deepwater Horizon Restoration Section. ADCNR is the state agency responsible for the conservation and management of Alabama's natural resources and also issues hunting and fishing licenses for the state.

Alabama Department of Environmental Management (ADEM) administers environmental legislation, reviews and issues permits concerning activities in the coastal area, promulgates regulations and standards, and develops environmental policy for the state. ADEM is the regulatory, permitting, monitoring and enforcement arm of the ACAMP. ADEM collects environmental and regulatory data statewide and administers federally- designated environmental projects. ADEM provides the coastal regulatory controls and enforcement of coastal development authorities. ADEM serves the Reserve in an advisory capacity with a member on the WBAC.

Current Staffing and Needs

ADCNR will implement the Reserve programs by hiring, directing, training, and maintaining Reserve staff. Implementation of the goals and objectives for the Reserve is dependent upon adequate staffing levels. Although staffing levels may change over time and with availability of resources, a minimum staff is needed to manage and coordinate Reserve activities. The Reserve System identifies the following positions as core staff, those needed to maintain and implement system-wide programs: Reserve Manager, Research Coordinator, Education Coordinator, Coastal Training Program Coordinator, and Stewardship Coordinator. The activities and roles of core positions are essential to the operation of the Reserve and are filled

continuously. There are also other technical and administrative support staff necessary to maintain and implement system-wide programs. Positions other than the core staff may or may not be filled depending on availability of resources. The roles and responsibilities of staff positions are described below, and the staff structure is provided in Figure 20.

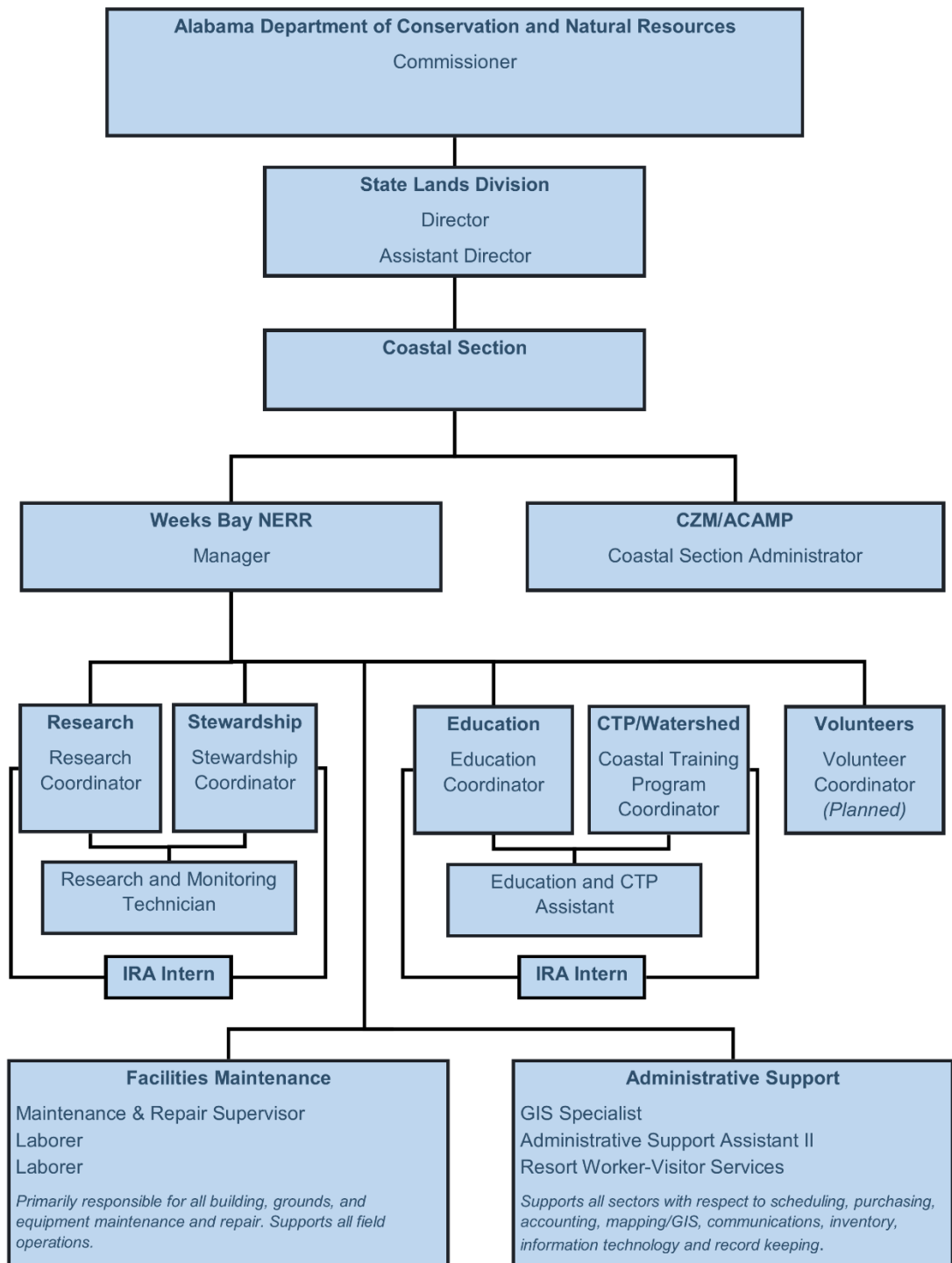


Figure 20. Weeks Bay Reserve Organizational Chart.

Roles and Responsibilities

Reserve Manager supervises the implementation of the Management Plan and coordinates Reserve activities and programs. In addition, the manager develops and manages the annual operations plan and budget; ensures compliance with NOAA and ADCNR requirements; oversees ongoing education, research, and stewardship programs; develops and fosters partnerships with other agencies and non-governmental organizations to promote conservation of coastal resources; oversees ongoing site development, acquisition, and maintenance activities; maintains a strong working relationship with the South Alabama Land Trust; and represents the Reserve at the regional and national level. The Reserve Manager serves as the chair and a state lead for the Gulf of America Alliance Education and Engagement Team.

Administrative Support Assistant II conducts administrative operations of the Reserve. Includes support for communications/reception, office organization, recordkeeping, scheduling, fiscal operations (purchasing, payments, financial reporting), and property management (inventory).

Education Coordinator develops and implements preK-12, teacher and community education and outreach programs at the Reserve. The position requires education experience as well as expertise in biological and/or environmental sciences. This person leads interpretive tours, makes presentations to community organizations, develops educational workshops, coordinates summer estuary camps, and participates in outreach events and festivals. The Education Coordinator must be able to comprehend information at various technical levels to communicate and present marine and estuarine science to varying age and grade levels.

Education and Coastal Training Assistant is responsible for supporting education, outreach, and coastal training programs. The position requires practical education-related experience as well as training in the areas of biology, environmental science, and/or coastal resource management. Duties include scheduling groups, leading field trips, producing outreach and training materials, and assistance with public relations, social media, and communications.

Coastal Training Program (CTP) Coordinator develops and conducts training events and provides technical support for organizations or agencies that make decisions affecting coastal resources. CTP audiences may include governments, resource management agencies, private engineers or consultants and environmental groups. CTP Coordinator activities include conducting workshops, developing manuals and guidebooks, leading grant-funded projects, building partnerships and serving on advisory and technical committees. This position also develops local programs designed to educate and involve citizens regarding watershed issues and pollution reduction. The CTP Coordinator serves as a state lead for the Gulf of America Alliance Coastal Community Resilience Team.

Research Coordinator oversees research and monitoring activities, initiates research projects, and facilitates research activities of academic, governmental, non-profit, and private research organizations partnering with the Reserve. This is a professional position requiring a background

in field research and expertise in estuarine ecology including experience in at least one of the Reserve System Priority Research Areas.

Research and Monitoring Technician (RMT) assists the Research and Stewardship Coordinators in implementing the System-wide Monitoring Program and facilitation of research and monitoring at the Reserve. The Research and Monitoring Technician calibrates and troubleshoots electronic data loggers and electronic sample collection devices, does quality control on large data sets, collects water samples in accordance with established techniques, oversees collection of data through the Sentinel Site program and assists with other research and monitoring programs at the Reserve.

Geographic Information Systems (GIS) Specialist creates and maintains GIS databases, produces digital and printed map products, and assists with development of GIS applications for the Reserve. This position requires advanced technical training in GIS and other software, specialized experience, and continuing education. The GIS Specialist serves as a state lead for the Gulf of America Alliance Data Advisory Committee.

Stewardship Coordinator leads planning and restoration activities within the Reserve boundary. The program coordinator conducts habitat monitoring and collaborates with agency, academic, and private experts to develop and implement activities that improve the ecological health and biological diversity of lands in and around the Reserve. Other duties include assisting with research and monitoring and land acquisition. This position requires scientific and educational experience. Coordinator must be able to comprehend information at various technical levels to communicate and present marine and estuarine science to the public. The Stewardship Coordinator serves as a state lead for the Gulf of America Alliance Habitat Resources Team.

Maintenance Supervisor oversees laborer positions, conducts maintenance and repair of equipment, vehicles, vessels, buildings, and grounds of the Reserve, and assists with purchasing of maintenance supplies.

Laborers (1&2) maintain the grounds, trails, and boardwalks of the Reserve and conduct janitorial duties as required in all Reserve buildings. Duties include opening and closing the Visitor Center on Saturdays. These positions require some reception duties.

Resort Worker works to ensure positive visitor experiences in the Weeks Bay Visitor Center. Duties include answering phones, greeting visitors, orienting visitors to exhibits and trails and coordinating the use of Weeks Bay facilities. This position also supports core programs as needed.

Volunteer Coordinator (Planned) The Reserve appreciates that the need for additional administration support could arise as the volunteer program successfully expands. For example,

the need for programmatic oversight, day-to-day coordination, and long-term partnership building could become challenging. Accordingly, the Reserve will seek opportunities to identify funding sources and leveraging opportunities in an effort to develop a Volunteer Coordinator position. A dedicated Volunteer Coordinator could enhance partnerships with other volunteer organizations such as Master Gardeners, Master Environmental Educators, and Master Naturalist programs. Key partnerships are mutually beneficial and include the sharing of creative ideas, operations, and workload between the teams.

Inflation Reduction Act (IRA) Interns (2) are funded for five years (May 2024- April 2029) through the NERRS IRA Non-competitive Award. IRA interns support coastal resilience training, education, stewardship, and research programs. Duties include development of coastal resilience themed CTP workshops; education activities with students and community members; engagement with volunteers on community science projects; habitat monitoring; and implementing bioacoustics monitoring on Reserve properties to track species distribution to evaluate success of restoration and management actions.

Seasonal Interns perform various research, stewardship and education tasks as needed or as directed by the organization funding the internship. These positions are filled as funding resources are identified or as needed. Interns may be funded by ADCNR or in partnership with the South Alabama Land Trust or other partners.

Strategic Partnerships

The administration of the Reserve occurs through a collaborative process involving a variety of agencies, institutions, and organizations at various levels of engagement. Organizations key to the administrative function of the Reserve are noted.

Alabama Coastal Area Management Program (ACAMP) supports the Reserve through funding, program policy, and regulations. Where funds are available and their use not prohibited by federal or state guidelines, the ACAMP financially supports the activities of the Reserve. Additionally, ACAMP recognizes and reinforces the goals of the Reserve, and ADEM promotes the resource conservation program wherever feasible.

As part of ADCNR SLD, ACAMP and Reserve staff work together regularly on research, restoration, land acquisition, education and training opportunities. Several staff positions are shared between the Reserve and ACAMP including education, CTP, and GIS. This furthers the reach of both programs and reduces potential duplication of efforts among programs. A large portion of the public education/outreach needs of the ACAMP, particularly those directed toward the age groups preK-12, are met by the programs of the Reserve. CTP fosters collaborative opportunities as well. For example, CTP partnered with ACAMP to offer workshops on living shoreline suitability and permitting. The goal of these workshops was to provide landowners and contractors the knowledge and tools needed to implement these nature-based solutions in suitable

areas and promote resilience to coastal hazards. The programs also have collaborated on community science programs, including the CoCoRaHS program. Additionally, the Reserve is represented on the ACAMP Coastal Resources Advisory Committee and ACAMP is represented on the Weeks Bay Advisory Committee.

Closer coordination of education, outreach and training activities is a priority of both programs. The Reserve endeavors to expand its role in research coordination and assistance in support of ACAMP. The results would be more research, data, and best practices useful for both programs and the wider coastal resource management effort.

South Alabama Land Trust (SALT) is a nonprofit, accredited land trust that provides support, funding, and resources for the Reserve. SALT raises money through donations, grants, and membership fees to support activities of the Reserve, as well as facilitates property acquisition and special activities in Coastal Alabama.

Weeks Bay Advisory Committee (WBAC) was established during the initial stages of the Reserve designation. This Committee is composed of local and state representatives, as well as private citizens, that provide a wide range of expertise operating under a set of established bylaws (Appendix D). Individuals serve to advise management on matters of operations at the Reserve. The WBAC promotes the Reserve by seeking support for programs. Since committee members are involved in community efforts, they also inform management of needs, concerns, and interests of citizens using the Reserve. WBAC may form subcommittees as needed to address such topics as research and education.

The Weeks Bay Advisory Committee is composed of eighteen members plus two non-voting Citizen Representatives that include:

Agency Representatives

1. ADCNR, Wildlife and Freshwater Fisheries Division (appointed by ADCNR Commissioner)
2. ADCNR, Marine Resources Division (appointed by the ADCNR Commissioner)
3. ADCNR, State Land Division (appointed by the ADCNR Commissioner)
4. Alabama Department of Environmental Management (appointed by the Chief of the ADEM Mobile Field Office)
5. Alabama Senate - Seat No. 32
6. Alabama House of Representatives - Seat No. 94
7. Baldwin County Board of Education (appointed by the Baldwin County Superintendent)
8. Marine Environmental Sciences Consortium (MESC), (a.k.a. Dauphin Island Sea Lab (DISL), appointed by the MESC Director)
9. Baldwin County Commission (BCC), (appointed by the BCC Chairperson)

10. Auburn University Marine Extension and Research Center (AUMERC),
(appointed by the AUMERC Director)
11. Environmental Studies Center (ESC), Mobile County Board of Education (appointed
by the ESC Director)
12. Coastal Alabama Community College (appointed by the Coastal Alabama Community
College President)

Citizen Representatives

1. Six additional members appointed by the Governor for the duration of his/her term.
2. Additional Membership

Two non-voting members:

- a. ADCNR, State Lands Division, Coastal Section Chief
- b. SALT (appointed by the President of SALT)

Volunteers

Volunteers make tremendous contributions to Reserve programs by supplementing the efforts of staff. The Reserve recruits individuals with a wide variety of skills and expertise from the local community. In addition to directly assisting Reserve staff with specific tasks, trained volunteers serve to effectively transfer information on the value of estuaries to a broader public audience. The Reserve benefits from volunteers carrying their knowledge and experiences to certain communities not easily reached by Reserve staff. Volunteers gain personal satisfaction from the knowledge that they are performing an important role in conserving local estuarine and coastal resources.

The Volunteer Program is currently directed by all sector coordinators and the Reserve manager. Staff provide annual volunteer orientation, education, and development so that community members can participate across Reserve sectors. South Alabama Land Trust is instrumental in helping recruit volunteers from within their extensive volunteer network and working with the Reserve to track volunteer efforts.

Volunteers have traditionally helped with visitor center services, education and outreach programs and various stewardship activities. Reserve staff plan to increase volunteerism efforts through community science projects within the watershed including Alabama Water Watch, Nurdle Surveys, Weeks Bay Phenology Trail, and the Community Collaborative Rain, Hail, and Snow Network. A volunteer appreciation event will be hosted annually, and social media posts created throughout the year to recognize the valuable service provided by volunteers. Recognition of volunteer service affirms the Reserve's commitment to volunteerism, increases retention of trained supporters and motivates future participation.

Weeks Bay Reserve Disaster Response

In response to the need for emergency preparedness, the Reserve developed a Disaster Response Plan (DRP). In addition to preparing staff to respond to threats, the Reserve uses the DRP to educate local responders of the need to minimize effects on Reserve infrastructure, science stations and conserved lands. The DRP promotes the use of Reserve expertise and research and monitoring data in response and recovery when appropriate.

In general, emergency response follows a contingency plan to provide safety for individuals and protection of state assets. The Reserve, working with coastal emergency managers, first responders and responder support organizations, developed contingency plans to respond to emergency conditions which may arise. Plans are generic in nature and include actions that proceed through basic steps depending on the emergency condition. The approach is as follows:

- Notification of Emergency
- Immediate Response
- Confirmation of Emergency and Evaluation
- Agency Contact and Follow-up Procedures

Reserve staff and partners developing the DRP prioritized threats and emergency situations likely to occur at the Reserve. For these situations, the DRP includes specific contingency responses. These situations include fire, spills, accidents, hurricanes, and stranding of manatees or other marine mammals. Additionally, the Reserve emergency response also follows the ADCNR Standard Operating Guide for Hurricanes and Natural Disasters (ADCNR 2023).

Administration Objectives and Actions

The Administration sector identifies objectives and actions to accomplish components of the Management Plan. Reserve goals provide direction and structure for the Administration sector to take cohesive action towards meeting objectives over the next five years. This section outlines Administration sector objectives and actions to meet Reserve goals.

GOAL 1: Biologically diverse and resilient ecosystems within the Weeks Bay watershed serve as a model to other coastal ecosystems.

Objective 1-1: Reserve administration and financial management activities facilitate implementation of Reserve projects that support ecosystem health and biological diversity.

Action 1

ADCNR writes grants to secure funding in support of habitat restoration, land acquisition and biological diversity within the Reserve.

Action 2

ADCNR provides grant administration support to ensure that funds are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology and equipment and expand resources and partnerships to meet the needs of land management programs of the Reserve.

Action 4

Reserve uses practices where possible in infrastructure development that have a low impact on the ecosystems.

- a. Balance development and restoration.
- b. Mitigate light pollution.
- c. Implement storm water sensitive site design and stormwater pollution mitigation practices.
- d. Retrofit existing facilities and use native landscaping to reduce water use.
- e. Use energy efficient fixtures, appliances, and HVAC in new construction and retrofits.

GOAL 2: Understanding of coastal ecosystems through science and monitoring informs decisions affecting estuaries and coastal watersheds.

Objective 2-1: Reserve administration and financial management activities facilitate coastal management research and the transfer of scientific information to coastal decision-makers.

