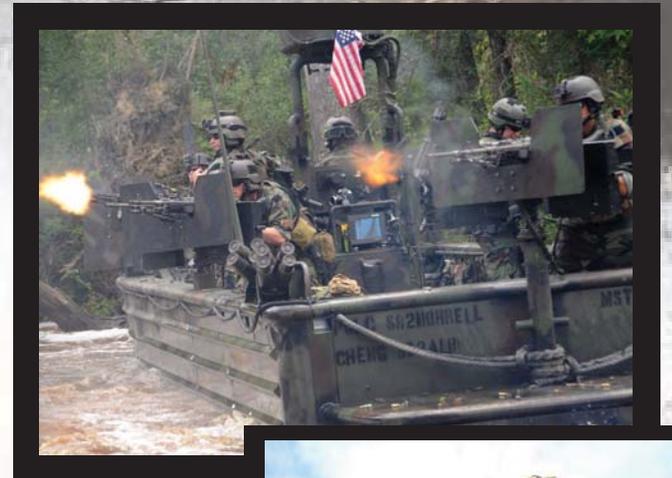
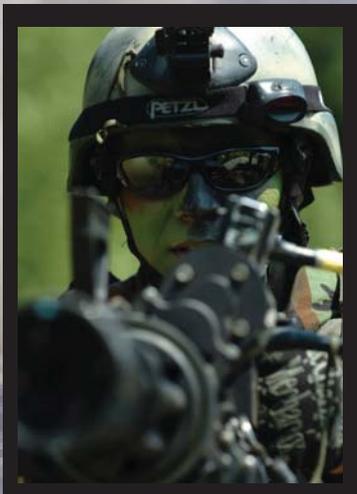


FINAL

Naval Construction Battalion Center (NCBC) Gulfport
Stennis Western Maneuver Area
Stennis Space Center, Mississippi
Integrated Natural Resources Management Plan



FEBRUARY 2011

Final

**NAVAL CONSTRUCTION BATTALION CENTER (NCBC) GULFPORT
STENNIS WESTERN MANEUVER AREA
STENNIS SPACE CENTER, MISSISSIPPI
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

Prepared For:

United States Navy
Naval Facilities Engineering Command Southeast
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FEBRUARY 2011

Final

**NAVAL CONSTRUCTION BATTALION CENTER (NCBC) GULFPORT
STENNIS WESTERN MANEUVER AREA
STENNIS SPACE CENTER, MISSISSIPPI
INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

This Integrated Natural Resources Management Plan (INRMP) provides the initial management plan for the Naval Construction Battalion Center (NCBC) Gulfport's Stennis Western Maneuver Area (WMA). The Sikes Act Improvement Amendment of 1997 requires that the proposed INRMP be prepared in cooperation with the United States (U.S.) Fish and Wildlife Service and the State Fish and Wildlife Agency, and that the management of fish and wildlife in this INRMP reflects mutual agreement of the parties. Mutual agreement is required only with respect to those elements of this INRMP that are subject to the otherwise applicable legal authority (i.e., authority derived from a source other than the Sikes Act, such as the Endangered Species Act) of the U.S. Fish and Wildlife Service and the State Fish and Wildlife Agency to conserve, protect, and manage fish and wildlife resources.

To the extent that resources permit, the U.S. Fish and Wildlife Service, Mississippi Department of Wildlife, Fisheries and Parks, and NCBC Gulfport by signature of their agency representative, do hereby agree to enter a cooperative program for the conservation, protection and management of fish and wildlife resources on the Stennis WMA. The intention of this agreement is to develop functioning, sustainable ecological communities on the Stennis WMA that integrate the interests and mission of the agencies charged with conservation, protection, and management of natural heritage in the public interest. This agreement may be modified and amended by mutual agreement of the authorized representatives of the three agencies. The INRMP will be reviewed on an annual basis by the Stennis WMA Natural Resources Manager and in coordination with the Commander, Navy Region Southeast (CNRSE) staff. A detailed review will also occur at the 5- and 10-year anniversaries to determine necessary revisions or updates, particularly in light of potential effects on the military mission, protected or sensitive resources, and changes in Federal regulations.

By their signatures below, or an enclosed letter of concurrence, all parties grant their concurrence and acceptance of the following document.

Approving Officials:

Installation Commanding Officer

Date

Installation Natural Resources Manager

Date

Regional Environmental Coordinator

Date

Natural Resources Manager – NAVFAC Southeast

Date

U.S. Fish and Wildlife Service

Date

Mississippi Department of Wildlife, Fisheries, and Parks

Date

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EXECUTIVE SUMMARY

ES.1 Type of Document

This is an Integrated Natural Resources Management Plan (INRMP).

ES.2 Purpose of Document

The purpose of this document is to meet statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, Nov. 18, 1997, 111 Stat 2017-2019, 2020-2022. In November 1997, the Sikes Act, 16 United States Code (U.S.C.) § 670a *et seq.*, was amended to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement INRMPs for each military installation in the United States (U.S.) unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. The U.S. Department of the Navy (Navy) has prepared this INRMP for Naval Construction Battalion Center (NCBC) Gulfport for the management of Naval Special Operations Forces Training Range (Stennis Western Maneuver Area [WMA]), Hancock County, Mississippi.

The INRMP is a long-term planning document to guide the installation commander in the management of natural resources to support the installation mission, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The primary purpose of the INRMP is to ensure that natural resources conservation measures and military operations on the installation are integrated and consistent with stewardship and legal requirements. This INRMP covers a 10-year period, but is reviewed annually, and has the flexibility to accommodate changes in natural resources/ecosystem management and military mission.

ES.3 Goals and Objectives of the INRMP

The development and implementation of the INRMP is a dynamic, multidisciplinary planning process that incorporates as its primary goal the support and maintenance of the military mission while managing, protecting, and enhancing the biological integrity of military lands and water. Furthermore, the INRMP creates an ecosystem-based

conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides military personnel access to natural resources subject to safety and military security considerations. The management objectives are to integrate land management, forest management, fish and wildlife management, and management for outdoor recreational opportunities, as practicable and consistent with the military mission and established land uses.

ES.4 Projects of the INRMP

Projects are discrete actions for fulfilling a particular goal or objective. Projects may be required in order for Stennis WMA to fulfill regulatory requirements regarding natural resources management, enhance existing measures for ensuring compliance, or support or sustain military training. Projects currently planned are shown in Table ES-1.

Funding for implementation of the INRMP will come from the Commander, Naval Installations Command or Naval Facilities Engineering Command natural resources fund sources. The natural resources programs and projects described in this INRMP are divided into mandatory and stewardship categories to reflect implementation priorities (Table ES-2). Funding will be acquired to implement Department of Defense mandatory projects in the most timely manner possible. Stewardship projects will be funded through the Installation operations and management budget and other fund sources identified in partnerships with Federal and state resources agencies.

ES.5 Physical Environment and Ecosystems

The Stennis WMA is located in western Hancock County, with the majority of the installation within the floodplain of the East Pearl River. Habitat adjacent to the East Pearl River consists of wetlands with a mixture of bottomland hardwoods, pine hardwoods and emergent wetlands. The topography is relatively flat over most of the Stennis WMA, with higher land adjacent to the east side of the area along a state highway. There has been extensive mining for sand and fill dirt in the past, and several active surface mines are present. Due to the location within the National Aeronautical and Space Administration (NASA) Stennis Space Center (SSC) noise buffer zone, there is no development or habitation within the Stennis WMA, and none is allowed. The

Table ES-1. Projects to be Implemented During Fiscal Years 2010 through 2017 in Support of the INRMP

Fiscal Year(s)	Project (EPR #)	Management Action	Project	Program Element Support
2010-2017	Project 1 (62604WBMON)	Biological Monitoring	RTE species and other species surveys	ESA compliance
2012-2017	Project 2 (62604WFIRE)	Land and Fire Management	Conduct prescribed burning and wildland fire control management	RDP
2012-2017	Project 3 (62604WINV1)	Invasive Plant Control	Inventory and conduct eradication/control plan for invasive plant species	RDP
2012-2017	Project 4 62604WSPHD)	Species Protection and Habitat Development	Fund species-specific habitat maintenance for RTE species	ESA compliance
2012-2017	Project 5 (62604WTSIF)	Timber Stand Improvement	Herbicide, fertilizer, fire and mechanical improvements for timber management	RDP
2012-2017	Project 6 (62604WWILD)	Nuisance Wildlife Management	Control/eradicate exotic animal species	ESA and RDP
2014	Project 7 (62604WBSUR)	Neotropical Migratory Bird Surveys*	Inventory neotropical migratory birds	ESA and MBTA compliance

Range Development Plan (RDP)
 Endangered Species Act (ESA)
 Migratory Bird Treaty Act (MBTA)

*Non-recurring; all others are recurring funds

Table ES-2. Anticipated Project Implementation and Maintenance Costs for Fiscal Years 2010 through 2017

Project No.	Project Description	FY 2010*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	Total Cost
1	Biological Monitoring	\$175,000	\$25,000	\$25,450	\$25,908	\$150,000	\$26,849	\$27,332	\$455,539
2	Land/Fire Management		\$65,000	\$48,225	\$49,093	\$49,997	\$50,876	\$51,972	\$315,163
3	Invasive Plant Control		\$50,000	\$50,900	\$51,816	\$52,749	\$53,698	\$54,665	\$313,828
4	Species Protection - Habitat Development		\$20,000	\$20,360	\$20,726	\$21,100	\$21,479	\$21,866	\$125,531
5	Timber Stand Improvement		\$13,500	\$13,743	\$13,990	\$14,242	\$14,449	\$14,760	\$84,684
6	Nuisance Wildlife Management		\$25,000	\$25,450	\$25,908	\$26,374	\$26,849	\$27,332	\$156,913
7	Neotropical Migratory Bird Surveys				\$40,000				\$40,000
Total Cost		\$175,000	\$198,500	\$184,128	\$227,441	\$314,462	\$194,200	\$197,927	\$1,491,658

* A contract is underway to conduct a biological inventory of the Stennis WMA.