Action 1

Reserve administration invests staff capacity to seek external funding in support of emerging research and monitoring projects, leveraging SWMP or other existing infrastructure as possible.

Action 2

ADCNR provides grant administration support to ensure funding resources are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology, equipment, personnel, and facilities in support of reserve research and monitoring programs.

GOAL 3: Improved ecological appreciation to advance coastal literacy, conservation, and resiliency.

Objective 3-1: Adequate administrative staffing and facilities support implementation of Reserve training and education programs.

Action 1

ADCNR assists with education, training and outreach efforts as needed.

Action 2

ADCNR writes grants to secure funding for programmatic support and provides grant administration support to ensure funds are managed efficiently.

Action 3

ADCNR maintains and acquires necessary technology and equipment to support education and training programs.

Action 4

Reserve staff leverages agency capabilities to meet the needs of Reserve programs through better coordination and communication of essential gaps to be addressed or filled.

Action 5

ADCNR works to improve existing infrastructure to enhance Reserve programs and visitor experience. This will proceed with implementation of the Facility Master Plan as resources allow.

- a. Provide signage and educational markers to delineate boundaries of Reserve and increase visitor awareness of Reserve public access points and facilities.
- b. Rework existing parking area at the Visitor to provide delineated parking while reducing runoff from the site.
- c. Revise visitor flow in the Reserve Visitor Center to enhance guest experience.
- d. Design new exhibits and interpretive signage to better engage audiences of all ages and abilities.

GOAL 4: Enhanced community sense of stewardship and appreciation of the local ecosystems.

Objective 4.1: Administrative staff help sustain existing and build new partnerships and community outreach efforts that strengthen public appreciation of Reserve.

Action 1

ADCNR facilitates partnerships with local community organizations to support Reserve programs.

Action 2

ADCNR assists with coordination and implementation of community outreach efforts including representing the Reserve at community events.

Action 3

ADCNR writes grants to secure funding for programmatic support.

Action 4

ADCNR provides grant administration support to ensure funds are managed efficiently.



VI. Facility Development and Improvement Plan

Purpose of Facilities and Construction Principles

The facilities of Weeks Bay Reserve (Reserve) are located at three sites: Visitor Center site, Resource Center site, and Research Center site. The Visitor Center site is located on the south side of U.S. Highway 98, the Resource Center site to the east near the bridge over Fish River, and the Research Center site is located directly across U.S. Highway 98 from the Visitor Center. Facility site locations of the Reserve are shown in Figure 21 and are described in the 2011 Weeks Bay Reserve Facility Master Plan Study and Design (Facility Master Plan) document which is used to inform much of this chapter (WBNERR 2011).

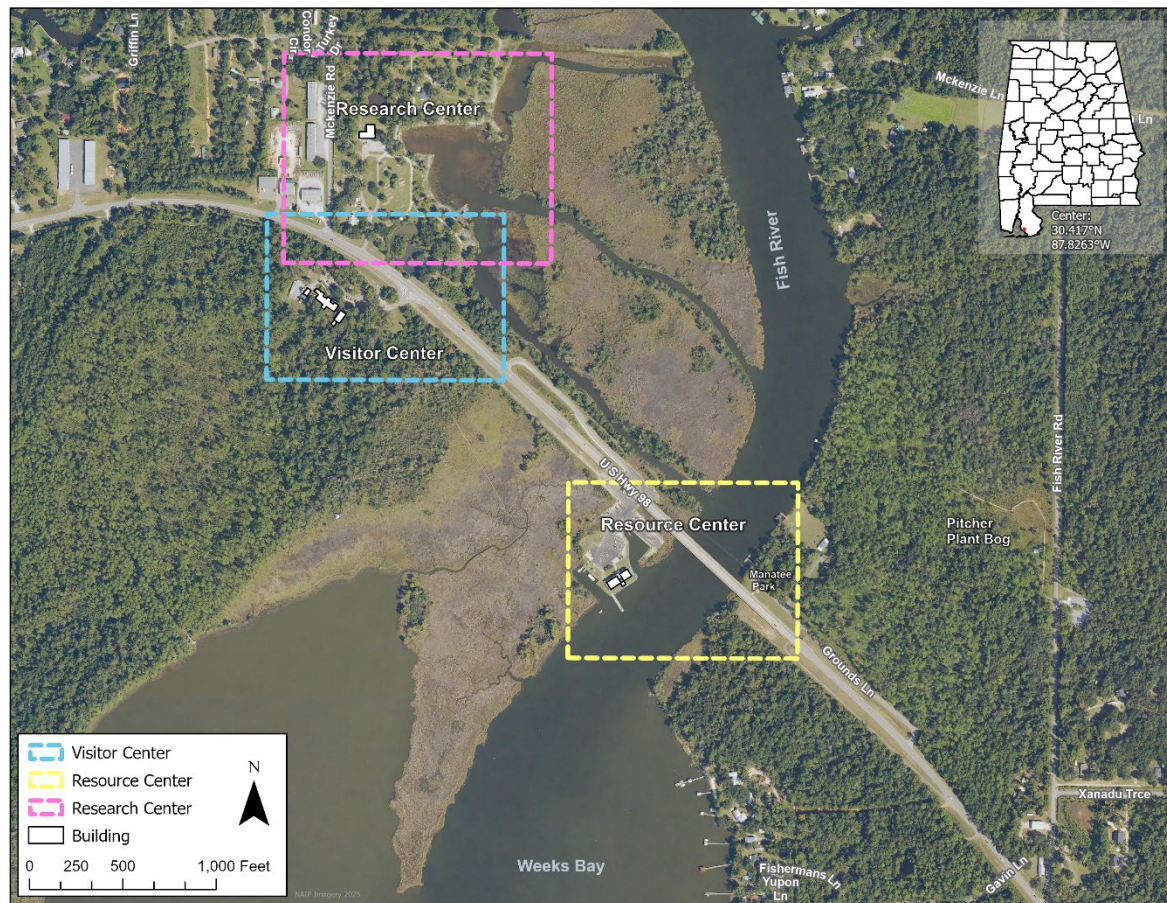


Figure 21. Weeks Bay Reserve Facility Site Locations.

The Reserve facilities are owned by the Alabama Department of Conservation and Natural Resources, State Lands Division (ADCNR-SLD) (Figure 22). These facilities and infrastructure provide workspace, research facilities, and a public venue for learning and collaboration among staff, partners, visitors, and residents. The facilities serve Reserve staff, university students and interns, as well as our partners and the public. The Reserve site provides a gathering place as well as outdoor recreation and education areas for people of varying age, ability, and familiarity with Alabama's unique natural resources.

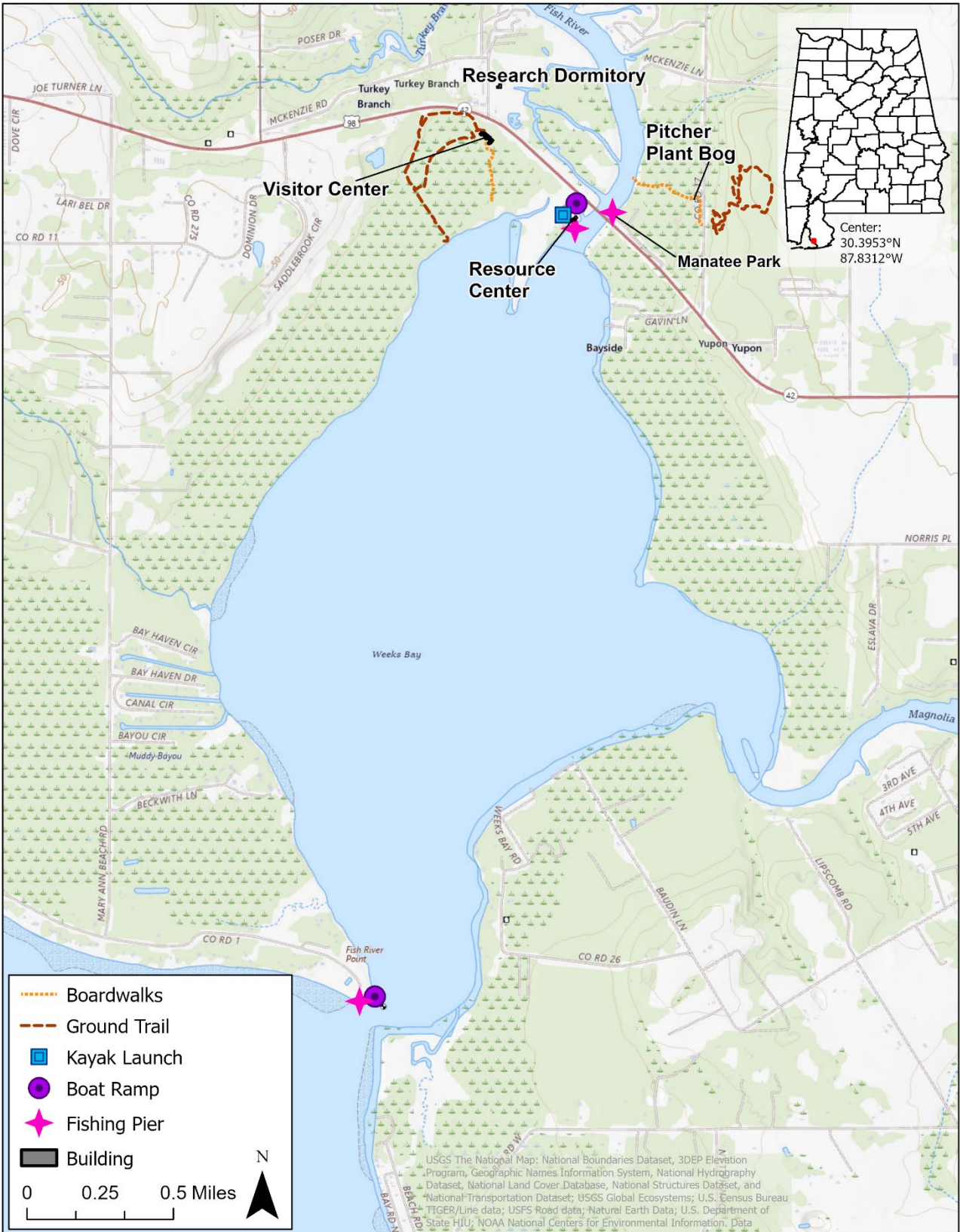


Figure 22. Map of Weeks Bay Reserve Facilities.

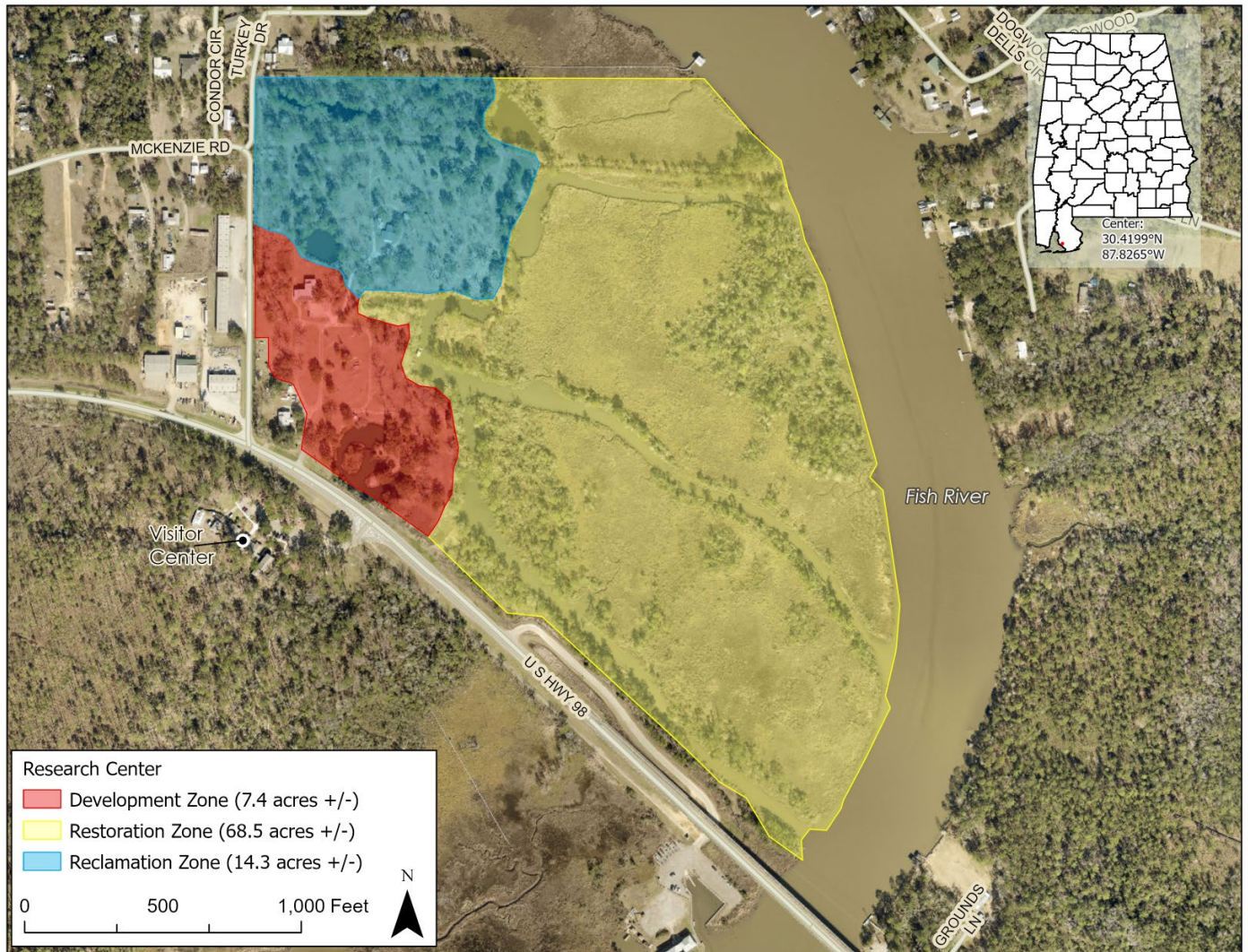
The 2011 Facility Master Plan provides guidance for accommodating growth at the Reserve. As programs grow and expand, requiring new or adapted facilities, this document will assist with efforts to seek funding and provide direction on the implementation of various facility enhancement projects. The Facility Master Plan was developed in five distinct chapters. Chapter one, “Design Principles”, was created as a roadmap to align the design and construction of future facilities at the Reserve with goals in the Reserve Management Plan. The principles lay out measurable performance goals for both new and existing facilities on the Reserve in 5 categories: Site Development, Restoration and Protection, Water Conservation and Re-use, Efficient Energy Use, Building Materials and Resource Conservation and Creating Indoor Environments.

The next four chapters, “Overall Site”, “Visitor Center”, “Resource Center”, and “Research Center”, describe each of the four facility activity areas of the Reserve. Each chapter includes “Existing Conditions”, “Programming”, “Design Concepts”, and “Budget Projection” for each site. The Facility Master Plan will continue to guide the Reserve over the next five years. Facility development may result in a need for increased staffing which is also addressed in the Facility Master Plan. Facility Master Plan component implementation is dependent on availability of funds and resources thus a definitive timeline cannot be provided. In addition, while the Facility Master Plan established a strategic vision as to potential future enhancements, the Reserve remains mindful of the need to first assure that sufficient resources exist to properly staff, maintain, and efficiently utilize existing facilities.

In construction, renovation, maintenance, and daily operation, the Reserve strives for energy efficiency, efficient use and reuse of materials, and recycling of used materials. Through a National Estuarine Research Reserve System (NERRS) Procurement, Acquisition, and Construction (PAC) Grant, the Reserve was able to install solar panels on the dormitory and resource center facilities. The NERRS has developed design and energy efficiency guidance for all reserves (Dewberry Design 2004). Additionally, the Reserve Facility Master Plan references building standards and tools. Adhering to these building practices will be an important consideration for any future facility updates and construction.

Also, in planning for facility development, use and function determine what types of buildings are needed. However, decisions as to siting of facilities are made in the context of factors such as impacts to any sensitive habitats, vulnerability to rising sea levels, exposure to increases in storm frequency and degree of vulnerability to stressors. Optimal sustainability, survivability, and accessibility need to be considered when choosing sites for new facilities or undertaking facility upgrades. Planning efforts undertaken as part of developing the Facility Master Plan incorporated such an analysis and resulted in siting new facilities such as a proposed boatyard or updated laboratory near the Research Center within the Reserve’s “Development Zone” (Figure 23). The Development Zone delineated in the Facility Master Plan is a portion of acreage that was developed and operated as a recreational vehicle park prior to acquisition by the State.

Limiting construction activities to this area will minimize any potential additional ecological impacts.



Description of Current Facilities

The Reserve, following designation in February 1986, moved operations into its first onsite facility in November 1992. Reserve administrative offices are in a 4,500 ft² Visitor Center located on U.S. Highway 98 (Figure 24).



Figure 24. Weeks Bay Reserve Visitor Center.

This center currently serves to house staff positions and provides exhibits and access for visitors to learn more about the estuarine habitats found at Weeks Bay. It includes a classroom, laboratory, conference room, and exhibit area containing live animals, restrooms, and storage space. Construction of a two-story, 3,500 ft² Auditorium Building was completed in 1997. This facility, directly adjacent to the Visitor Center, contains an auditorium for educational programs and additional office space (Figure 25). In 2025, the Reserve received NOAA PAC funding to develop a Renovation Plan to provide guidance for the improvement and management of high-priority buildings and the associated outdoor spaces at the Weeks Bay Reserve Visitor Center and Auditorium complex. This plan will take a comprehensive look at the Reserve's operations and facilities, suggest updates and improvements to interior and exterior architectural features,

incorporate sustainable and energy efficient design elements, and explore cost estimates for procuring and installing these items. The design will also include a conceptual plan for interpretive displays that address topical subjects, explore opportunities to make the Visitor Center and grounds more engaging to guests and school groups, and offer dynamic, flexible, and adaptive ways for visitors to participate in outdoor education and explore the Reserve's many ecosystems.



Figure 25. Weeks Bay Reserve Auditorium.

The 3,600 linear ft. Weeks Bay Visitor Center Boardwalk was originally constructed in 1993 and includes an elevated boardwalk with an observation deck and a 16 x 20 ft covered pavilion overlooking Weeks Bay. In 2020, the loop section of the boardwalk was heavily damaged during Hurricane Sally and was removed leaving 1,320 linear ft. Access to the Weeks Bay Pitcher Plant Bog is provided via a 2,000 ft elevated boardwalk, originally constructed in 1996. The Reserve received NOAA Procurement, Acquisition and Construction (PAC) awards to replace both boardwalks as they have reached their end of service life. Replacement of the Weeks Bay Pitcher Plant Bog boardwalk was completed in 2025, and the Visitor Center boardwalk will be completed by 2027.



Figure 26. Weeks Bay Reserve Resource Center.

The Resource Center, located near the Fish River Bridge (Figure 26), was constructed on this site in 2008 replacing buildings destroyed by Hurricane Ivan in 2004. The center contains two facilities utilized for meetings, coastal training, educator and community workshops, and public events. Solar panels were installed on the Resource Center in 2020. At the Resource Center site is a public boat ramp, maintained by ADCNR Marine Resources Division through an agreement

with the Reserve. Additionally, there is a boat basin and dock for the Reserve Explorer pontoon boat and public fishing piers directly beside the center and across the river from the center, all maintained by the Reserve. An accessible kayak launch with parking was installed in the pontoon boat basin using Coastal Zone Management 306a funding in 2023 and parking lot improvements including paving, delineated spaces, and solar lighting were completed in 2026 using GOMESA funding. The Reserve continuously operating reference station is also located at the Resource center site.



The Reserve completed construction of a new Research Dormitory within the Research Center site (Figure 27) in the spring of 2016. The facility is approximately 3,500 ft² in area with seven rooms containing 24 beds. The facility contains several elements of sustainable design including solar panels which were installed using NERRS PAC Funds. The dormitory played an important role in Hurricane Sally recovery by housing crews of state and partner personnel who helped with damage assessment and debris removal. Consequently, the Reserve applied and received a

PAC award to make upgrades to the dormitory that will increase its functionality in disaster response. These upgrades include a backup generator and as well as technology upgrades to enhance communications and connectivity during storm events will position the Reserve as a self-sustained Incident Command Center during disaster events to the benefit of the local community. The Reserve weather station is also located at the Research Center site.

Facility Challenges and Gaps

Weeks Bay Reserve faces several challenges associated with the on-going management and maintenance of its facilities. These challenges result from age, use, and natural stressors. Table 5 summarizes the major challenges at each Reserve facility, as well as strategies used by the Reserve to meet these challenges.

Facility	Construction Date	Challenges/ Gaps	Strategies
Visitor Center	1992	On-going maintenance of building	Maintenance staff responsible for routine maintenance of buildings and grounds.
		Space can become limited when large groups of students are present. Exhibits are dated.	Seek funding to implement recommendations made in the Facility Master Plan.
		Older equipment and fixtures are not energy or water efficient.	Seek funding to upgrade HVAC, windows, lighting, and lavatory features to increase energy efficiency and decrease water usage
		Threat of tropical storms/hurricanes	Seek funding to upgrade to storm resistant windows to eliminate need for storm shutters. Continue removing trees that pose a risk to infrastructure. Reserve staff have developed a protocol document to ensure infrastructure and equipment is as secure as possible prior to predicted major storm events.

Visitor Center Site Parking and Grounds		Lack of parking when events and classes are at the visitor center. Lack of wayfinding and interpretive signage outside of center.	Seek funding to increase parking and improve stormwater management (i.e., pervious pavement, rain gardens or bioswales). Increase outside wayfinding signage to improve visitor flow. Make improvements to landscaping to increase visitor impression of grounds, improve ecological health of area, and act as an educational opportunity.
Laboratory	2001	Small and somewhat outdated lab housed within the visitor center.	After confirming long-term resources available to maintain and upgrade current facilities, seek funding to build an up-to- date lab.
Auditorium Building	1996	On-going maintenance of building and grounds.	Maintenance staff responsible for routine maintenance of building and grounds.
		Older equipment and fixtures are not energy or water efficient.	Seek funding to upgrade HVAC, windows, lighting, and lavatory features to increase energy efficiency and decrease water usage
		Threat of tropical storms/hurricanes	Seek funding to upgrade to storm resistant windows. Continue removing trees that pose a risk to infrastructure. Reserve staff have developed a protocol document to ensure infrastructure and equipment is as secure as possible prior to major storm.
		Outdated AV equipment	Seek funding to make upgrades to AV equipment.
Tonsmeire Resource Center	2008	On-going maintenance of building	Maintenance staff responsible for routine maintenance of building and grounds.
		Weathered decking and ramp	Reserve staff assist with replacement/reconstruction of decking. Staff seek funding for replacement of structures as needed.

		Outdated AV equipment	Seek funding to update AV equipment
		Ground level under center is not utilized efficiently	Seek funding to retrofit building for more effective FEMA compliant use of under story space beneath building
		No shade	Seek funding for landscaping elements to establish “shade islands” and shading pavilion for loading/unloading tour groups.
		Public access on grounds	Maintenance staff with the assistance of other staff as needed maintain and improve public amenities.
		On-going maintenance of tour vessel	Stewardship Coordinator and other staff as needed responsible for maintaining the tour vessel.
		Threat of tropical storms/hurricanes	The Resource Center is designed to withstand storm conditions. Hurricane shutters must be installed prior to storm event. Reserve staff have developed a protocol document to ensure infrastructure and equipment is as secure as possible prior to major storm.
Kayak launch	2023	On-going maintenance; threat of storms	Maintenance staff responsible for routine maintenance; will seek funding to replace/repair if damaged from storm or ages out.
Weeks Bay Explorer Floating Classroom	2008	On going maintenance; age	Boat captain and crew responsible for routine maintenance; due to its age, will seek funding to replace

Pontoon Boat Basin Dock and Bulkhead		On-going maintenance; threat of storms	Maintenance staff responsible for routine maintenance; will seek funding to replace/repair if damaged from storm or ages out.
Fishing Piers		On-going maintenance; threat of storms	Maintenance staff responsible for routine maintenance; fishing piers updated in 2022 using Thru-flow decking to prevent uplift caused by storm surge. Will seek funding to replace/repair if damaged from storm or ages out.
Research Center Site		On-going maintenance of buildings and grounds	Maintenance staff responsible for routine maintenance of buildings and grounds.
		Managing visitor access	Develop plan to improve visitor access opportunities. Seek funding for wayfinding and interpretive signage and landscaping.
		Threat of tropical storms/hurricanes	Reserve staff have developed a protocol document to ensure infrastructure and equipment is as secure as possible prior to major storm.
		Invasive species	Staff continues to monitor and treat exotic invasive species.
Safe Harbor Storage Building		Building is aged, heavily damaged and serves as storage area.	Seek funding to build new storage facility. Demolition of old building.
Volunteer Kitchen		Building has new roof but needs additional repairs.	Staff and volunteers undertake improvements to building.
Volunteer Arboretum		Maintenance of arboretum is labor intensive.	Seek funding and partners to alleviate maintenance input via transformation of turf to native wildflower/pollinator species.

Research Dormitory	2016	On-going maintenance of building and grounds.	Maintenance staff responsible for routine maintenance of building and grounds.
		Lack of long-term lodging for research scientists or interns	Seek funding for stand-alone research cottage
		Lack of secure storage for research vessels	Secure funding for fenced boat yard to secure Reserve and visiting researchers' vessels

Table 5. Weeks Bay Reserve Facility Challenges and Gaps

Planned Facilities and Infrastructure

While first appreciating the need to ensure ongoing funding to properly maintain current facilities, the Reserve anticipates seeking funding for some or all capital improvement projects or upgrades detailed below over the next five years. Prioritization of capital improvements will depend upon timing and nature of available funding in relation to demonstrated program needs.

Weeks Bay Research Center Boat Yard

The Facility Master Plan listed the construction of a boatyard and maintenance facility as a “short-term goal”. This facility is a priority need for the purpose of storing, securing, and maintaining costly motorized boats/vehicles and other maintenance equipment. The Reserve currently is limited to storing boats and various equipment in the open, making them vulnerable to theft and vandalism as well as wear and tear from routine exposure to the elements and frequent severe weather events. An area to store equipment in a protected environment and to perform required maintenance would both reduce ongoing maintenance/operating costs and enhance the ability for staff to accomplish Reserve goals more efficiently.

This facility will be a 2,400 ft² building that will provide enclosed storage for boats and other equipment as well as a maintenance shop. It may include an outdoor area enclosed with a 12,000 ft² (100 X 120 feet) fence to enhance security.

Energy and Water Efficiency Upgrades to the Visitor Center and Auditorium Buildings

Energy consumption represents a significant portion of any building’s operating cost. The Weeks Bay Visitor Center and Auditorium Building were constructed in 1992 and 1996 respectively and have been minimally updated since. Upgrades to these buildings will allow opportunities for improved staff and guest comfort, longer equipment life, and lower operating costs.

Improvements to the buildings may include:

- Lighting: Lighting uses 18% of the electricity generated in the US and affects other

building systems in the waste heat it produces. Upgrading lighting systems with efficient light sources, fixtures, and controls can reduce lighting energy use, improve the visual environment, and affect the sizing of the HVAC.

- HVAC: HVAC upgrades were recently completed in the Auditorium building. We plan to upgrade the Visitor Center HVAC with units that use current refrigerant type, are properly sized, and operate more efficiently. We plan to also install programmable thermostats for each unit.
- Breakroom and Lab Equipment: We plan to replace old breakroom equipment in the Visitor Center and Auditorium building and replace laboratory refrigerator and freezer with new ENERGY STAR-labeled equipment.
- Doors, Windows, and Window Shading: The current windows and exterior glass doors in the Visitor Center and Auditorium building are 30+ years old and at the end of life, with several having failing seals. We plan to replace all windows and doors with low-emissivity, impact-resistant glass. These will protect equipment and supplies as well as limiting hurricane preparation time by eliminating the need to install hurricane shutters. They also reduce potential workplace injuries from installing heavy metal hurricane shutters and working on second story building. Not only will these provide protection from storms but are also exceptionally energy efficient. Additionally, we will add improved interior shading with blinds that will also reduce solar gain.
- Water efficiency upgrades: We plan to upgrade the lavatories with low-flow toilet and sink fixtures and touchless sink faucets to decrease water use.

Weeks Bay Visitor Center Educational Exhibits Design

Reserve exhibits provide important passive and active learning opportunities for a variety of visitors about the dynamic processes and benefits of estuaries, as well as the pressures estuaries are under and what the public can do to protect these resources. Permanent exhibits within the Weeks Bay Visitor Center were last updated in 2006 with no capacity for traveling exhibits or new content. Within this management plan period, we will seek funding for the initial design of the educational exhibits. Exhibits will be theme based, address Reserve priority issues, convey the Reserve's key messages, and be accessible to all, including those with cognitive, physical, or other challenges. Once the plan is completed, we will seek funding for the construction of new exhibits.

Weeks Bay Floating Pontoon Classroom

The Reserve currently owns a 40 ft pontoon boat used during field trips and guided tours of the estuary. The boat provides a valuable resource for local schools, serving as an outdoor classroom to visiting preK-12 students and providing important educational opportunities on the bay. Built in 2008, the boat is nearing the end of service. The Reserve will seek funding to replace the vessel.

Weeks Bay Research Laboratory

The current laboratory was built in 2001 and is located in the Visitor Center. A new laboratory facility would be sited at the Research Center, making its placement convenient to visiting scientists and freeing up needed space in the Visitor Center. Facilities would include separate chemistry, microbiology, and biological labs supported by offices for visiting researchers and staff as outlined in the Facility Master Plan. While construction activities are not anticipated during the next five years, the Reserve will seek funding to evaluate potential design concepts and cost estimates to inform decision making related to the potential to add another facility building.

Audiovisual Equipment Upgrades to the Auditorium and Resource Center Buildings

The Reserve Auditorium and Resource Center buildings have not had updates to the audiovisual systems since being built, and the equipment uses outdated technology. Increasing use of these facilities for meeting space or for training and classes has emphasized the need to update this equipment to better serve audiences.

Resource Center Parking Lot Improvements

In 2026 the parking area at the Resource Center and adjacent boat ramp was leveled, resurfaced, and delineated to maximize number of parking spaces and improve traffic flow. Solar powered parking lot lighting was also installed to enhance visitor usability. The Reserve plans to seek funding to implement additional design concepts identified within the Facility Master Plan including:

- Shading Pavilion for loading/unloading passengers of classes and tour groups. This will include tables to allow for class instruction, picnics, etc.

VII. Resource Conservation Plan

State Management and Statutory Authority

Alabama Department of Conservation and Natural Resources (ADCNR) ADCNR is an executive and administrative department of the State of Alabama created by statute. The Commissioner, appointed by the Governor as a member of the Cabinet, advises the Governor and Legislature on the management of freshwater fish, wildlife, marine resources, state lands, state parks, and other natural resources. ADCNR enforces Alabama hunting, freshwater fisheries, and wildlife regulations. ADCNR Marine Resources Division manages Alabama's marine fisheries resources with assessment and monitoring, applied research, and enforcement programs.

Weeks Bay Reserve is a component of ADCNR, State Lands Division (SLD). ADCNR-SLD regulations address impacts to submerged lands and guide conduct on state-owned lands as to activities such as access, recreation, misuse, etc. ADCNR SLD provides the administrative framework for operation of the Reserve and is responsible for managing the Reserve on a daily basis, implementing programs locally, and providing funds to match the federal investment.

Additional Information

<https://www.outdooralabama.com/>

Weeks Bay Reserve works within ADCNR and with other agencies and programs to enhance resource conservation. These programs and agencies include:

Alabama Coastal Area Management Program (ACAMP) Administered by ADCNR SLD, the ACAMP implements and enforces policies and regulations for the purpose of protecting Alabama's coastal resources. The enforceable policies of the program provide for regulation of various activities on coastal lands and waters seaward of the continuous 10-foot contour in Baldwin and Mobile Counties of Alabama. The ACAMP is a joint effort of the Alabama Department of Conservation and Natural Resources-State Lands Division (ADCNR-SLD) and the Alabama Department of Environmental Management (ADEM) Coastal Program. ADCNR-SLD is responsible for planning and policy development while ADEM is responsible for permitting, monitoring and enforcement activities, as detailed in the ADEM Division 8: Coastal Programs Regulations.

Additional Information

<https://www.adem.alabama.gov/coastal>

<https://www.outdooralabama.com/coastal-programs/alabama-coastal-area-management-program>

Alabama Department of Public Health (ADPH) The ADPH enforces state and local regulations relating to environmental health. The Division of Community Environmental Protection carries out programs to minimize the adverse effects of disposal of sewage and high-strength sewage on

human health and the environment by establishing and enforcing requirements for the design, permitting, installation, approval, and use of onsite sewage treatment and disposal systems. The Soils and Onsite Sewage Branch's main objective is to coordinate the onsite sewage program in the county health departments. The Solid Waste Branch provides technical assistance to county environmentalists who work in solid waste, septage management, and vector control programs. The Division of Food, Milk and Lodging establishes rules for seafood and shellfish safety.

Additional Information

<https://www.alabamapublichealth.gov/>

The ADPH Alabama Coastal Beach Monitoring Program began in June 1999 in cooperation with ADEM. The program monitors selected swimming beaches and recreational areas on the Gulf of America, Mobile Bay, Perdido Bay and several other riverine waters for the presence of Enterococcus bacteria and provides prompt notification at each site when water quality standards are not being met.

Additional Information

<https://adem.alabama.gov/programs/coastal/beachMonitoring.cnt>.

Alabama Historical Commission (AHC) The AHC was established by the Alabama Legislature in 1966 (Code of Ala. 1975, §§41-9-240, et seq.) to foster the understanding and preservation of Alabama's heritage. The AHC conducts archeological surveys or testing projects that are required as elements of cultural resource assessments for compliance with federal laws and regulations, including the National Historic Preservation Act.

Additional Information

<https://ahc.alabama.gov>

Baldwin County Soil and Water Conservation District (SWCD) The Baldwin County SWCD Board provides direction for local programs and ensures that the district staff fulfill their primary mission of working with landowners to install BMPs to control erosion, protect water quality, and provide other measures necessary to enhance and protect the environment.

Additional Information

<https://alabamasoilandwater.gov/>

Federal Regulatory Agencies and Programs

NOAA/National Marine Fisheries Service (NMFS) The NMFS is responsible for identifying Essential Fish Habitats for federally regulated species of fishes and carrying out provisions of the Magnuson-Stevens Act. Under the Endangered Species Act, the NMFS helps protect threatened

and endangered species. NMFS is also responsible for marine mammal protection under the Marine Mammal Protection Act. NMFS often makes recommendations to the USACE on wetlands permits under the Clean Water Act. No Essential Fish Habitat or Habitat Areas of Particular Concern are found within the Reserve boundary.

Additional information:

<https://www.habitat.noaa.gov/apps/efhmapper/>

<https://www.fisheries.noaa.gov/about-us>

NOAA/Office of Response and Restoration/Disaster Response Center (DRC) The DRC is the lead office for NOAA in preparing for and responding to oil and chemical releases in marine waters. Weeks Bay Reserve along with the other Gulf Coast reserves were funded by the DRC to develop Disaster Response Plans to address response and coordination relating to the trust resources of these reserves. This integrated plan is coordinated with other local, state, and Federal responders and will serve as a template for similar plans for other protected areas. This will aid efforts to protect reserve resources in the event of hazardous releases or other emergencies.

Additional Information

<https://response.restoration.noaa.gov/disaster-preparedness/disaster-response-center>

U.S. Fish and Wildlife Service (USFWS) The USFWS has regulatory authority for endangered species and migratory bird issues on the Reserve. The Reserve uses practices identified in USFWS recovery plans to manage activities where threatened, endangered, rare, or recovering species could exist. The USFWS also makes recommendations to the U.S. Army Corps of Engineers regarding wetland permits.

Additional Information:

<https://ecos.fws.gov/ecp/report/species-with-recovery-plans>

U.S. Army Corps of Engineers (USACE) The USACE is responsible for administration of the federal wetland permitting programs for tidal and non-tidal wetlands within the Reserve and on adjacent waters and wetlands through its Mobile, Alabama, District Office.

Additional Information

<https://www.sam.usace.army.mil>

U.S. Environmental Protection Agency (USEPA) The USEPA has enforcement and commenting authority for the federal wetlands permitting program in addition to joint responsibilities with the ADEM for administering the Clean Air and Clean Water acts in Alabama.