Notes:

Estimated project costs and execution are dependent on natural resources management priorities and amounts are subject to available funding allocations.

Stennis WMA may eventually consist of approximately 5,220 acres. To date, approximately 3,483 acres have been purchased, and the remainder is scheduled to be purchased in phases over a period of approximately 15 years depending on the availability of funding.

The biotic environment is typical of a marginal floodplain, with areas of hardwood forest, extensive invasive species infestation (primarily Chinese tallow tree [*Triadica schifera*]), open water in the form of streams and rivers, as well as ponds left over from abandoned surface mines, and some open agricultural fields. A goal of the INRMP is to restore the habitat to near natural conditions.

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*) and ringed map turtle (*Graptemys oculifera*) are known to occur in the East Pearl River, and possibly Mike's River within the Stennis WMA; the measures proposed in this INRMP are expected to protect these species' habitat by improvements to quantify and qualify of stormwater runoff.

Although it is unlikely, there is the potential that activities within the Stennis WMA could generate ground disturbance (dredging and/or filling) that could impact jurisdictional wetlands or waters of the U.S. regulated by the U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. In the event that physical and/or natural resources are impacted, the Navy would coordinate with the applicable regulatory agency to fulfill regulatory requirements.

ES.6 Mission Sustainability

The goal at Stennis WMA is to maintain and enhance the capability of military lands to support the training mission, while conserving the area's natural resources. Implementation of the INRMP by NCBC Gulfport will primarily focus on enhancing and sustaining the military mission, but at the same time NCBC Gulfport will implement projects designed to enhance and protect the natural resources within the Stennis WMA, since the natural habitat is necessary for success of the military mission. Issues such as uncontrolled erosion and downstream public sedimentation, inappropriate use of herbicides, and unplanned public use of Mike's River must be addressed to ensure that enforcement actions by regulatory agencies do not affect the military training mission.

Currently, the only ongoing project is the Rare, Threatened, and Endangered (RTE) species survey on the Stennis WMA (Project 1), in compliance with the Endangered Species Act (ESA). This survey effort will also address the presence/absence of invasive flora/fauna species and will provide management prescriptions for enhancing the native environment while promoting mission objectives. During the course of activities dedicated to maintaining and enhancing the Stennis WMA for the military mission, many of the remaining projects will be implemented as the need arises.

Soil and sand resources present in the active surface mines in the Stennis WMA will be utilized as needed to maintain and improve the training range for the military mission. Some old abandoned surface mine areas may be evaluated for rehabilitation. Other environmental concerns, such as wetlands and non-point source pollution, are being addressed to ensure that the Stennis WMA is in compliance with Federal and State mandates and requirements.

Table ES-3, on the following page, provides a cross reference of the discussions presented in this INRMP and the April 2006 Navy Guidance for INRMPs. Sections that are not applicable for the Stennis WMA are also identified.

Table ES-3. Cross Reference of OSD Format to Format Used in this INRMP

OSD recommended INRMP format	Cross reference to required information in this document
Cover Page	Cover Page
Signature Page	Signature Page
Executive Summary	Executive Summary
Table of Contents	Table of Contents
Chapter 1 - Overview	Chapter 1.0 – Overview
1.a – Purpose	1.1 – Purpose of Plan
1.b – Scope	1.2 – Scope
1.c – Goals and Objectives Summary	1.3 – Goals and Objectives
1.d – Responsibilities of Stakeholders	1.4 – Responsibilities
1.e – Commitment of Regulatory Agencies	1.8 – Commitment of Regulatory Agencies
1.f – Authority	1.5 – Authority
1.g – Stewardship of Compliance Statement	1.6 – Sustainability and Compliance
1.h – Review and Revision Process	1.7 – Review and Revision Process
1.i – Management Strategies	1.9 – Management Strategy
1.j – Integration with other Plans	Not applicable
Chapter 2 – Current Conditions and Use	Chapter 2.0 – Current Conditions and Use
2.0 – Installation Information	2.1 – Installation Information
2.a.1 – Location Statement (concise)	
2.a.2 – Regional Land Use	2.1.7 – Regional Land Uses
2.a.3 – History and Pre-Military Land Use (abbreviated)	2.1.6 – Abbreviated History and Pre-Military Land Use
2.a.4 – Military Mission (concise)	2.1.2 – Military Mission
2.a.5 – Operations and Activities	2.1.5 – Operations and Activities
2.a.6 – Constraints Map	2.1.3 – Constraints Map
2.a.7 – Opportunities Map	2.1.4 – Opportunities Map
2.b – General Physical Environment and Ecosystems	2.2 – General Physical Environment and Ecosystems
2.c – General Biotic Environment	2.3 – Biotic Environment
2.c.1 – Threatened and Endangered Species and Species of Concern	2.3.3 – Rare, Threatened and Endangered Species
2.c.2 – Wetlands and Deep Water Habitats	2.3.1 – Aquatic Habitats / 2.3.4 – Waters of the U.S. and Wetlands
2.c.3 – Fauna	2.3.5 – Fauna
2.c.4 - Flora	2.3.2 – Terrestrial Habitat
Chapter 3 – Environmental Management Strategy and Mission Sustainability	Chapter 3.0 – Environmental Management Strategy and Mission Sustainability
3.a – Supporting Sustainability of the Military Mission and the Natural Environment	3.1 – Supporting Sustainability of the Military Mission and the Natural Environment
3.a.1 – Integrate Military Mission and Sustainability Land Use	3.1.1 – Military and Mission and Sustainable Land Use
3.a.2 – Define Impact to the Military Mission	3.1.2 – Defining Impact on the Military Mission
3.a.3 – Describe Relationship to Range Complex Management Plan or other Operational Area Plans	3.1.3 – Relationship to Range Complex Management Plan
3.b – Natural Resources Consultation Requirements (Section 7, EFH)	3.2 – Natural Resource Consultation Requirements
3.c – NEPA Compliance	3.3 – Planning for National Environmental Policy Act Compliance
3.d – Opportunities for Beneficial Partnerships and Collaborative Resource Planning	3.4 – Beneficial Partnerships and Collaborative Resource Planning

Table ES-3, continued

OSD recommended INRMP format	Cross reference to required information in this document
3.e – Public Access and Outreach	3.5 – Public Access and Outreach
3.e.1 – Public Access and Outdoor Recreation	3.5.1 – Public Access and Outreach
3.e.2 – Public Outreach	3.5.2 – Public Outreach
3.e.3 – Encroachment Partnering	3.6 – Encroachment Partnering
3.e.4 – State Comprehensive Wildlife Plans (SCWP) Integration	3.7 – State Comprehensive Wildlife Plans (SCWP)
Chapter 4 – Program Elements	Chapter 4.0 – Program Elements
4.a – Threatened and Endangered Species and Species Benefit, Critical Habitat, Species of Concern Management	4.3.2 – Rare, Threatened and Endangered (RTE) Species
4.b – Wetlands and Deep Water Habitats	4.1.1 – Wetland Management
4.c – Law Enforcement	Not Applicable
4.d – Fish and Wildlife	4.3 – Fish and Wildlife Management
4.e – Forestry	4.2 – Forest Management
4.f – Vegetation	4.1.4 – Vegetative Management
4.g – Migratory Birds	4.3.3 – Migratory Birds
4.h – Invasive Species	4.1.5 – Invasive Species Management
4.i – Pest Management	Not Applicable
4.j – Land Management	4.1 – Land Management
4.k – Agricultural Outleasing	Not Applicable
4.l – GIS Management, Data Integration, Access, and Reporting	4.5.2 – Geographical Information Systems, Data Integration, Access, and Reporting
4.m – Outdoor Recreation	4.4 – Outdoor Recreation
4.n – Bird Aircraft Strike Hazard	4.3.4 – Bird Aircraft Strike Hazard
4.o – Wildland Fire	4.2.2 – Wildland Fire Management
4.p – Training of Natural Resource Personnel	4.5 – Training
4.q – Coastal/Marine	Not Applicable
4.r – Floodplains	4.1.3 – Floodplain Management
4.s – Other Leases	Not Applicable
Chapter 5 - Implementation	Chapter 5.0 – Implementation
5.a – Summary of Project Prescription Development Process	5.1 – Plan Implementation and Review
5.b – Achieving No Net Loss	5.2 – Planning and Mission Sustainability
5.c – Use of Cooperative Agreements	5.3 – Partnerships
5.d – Funding Process	5.4 - Funding
Appendix 1. Acronyms	Appendix A. Abbreviations and Acronyms
Appendix 2. Detailed Natural Resources Prescriptions	Appendix H. Copies of Pertinent Memos and Guidelines
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Appendix 5. Research Requirements	Not Applicable
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Appendix 7. Benefits for Endangered Species	Not Applicable
Appendix 8. Critical Habitat	Not Applicable

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1.0 OVERVIEW

1.1 PURPOSE OF PLAN

The purpose of this plan is to meet statutory requirements under the Sikes Act Improvement Act (SAIA), Public Law 105-85, Div. B. Title XXIX, Nov. 18, 1997, 111 Stat 2017-2019, 2020-2022. The Sikes Act, 16 United States code (U.S.C.) § 670a *et seq.*, was amended in November 1997 to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the preparation and implementation of Integrated Natural Resources Management Plans (INRMP) for each military installation in the United States (U.S.) unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. These plans are reviewed every year by the military installations in cooperation with the state wildlife agency and U.S. Fish and Wildlife Service (USFWS) and modified as necessary. The INRMP is a long-term planning document to guide the installation commander in the management of natural resources to support the installation mission, while protecting and enhancing installation resources for multiple use, sustainable yield, and biological integrity. The primary purpose of the INRMP is to ensure that natural resources conservation measures and military operations on the installation are integrated and consistent with stewardship and legal requirements.

INRMPs are developed to balance the use of installation resources utilizing an ecosystem management approach, taking into account mission requirements and other land use activities affecting the installation. INRMPs must also be presented to the local community for public comment and prepared in cooperation with the USFWS and state fish and game agency to reflect mutual agreement on the fish and wildlife management aspects of the plan.

The U.S. Department of the Navy (Navy) is preparing this INRMP for the Naval Construction Battalion Center (NCBC) Gulfport, Stennis Western Maneuver Area (WMA) (hereafter called the Stennis WMA) to comply with the SAIA and with Department of Defense (DoD) Instruction (DoDINST) 4715.3. This INRMP also complies with the

Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1C, Chapter 22, Assistant Secretary of the Navy (Installations and Environment) Memorandum of 12 August 1998, Office of the Under Secretary of Defense (OUSD) Memorandum of 21 September 1998, Chief of Naval Research letter Ser N45D/8U589016 of 25 September 1998, Chief of Naval Operations (CNO) letter Ser N456F/8U589129 of 30 November 1998, and OUSD Memorandum of 14 August 2006.

Section 1 provides a general overview of the purpose and intent of the INRMP, the processes for review, implementation of environmental management strategy, and revisions to the plan. Section 2 describes the current conditions and uses, including the general physical and biotic environment. Section 3 discusses the military mission, mission sustainability, environmental compliance, and partnerships. Section 4 outlines the ecosystem management elements and relates them to the goals, objectives, strategies, initiatives, and projects. Section 5 describes the INRMP implementation including projects, cooperative agreements and funding. A list of acronyms and abbreviations used in the INRMP is provided as Appendix A. Appendix B provides a list of references used in the preparation of this INRMP.

1.2 SCOPE

The Stennis WMA is located within the noise buffer zone of the Stennis Space Center (SSC) in southwest Mississippi (Figure 1-1). The scope of the INRMP includes all lands currently managed by NCBC Gulfport at the Stennis WMA (Figure 1-2), creating the framework for the implementation of a natural resources management program to provide for the conservation and rehabilitation of natural resources. Appropriate and effective management of natural resources on Navy lands will be achieved in accordance with the principles and practices of ecosystem management. It is not a pest management plan, hazardous waste plan, or stormwater retention plan. This INRMP has a dual purpose of complying with environmental laws and regulations while supporting the military mission of NCBC Gulfport, Naval Special Operations Forces (SOF), and the Navy.

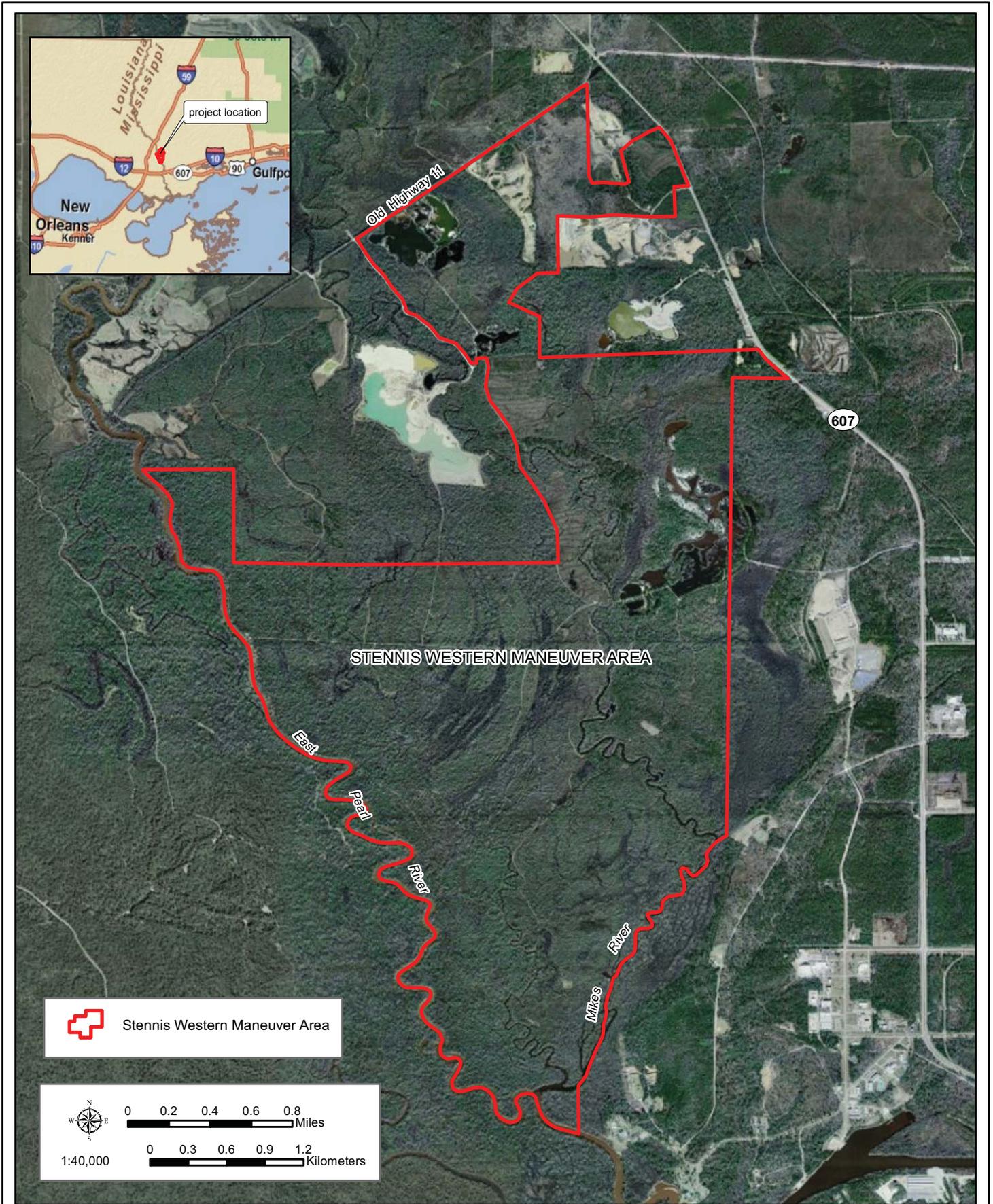


Figure 1-2: Project Area Map

1.3 GOALS AND OBJECTIVES

The development and implementation of the INRMP is a dynamic, multidisciplinary planning process that incorporates as its primary goal the support and maintenance of the military mission while managing, protecting, and enhancing the biological integrity of military lands and water. Furthermore, the INRMP creates an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides military personnel access to natural resources subject to safety and military security considerations. The management objectives are to integrate land management, forest management, fish and wildlife management, and management for outdoor recreational opportunities, as practicable and consistent with the military mission and established land uses.

1.4 RESPONSIBILITIES

The Commander, Navy Region Southeast (CNRSE) is responsible for ensuring that the Stennis WMA INRMP complies with DoD, Navy, and CNO policy and associated National Environmental Policy Act (NEPA) document preparation, revision, and implementation, and for ensuring that the Stennis WMA INRMP undergoes annual reviews and updates projects, goals, and objectives as needed to provide integrated adaptive conservation management. CNRSE is also responsible for programming of resources to maintain, implement, and periodically revise the Stennis WMA INRMP.

The NCBC Gulfport Commanding Officer (CO) is responsible for the preparation, completion, and implementation of this INRMP and associated NEPA documents for Stennis WMA and systematically applying the conservation practices set forth in this INRMP. The CO's role is to act as the steward of natural resources under his jurisdiction and integrate natural resources management requirements into the daily decision-making process; designate a Stennis WMA Natural Resources Manager (NRM) that is responsible for the management efforts related to the preparation, revision, implementation and funding for INRMPs, as well as coordination with installation trainers, subordinate commands and installations; ensure that natural resources

management and this INRMP comply with all natural resource-related legislation, Executive Orders (EO) and Executive Memorandums, and DoD, Secretary of the Navy (SECNAV), Navy, and CNO directives, instructions and policies; involve appropriate tenant, operational, training, or research and development (R&D) commands in the INRMP review process to ensure no net loss of military mission; involve appropriate Navy Judge Advocate General (JAG) or Office of the General Counsel (OGC) Legal Counsel to provide advice and counsel with respect to legal matters related to natural resources management and this INRMP; and, endorse this INRMP via CO signature.