Additional Information

<https://www.epa.gov>

<https://www.adem.alabama.gov/alEnviroRegLaws/default.cnt>

<https://www.adem.alabama.gov/sites/default/files/2025-10/Division3.pdf>

Federally Recognized Tribes in Alabama

The Poarch Band of Creek Indians. The Poarch Creek Indians are descendants of a segment of the original Creek Nation that once covered almost all of Alabama and Georgia. Today, they live in the Atmore area of Baldwin County approximately sixty (60) miles north of the Reserve and are the only federally recognized Native American tribe in Alabama. The Reserve and Poarch Creek Indian Tribe have a shared commitment to cultural resource protection within the Reserve.

Additional Information

<https://pci-nsn.gov>

<https://aiac.alabama.gov>

Additional Federally Recognized Tribes with Historic Ties

The Choctaw Nation of Oklahoma. The Choctaw Nation is the third-largest Indian nation in the United States. Baldwin County, Alabama, holds great significance within the Choctaw Nation's area of historic interest. The Reserve and Choctaw nation have a shared commitment to cultural resource protection within the Reserve.

Additional Information

<https://www.choctawnation.com/>

Allowable Uses

It is Reserve policy to continue traditional recreational uses of coastal resources that are compatible with Reserve goals. These include activities such as hiking, boating, paddling, fishing, hunting, swimming, crabbing, bird watching and photography. These uses are governed by the agencies listed under the State Management and Statutory Authority heading of this section. Changes in allowable activities may occur in the future due to changes in statutes/regulations, habitat viability, or public safety considerations.

Watercraft

The Reserve encourages operation of watercraft in a manner that is compatible with the goals of the Reserve. The Alabama Law Enforcement Agency's Marine Patrol Division's mission to enhance safety and promote responsible use of resources on Alabama's waterways. The Reserve encourages compatible activities through public education/information and public outreach efforts in cooperation with appropriate agencies. Manatees are present in the waters of the

Reserve in spring and summer. The Reserve and other agencies post signage at public launches within the Reserve boundary to educate boaters about practices that protect manatees. The Reserve discourages incompatible activities such as those that create excessive wave action, noise, petroleum product pollution, or degradation of benthic organisms.

Fisheries

The Reserve encourages fishing activities that are compatible with the goals of the Reserve, especially the maintenance of habitat and providing a natural research laboratory. Commercial and recreational crabbing, gill netting, and fishing are allowed per ADCNR licensing and regulatory requirements. Commercial and recreational shrimping is not allowed within Weeks Bay or its tributaries as Weeks Bay is designated as a Shrimp Nursery Area per ADCNR regulations.

Additional Information

<https://www.outdooralabama.com/fishing>

Wildlife

The Reserve encourages activities related to wildlife and wildlife habitat that are compatible with the goals of the Reserve. Collection of wildlife for scientific research is allowed with appropriate Scientific Collecting Permit(s).

Additional Information

<https://www.outdooralabama.com/wildlife/nongame-wildlife-program>

Reserve acreage continues to be evaluated for potential inclusion or expansion of public recreational access for activities including hunting. Certain enforcement constraints including, but not limited to, proximity of residential areas as well as periodic restoration initiatives, cause some areas of Reserve acreage to not be suitable for some forms of public hunting.

Additional Information

<https://www.outdooralabama.com/what-hunt/waterfowl-hunting-alabama>

<https://www.outdooralabama.com/hunting/seasons-and-bag-limits>

Lands

With Reserve staff (and other ADCNR staff as applicable) review and approval, certain land impacting actions are permissible on Reserve holdings. These actions include approved research, restoration and habitat management activities, and resource collection. In addition to Reserve staff review and approval, individuals or organizations need to acquire all necessary permits according to ADCNR and Federal guidelines prior to initiating activities. Whether implemented by Reserve staff, researchers, or contractors, activities that require land disturbance will need to be implemented in a manner consistent with best management practices to prevent erosion,

control for sediment, and otherwise mitigate the potential for adverse impacts to the land and surrounding habitat conditions. All such activities require prior notification to, and permission of, the Reserve to access holdings. Refer to “Public Access and Visitor Use Plan” and “Restoration Plan” sections of this document for further information.

Wetlands

Reserve policy is compatible with the wetlands regulatory program of ADEM/USACE as embodied in section 404 of the Clean Water Act and ADEM Division 8: Coastal Program Regulations. Reserve staff review permit applications for activities affecting wetlands and submit comment recommendations to ADCNR for consideration. Reserve staff monitor and report wetland disturbance in the Reserve to ADEM and USACE. Within the Reserve boundary, the Reserve management proposes no activities that alter wetlands except those necessary to support education or research goals which will be conducted consistent with all applicable permitting requirements.

Additional Information

<https://adem.alabama.gov/programs/water>

Water Quality

Reserve staff work cooperatively with ADEM through the section 319 Nonpoint Source Pollution Program, Division 8: Coastal Program Regulations, the National Pollutant Discharge Elimination System regulations, and the provisions of the Outstanding National Resource Water (ONRW) designation to discourage activities or uses that significantly diminish water quality. ONRWs are protected and require a thorough evaluation of discharges from new or expanded point sources of pollutants (ADEM 2012). Cooperative efforts include working with ADEM on permitted activities affecting the Reserve and reporting activities affecting water quality. Reserve management also works with Federal, state, and local entities to reduce pollution from stormwater through public education/outreach, training, and cooperative demonstration projects.

Additional Information

<https://adem.alabama.gov/water/nonpoint-source-pollution-program>

Pollution from Stormwater Runoff

The Alabama Coastal Nonpoint Pollution Control Program (ACNPP), as required under Section 6217 of the Coastal Zone Act Reauthorization Amendments, was approved October 2024 and is part of the Alabama Coastal Area Management Program that aims to improve water quality by addressing nonpoint sources of pollution such as stormwater runoff, on-site sewage disposal systems, and runoff from construction development. ACNPP uses a voluntary approach to address nonpoint source pollution. The program relies on best management practices, education and outreach, technology transfer, monitoring and assessments, and resource assistance using a balanced statewide and watershed-focused restoration approach. The Reserve

coordinates with local governments and agencies, ADEM section 319 program, and ACNPP to encourage similar approaches to minimize nonpoint source pollution in the Alabama coastal area and Weeks Bay watershed.

Additional Information

<https://adem.alabama.gov/coastal/alabama-coastal-nonpoint-pollution-control-program>

Submerged Lands (lands that include tidal lands, sand bars, shallow banks, and lands waterward of the mean low water line beneath navigable freshwater or the mean high tide line beneath tidally influenced waters, to which the State of Alabama acquired title on December 14, 1819). ADCNR State Lands Division is responsible for management of submerged lands. Reserve policy is compatible with State Lands Division Administrative Code, 220-4. The Reserve encourages activities and practices that reduce adverse impacts on submerged lands through education and outreach efforts in cooperation with appropriate agencies.

Additional Information

<https://admincode.legislature.state.al.us/administrative-code/220-4-.01>

Piers and Docks

ADCNR State Lands Division in conjunction with the USACE, is responsible for management of the placement of piers and other improvements on state-owned submerged lands. Reserve policy is compatible with State Lands Division Administrative Code, 220-4 and Regional General Permit for Alabama ALGP-05 administered by the USACE. The Reserve encourages activities and practices that reduce adverse impacts on submerged lands, fringe wetlands, and the Weeks Bay shoreline through education and outreach efforts in cooperation with appropriate agencies.

Additional Information

https://www.sam.usace.army.mil/Portals/46/docs/regulatory/docs/AL_GPs_2016_SZ.pdf?ver=2016-10-05-112824-673

Shoreline

The Reserve discourages activities or uses that adversely alter the shoreline or coastal buffer that are not compatible with Reserve goals. The Reserve supports and encourages the use of living shorelines and alternatives to vertical hard structures where practical. USACE Regional General Permits for Alabama, ALGP-11 and ALGP-05, and Nationwide Permit 54 include activities and techniques supported by the Reserve. Other strategies encouraged include the restoration of fringe wetlands, non-structural means of stabilizing shorelines, and protection of the natural vegetation in the buffer strip adjacent to the water.

Additional Information

<https://www.sam.usace.army.mil/regulatory/source-book/alabama->

Air Quality

The Reserve encourages activities that do not diminish air quality below standards established by ADEM.

Additional Information

<https://adem.alabama.gov/air>

Any activity not listed, but prohibited by local, state, and Federal regulations, is also prohibited within the Reserve boundaries and its managed resources. Changes in permissible activities may occur in the future due to evolving land/habitat conditions, safety needs, and Reserve programming.

Permissible Actions

The Reserve is available for a variety of public use activities. The Reserve allows staff and affiliated entities to conduct educational programs, research, and habitat management activities. The Reserve also encourages outdoor recreation to include boating, paddling, fishing, and use of Visitor Center and Pitcher Plant boardwalk and nature trails. Figure 28 provides geographic context to allowable uses within the Reserve.



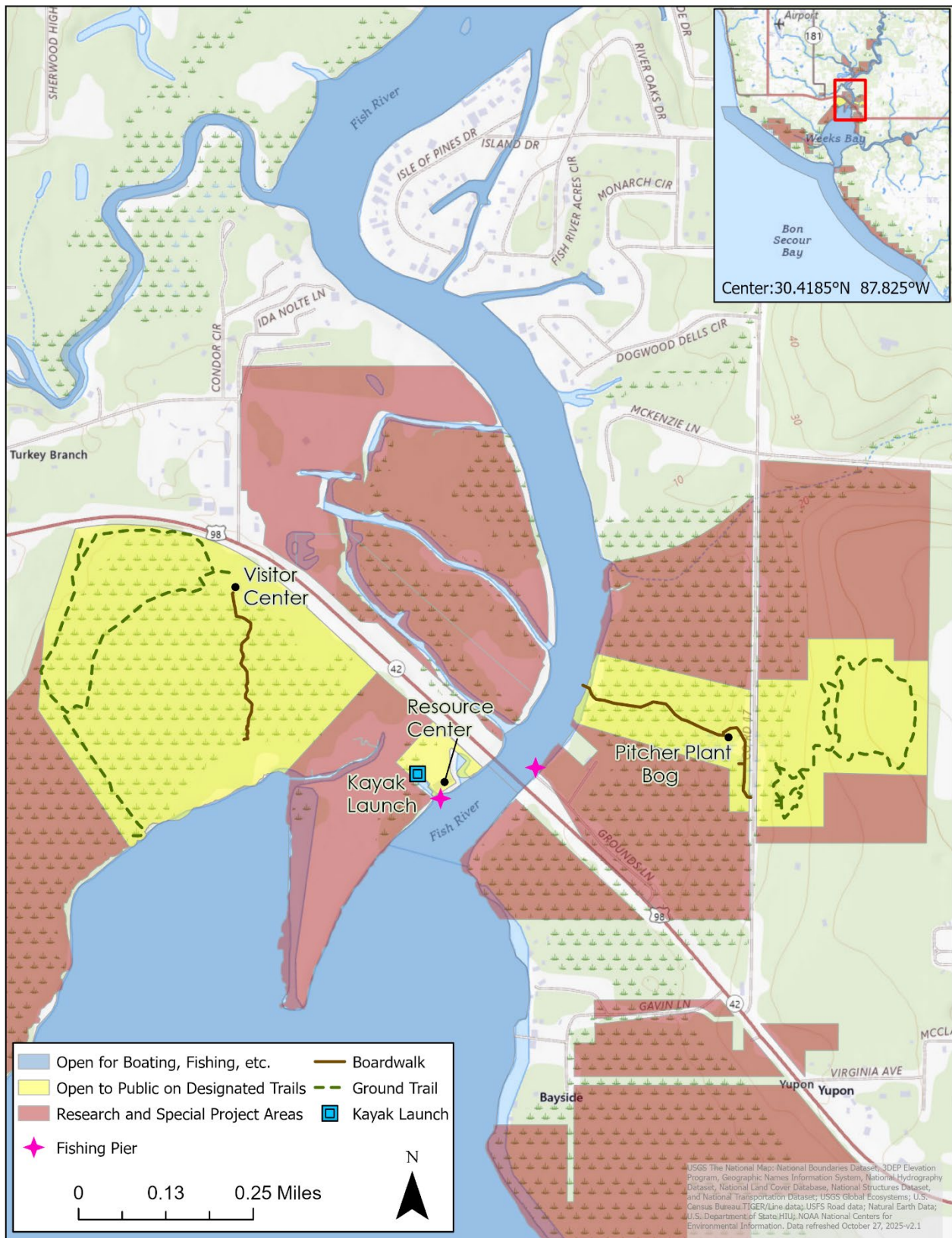


Figure 28. Weeks Bay Reserve Allowable Uses Map.

Surveillance and Enforcement Capacities

Enforcement of state statutes and rules relating to criminal violations and civil infractions rests with ADCNR State Lands Division, Wildlife and Freshwater Fisheries Division and Marine Resources Division enforcement officers; Alabama Law Enforcement Agency's Marine Patrol Division; and other state and local law enforcement agencies. The Alabama Departments of Environmental Management and Public Health enforce various environmental and health safety laws.

Resource Conservation Challenges

Activities and uses within and outside the Reserve boundary can have impacts on Reserve resources. Such challenges include:

Land Use Changes

Land use changes in the watershed may potentially be the greatest threat to the coastal communities within the Reserve. Research quantifying land use changes can predict areas of concern and guide land acquisition efforts. Where and how development occurs has direct impacts to water quality, aquatic species, and wildlife habitat. The conversion of forested land to residential and commercial property has the potential to result in adverse impacts the Reserve watershed including increased polluted runoff, flooding, and erosion and decreased groundwater recharge. Riparian vegetation plays an important role in reducing turbidity by trapping sediment, providing thermal cover to prevent water temperature extremes, and taking up excess nutrients that may be present in runoff. Shoreline vegetation absorbs wave energy and reduces erosion. Floodplain habitat reduces the height and velocity of flood waters. Conversion of these natural buffers to waterfront development and bulkheaded shoreline lessen natural protections for water quality, fisheries, and wildlife habitat. Willing-seller acquisition of lands and habitat restoration is a strategic component of the Reserve to increase ecosystem health and ensure public access and recreation. Additionally, CTP educates public audiences about low impact development practices and shoreline restoration alternatives.

Nonpoint Source Pollution

Nonpoint source pollution, also known as polluted runoff, occurs when rainfall flows over and through the land picking up contaminants such as sediment, nutrients, or bacteria. These pollutants are then carried by streams or storm sewers to our lakes, rivers, wetlands, coastal waters, and ground waters. Nonpoint source pollution includes:

- **Runoff from Development**
Commercial and residential development is occurring along the major transportation corridors of Interstate 10, U.S. Highways 31 and 90, Alabama Highways 59 and 181, and County Road 64. Stormwater runoff from construction and developed sites significantly impacts rivers and bays, carrying pollutants and sediments. The Education and CTP sectors of the Reserve work with students, homeowners and contractors to increase

awareness of best management practices for reducing stormwater runoff. Alabama Water Watch volunteers track the effects of sedimentation from development.

- **Runoff from Agriculture**

Approximately 40% of the Fish River watershed and 64% of the Magnolia River watershed is in agriculture. Runoff from pastures, animal feeding areas, improper land application of animal wastes, and animals with direct access to streams have the potential to contribute bacteria and nutrient loading to water bodies. The SWMP monitors nutrient concentration over time within the Bay. Research within the watershed from headwater streams to sub-watershed comparison has modeled nutrient nonpoint source pollution.

- **Atmospheric Deposition of Mercury**

Mercury is an element known to be toxic to wildlife and humans. Mercury sources can be from natural (i.e., volcanoes and fire) and anthropogenic sources (i.e., industrial processes such as coal burning power plants). There are five segments within the Weeks Bay watershed on the 2024 ADEM 303(d) list as impaired due to fish consumption advisories related to mercury (Fish River, Turkey Branch, Cowpen Creek, Polecat Creek and Magnolia River). The source of mercury is thought to be atmospheric deposition stemming from industrial sources.

- **Failing Septic Systems**

In areas where there are no sewerage facilities, septic tanks may be used in accordance with current regulations of the Alabama Department of Public Health, the Baldwin County Health Department, and the Baldwin County Coastal Area Program, where applicable (BCPZD 2023). It is estimated that more than 670,000 active septic systems exist in Alabama, along with an unknown number of older, abandoned systems. More than 20,000 new systems are estimated to be permitted annually (ADEM 2001). In Baldwin County, 5,534 new install permits were issued from November 2012-December 2024 (personal communication, June 8, 2026, M. Jordan, PhD Postdoctoral Fellow Department of Geosciences, Auburn University). If properly installed, used, and maintained, septic systems pose no threat to water quality. However, the Alabama Department of Public Health estimates that as many as 25 percent of all septic systems in Alabama could be failing. While many residences within the Weeks Bay watershed are converting to municipal or private sewer, there are still existing septic systems, some of which may be failing or improperly sited. This could potentially result in chronic release of pathogens and nutrients into local waterways. CTP works with ADEM to educate community members about septic system maintenance. Recent research has focused on tracking the sources of pathogens associated with failing septic systems and expansion of these efforts is proposed.

Point Source Pollution (ADEM 2013)

Point source contributions can typically be attributed to municipal wastewater facilities, illicit discharges, and leaking sewer systems in urban areas. Municipal wastewater treatment facilities are permitted through the National Pollutant Discharge Elimination System (NPDES) process administered by ADEM. In urban settings sewer lines typically run parallel to streams in the floodplain. If a leaking sewer line is present, high concentrations of bacteria can flow into the stream or leach into the groundwater. Illicit discharges are found at facilities that are discharging bacteria when not permitted, or when the pathogens criterion established in the issued NPDES permit is not being upheld.

Along Fish River, exceedances of permitted discharge limits at wastewater treatment plants (WTP) can occur, especially when equipment fails, or high rain events cause sewage overflows. These issues, coupled with growing sewer infrastructure needs due to population growth in the county, will lead to increasing resource protection challenges within the watershed. The proposed expansion of source tracking research will address effects of point source, as well as nonpoint source pollution.

For more information:

<https://adem.alabama.gov/programs/water/wquality/tmdls/FinalFishRiverPathogensTMDL.pdf>



VIII. Public Access and Visitor Use Plan

Current Public Access

Visitors to Weeks Bay Reserve encompass a broad array of community members, tourists, education and conservation groups, non-governmental organizations, and researchers. Providing visitors access to the Reserve and its facilities for educational, research, and recreational activities is essential to fulfilling the Reserve's mission and promoting public support and stewardship. Reserve holdings include multiple access points with interpretive signage.