1.5 AUTHORITY

The INRMP is written to meet the requirements of the SAIA of 1997 (16 U.S.C. Sec. 670a *et seq.*) and the requirements of the DoD Environmental Conservation Program (DoDINST 4715.3). It also incorporates guidance given in OPNAVINST 5090.1C, the Navy Environmental Protection and Natural Resources Manual and the Naval Facilities Engineering Command (NAVFAC) Real Estate Procedural Manual (NAVFAC P-73).

1.6 SUSTAINABILITY AND COMPLIANCE

The natural resources management program at Stennis WMA is responsible for meeting sustainability needs or compliance requirements. Sustainability projects are based upon the land management responsibility of the Navy and are not required to be implemented to meet regulatory needs. Compliance projects are mandatory, and implementation is required to comply with laws and regulations that apply to lands and operations at NCBC Gulfport Stennis WMA.

Natural resources management NCBC Gulfport considers its sustainability responsibilities during the planning and analyses of natural resources and training projects at Stennis WMA. For example, potential erosion and mitigation measures to eliminate or reduce erosion would be considered when planning for the construction of a new range or facility. By considering its sustainability responsibilities during the planning and analysis phase, NCBC Gulfport would eliminate or minimize potential soil erosion and sedimentation in the East Pearl River and other waterbodies on the Installation.

1.7 REVIEW AND REVISION PROCESS

NCBC Gulfport must complete an annual evaluation of the effectiveness of this INRMP. The evaluation can be readily completed using the web-based Metrics Builder tool on the Natural Resources Data Call Station website located at <https://clients.emainc.com/dcs/navfac/>. The Metrics Builder provides the means to evaluate performance in seven areas:

- INRMP Implementation
- Partnership/Cooperation and Effectiveness
- Team Adequacy
- INRMP Impact on the Installation Mission
- Status of Federally Listed Species and Critical Habitat
- Ecosystem Integrity
- Fish and Wildlife Management and Public Use

Annual reviews of the Stennis WMA INRMP will include revisions as appropriate.

1.8 COMMITMENT OF REGULATORY AGENCIES

The USFWS and the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) are integral partners in the INRMP development, review, and revision process for NCBC Gulfport Stennis WMA. The USFWS and MDWFP cooperate in the development of the INRMP and participate in the annual reviews and revisions. NCBC Gulfport will coordinate with the USFWS and MDWFP as partners with the Navy by implementing their recommendations in future reviews and revisions of the Stennis WMA INRMP.

In the future, coordination with Louisiana Department of Wildlife and Fisheries (LDWF) may be sought since the LDWF manages the Pearl River Wildlife Management Area along the East Pearl River adjacent to the Stennis WMA.

1.9 MANAGEMENT STRATEGY

In the 1990s, the DoD reviewed its natural resources management philosophy in an attempt to improve performance through new management techniques. On 8 August 1994, the OUSD issued a policy directive for the *Implementation of Ecosystem*

Management in the DoD. This policy directive provides an important change in the philosophy of how DoD will manage its lands/resources. The policy directive states:

“...ecosystem management will include: a shift in focus from the protection of individual species to management of ecosystems (ecological approach); formation of partnerships to achieve shared goals (partnerships); public participation in decision making (participation); use of the best available science in decision making (information); implementation of adaptive management techniques (adaptive management)” (DoD 1994).

An ecosystem is a dynamic and natural complex of living organisms interacting with each other and with their associated nonliving environment. Ecosystem management is a goal-driven approach to managing natural resources that support present and future mission requirements; preserves ecosystem integrity; is at a scale compatible with natural processes; is cognizant of nature's time frames; recognizes social and economic viability within functioning ecosystems; is adaptable to complex and changing requirements; and is realized through effective partnerships among private, local, state, tribal, and Federal interests. Ecosystem management is a process that considers the environment as a complex system functioning as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The INMRP and the implementation of its management plans and projects provides for ecosystem management at Stennis WMA. The INRMP takes into account specific projects and management techniques that serve to manage the ecosystem and maintain biological diversity at a landscape scale. The development and implementation of the INRMP is a dynamic, multidisciplinary planning process that incorporates as its primary goal the support and maintenance of the military mission while managing, protecting, and enhancing the biological integrity of military lands and waters.

Natural resource management on Stennis WMA is achieved through adaptive and cooperative management strategies. Adaptive management is a systematic approach for continually improving management practices by learning from the outcome of projects, programs and other experiences. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into

management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices. The Metrics Builder provides the means to evaluate performance in INRMP reviews and updates for Stennis WMA. The Metrics Builder can be applied to completed and ongoing projects, natural resource practices, and new proposals.

Cooperative management refers to management strategies between government agencies for responsible resource stewardship. In cooperative management, representatives of government agencies share information, resources, and responsibility. The USFWS, MDWFP, and the Navy will cooperatively manage the natural resources at NCBC Gulfport Stennis WMA and strive to meet the military mission, while conserving and enhancing the natural resources of the base.

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2.0 CURRENT CONDITIONS AND USE

2.1 INSTALLATION INFORMATION

2.1.1 General Description

The NCBC Gulfport Stennis WMA is located in the western quadrant of the area previously occupied/identified as the Stennis Space Center (SSC) noise buffer in western Hancock County, Mississippi (see Figure 1-1). The Stennis WMA is approximately 40 miles northeast of New Orleans, Louisiana, and 30 miles west of Gulfport, Mississippi. This INRMP currently covers 3,483 acres of land for the Stennis WMA (see Figure 1-2). Approximately 5,220 acres are ultimately proposed to comprise the Stennis WMA; however, due to real estate administrative requirements and project funding, the Navy currently owns approximately 3,483 acres. As additional real estate is acquired, the INRMP will be updated to include the new property and its unique natural resources and management needs.

2.1.2 Military Mission

The Stennis WMA was acquired to provide additional training capabilities for the Naval SOF as part of the Naval Special Warfare (NSW) Command. The NSW is a component of the Special Operations Command (SOCOM) and its primary mission areas include unconventional warfare, direct action, special reconnaissance, and foreign internal defense. The NSW Command also conducts security assistance, counterdrug operations, personnel recovery, and hydrographic reconnaissance (NSW 2004). NSW Command has four groups: Group 4 is headquartered in Naval Amphibious Base, Little Creek, Virginia and has command over all Special Boat Teams (SBT-12, San Diego; SBT-20, Little Creek; and SBT-22, Stennis). Naval Small Craft and Training School (NAVSCIATTS) is under Group 4 as well; however, NAVSCIATTS provides training only, while SBT-22 trains and deploys mission-ready teams. NCBC Gulfport is the land manager for the Stennis WMA; however, SBT-22/Group 4 is responsible for conducting and supporting worldwide operations and taskings in a riverine environment. SOF train on the East Pearl River, Mike's River, and their tributaries, which provide dense vegetation, water and land maneuver areas, and near "jungle" climatic conditions.

SBT training includes Special Warfare Combatant Crews (SWCC), which are primarily boat operators. SBT-22 mission objectives include (NSW 2004):

- Prepare units to conduct special maritime operations in riverine environments anywhere in the world.
- Support SOF employment in operational plans and contingencies.
- Develop operational employment concepts for riverine special operations and train SOF how to employ those concepts.

The Stennis WMA is located within the SSC's noise buffer zone, and is therefore protected from encroachment and noise issues. Although SBT-22 uses other military installations for specific training, the vast majority of its training is conducted at the Stennis WMA. The Stennis WMA is used for Unit Level Training (ULT) and Squadron Integration Training (SIT), as well as for other Sea, Air, and Land (SEAL) special training, Federal Bureau of Investigation (FBI) and foreign national troop training. The ULT includes professional development (e.g., language skills) and integrated development and intelligence. The SIT sessions are commanded by a Navy Captain and the training units are comprised of commander, communications, medical, logistics, and other units that would typically make up an entire unit that is to be deployed.

SBT-22's training and deployment capabilities are provided to all theaters using the latest watercraft in the Navy's inventory, the Special Operations Craft Riverine (SOC-R).



Photograph 2-1. SBT-22

The SOC-R is a specially designed 33-foot-long craft powered by two 1000-horsepower diesel engines. SOC-Rs are equipped with .50 cal guns to protect troops during patrol, insertions and extractions activities. SBT-22 currently has 20 SOC-Rs, which are capable of supporting four active riverine units. Typical SBT-22 training operations include riverine patrol and interdiction, insertion and extraction of SEALs in riverine environments, surveillance of

enemy rivers and waterways, and training of foreign military units in riverine patrol tactics. Training scenarios for riverine patrol and interdiction are designed to develop skills in boat handling during high-speed operation and during boarding, search, and seizure of suspect vehicles. Surveillance training is for skills in concealing watercraft and

monitoring traffic in enemy rivers and waterways. Personnel learn tactics to escape detection as well as defense maneuvers to use if detected or ambushed.

NAVSCIATTS' mission is to promote increased levels of operational capabilities and readiness in allied naval and coast guard units through formal courses of instruction and mobile training teams in the operation of small craft including employment, maintenance and logistic support. Course offerings may vary on an annual basis based upon the needs of the participating nations.

NAVSCIATTS typically provides four Patrol Officer (Littoral/Riverine) courses annually. Each course accommodates 24 students and runs 9 weeks. Waterborne evolutions are conducted cold or with blank fire. The waterborne evolutions take place on the Waste House and East Pearl Rivers, Shell Beach, and Mississippi Sound. Other frequent training sites include the NSW Group-4 Finger Piers, Cypress House and Rouchon House which are south of the Stennis WMA. The Patrol Boat Light (PBL) is the training craft used for all course offerings in the riverine environment.

2.1.3 Constraints Map

The future expansion of the Stennis WMA beyond the proposed full build-out to 5,220 acres is somewhat limited. The current area is bound by the East Pearl River to the west; Old Highway 11, a county road, to the north; State Highway 607, and SSC to the east; and Mike's River to the south (see Figure 1-2). Any expansion would span county highways, state highways, or rivers. Expansion into the SSC is not an option. Due to the mission requirements discussed below in Section 2.1.5, training areas must be buffered for public safety, especially during the use of short-range ammunition. Expansion along the East Pearl River south of the SSC East Pearl River frontage is limited due to the proximity to Interstate 10. While the Stennis WMA could be expanded to the north, as no residential or commercial displacements would be required, additional funding would be necessary beyond that already programmed for the remaining 1,737 acres. Expansion to the east would encroach into the Pearl River Wildlife Management Area.

2.1.4 Opportunities Map

NCBC Gulfport is currently focused on finalizing the acquisition of land parcels within the proposed boundary of the Stennis WMA. Of the approximately 5,220 acres proposed for the Stennis WMA, 3,483 acres have been acquired (Figure 2-1).

2.1.5 Operations and Activities

The Navy utilizes the Stennis WMA for SOF training associated with two of the three stages of live fire ammunition training (i.e., crawl-walk-run). The crawl and walk stages occur on the Stennis WMA. Training at the crawl level does not include the use of live projectiles or ammunition; however, walk level training can include blank ammunition or plastic bullets (short-range training ammunition [SRTA]).

Typical training operations conducted by Naval SOF at Stennis WMA include riverine patrol and interdiction, insertion and extraction of SOF in jungle and riverine environments, craft concealment and evasion tactics, surveillance of enemy-held rivers and waterways, and training of foreign military units in riverine patrol tactics (NSW 2004). Operational scenarios are practiced during the day and at night once detachments have reached a required level of proficiency (Navy 2000a).

2.1.6 Abbreviated History and Pre-Military Land Use

Historically, the areas where National Aeronautics and Space Administration (NASA) SSC, including the Stennis WMA, are located were very active lumber mill towns surrounded by rich timber stands typical of the coastal plain. In 1832, the East Pearl River Lumber Company began operation in Gainesville, Mississippi, becoming one of the largest lumber suppliers in the antebellum south (Navy 2000a). Logtown was also a significant timber mill town along the East Pearl River.

By 1961, when NASA established SSC in Hancock County, many small towns were relocated beyond the boundary of the SSC. The towns of Gainesville (the county seat of Hancock County), Napoleon, Santa Rosa, Logtown, and Westonia were all relocated to allow for the establishment of what was then known as the Mississippi Test Operations (Navy 2000a).

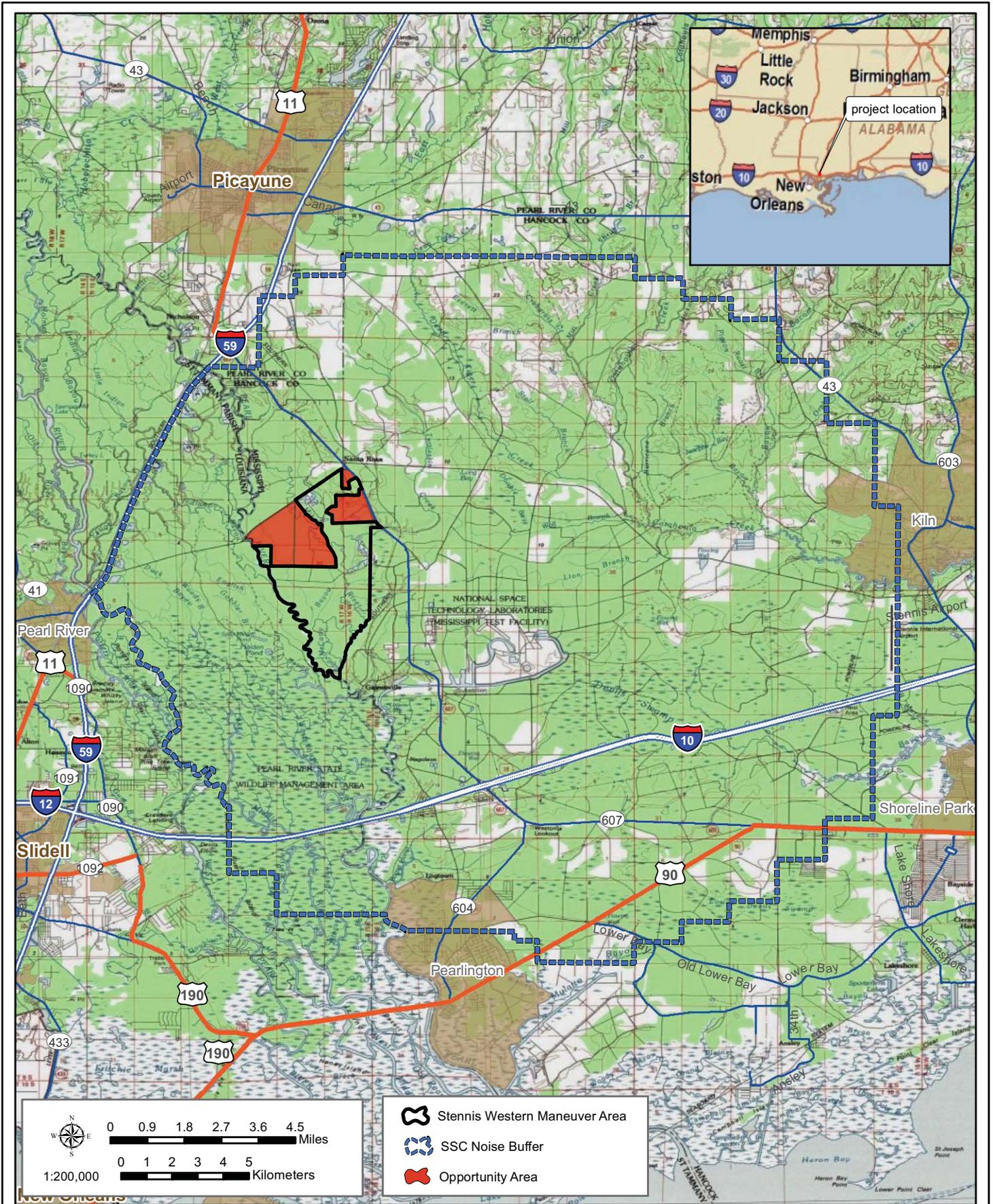


Figure 2-1: Stennis Western Maneuver Area Opportunities Map

2.1.7 Regional Land Uses

Regional land uses in the vicinity of the Stennis WMA are restricted by the SSC buffer zone, which was established to protect civilians and civilian structures from the effects of high-intensity, low-frequency noise generated by the testing of rocket motors at the NASA test facility. The buffer zone consists of easements and government land purchases with restrictions that exclude the construction of habitable structures or any habitation of the SSC buffer zone properties. Because of these restrictions, all land within the SSC buffer zone is solely used for agricultural and forestry activity, wildlife management, including hunting leases, surface mining for soil and aggregate, or as undeveloped forested acreage.

The main SSC campus is developed for industrial and commercial use to support the NASA test facility and other Federal agencies that do not require habitable structures.

Regional land uses beyond the SSC buffer zone include state and Federal wildlife management areas and refuges, commercial timber and gravel mining operations, other commercial development and private residences.

Large portions of the SSC noise buffer zone on the east side of SSC, including the Stennis WMA, are subjected to frequent flooding. The water levels are largely controlled by discharges from the Ross Barnett Reservoir in Jackson, Mississippi. However, other uncontrolled discharges from major tributaries including the Bogue Chitto River, Upper Little Creek and Pushepatapa Creek, also contribute to flooding conditions in the Pearl River basin.

2.2 GENERAL PHYSICAL ENVIRONMENT AND ECOSYSTEMS

2.2.1 Climate

The Stennis WMA is located in a region of moderate climate. The average annual temperature is 67 degrees Fahrenheit (°F). January is usually the coolest month with an average low temperature of 40° F. Freezing temperatures occur an average of 5 days per month from December through February. Maximum temperatures often exceed 90° F from May through September. Annual precipitation averages 66 inches and relative humidity is generally high (Mississippi State Climatologist 2000).

2.2.2 Geology

The geology of Stennis WMA is dominated by a thick sequence of Recent and Quaternary sediments consisting of unconsolidated alluvium deposited by floodwaters of the Pearl River basin. The Pearl River floodplain is carved into a gently sloping terrace of Pleistocene to Pliocene alluvial and near coastal deposits that are dominated by the Citronelle Formation, an alluvial deposit of sands and gravels of late Pliocene to early Pleistocene age. The Citronelle Formation and the resulting soils formed from it are heavily mined in the area for sand and gravel, as well as construction fill dirt. The whole sequence of subsurface strata dips gently toward the south, and the Mississippi Sound. The thickness of the Citronelle Formation is thought to be around 150 feet thick in lower Hancock County, while the Pliocene to Miocene strata as a whole may be as thick as 2,000 feet (Otvos 1973).