The Visitor Center which is currently open Monday through Saturday offers information on estuaries, local habitats, natural communities, and resource conservation efforts. Laboratory space located in the Visitor Center is available upon request of visiting scientists. The buildings at the Resource Center are open for scheduled uses and events and also may be reserved by the public consistent with Reserve operations and in accordance with the Reserve's policy for building usage. The Reserve Manager in consultation with State Lands determines compliance with the use policy. The decks, covered pavilions with picnic tables, ADA accessible kayak launch, boat launch, and fishing pier located at the Resource Center are open to the public seven days a week during daylight hours.

Boardwalks and nature trails maintained by Reserve staff offer opportunities for hiking, wildlife viewing, photography, research, educational programs, and other permissible outdoor activities. Approximately one mile of boardwalks is available for access in two areas. An interpretive boardwalk is located behind the Weeks Bay Visitor Center running about 1,900 linear feet through a hardwood forest/swamp and overlooks Weeks Bay. Another 2,000 feet of boardwalk passes through the Weeks Bay Pitcher Plant bog and terminates with an overlook on Fish River. Approximately two miles of ground trail are available in addition to the boardwalks. A one-mile Nature Trail is accessible from the Visitor Center and another one-mile Upland Trail is accessible from the parking area adjacent to the Pitcher Plant Bog on County Road 17. Two boat ramps, including one adjacent to the Resource Center, are maintained by ADCNR to provide access to Weeks Bay and adjoining waterways for recreational and research purposes (Figure 29).

State Lands staff are currently assessing the viability of visitor access to the Meadows Complex and Holmes Tract (Figure 29). The assessment will consider the feasibility of creating a visitor parking area, determination of allowable uses and enforcement mechanisms, trail marking, appropriate type and use of access control mechanisms, and development of interpretive signage.

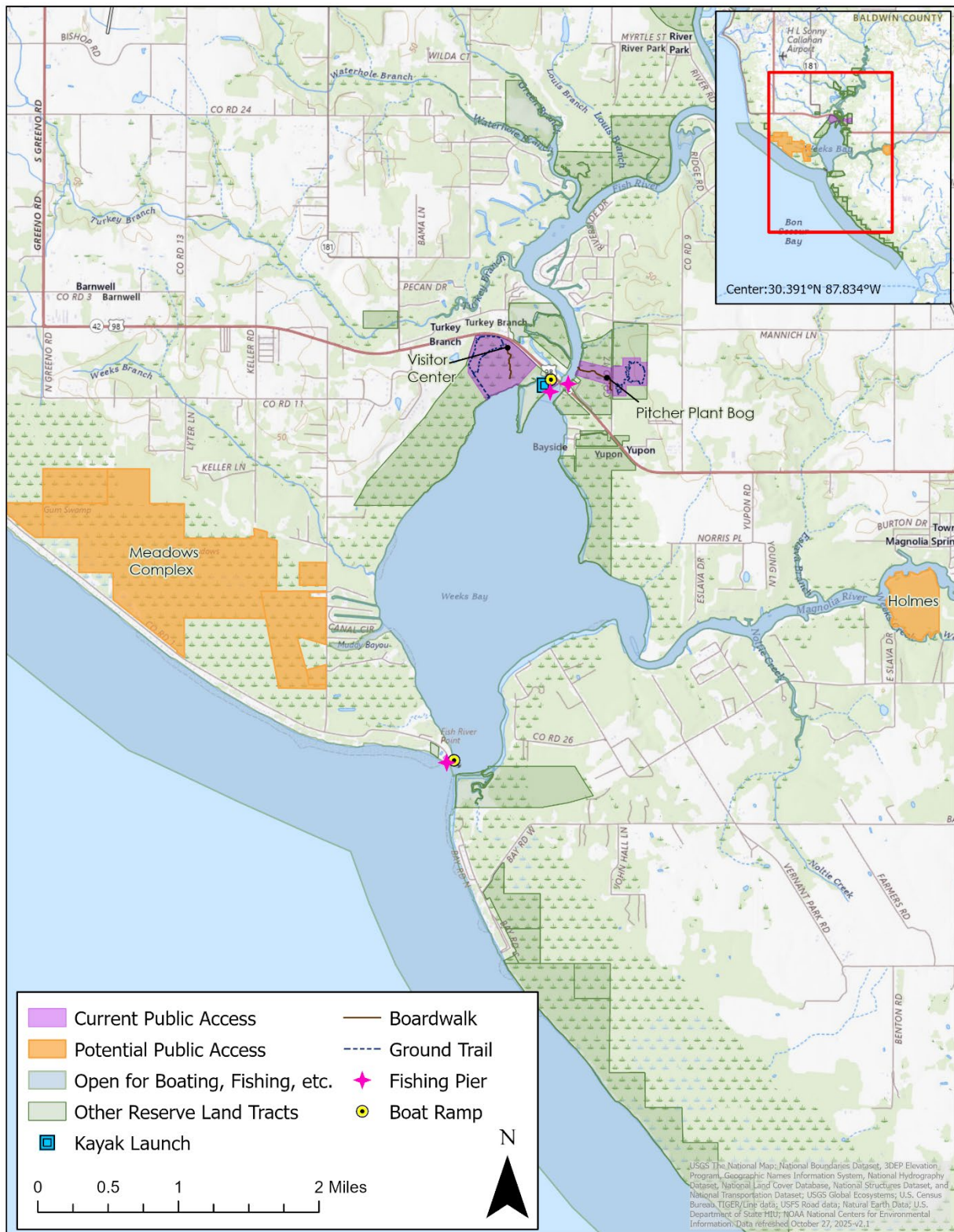


Figure 29. Weeks Bay Reserve Public Access Areas.

Public Access Opportunities and the Visitor Experience

When individuals visit the Visitor Center or hike the trails, they have an opportunity to gain a better appreciation for the natural beauty, intricacies, and value of coastal habitats. The Visitor Center provides information on specific habitats and resource conservation serving as the focal point for visitor access to learn more about estuaries and the boardwalk, trail, boating, and paddling, and fishing experiences that are available. Weeks Bay Reserve serves as a focal point for education and outreach and provides the public with opportunities to experience and enjoy nature. The Reserve is ideally situated for education and outreach activities by virtue of its accessibility from a major state highway.

Part of the visitor experience involves passive or active learning at one or more of Reserve's exhibits at the Visitor Center as well as through interpretive signage along the boardwalks and trails. Additionally, the Reserve plans to work with the ADCNR Communications and Marketing section to add videos to the Reserve website to allow visitors to experience the Reserve virtually. The Stewardship and Education Coordinators, working with other Reserve staff, will continue to update signage, exhibits, the website, social media, and similar outreach materials (objective 1.5, action 1).

The Reserve continues to improve access opportunities for visitors with disabilities (objective 1.5, action 3). An accessible kayak launch was added in 2023 within the south basin of the Resource Center complex. State of Alabama GOMESA program funding was used to enhance accessibility by adding delineated parking for vehicles and boat trailers at the boat ramp adjacent to the Resource Center (objective 1.5, action 3), including disability access parking. ADA Standards for Accessible Design are implemented during retrofit of existing or construction of new visitor use infrastructure.

Public Access Challenges

Population growth within neighboring communities will continue to stress the capacity of aging visitor facilities of the Reserve. The Facility Master Plan discusses existing conditions and illustrates opportunities for facility enhancements and site development. (The Facility Master Plan is linked on the Reserve's website, www.weeksbayreserve.com.) However, securing funding for engineering and design and subsequent construction of improvements likely will be challenging. In addition, the Reserve is committed to identifying sufficient funding for long-term maintenance of and upgrades to existing facilities prior to seeking funding for construction of new facilities. Accordingly, the Reserve will continue to monitor utilization of current facilities to inform prioritization of potential implementation of the Facility Master Plan recommendations.

IX. Land Acquisition Plan

Acquisition Context and Values

Willing-seller acquisition of lands is a strategic component of the Reserve's vision "to support thriving Weeks Bay coastal habitats that are conserved, valued, and enjoyed by the community." Land acquisition also aligns with the National Estuarine Research Reserve System Strategic Plan goal to "enhance and inspire stewardship, protection, and management of estuaries and their watersheds in coastal communities through place-based approaches by supporting acquisition and inclusion of additional lands and waters to Reserve boundaries to increase ecosystem protection and understanding of estuarine environments" (NOAA Office for Coastal Management 2022). The Reserve evaluates willing-seller parcels within the acquisition area on a case-by-case basis.

A parcel's ecological and conservation value to the Weeks Bay ecosystem and its impact upon the boundary core and buffer areas influence acquisition priority consistent with Reserve Management Plan goals and objectives. Additional characteristics associated with enhancing public access and the potential to establish opportunities to further outdoor recreational opportunities are also considered relevant and beneficial. The Reserve also reviews parcel attributes associated with suitability for scientific research and educational use as well as historical and cultural significance when evaluating beneficial tract acquisition and viable future uses.

Ecological characteristics considered significant include habitat type, rare/endangered species, breeding/nursery area, forage area, migratory species, geomorphic features, ecosystem function, and uniqueness of the natural community. Habitat stressors also play a role in evaluating land for acquisition including how future stressors may affect parcel attributes and/or adjoining habitats. Stressors include those related to sea level rise, storm intensity and frequency, temperature, and rainfall variability. Such stressors may result in changes to water quality and salinity, exacerbate coastal erosion, alter inundation and flooding of coastal areas, increase extreme drought, and potentially drive changes in habitat range, composition, and function. Anthropogenic stressors include land use changes from development, hydrologic manipulations, and building of infrastructure, all of which may contribute to loss of native habitat, fragmentation of conservation corridors, and increased pollutant loadings in waterways.

Ongoing stewardship and/or restoration costs and likelihood of available funding for necessary land management actions in relation to viability of tract habitats, features, and attributes are additional factors examined by the Reserve. When evaluating parcels for potential acquisition, attention is given to encumbrances, restrictions on use, availability of access from roadways to effectively and appropriately accommodate public use, limitations on ability to implement land management techniques such as prescribed fire, development threat, and adjacent land

influences.

As funding for potential land acquisition can come from a variety of sources, the tract assessment and evaluation process utilized by the Reserve necessarily varies in accordance with specific grant program requirements and the range of available funding under the applicable funding opportunity. However, assessment frameworks designed to assist with evaluation of site characteristics such as the site assessment guide associated with the Alabama Coastal and Estuarine Land Conservation Program also may be consulted. As federal grant sources for potential acquisitions frequently require non-federal matching funds, evaluation criteria for the State of Alabama Forever Wild Land Trust, also a willing-seller program, are routinely considered when evaluating potential acquisition parcels.

Priority Acquisition Areas

Priority acquisition areas for the Reserve include lands within the Weeks Bay Watershed (Figure 30) and proximate lands where parcel acquisition would contribute towards conserving the ecological, cultural, or recreational integrity of the Reserve Core and Buffer. The acquisition areas contain waters and lands having unique or special designations like National Estuarine Research Reserve (NERR), Outstanding National Resource Water, Outstanding Alabama Water, Gulf Ecological Management Site, and Geographic Area of Particular Concern.



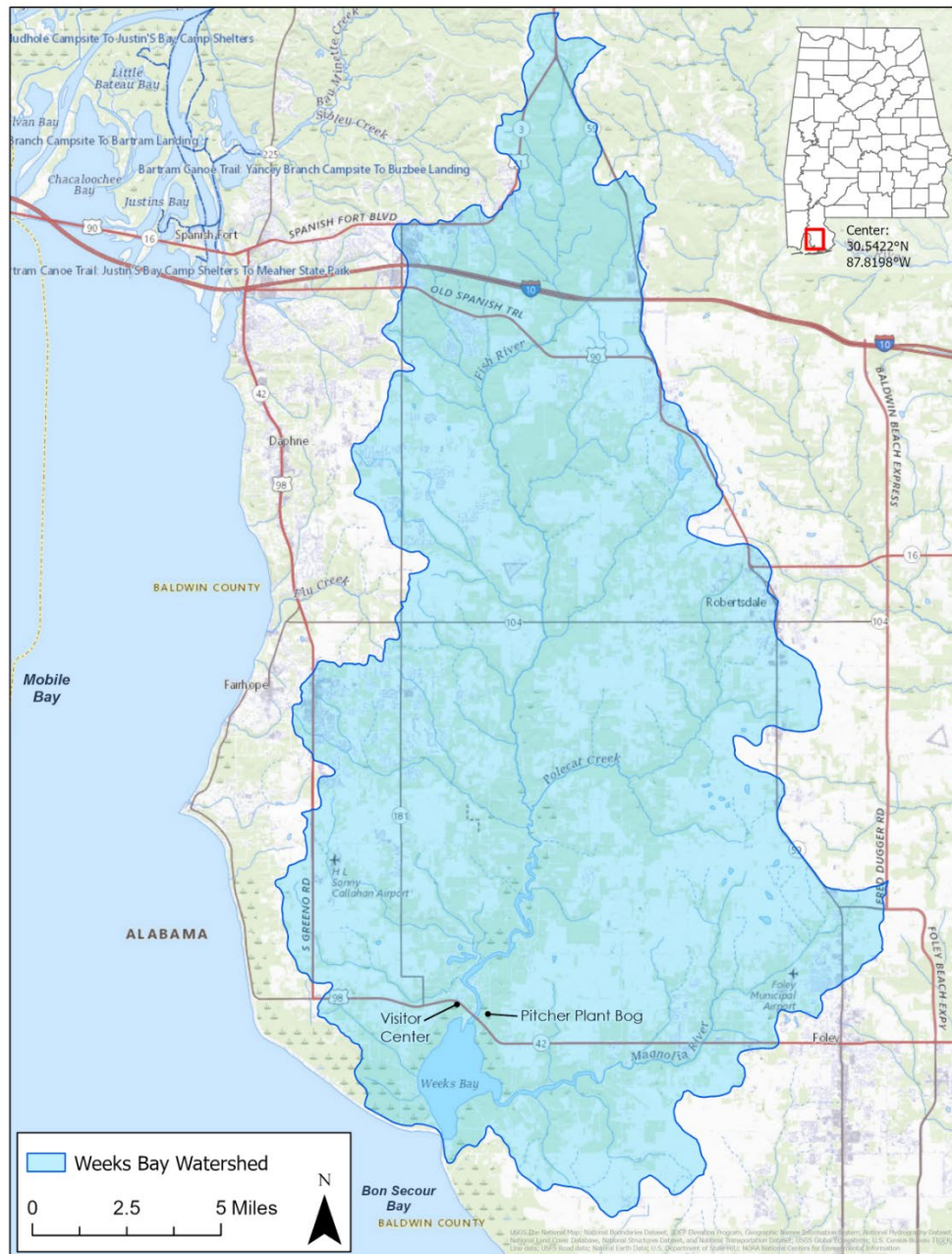


Figure 30. Weeks Bay Watershed

Since the initial EIS was conducted, Baldwin County has experienced significant population growth, especially within the Weeks Bay watershed. Land use changes due to growth can result in loss of habitat and polluted runoff from urbanized areas that impacts water quality and has the potential to detrimentally affect Weeks Bay. Conservation of lands within the watershed can buffer these effects and limit impacts on the coastal environment.

Reserve staff have delineated three Priority Acquisition Areas (PAA) based upon geographic

location, similarity of abiotic and biotic parameters, and ecological or programmatic value to the Reserve (Figure 31). Each PAA contains parcels already within the Reserve boundary or parcels to be evaluated for acquisition and are briefly described below. Consistent with the ADCNR requirements, only potential willing-seller acquisitions will be formally evaluated or prioritized. However, willing-seller parcels within the identified acquisition areas likely would be priorities as funding opportunities emerge.

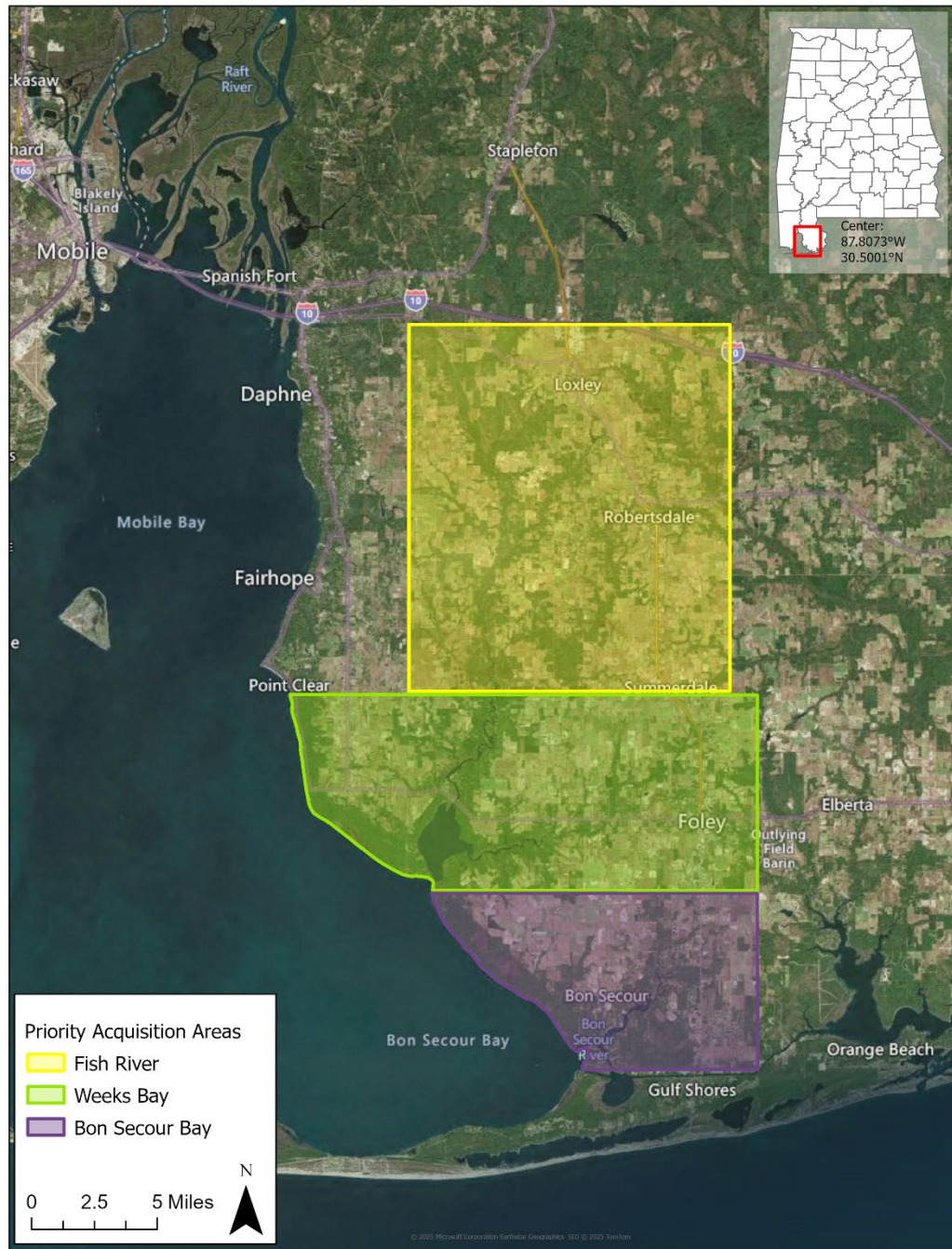


Figure 31. Weeks Bay Reserve Priority Acquisition Areas.

Fish River PAA

The Fish River PAA incorporates the center portion of Fish River. Much of the land adjacent to this portion of Fish River and its tributaries remains tidal and non-tidal forested wetland, with small pockets of fringing emergent marsh. The dominant surrounding land use outside the riparian wetlands is agriculture, although agricultural land is being converted for residential and commercial use. Several rare plant and animal species are documented here including pitcher plants in low lying areas and gopher tortoises in adjacent uplands. Both riparian and upland areas should be acquired for their ecological, recreational, storm mitigation, and aesthetic value.

Weeks Bay PAA

The Weeks Bay PAA captures the entirety of Weeks Bay, the Magnolia River and its tributaries, and the lower portion of Fish River and its tributaries. Significant portions of the shoreline within this project area remains fringed with emergent marsh that transitions landward into forested wetland. Low lying areas are predominantly bottomland hardwood forest grading upslope into wet pine flatwoods or mixed hardwood and pine forests. In areas where fire has been reintroduced as a management tool, hardwood overstory and midstory species have been reduced with a corresponding recovery in herbaceous species richness. Several rare plant species are documented here including pitcher plants within Okenee and Plummer soils. Significant wetland habitats still exist within the Weeks Bay Project area that provide many ecological, recreational, storm mitigation, and aesthetic benefits and should be acquired for conservation if the opportunity arises.

Bon Secour Bay PAA

Reserve Core water bottoms extend outside the Weeks Bay watershed into Bon Secour Bay, a sub-embayment of Mobile Bay. Parcels within this area consist of open beach, marsh, bottomland forest and wet pine flatwoods. These parcels are currently unprotected and accessible only by water. The Bon Secour PAA extends to the Bon Secour River to capture parcels proximate to the Weeks Bay Core and having a hydrological nexus with the Weeks Bay Buffer. Expanded acquisition southward along Bon Secour Bay and adjoining waterways would preempt possible shoreline development and conserve ecological, recreational, and aesthetic benefits.

Recent Acquisitions/Proposed Boundary Expansion

Since the last management plan update, the Reserve has purchased 11 properties (Figure 32 and Table 6) within PAAs. The table contains name, acreage, associated PAA, acquisition year, and funding source(s). For acquisitions by the FWLT, title is held by the state in the name of the Alabama Trust Fund and managed by State Lands as a Reserve holding.

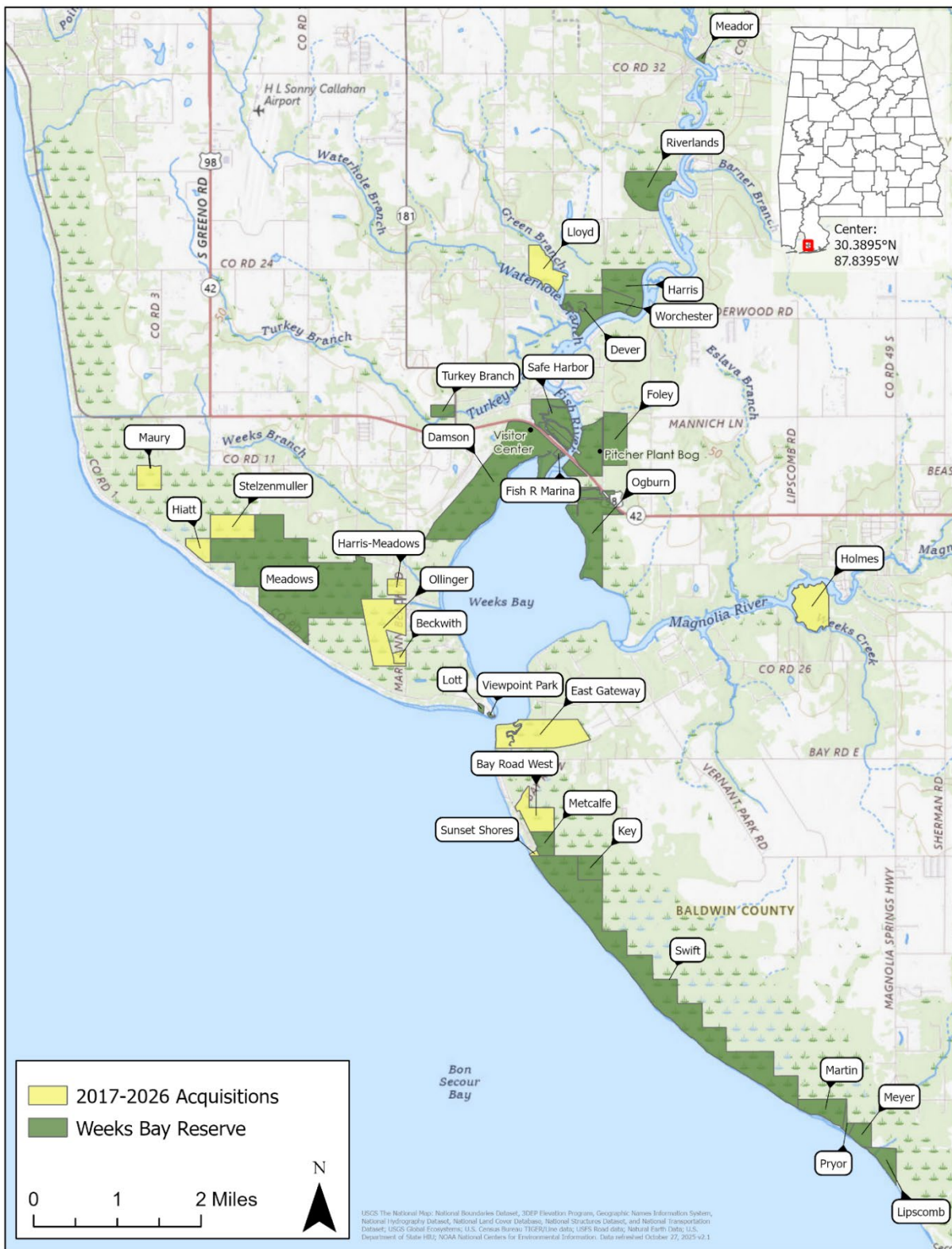


Figure 32. Map of Weeks Bay Reserve Acquisitions 2017 – 2026.

NAME	Acres	PAA	Funding Source	Deed year
Ollinger	142.5	Weeks Bay	FWLT/PAC	2017
Wood-Hiatt	28	Weeks Bay	FWLT/PAC	2017
Stelzenmuller	69	Weeks Bay	FWLT/PAC	2017
Bay Road West/Lipscomb	64	Bon Secour Bay	FWLT/PAC	2017
Sunset Shores/Metcalf	2.75	Bon Secour Bay	FWLT/PAC	2017
Harris	19.7	Weeks Bay	FWLT/PAC	2019
Beckwith	10	Weeks Bay	FWLT/PAC	2019
East Gateway/Williams	163.6	Weeks Bay	NRDA/PAC	2019
Holmes	91	Magnolia River	NRDA/SALT	2020
Lloyd	60	Lower Fish River	NRDA	2022
Maury	40	Weeks Bay	BIL	2026
Total	690.55			

Table 6. Weeks Bay Reserve Properties Acquired 2017-2026.

FWLT - Alabama Forever Wild Land Trust Program; PAC - NERRS Procurement, Acquisition and Construction; NRDA DWH Natural Resource Damage Assessment; SALT - South Alabama Land Trust; BIL - Bipartisan Infrastructure Law

Table 7 lists the eleven land acquisitions added to the Reserve since the 2017 management plan update, their prior use, importance to the Reserve and anticipated use.

NAME	Buffer or Core	Acres	Prior Use	Importance of property to Reserve	Anticipated Use
Ollinger	Buffer	142.5	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Wood-Hiatt	Buffer	28	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Stelzenmuller	Buffer	69	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
Bay Road West	Buffer	64	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Conservation and management
Sunset Shores	Buffer	2.75	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Conservation and management
Harris	Buffer	19.7	Natural state, unmanaged	Purchase of additional parcel would create contiguous habitat, provides development buffer	Conservation and management
Beckwith	Buffer	10	Natural state, unmanaged	Expands contiguous habitat, provides development buffer	Restoration of pine flatwoods habitat, public access improvements
East Gateway	Buffer	163.6	Natural state, unmanaged	Riparian protection, significant emergent habitat, accessible for educational and recreational kayak tours	Shoreline restoration, site for education and outreach programs

Holmes	Buffer	91	Natural state, unmanaged	Extensive shoreline, significant riparian buffer, protects from upland development,	Restoration of longleaf pine habitat, possible visitor access via small vessel landing area
Lloyd	Buffer	60	Agriculture	Extensive shoreline, significant riparian buffer, healthy cedar dominated bottomland, protects from upland development	Restoration of longleaf pine habitat via return of natural fire regime and possible plantings
Maury	Buffer	40	Natural state, unmanaged	Protection of critical pine flatwoods/savanna habitat within the Meadows management unit	Restoration of pine flatwoods habitat via return of natural fire regime
Water bottoms	Core	868	Natural state, unmanaged	Conservation of ecological function, recreational fishing, commercial fishing	Conservation

Table 7. Acquisitions Completed and Proposed to be Added to the Reserve since the 2017 Management Plan Update.

Acquisition Strategies

Acquisition opportunities arise when land within a PAA becomes available from a willing seller. The Reserve often works with partners to acquire lands. The Alabama Forever Wild Land Trust (FWLT) which provides non-federal match through funded fee simple acquisition provides a process for nomination, appraisal valuation, and purchase negotiation. The South Alabama Land Trust (SALT) often assists with land acquisition by communicating with landowners, purchasing parcels for later acquisition by the State, and assisting with appraisals and purchase negotiation. The Stewardship Coordinator attends both FWLT and SALT board meetings. Additional mechanisms to acquire properties may include working with partners such as local or regional land trusts and conservation organizations.

There are multiple methods or mechanisms of acquisition that would establish long-term conservation of properties within priority areas, they include:

- Fee Simple Acquisition
- Conservation Easement
- Donation

The Reserve focus is upon establishing fee simple ownership by either ADCNR or the FWLT. In the event a conservation easement is acquired, it is preferred that a Nationally Accredited Land

Trust such as the SALT hold conservation easements. Agreements to manage lands adjacent to the Reserve Core may be made on a case-by-case basis to facilitate restoration or management strategies.

Fair Market Value Estimates

Dynamic market processes determine the valuation of land within acquisition areas. Valuation cannot be determined for future opportunities thus an effort was not made in this management plan to estimate fair market value for any parcels. Acquisition of land is conducted pursuant to procedures of underlying funding sources and is dependent upon determination of highest and best use appraisal value at the time of purchase.

Estimated Acquisition Timeline

Reserve land acquisition is opportunistic and based upon Reserve interest in and ability to purchase a parcel from a willing seller. The amount of time from initial acquisition discussions with a willing seller to tract closing varies for each acquisition project due to numerous factors: time to secure funding, requirements of underlying funding source (including Quarterly Board meeting schedule if FWLT funding), obtaining appraisals (including second appraisals if FWLT funding), clearing environmental site assessments, reviewing title exceptions, conducting negotiations, and completing title work, etc. which typically takes between 1 to 2 years.

Potential Funding Sources

Alabama Forever Wild Land Trust (FWLT)

The Alabama FWLT works to expand public access and conservation practices to ensure present and future generations can continue to enjoy Alabama's unique natural resources. Tracts are nominated by the public for possible purchase once willing-seller status is confirmed. Decisions to purchase acquisition of nominated tracts is made by the FWLT's independent 15-member Board of Trustees. ADCNR Commissioner serves as Ex-officio Board Chairman and ADCNR administers the program and manages acquisition on behalf of the Board.

Bipartisan Infrastructure Law and Inflation Reduction Act

Competitive Federal funding opportunities for land acquisition projects support restoration and conservation projects through the National Coastal Zone Management Program and National Estuarine Research Reserve System.

NOAA's National Estuarine Research Reserve System Procurement, Acquisition, and Construction Fund

NOAA provides cost-share grants to state host agencies of reserves to support construction or land acquisition for projects identified in approved reserve management plans.

U.S Department of Agriculture Forest Legacy Program

Cost-share grants available to help landowners, state and local governments, and private land

trusts identify and protect environmentally important forest lands that are threatened by present and future conversion to non-forest uses.

U.S. Fish and Wildlife Service's North American Wetland Conservation Act Program

Cost-share grants are available to fund conservation of wetlands and wetland-dependent fish and wildlife (waterfowl) through acquisition, restoration and/or enhancement.

U.S. Fish and Wildlife Service's Coastal Wetland Grant Program

Cost-share grants are awarded to Great Lakes and coastal states and trust territories for projects that restore, acquire, manage, or enhance coastal lands and waters. Projects must provide for the long-term conservation of such lands and waters and the fish and wildlife dependent on them.

Natural Resources Conservation Service (NRCS) and USDA Farm Service Agency Grant Programs

The NRCS has several cost-share/grant programs that involve acquisition of conservation easements.

Other Funding Sources

In addition, periodic opportunities for funding support may also develop pursuant to the State of Alabama's GOMESA grant program and Deepwater Horizon Oil Spill related restoration efforts.



X. Restoration Plan

NERRS Restoration Science Strategy

A priority of the Weeks Bay National Estuarine Research Reserve is to restore and conserve ecosystems located within Reserve boundaries. Restoration ecology is the scientific study and practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats in the environment by active human intervention and action, accomplished within a short time frame using targeted actions to achieve relatively self-sustaining ecological conditions. The Society for Ecological Restoration defines ecological restoration as an “intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability” (SER 2004). Restoration planning and practices align with the guiding principles for restoration as set forth within the NERRs *Restoration Science Strategy* (NOAA/NERRS 2002):

- Preservation and conservation of existing habitat must occur along with restoration.
- Reserve participation is voluntary, and additional funding is required for implementation.
- Reserves will not support habitat manipulation that causes adverse impacts.
- A partnered approach with science and management organizations or professionals.
- Integrated application of research, education, and stewardship capacities.
- Science activities will be subject to a peer-review process.

Background

The Reserve has participated in watershed planning for Weeks Bay dating back to 1998. A revised Weeks Bay Watershed Management Plan (Watershed Plan) was completed in 2017 in association with the Mobile Bay National Estuary Program (Thompson Engineering 2017). The Watershed Plan incorporates results for hydrologic and land use assessment models that can be incorporated in Reserve planning. The models can be manipulated to examine the effects of modification of flow, erosion, and other watershed characteristics. The Watershed Plan assists with identification of problem sites located outside of the boundary that contribute pollutants or sediment or sites for future acquisition or restoration. Actions to reduce or eliminate these pollutant stressors can be incorporated into tract-level plans. Possessing an approved watershed management plan for Weeks Bay increases opportunities for partnerships and availability of certain sources of external funding.

In 2019, Reserve sector leads convened to assess the current condition of terrestrial buffer habitats within the Reserve, evaluate sensitivity and adaptive capacity of the habitats to change, and consider potential interactions of man-made stressors with meteorological variability, using guidance and assessment tools offered through the NERRS. These assessment tools function as decision support tools for land managers, decision makers, and researchers and integrate local data and knowledge and current research with local/regional predictions to provide an assessment of potential habitat vulnerabilities associated with physical stressors such as

alterations in average temperatures; variation in rainfall intensity, amounts, and frequency; increased flooding; increased periods of drought and wildfires; sea level rise and changes to freshwater inflows. The sector leads identified the combined effects of rising sea levels, potentially altered rainfall patterns, changing freshwater flows, and rapid land use change as a significant and likely future threat to native and built communities. The sector leads identified areas with terrestrial habitat connectivity that will allow upslope marsh migration as priority habitat management and restoration areas.

Restoration Plans

In July 2012, the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) established the Gulf Coast Ecosystem Restoration Council (Council). The RESTORE Act dedicates 80 percent of all administrative and civil penalties related to the Deepwater Horizon spill to a Gulf Coast Restoration Trust Fund and outlines a structure by which the funds can be utilized to restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast region.

Two restoration projects within the Reserve boundary, The Fish River and Weeks Bay Marsh Restoration and the Meadows Tract Marsh Restoration, were included in the *Connecting Coastal Waters: Restoring Coastal Wetland Hydrology* proposal presented to the Council by NOAA (NOAA 2015). RESTORE funding was provided for the development of restoration plans for the two projects. The Meadows plan achieved 90% completion with no further activities scheduled. The Fish River and Weeks Bay Marsh Restoration plan is complete. Additional funding was provided to implement the Fish River and Weeks Bay Marsh restoration plan. The primary objective of recontouring the shape of dead-end canal basins using on-site sediment borrow to restore marsh vegetation was successfully accomplished in December of 2024 (objective 1.3, action 8). More information may be found at <https://www.diver.orr.noaa.gov/restore-council>.

Deepwater Horizon Natural Resource Damage Assessment (NRDA) funds were used in the acquisition of three tracts within the Reserve boundary: East Gateway, Lloyd, and Holmes. Monitoring and Adaptive Management Plans (MAM) have been developed for these tracts. WBNERR and other State Lands staff will continue to implement actions to meet restoration goals and objectives laid out within the MAM. Actions may include the establishment of prescribed fire regime, planting of native species, and control of exotic invasive species as appropriate for each tract. (objective 1.3, actions 3 and 4) NRDA monies will fund design of a living shoreline for the East Gateway Tract. (objective 1.3, action 9)

Two restoration project proposals were awarded through the NERRS Habitat Protection and Restoration Bipartisan Infrastructure Law grant opportunity. The awards are for a shoreline restoration project to enhance coastal resilience and a forested wetland restoration project. Data will be collected and analyzed to develop and implement a restoration design plan for each

project. The Stewardship Coordinator will work with the Reserve Manager as project lead principal investigators.