2.2.2.1 Physiographic Setting

The Stennis WMA is located within the Gulf Coastal Plain of Mississippi. Physiography is dominated by tidally influenced marshes and river floodplains adjacent to higher elevation areas supported by older eroded sedimentary deposits. The river valleys in the coastal plain were cut into the older strata during prior periods of extensive North American glaciation, when sea level was much lower. The incised river valleys were later filled when the glaciers retreated and sea level rose to its current level. Within the Stennis WMA, the vast majority of the land is located within the East Pearl River floodplain, and the higher elevations along Highway 607 and in the northeast corner of the Stennis WMA represent the original older, eroded landforms.

2.2.2.2 Mineral Resources

The dominant economic mineral resources present within the Stennis WMA are construction fill dirt and sand and gravel deposits. Eight active surface mines are currently developed within the Stennis WMA property to exploit these resources. Numerous older abandoned surface mines are also present and contribute to the rugged topography along Highway 607. Several of the active mines have wash operations to recover clean sand and aggregate for use as construction fill and for masonry components. All of the active mines are regulated by the Surface Mining Division of the Mississippi Department of Environmental Quality (MDEQ). The Mississippi mining regulations require restoration of surface mines by smoothing the post-mine topography

and planting of vegetation to prevent erosion of the mined surfaces and pollution of nearby water bodies. Mine operators are also required to post a bond with the state to ensure that restoration after mining is completed.

Several oil and gas fields are located to the east and south of the Stennis WMA, with production of oil and natural gas from Cretaceous strata. It is unlikely that recoverable oil and gas resources are located under the Stennis WMA, based on current knowledge of the subsurface structures and formations, but that slight possibility exists.

2.2.3 Soil Series and Associations

The Stennis WMA consists predominantly of floodplain associated with the current course of the East Pearl River. Soils present in the Stennis WMA were determined from the Natural Resources Conservation Service (NRCS) soil survey of Hancock County, which was obtained from the Web Soil Survey on the NRCS website (NRCS 2009). The distribution of soil types can be found in Figure 2-2, and the total acreage of each soil type is presented in Table 2-1. All of the soil series listed are located in the northeast corner of the Stennis WMA and along Highway 607, with the exception of the Arkabutla-Rosebloom association, which comprises the majority of the area in the East Pearl River floodplain.

Table 2-1. Soil Types and Acreages Present at Stennis WMA

Soil Type	Total Acreage
Arkabutla-Rosebloom association, frequently flooded	3,061
Atmore silt loam	2
Escambia loam, 0 to 2 percent slopes	55
Eustis loamy fine sand, 2 to 5 percent slopes	15
Harleston fine sandy loam, 0 to 2 percent slopes	< 1
Harleston fine sandy loam, 2 to 5 percent slopes	5
McLaurin fine sandy loam, 2 to 5 percent slopes	20
Poarch fine sandy loam, 2 to 5 percent slopes	26
Ruston fine sandy loam, 5 to 8 percent slopes	18
Saucier fine sandy loam, 0 to 2 percent slopes	21
Saucier fine sandy loam, 2 to 5 percent slopes	67
Saucier fine sandy loam, 5 to 8 percent slopes	63
Smithton fine sandy loam, frequently flooded	3
Water	126
Total	3,483

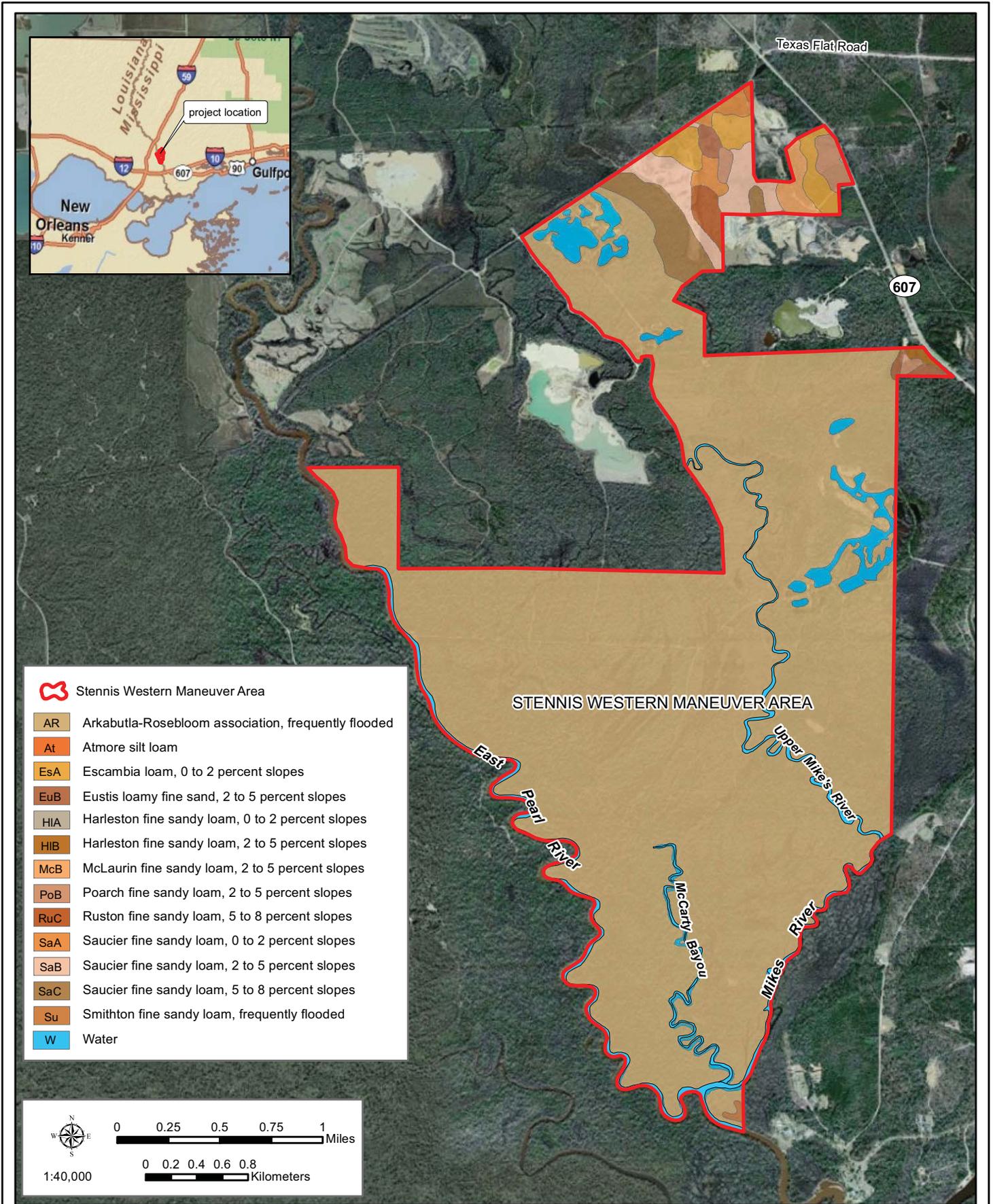


Figure 2-2: Soil Types on Stennis Western Maneuver Area

AR-Arkabutla-Rosebloom association, frequently flooded

The predominant soil type present in the Stennis WMA (3,061 acres) is the Arkabutla-Rosebloom association, which is a frequently flooded, poorly drained, silty soil that was produced by sedimentation from flood waters of the East Pearl River. This soil is very strongly acidic, with moderate permeability and very high water capacity. Both the Arkabutla and Rosebloom soils are classified as hydric soils and support vegetation types that are normally associated with wetlands, such as Nuttall oak (*Quercus nuttallii*), cottonwood (*Populus deltoides*), water oak (*Q. nigra*), willow oak (*Q. phellos*), willows (*Salix* spp.), and sweetgum (*Liquidambar styraciflua*).

At-Atmore silt loam

This soil type is found on wet, upland flats with 0 to 2 percent slopes, and only 2 acres of this soil type are present in the Stennis WMA. It is strongly acidic with moderate permeability near the surface and moderately slow permeability with depth and high water capacity. It is classified as a hydric soil, and supports vegetation types normally associated with wetlands.

EsA-Escambia loam, 0 to 2 percent slopes

Escambia soil comprises approximately 55 acres within the Stennis WMA, situated along the roads at the northeast corner of the area. This soil is a fine-grain loam that is strongly acidic with moderate permeability near the surface and low permeability with depth. Water capacity is high, but the soil is not classified as a hydric soil. Common vegetation for this soil type is slash pine (*Pinus elliotii*), loblolly pine (*P. taeda*) and longleaf pine (*P. palustris*).

EuB-Eustis loamy fine sand, 2 to 5 percent slopes

This soil comprises approximately 15 acres within the Stennis WMA, situated in the northeast corner of the area. It is strongly acidic, well-drained soil with rapid permeability and low water capacity. Common vegetation for this soil type is slash pine, longleaf pine and loblolly pine.

HIA-Harleston fine sandy loam, 0 to 2 percent slopes

Harleston sandy loam is a deep, moderately well-drained, moderately permeable soil, which was formed in marine or stream deposits consisting of thick beds of sandy loam.

They are typically found on terraces and uplands of the Southern Coastal Plain. This soil type only accounts for less than 1 acre on Stennis WMA in the northeastern portion of the installation, along old Highway 44. Common vegetation consists of loblolly, shortleaf (*P. echinata*), and slash pines.