Prioritizing Restoration Actions

The Reserve hosted a facilitated workshop to assist staff in developing a framework document to guide future restoration and conservation actions (objective 1.2, actions 1-5). Workshop participants consisted of local and regional subject matter experts. Participants were provided site descriptions, a summation of available NERRS coastal habitats assessment tools, historical information, maps, sea level rise projections, and other relevant information to assess current and projected habitat and ecosystem conditions. Participants were asked to use their expertise to identify ecological impairments across all tracts and suggest prioritization of management recommendations as needed to achieve one or more of the following:

- Conservation or creation of resilient native ecosystems
- Conservation or creation of rare or imperiled ecosystems
- Conservation or creation of habitat beneficial for threatened or endangered species
- Long term conservation of human infrastructure.

To prioritize recommendations, a Resist-Accept-Direct (RAD) framework was employed. The RAD Framework developed by the United States Geological Survey lays out three approaches for making management decisions for systems undergoing ecosystem transformation: 1) *Resist*, where managers work to maintain or restore ecosystem composition, structure, processes, or function on the basis of historical or acceptable current conditions, 2) *Accept*, where managers allow ecosystem composition, structure, process, or function to change autonomously, and 3) *Direct*, where managers actively shape change in ecosystem composition, structure, processes, or function toward preferred new conditions.

State Lands staff are working with the Habitat Resilience Specialist with the Mississippi-Alabama Sea Grant Consortium to synthesize workshop recommendations with Reserve habitat management plans.

Additional Information

<https://www.usgs.gov/programs/climate-adaptation-science-centers/science/resist-accept-direct-rad-framework>

To avoid, minimize, or mitigate disturbance to natural or historical/cultural resources, Reserve staff will consult with partners and agencies (e.g. ADCNR, NOAA, USFWS) to identify and implement best management practices for conservation or restoration activities. For any activity requiring permitting, the Reserve or organizations working in support of the Reserve, will obtain necessary permits. The Reserve cooperates with federal, state, and local agencies to secure the proper permits. Avoiding negative effects of activities on historical and cultural resources is

important to the Reserve. As needed, the Reserve will consult with the Alabama Historical Commission to identify known historical and cultural resources in a project area and implement the appropriate practices.



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APPENDICES

- A. NOAA and ADCNR State Lands Memorandum of Understanding 2017
- B. Federal Consistency Determination
- C. Public Involvement and Comments
- D. Weeks Bay Advisory Committee Bylaws
- E. Animal and Plant Species of Concern Potentially Occurring within Weeks Bay Reserve

A. NOAA AND ADCNR STATE LANDS MEMORANDUM OF AGREEMENT 2017

Memorandum of Agreement
between the
National Oceanic and Atmospheric Administration
and the
Alabama Department of Conservation and Natural
Resources, State Lands Division
detailing the state-federal roles in the
management of the Weeks Bay
National Estuarine Research Reserve

This Memorandum of Agreement (MOA) states the provisions for the cooperative management of Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR) in the state of Alabama between the Alabama Department of Conservation and Natural Resources (ADCNR) and the National Oceanic and Atmospheric Administration's (NOAA) Office for Coastal Management (OCM). This Memorandum of Agreement supersedes the previous Memorandum of Understanding between NOAA and ADCNR regarding Weeks Bay NERR made on November 9, 2006.

I. BACKGROUND

- A. The state of Alabama has determined that the waters and related coastal habitats of the Weeks Bay Watershed provide unique opportunities to: study natural and human processes that contribute to the science of estuarine ecosystem functions; enhance environmental education opportunities; and provide scientific information for effective coastal zone management in the state of Alabama.
- B. The state of Alabama has determined that the resources of the Weeks Bay NERR and the values they represent to the citizens of Alabama and the United States will benefit from the management of these resources as part of the National Estuarine Research Reserve System.
- C. The National Oceanic and Atmospheric Administration has concurred with that finding, and pursuant to its authority under Section 315 of the Coastal Zone Management Act of 1972, as amended (CZMA, 16 U.S.C. § 1461), and in accordance with implementing regulations at 15 C.F.R. § 921.30, has designated the Weeks Bay NERR.
- D. ADCNR, as the agency designated by the Governor of Alabama, is responsible for maintaining and managing Weeks Bay NERR in accordance with Section 315 of the CZMA and acknowledges the value of state-federal cooperation for the long-term management of the reserve in a manner consistent with the purpose of its designation.
- E. The Weeks Bay NERR management plan, approved by NOAA, describes the goals, objectives, strategies/actions, administrative structure, and institutional arrangements for the reserve, including this MOA and others. In consideration of the mutual agreements herein, NOAA and ADCNR agree to the following roles indicated in Section II of this agreement.

II. STATE-FEDERAL ROLES IN RESERVE MANAGEMENT

ADCNR Role in Reserve Management

ADCNR shall:

1. comply with federal laws and regulations as applicable, and include language in the Weeks Bay NERR management plan to be consistent with the provisions of the CZMA and implementing regulations;
2. to the extent possible , protect natural resources of the reserve, and support enforcement of the provisions of state law, including rules and regulations of the Alabama Coastal Area Management Program;
3. to the extent possible , support long-term protection and management of lands and waters included within the reserve boundary;
4. apply for, budget, allocate, and expend funds in accordance with federal and state laws, the reserve management plan, and annual funding guidance for reserve operations, research and monitoring, education and stewardship, and, as necessary, land acquisition and reserve facility construction;
5. conduct and coordinate research and monitoring programs that encourage scientists from a variety of institutions to work together to understand the ecology of the reserve ecosystem to improve coastal management;
6. conduct and maintain programs that disseminate research results via materials, activities, workshops, and conferences to resource users, state and local agencies, school systems, general public, and other interested parties;
7. provide staff for programs of the reserve;
8. secure facilities and equipment required to implement the provisions within the reserve management plan;
9. expend funding derived from the NOAA operations grant and state match for facilities operation and maintenance;
10. maintain effective liaison with local, regional, state, and federal policy makers, regulators and the general public;
11. serve as principal contact for issues involving proposed boundary changes and/or amendments to the reserve management plan; and

12. respond to NOAA's requests for information made pursuant to the Federal Evaluation Section 312 of the CZMA, particularly cooperative agreement and grant progress reports and evaluation findings, including necessary actions and recommendations.

B. Federal Role in Reserve Management

NOAA's Office for Coastal Management shall:

1. administer the provisions of Sections 315 and 312 of the CZMA to ensure that the reserve operates in accordance with goals of the reserve system and the Weeks Bay NERR reserve management plan;
2. review and process applications for financial assistance from the ADCNR, consistent with 15 C.F.R. § 921, for management and operation, and, as appropriate, land acquisition and facility construction;
3. advise ADCNR of existing and emerging national and regional issues that have bearing on the reserve and reserve system;
4. maintain an information exchange network among reserves, including available research and monitoring data and educational materials developed within the reserve system;
5. to the extent possible, facilitate the allocation of NOAA resources and capabilities in support of reserve goals and programs.

C. General Provisions

1. Nothing in this agreement or subsequent financial assistance awards shall obligate either party in the expenditure of funds, or for future payments of money, in excess of appropriations authorized by law.
2. Upon termination of this agreement or any subsequent financial assistance awards to ADCNR, any equipment purchased for studies to further this agreement will be disposed of in accordance with 15 C.F.R. § 24.32.
3. A free exchange of research and assessment data between the parties is encouraged and is necessary to ensure success of cooperative studies.

D. Other Provisions

1. Nothing in this agreement diminishes the independent authority or coordination responsibility of either party in administering its respective statutory obligations. Nothing in this agreement is intended to conflict with current written directives or policies of either party. If the terms of this agreement are inconsistent with existing written directives or policies of either party entering this agreement, then those portions of the agreement which are determined to be inconsistent with such written

directives and policies shall be invalid; but the remaining terms not affected by the inconsistency shall remain in full force and effect. At the first opportunity for revision of this agreement, all necessary changes shall be made by either an amendment to this agreement or by entering in a new superseding agreement, whichever is deemed expedient to the interested parties. Should disagreement arise on the interpretation of the provisions and/or amendments of this agreement, such disagreement shall be resolved by negotiations at the operating level of each party.

III. REAL PROPERTY ACQUIRED FOR PURPOSE OF THE RESERVE

As well as acknowledging the rest of the requirements set forth at 15 C.F.R. § 921, ADCNR specifically acknowledges and will fully comply with conditions set forth at 15 C.F.R. § 921.21 (e), which specify the legal documentation requirements concerning the use and disposition of real property acquired for reserve purposes with federal funds under Section 315 of the CZMA.

IV. PROGRAM EVALUATION

The Office for Coastal Management of NOAA will schedule periodic evaluations of ADCNR performance in meeting the terms of this agreement, financial assistance awards, and the reserve management plan. Where findings of deficiency occur, NOAA may initiate action in accordance with the designation withdrawal or interim sanctions procedures established by the CZMA and applicable regulations at 15 C.F.R. § 921.40-41.

V. EFFECTIVE DATE, REVIEW, AMENDMENT AND TERMINATION

- A. This agreement is effective on the date of the last signature on this agreement and shall be in effect until terminated by either party.
- B. This agreement will be reviewed periodically by both parties and may only be amended by the mutual written consent of both parties.
- C. This agreement may be terminated by mutual consent of both parties.
- D. If any clause, sentence or other portion of this MOA shall become illegal, null, or void for any reason, the remaining portions of this MOA shall remain in full force and effect.
- E. No waiver of right by either party of any provision of this MOA shall be binding unless expressly confirmed in writing by the party giving the waiver.

- C. This agreement may be terminated by mutual consent of both parties.
- D. If any clause, sentence or other portion of this MOA shall become illegal, null, or void for any reason, the remaining portions of this MOA shall remain in full force and effect.
- E. No waiver of right by either party of any provision of this MOA shall be binding unless expressly confirmed in writing by the party giving the waiver.

IN WITNESS THEREOF, the parties have caused this agreement to be executed.


Jeffrey L. Payne, Ph.D.
Director
Office for Coastal Management
National Ocean Service
National Oceanic and Atmospheric
Administration

7/6/17
Date

APPROVED LEGAL



Patricia J. Powell
Director
State Lands Division
Alabama Department of
Conservation and
Natural Resources

7/13/17
Date


Christopher M. Blankenship
Acting Commissioner
Alabama Department of
Conservation and
Natural Resources

7-27-17
Date

B. FEDERAL CONSISTENCY DETERMINATION



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office for Coastal Management
Silver Spring Metro Center, Building 4
1305 East-West Highway
Silver Spring, Maryland 20910

March 16, 2017

Mr. Scott Brown
Alabama Department of Environmental Management
2204 Perimeter Road
Mobile, Alabama 36695

Re: Coastal Zone Management Act Consistency Determination
Weeks Bay National Estuarine Research Reserve 2017-2022 Management Plan

Dear Mr. Brown:

Pursuant to section 307(c)(1) of the Coastal Zone Management Act, 16 U.S.C. § 1457(c)(1), and 15 C.F.R. part 930, subpart C, for management plan approval, the NOAA Office for Coastal Management (OCM) Stewardship Division is submitting this Consistency Determination to the Alabama Coastal Area Management Program (ACAMP), for the Weeks Bay National Estuarine Research Reserve (the reserve) revised management plan. The information in this Consistency Determination is provided pursuant to 15 C.F.R. § 930.39 and is being submitted in compliance with 15 C.F.R. § 921.13.

The NOAA Office for Coastal Management believes that the Reserve's revised management plan contains goals, objectives and actions taken in support of meeting the Reserve's mission. The Reserve conducts land conservation and stewardship, research, monitoring, education and training. The Reserve manages construction and use of infrastructure in the form of, but not limited to, launches, buildings, boardwalks, docks and piers. Land management activities include restoration and stabilization of uplands, wetlands, shorelines and submerged lands. Research and monitoring activities conducted by Reserve staff or outside agencies and universities may include manipulation of areas within the Reserve boundary. In addition, the Reserve collaborates with agencies, nongovernmental organizations and other entities to reach out to willing landowners to the purpose of acquiring additional lands to support its research, education, preservation, and conservation goals.

The enforceable policies of ACAMP are codified under Alabama Department of Environmental Management (ADEM) Admin. Code R. 335-8-1 and pursuant to ADEM Administrative Code r. 335-8-1-.05, the conservation, repletion, research and management activities associated with the Reserve are permissible uses under the ACAMP. Reserve management and staff collaborate closely with the ACAMP so that activities and actions taken in support of the management plan are also consistent with ACAMP. The Reserve's activities and actions comply with the ACAMP's enforceable policies and will be conducted in a manner consistent with the ACAMP.



Based upon the following information, data and analysis, NOAA finds that the management plan revision and associated affects are consistent to the maximum extent practicable with the enforceable policies of the Alabama Coastal Management Program. Pursuant to 15 C.F.R. §930.41, the ACAMP has 60 days from the receipt of this statement in which to concur with or object to this Consistency Determination, or to request an extension under 15 C.F.R. §930.41 (b). The State's concurrence will be presumed if NOAA does not receive the State's response on the 60th day from receipt of this determination. The State's response should be sent to:

Matt Chasse
Coastal Management Specialist
National Oceanic & Atmospheric Administration
NOS, Office for Coastal Management
1305 East West Highway, SSMC4/10th Floor
Silver Spring, MD 20910

Please let me know if you have any questions or concerns. I can be reached at (240) 533-0808 or matt.chasse@noaa.gov.

Sincerely,



Matt Chasse
Coastal Management Specialist

Attachment

cc: Kerry Kehoe, NOAA Office for Coastal Management



LANCE R. LEFLEUR
DIRECTOR



Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
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(334) 271-7700 ■ FAX (334) 271-7950

ROBERT J. BENTLEY
GOVERNOR

April 12, 2017

Mr. Matt Chasse
Coastal Management Specialist
National Oceanic & Atmospheric Administration (NOAA)
NOS, Office for Coastal Management
1305 East West Highway, SSMC4/10th Floor
Silver Spring, Maryland 20910

RE: State of Alabama Coastal Consistency Concurrence
Weeks Bay National Estuarine Research Reserve 2017-2022 Management Plan
Alabama Department of Environmental Management (ADEM) Tracking Code: 2017-204-FC-FAA-NOAA

Dear Mr. Chasse:

The ADEM received NOAA's coastal consistency determination for the referenced activity - required by Title 15CFR §930.36 - on March 17, 2017. Public noticing requirements of Title 15CFR §930.42 have been completed. Pursuant to Title 15CFR §930.41, by this letter the ADEM hereby notifies NOAA of its concurrence with NOAA's determination that the proposed activities are consistent with the enforceable policies of the Alabama Coastal Area Management Program.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony Scott Hughes".

Anthony Scott Hughes, Chief
Field Operations Division

ASH/jsb

File: CZCERT

cc: Phillip Hinesley, ADCNR (Sent Via Email Only: Phillip.Hinesley@dcnr.alabama.gov)
L.G. Adams, ADCNR (Sent Via Email Only: L.G.Adams@dcnr.alabama.gov)

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C. PUBLIC INVOLVEMENT AND COMMENTS

D. WEEKS BAY ADVISORY COMMITTEE BYLAWS

ARTICLES OF ORGANIZATION AND BY-LAWS FOR THE WEEKS BAY NATIONAL ESTUARINE AND RESEARCH RESERVE ADVISORY COMMITTEE

ARTICLE I.

Name

The name of this organization shall be the Weeks Bay National Estuarine Research Reserve Advisory Committee (WBNERRAC). All references in these Articles and Bylaws to "the Committee" are to such organization.

ARTICLE II.

Purpose

1. The principal purpose of the Committee shall be to provide a mechanism to facilitate operations and management of the Weeks Bay National Estuarine Research Reserve (WBNERR) through advice and other interactions with the Alabama Department of Conservation and Natural Resources (ADCNR) and the WBNERR staff.
2. The duration of this organization shall be perpetual pursuant to the conditions set forth in Article IV.

ARTICLE III.

Location

The principal office and mailing address of the Committee shall be the office of the Manager of the WBNERR.

ARTICLE IV.

Membership and Meetings

1. **Membership.** The membership of the Committee shall consist of those persons duly appointed by their respective agency executive as defined in the Weeks Bay National Estuarine Research Reserve Management Plan and other members appointed by the Governor of the State of Alabama. It is expected that members will attend

meetings and otherwise participate in the business of the Committee. Since participation is voluntary an individual or organization may resign at their discretion at any time.

2. Proxy. Agency Executives or the Governor may name alternate representatives to the Committee for their respective appointments or members of the Committee may name an individual to serve as a Proxy during any Committee meeting or function by notification of the Chair or the Reserve Manager prior to commencement of the meeting or function.
3. Membership Expansion. New members, in addition to those specified in the Management Plan, may be nominated by an existing member and appointed to the Committee or any of its subcommittees by the Chair following a two-thirds majority approval of the Committee.
4. Voting. Voting is by individual appointee, or their designated alternate or proxy, and a simple majority of the Committee or subcommittee present shall rule.
5. Meetings. The Committee shall hold quarterly meetings and such other regular meetings as it may deem advisable each year. Special meetings may be called by the Chair or by written request of at least four members of the Committee; with at least seven working days written notice of said meeting being given to the members.
6. Quorum: A quorum shall be a simple majority of the Committee or any of its subcommittees.
7. Minutes. It shall be the WBNERR Manager or other staff person's responsibility to keep an accurate record of the business conducted at each meeting of the Committee, which they shall promulgate to the Committee members as non-verbatim minutes, prior to the following meeting of the Committee.
8. Rules of Order. Meetings shall be run at the discretion of the Chair and Robert's Rules of Order (current edition) shall be the deciding factor in parliamentary questions not covered by these bylaws.

ARTICLE V.

Officers

The officers of the Committee shall be Chair, and Vice Chair.

1. Chair. The Chair shall preside at all meetings of the Committee and perform all other duties customarily associated with the office of Chair. The position of Chair shall be automatically filled biennially by the past Vice Chair.
2. Vice Chair. The Vice Chair shall serve in the absence of the Chair, assuming his duties when necessary, and shall also perform such tasks as designated by the Chair. The Vice Chair shall be elected biennially by the Committee.
3. Elections. The Chair and Vice Chair shall be elected positions, such election requiring a simple majority of a quorum of the Committee. Special elections for these offices shall be held in the event that both positions, or that of the Vice Chair, become vacant.
4. Subcommittees. Standing and ad hoc subcommittees of the Committee may be established by the Committee with members appointed to such subcommittees by the Chair, as needed. Subcommittees shall be charged with specific duties and responsibilities by the Committee at the time of their establishment.

ARTICLE VI.

Autonomy of Organizations and Exculpation of Members

Individual membership on the Committee shall in no way infringe upon the autonomy of any institution or organization to which the individual belongs or by which he is employed. No officer or other agent of the Committee or its facilities shall be liable to anyone for any acts on behalf of the Committee committed by such officer or agent.

ARTICLE VII

Effective Date

These Articles of Organization and Bylaws shall be effective upon ratification by a two-thirds majority of a quorum of the Committee.

ARTICLE IX

Amendments

These Articles of Organization and Bylaws may be amended by the Committee at any meeting of the Committee by the affirmative vote of two-thirds of the Committee present as a quorum, provided that notice of the proposed amendment shall have been given each member of the Committee in writing at least seven (7) working days prior to the scheduled meeting.

Adopted this 14 day of December, 2000.

Respectfully: John Brown
Presiding Chair

Witness: J. Adams
WBNERR Manager

E. ANIMAL AND PLANT SPECIES OF CONCERN POTENTIALLY OCCURRING IN WEEKS BAY RESERVE

Animal and Plant Species of Concern Potentially Occurring within Weeks Bay Reserve

A query of the Fish and Wildlife Service, Information for Planning and Consultation (IPaC) online mapper indicates the following species may be present. Species in bold observed within Weeks Bay system.

COMMON NAME	SPECIES	GROUP	STATUS
Alabama Red-bellied Turtle	<i>Pseudemys alabamensis</i>	Reptile	Endangered
Tricolored Bat	<i>Perimyotis subflavus</i>	Mammal	Endangered
West Indian Manatee	<i>Trichechus manatus</i>	Mammal	Threatened
Eastern Black Rail	<i>Laterallus jamaicensis</i> <i>ssp. Jamaicensis</i>	Bird	Threatened
Rufa Red Knot	<i>Calidris canutus rufa</i>	Bird	Threatened
Eastern Indigo Snake	<i>Drymarchon couperi</i>	Reptile	Threatened
Gulf Sturgeon	<i>Acipenser oxyrinchus</i> <i>desotoi</i>	Fish	Threatened
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	Reptile	Threatened
Monarch Butterfly	<i>Danaus plexippus</i>	Insect	Candidate

A species query of the State Lands Division's Natural Heritage Section Database found the following rare species (including candidates for federal listing as threatened or endangered species) to either have been reported from the Weeks Bay wetlands system (shown in **bold**) or have ranges and habitat requirements which suggest that they may benefit from the conservation efforts within the Reserve.

COMMON NAME	SPECIES
Mottled Duck	<i>Anas fulvigula</i>
Swallow-tailed Kite	<i>Elanoides forficatus</i>
Mississippi Kite	<i>Ictinia mississippiensis</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
Black Rail	<i>Laterallus jamaicensis</i>
Swainsons Warbler	<i>Limnothlypis swainsonii</i>
Southern Three-awned Grass	<i>Aristida simpliciflora</i>
Godfrey's Golden Aster	<i>Chrysopsis godfreyi</i>
Panhandle Lily	<i>Lilium iridollae</i>
Chapman's Butterwort	<i>Pinguicula planifolia</i>
Large-leaved Jointweed	<i>Polygonella macrophylla</i>
White-topped Pitcher Plant	<i>Sarracennia leucophylla</i>
Wherry's Sweet Pitcher Plant	<i>Sarracennia rubra wherrii</i>

The following Priority 1 and 2 (P1, P2) species as identified by the Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries within *Alabama's Wildlife Action Plan 2015 -2025* may benefit from proposed restoration and management actions.

Priority 1/Highest Conservation Concern (P1) - taxa critically imperiled and at risk of extinction/extirpation because of extreme rarity, restricted distribution, decreasing population trend/population viability problems, and specialized habitat needs/habitat vulnerability. Immediate research and/or conservation action required.

Priority 2/High Conservation Concern (P2) - taxa imperiled because of three of four of the following: rarity; very limited, disjunct, or peripheral distribution; decreasing population trend/population viability problems; or specialized habitat needs/habitat vulnerability. Timely research and/or conservation action needed.

	COMMON NAME	SCIENTIFIC NAME	HABITAT/LOCATION	SGNC RANK
<u>BIRDS</u>				
1	Black Rail	<i>Laterallus jamaicensis</i>	salt, brackish, and freshwater marshes, and partially flooded fields and meadows	P2
2	Bachman's Sparrow	<i>Peucaea aestivalis</i>	open pine forests with a diverse ground cover of herbaceous vegetation exist	P2
3	Henslow's Sparrow	<i>Ammodramus henslowii</i>	open longleaf pine (<i>Pinus palustris</i>) savannas, primarily coastal savannas and pitcher plant bogs	P1
4	Nelson's Sparrow	<i>Ammodramus nelson</i>	brackish and saltwater marshes	P2
5	Red-cockaded Woodpecker	<i>Picoides borealis</i>	a habitat specialist requiring mature, open pine forests with a grassy or sparse understory that is maintained by frequent fires.	P1

6	Red Knot	<i>Calidris canutus</i>	variety of coastal habitats, such as beaches, salt marshes, and mudflats	P2
7	Reddish Egret	<i>Egretta rufescens</i>	occurs almost exclusively along coastal lagoons, beaches, and estuaries	P2
8	Seaside Sparrow	<i>Ammodramus maritimus</i>	found in salt and brackish marsh savannas	P2
<u>AMPHIBIANS</u>				
9	Eastern Tiger Salamander	<i>Ambystoma tigrinum tigrinum</i>	occur in high-quality longleaf pine (<i>Pinus palustris</i>) forests of the Coastal Plain	P2
10	Gopher Frog	<i>Lithobates capito</i>	found in open longleaf pine-scrub oak forests on sandy soils	P1
11	Mississippi Gopher Frog	<i>Lithobates sevosus</i>	found in open longleaf pine-scrub oak forests on sandy soils	P1
12	One-Toed Amphiuma	<i>Amphiuma pholeter</i>	Found in organic muck in alluvial swamps of larger streams, the One-toed Amphiuma is known only from Baldwin, Covington, and Mobile counties in Alabama	P2
13	Reticulated Flatwood Salamander	<i>Ambystoma bishop</i>	found in pine flatwoods in the southernmost tier of counties in Alabama	P1
14	River Frog	<i>Lithobates heckscheri</i>	River Frog is known only from six locations in the extreme southern portion of the lower Coastal Plain in Mobile, Baldwin, Escambia, and Henry counties. It can be found along rivers and smaller streams and in river floodplains	P1

15	Small Mouthed Salamander	<i>Ambystoma texanum</i>	most commonly found in bottomland forests and wetlands that adjoin floodplains	P2
16	Southern Dusky Salamander	<i>Desmognathus auriculatus</i>	found in swampy, mucky, wet places in floodplain sloughs	P1
<u>CRAYFISH</u>				
18	Speckled Burrowing Crayfish	<i>Creaserinus danielae</i>	found in pine flatwoods in meadows, swamps, and seepage areas along small tributaries, often associated with pitcher plant (<i>Sarracenia</i>) bogs of the Southern Pine Hills, Coastal Lowlands, and Alluvial Deltaic Plain	P2
<u>MAMMALS</u>				
19	Marsh Rabbit	<i>Sylvilagus palustris</i>	occupies habitats supporting brackish marshes along coastal areas and barrier islands in addition to freshwater marshes associated with rivers, lakes and swamps	P2
<u>REPTILES</u>				
20	Gulf Saltmarsh Watersnake	<i>Nerodia clarkia</i>	the only snake that normally inhabits the coastal salt marsh habitats of the Gulf Coast states.	P2
21	Mimic Glass Lizard	<i>Ophisaurus mimicus</i>	strongly associated with the longleaf pine-wiregrass ecosystem, including pine flatwoods, savannas, and hillside seepage bogs. Known to occur in Mobile, Baldwin, and Covington counties. Habitat loss and fire suppression have negatively impacted the species.	P1

A query of the Alabama Department of Conservation and Natural Resources, State Lands Division, Natural Heritage Program database indicates the following State Protected species reported from the Weeks Bay wetlands system. P2 species in **bold**. Many of these species may benefit from the proposed habitat restoration and management actions.

COMMON NAME	GENUS SPECIES	GROUP	STATUS
Reddish Egret	<i>Egretta rufescens</i>	Bird	State Protected
Louisiana Seaside Sparrow	<i>Ammospiza maritima</i>	Bird	State Protected
Spotted Sandpiper	<i>Actitis macularius</i>	Bird	State Protected
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Bird	State Protected
Anhinga	<i>Anhinga anhinga</i>	Bird	State Protected
American Pipit	<i>Anthus rubescens</i>	Bird	State Protected
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Bird	State Protected
Great Egret	<i>Ardea alba</i>	Bird	State Protected
Great Blue Heron	<i>Ardea herodias</i>	Bird	State Protected
Tufted Titmouse	<i>Baeolophus bicolor</i>	Bird	State Protected
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Bird	State Protected
Cattle Egret	<i>Bubulcus ibis</i>	Bird	State Protected
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Bird	State Protected
Red-shouldered Hawk	<i>Buteo lineatus</i>	Bird	State Protected
Green Heron	<i>Butorides virescens</i>	Bird	State Protected
Northern Cardinal	<i>Cardinalis cardinalis</i>	Bird	State Protected
Turkey Vulture	<i>Cathartes aura</i>	Bird	State Protected
Hermit Thrush	<i>Catharus guttatus</i>	Bird	State Protected
Gray-cheeked Thrush	<i>Catharus minimus</i>	Bird	State Protected
Swainson's Thrush	<i>Catharus ustulatus</i>	Bird	State Protected
Black Tern	<i>Chlidonias niger</i>	Bird	State Protected
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	Bird	State Protected
Marsh Wren	<i>Cistothorus palustris</i>	Bird	State Protected
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Bird	State Protected
Black Vulture	<i>Coragyps atratus</i>	Bird	State Protected
Blue Jay	<i>Cyanocitta cristata</i>	Bird	State Protected
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Bird	State Protected
Gray Catbird	<i>Dumetella carolinensis</i>	Bird	State Protected
Swallow-tailed Kite	<i>Elanoides forficatus</i>	Bird	State Protected
Acadian Flycatcher	<i>Empidonax virescens</i>	Bird	State Protected
Common Yellowthroat	<i>Geothlypis trichas</i>	Bird	State Protected
Barn Swallow	<i>Hirundo rustica</i>	Bird	State Protected
Caspian Tern	<i>Hydroprogne caspia</i>	Bird	State Protected

Wood Thrush	<i>Hylocichla mustelina</i>	Bird	State Protected
Orchard Oriole	<i>Icterus spurius</i>	Bird	State Protected
Mississippi Kite	<i>Ictinia mississippiensis</i>	Bird	State Protected
Least Bittern	<i>Ixobrychus exilis</i>	Bird	State Protected
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Bird	State Protected
Herring Gull	<i>Larus argentatus</i>	Bird	State Protected
Ring-billed Gull	<i>Larus delawarensis</i>	Bird	State Protected
Orange-crowned Warbler	<i>Leiothlypis celata</i>	Bird	State Protected
Tennessee Warbler	<i>Leiothlypis peregrina</i>	Bird	State Protected
Laughing Gull	<i>Leucophaeus atricilla</i>	Bird	State Protected
Belted Kingfisher	<i>Megaceryle alcyon</i>	Bird	State Protected
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Bird	State Protected
Swamp Sparrow	<i>Melospiza georgiana</i>	Bird	State Protected
Song Sparrow	<i>Melospiza melodia</i>	Bird	State Protected
Northern Mockingbird	<i>Mimus polyglottos</i>	Bird	State Protected
Black-and-white Warbler	<i>Mniotilta varia</i>	Bird	State Protected
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Bird	State Protected
Northern Waterthrush	<i>Parkesia noveboracensis</i>	Bird	State Protected
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Bird	State Protected
Blue Grosbeak	<i>Passerina caerulea</i>	Bird	State Protected
Indigo Bunting	<i>Passerina cyanea</i>	Bird	State Protected
Brown Pelican	<i>Pelecanus occidentalis</i>	Bird	State Protected
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Bird	State Protected
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Bird	State Protected
Summer Tanager	<i>Piranga rubra</i>	Bird	State Protected
Glossy Ibis	<i>Plegadis falcinellus</i>	Bird	State Protected
Carolina Chickadee	<i>Poecile carolinensis</i>	Bird	State Protected
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	Bird	State Protected
Sora	<i>Porzana carolina</i>	Bird	State Protected
Purple Martin	<i>Progne subis</i>	Bird	State Protected
Prothonotary Warbler	<i>Protonotaria citrea</i>	Bird	State Protected
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Bird	State Protected
Eastern Phoebe	<i>Sayornis phoebe</i>	Bird	State Protected
Ovenbird	<i>Seiurus aurocapilla</i>	Bird	State Protected
Blackburnian Warbler	<i>Setophaga fusca</i>	Bird	State Protected
Magnolia Warbler	<i>Setophaga magnolia</i>	Bird	State Protected
Eastern Bluebird	<i>Sialia sialis</i>	Bird	State Protected

Red-breasted Nuthatch	<i>Sitta canadensis</i>	Bird	State Protected
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Bird	State Protected
Pine Siskin	<i>Spinus pinus</i>	Bird	State Protected
American Goldfinch	<i>Spinus tristis</i>	Bird	State Protected
Chipping Sparrow	<i>Spizella passerina</i>	Bird	State Protected
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	Bird	State Protected
Forster's Tern	<i>Sterna forsteri</i>	Bird	State Protected
Least Tern	<i>Sternula antillarum</i>	Bird	State Protected
Barred Owl	<i>Strix varia</i>	Bird	State Protected
Tree Swallow	<i>Tachycineta bicolor</i>	Bird	State Protected
Royal Tern	<i>Thalasseus maximus</i>	Bird	State Protected
Sandwich Tern	<i>Thalasseus sandvicensis</i>	Bird	State Protected
Carolina Wren	<i>Thryothorus ludovicianus</i>	Bird	State Protected
Brown Thrasher	<i>Toxostoma rufum</i>	Bird	State Protected
Willet	<i>Tringa semipalmata</i>	Bird	State Protected
House Wren	<i>Troglodytes aedon</i>	Bird	State Protected
American Robin	<i>Turdus migratorius</i>	Bird	State Protected
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Bird	State Protected
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Bird	State Protected
Yellow-throated Vireo	<i>Vireo flavifrons</i>	Bird	State Protected
White-eyed Vireo	<i>Vireo griseus</i>	Bird	State Protected
Red-eyed Vireo	<i>Vireo olivaceus</i>	Bird	State Protected
Blue-headed Vireo	<i>Vireo solitarius</i>	Bird	State Protected
Canada Warbler	<i>Wilsonia canadensis</i>	Bird	State Protected
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Bird	State Protected
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Bird	State Protected
Great Horned Owl	<i>Bubo virginianus</i>	Bird	State Protected
Broad-winged Hawk	<i>Buteo platypterus</i>	Bird	State Protected
Sanderling	<i>Calidris alba</i>	Bird	State Protected
Chimney Swift	<i>Chaetura pelagica</i>	Bird	State Protected
Killdeer	<i>Charadrius vociferus</i>	Bird	State Protected
Common Nighthawk	<i>Chordeiles minor</i>	Bird	State Protected
Northern Harrier	<i>Circus cyaneus</i>	Bird	State Protected
Northern Flicker	<i>Colaptes auratus</i>	Bird	State Protected
Eastern Wood-Pewee	<i>Contopus virens</i>	Bird	State Protected
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Bird	State Protected
Pine Warbler	<i>Dendroica pinus</i>	Bird	State Protected
Downy Woodpecker	<i>Dryobates pubescens</i>	Bird	State Protected
Little Blue Heron	<i>Egretta caerulea</i>	Bird	State Protected
Snowy Egret	<i>Egretta thula</i>	Bird	State Protected

Tricolored Heron	<i>Egretta tricolor</i>	Bird	State Protected
White Ibis	<i>Eudocimus albus</i>	Bird	State Protected
American Kestrel	<i>Falco sparverius</i>	Bird	State Protected
Common Loon	<i>Gavia immer</i>	Bird	State Protected
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Bird	State Protected
Eastern Screech-Owl	<i>Megascops asio</i>	Bird	State Protected
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	Bird	State Protected
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	Bird	State Protected
Northern Parula	<i>Parula americana</i>	Bird	State Protected
Horned Grebe	<i>Podiceps auritus</i>	Bird	State Protected
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Bird	State Protected
Hooded Warbler	<i>Setophaga citrina</i>	Bird	State Protected
Prairie Warbler	<i>Setophaga discolor</i>	Bird	State Protected
Palm Warbler	<i>Setophaga palmarum</i>	Bird	State Protected
Black-throated Green Warbler	<i>Setophaga virens</i>	Bird	State Protected
Field Sparrow	<i>Spizella pusilla</i>	Bird	State Protected
Common Tern	<i>Sterna hirundo</i>	Bird	State Protected
Eastern Meadowlark	<i>Sturnella magna</i>	Bird	State Protected
Peregrine Falcon	<i>Falco peregrinus</i>	Bird	State Protected
Osprey	<i>Pandion haliaetus</i>	Bird	State Protected
Black Skimmer	<i>Rynchops niger</i>	Bird	State Protected
Brown-headed Nuthatch	<i>Sitta pusilla</i>	Bird	State Protected
Common Ground Dove	<i>Columbina passerina</i>	Bird	State Protected
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	Bird	State Protected
Cooper's Hawk	<i>Accipiter cooperii</i>	Bird	State Protected
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird	State Protected
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Bird	State Protected
Gulf Salt Marsh Snake	<i>Nerodia Fasciata clarki</i>	Reptile	State Protected
Mississippi Diamondback Terrapin	<i>Malaclemys terrapin pileata</i>	Reptile	State Protected
Alligator Snapping Turtle	<i>Macrolemys temmincki</i>	Reptile	State Protected