HIB-Harleston fine sandy loam, 2 to 5 percent slopes

Harleston sandy loam comprised approximately 5 acres of the Stennis WMA adjacent to Highway 607 in the northeast portion of the area. Due to its high sand content, it is commonly mined for construction fill dirt. It is a strongly acidic soil with moderate permeability and moderate water capacity. Common vegetation consists of loblolly pine, slash pine and longleaf pine, with scattered sweetgum.

McB-McLaurin fine sandy loam, 2 to 5 percent slopes

This soil is found on approximately 20 acres of the Stennis WMA in a band along the northeast area down-slope from Highway 607. It is commonly mined for construction fill dirt in the area due to its high sand content. It is a strongly acidic soil with moderate permeability and medium water capacity. Common vegetation includes pines and white oak (*Quercus alba*).

PoB-Poarch fine sandy loam, 2 to 5 percent slopes

This is a well-drained soil found on approximately 26 acres on ridges and along Highway 607 in the northeast portion of the Stennis WMA. It is a very acidic soil with moderate permeability at the surface, decreasing with depth. Water capacity is medium. Common vegetation includes pines and white oak.

RuC- Ruston fine sandy loam, 5-8 percent slopes

This Ruston soil is found lower along the terrace slopes in the northeast portion of the Stennis WMA. It comprises approximately 18 acres, and is heavily mined for construction fill dirt. Soil properties are identical to those described above for the Poarch fine sandy loam.

SaA-Saucier fine sandy loam, 0 to 2 percent slopes

This is a moderately well-drained soil found on upland ridges. It comprises approximately 21 acres along Old Highway 11 in the northeast portion of the Stennis

WMA. It is strongly acidic, with moderate permeability near the surface, decreasing with depth. Water capacity is high. Common vegetation includes pines and sweetgum.

SaB-Saucier fine sandy loam, 2 to 5 percent slopes

This Saucier soil has the same properties as the soil above, but is found lower on the terrace slopes on approximately 67 acres in the northeast portion of the Stennis WMA. It is heavily mined for construction fill dirt.

SaC-Saucier fine sandy loam, 5 to 8 percent slopes

This soil is found on approximately 63 acres at the bottom of the terrace slopes in the northeast portion of Stennis WMA; this soil is also mined for construction fill dirt.

Su-Smithton fine sandy loam, frequently flooded

This soil is poorly drained, and is found on approximately 3 acres in drainage ways covered by standing water for long periods of time. It is strongly acidic with moderately low permeability and high water capacity. Vegetation includes pines, gum (*Nyssa* spp.) trees and water oak.

Water bottoms, in the form of ponds, streams, and emergent wetlands comprise approximately 104 acres of Stennis WMA throughout the Arkabutla-Rosebloom soil areas. Most of the ponds are the result of previous sand and fill dirt mining.

2.2.4 Topography

The Stennis WMA area is located within the floodplain of the East Pearl River in the Gulf Coastal Plain physiographic province. The flat floodplain topography ranges from swamps and meandering streams to areas of relatively steeper slopes adjacent to Highway 607 and in the northeast corner of the property. The streams within the property are small and bordered by hardwood swamp areas and wetlands. The elevation of the Stennis WMA ranges between 5 feet and 35 feet above mean sea level (msl), and the majority of the land area is between 5 feet and 10 feet above msl. Much of the more rugged topography in the northeast corner of the property is the result of extensive surface mining for fill dirt and sand.

Hydrology

The Stennis WMA area is within the lower East Pearl River watershed (hydrologic unit code [HUC] 03180004) in the Pearl River Basin and the easternmost reaches of the Mississippi Coastal sub-basin (HUC 03170009). The landscape has little topological relief, as is typical of a large river alluvial delta area. Many small rivers and streams (i.e., Mike's River, Turtleskin Creek) transect the training area before joining the Pearl River system. Mike's River flows southward into the East Pearl River which eventually flows into Mississippi Sound.



Photograph 2-2. Mike's River

2.2.5 Land Use

2.2.5.1 Land Use and Grounds Maintenance

Land use within the Stennis WMA consists of undeveloped woodlands, existing and former surface mine pits, and streams and ponds used for navigation and for recreational fishing. Within the property there are numerous unimproved roads and several bridges. The acreage by land use classification for the Stennis WMA is provided in Table 2-2 and illustrated in Figure 2-3.

Table 2-2. Inventory of Stennis WMA Land Use

Land Use	Area (acres)
Surface mine pits (abandoned)	125
Waterways, ponds, and emergent wetlands	104
Unimproved grounds	3,523
Cemetery	< 1
Total	3,483

2.2.5.2 Unimproved Grounds

Stennis WMA has an estimated 3,523 acres of unimproved grounds which are comprised of wetlands and general forestland. General unimproved grounds at the Stennis WMA are all used for the training mission, including the short-range training ammunition zones and buffer areas. The classification and management of the Stennis WMA's forestlands are described in detail in Section 4.4 (Forestry Management) of this document.

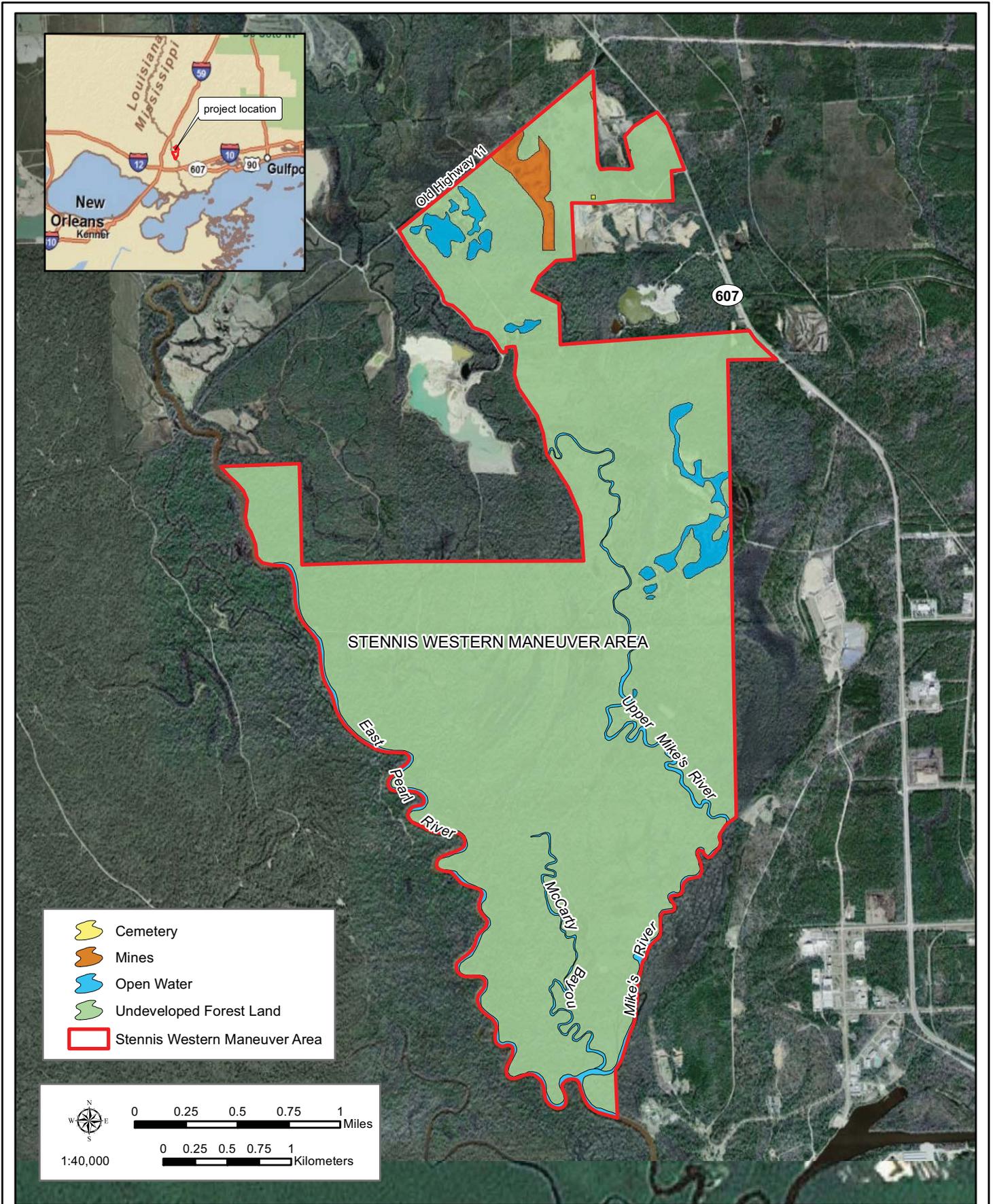


Figure 2-3: Land Use

2.2.5.3 Existing Land and Grounds Maintenance

Land use at the Stennis WMA is based on the operational needs and mission requirements. Land use in the Stennis WMA ranges from “high intensity”, well-developed areas used for operational functions to “low intensity” areas that serve as buffers or undeveloped lands/areas. Helispots, High Mobility Multipurpose Wheeled Vehicle (HMMWV) and Military Operations on Urban Terrain (MOU) training are the high intensity operations that occur on the Stennis WMA. Administrative and training facilities, public works, housing, medical facilities, and other mission support operations occur on SSC, outside the Stennis WMA. Low intensity land use areas include natural resources such as forests, ponds, wetlands, and other unique habitat. Grounds maintenance is currently comprised of road maintenance, control of native and non-native vegetation to support the training mission, and development and maintenance of strategic training areas. The entity responsible for grounds maintenance on the Stennis WMA is NCBC Gulfport.

2.2.5.4 Surface Mine Pits

Stennis WMA has numerous abandoned surface mine pits on the property (Photograph 2-3). These pits contain large areas of open or bare soil consisting of sand, gravel, and clay. Natural re-vegetation of these areas is in various stages. Approximately 125 acres of bare or nearly bare soils are found at these pit locations. Some of the mine pits are retaining stormwater in the form of shallow ponds within the mine pits. These ponds comprise approximately 89 acres of open water and 15 acres of emergent wetlands. Currently there is no maintenance of the mine pits or ponds. All of the existing mine pits on the Stennis WMA will be maintained in their current condition for training activities per agreement with MDEQ or incorporated to wetland restoration sites, as discussed later. The existing mine permits will be transferred to NCBC Gulfport for Stennis WMA use only when the Phase II and Phase III acquisitions come to fruition.



Photograph 2-3. Abandoned surface mine

2.3 BIOTIC ENVIRONMENT

Stennis WMA is included in the East Gulf Plain ecoregion. Based upon aerial photo interpretation and site reconnaissance surveys, three aquatic and seven terrestrial habitat types exist within the Stennis WMA: rivers, streams, ponds, abandoned mines (ruderal or bare soils), cutover-scrub, cypress-tupelo gum swamps and drains, mixed pine-hardwood, mixed hardwood-pine, bottomland hardwoods, and pasture (Figure 2-4). The latter category contains old food plots that were established prior to the Stennis WMA acquisition, but are still used by SBT-22 during training. The existing conditions and general values of each community type are discussed in the following subsections. Where appropriate, these discussions are correlated to the habitat descriptions used by Mississippi's Comprehensive Wildlife Management Strategy (MDWFP 2006).

The MDWFP (2006) developed habitat ranking values for each habitat type identified in the Comprehensive Wildlife Management Strategy. The value was assigned to each habitat type to indicate the relative importance of the various habitat types to the species of greatest concern. Therefore, the habitat groups with higher rankings provide habitat for more species of greatest conservation need. A summary table of each habitat type found at Stennis WMA and corresponding habitat ranking scores is found in Table 2-3.

Table 2-3. Habitat Types and Rankings

MDWFP Habitat Type	Stennis WMA Community Type	Habitat Ranking
Aquatic Habitats		
Riverine Palustrine Floodplain	Riverfront Forests	58
Streams	Streams	105
Lacustrine Communities	Artificial Ponds	33
	Beaver Ponds	16
Swamp Forests	Cypress/Gum Forests	67
	Small Stream Forests	81
Terrestrial Habitats		
Dry/Moderately Moist Upland Forests	Mixed Pine Hardwood Forests	64-87
Moderately Moist Upland Forests	Mixed Hardwood-Pine Forests	62-76
Agricultural/Hayfields/Old Fields	Pasture Lands	48
Shrublands/Pine Plantations	Cut over/Young Hardwood Shrub	50
Bottomland Hardwood Forests	Bottomland Hardwood Forests	83
Urban/Suburban Lands	Abandoned Mines	11

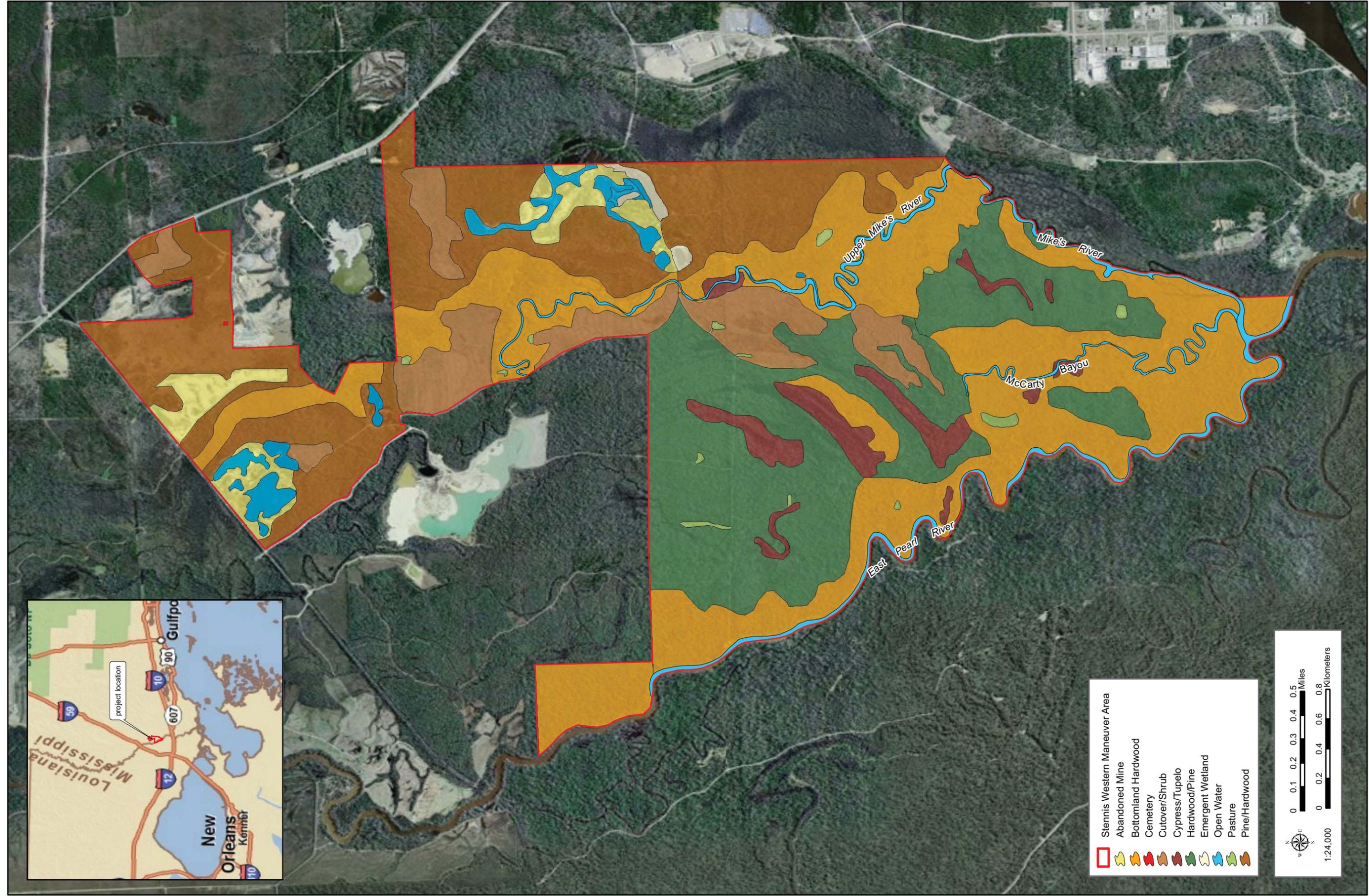


Figure 2-4: Habitats at Stennis Western Maneuver Area

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The MDWFP (2006) also identifies four tiers for Mississippi's species of greatest conservation need. Tier 1 species are defined as those species that are in need of immediate conservation action and/or research because of extreme rarity, restricted distribution, unknown or decreasing population trends, specialized habitat needs and/or habitat vulnerability.

Species considered Tier 2 are those species that are in need of timely conservation action and/or research because of rarity, restricted distribution, unknown or decreasing population trends, specialized habitat needs or habitat vulnerability or significant threats. The Tier 1 and 2 species of greatest conservation need, as identified by Mississippi's Comprehensive Wildlife Conservation Strategy, are presented in Appendix C according to associated habitat type.

2.3.1 Aquatic Habitats

Three different types of aquatic or semi-aquatic habitat types occur on Stennis WMA: riverfront forests, streams, and lacustrine communities.

2.3.1.1 Riverfront Palustrine Floodplain Forests

Riverfront forests occur on soils that have been deposited more recently than most other bottomland hardwood habitats. Sediments deposited from natural water level fluctuations rework riverbanks, sandbars, and point bars to form new channels, submerging some areas while building new lands elsewhere. Riverfront palustrine floodplain forests are most commonly characterized by early successional species such as cottonwood, black willow (*Salix nigra*), American sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), sugarberry (*Celtis laevigata*), and silver maple (*Acer saccharinum*). On Stennis WMA, this ecosystem is generally limited to very narrow corridors adjacent to the East Pearl River and the lower reaches of Mike's Rivers. Consequently, they are not mapped on Figure 2-4.

2.3.1.2 Streams

The streams and alluvial floodplains of Stennis WMA are part of the lower East Pearl River system. Vegetation typically associated with this habitat type is described below in the Bottomland Hardwood section. The East Pearl River, Mike's River and McCarty Bayou provide important habitat for a variety of aquatic and semi-aquatic species,

potentially including some Federally threatened and endangered species, and will be discussed later. The lower reaches of the East Pearl River, south of the Stennis WMA, are also designated as Essential Fish Habitat (EFH) for numerous marine and estuarine species.

Mike's River, a tributary of the East Pearl River, is entirely contained within the Stennis WMA. Mike's River is generally restricted to public access; however, the East Pearl River is frequently used for recreational fishing. Target species include largemouth and smallmouth bass (*Micropterus salmoides* and *M. dolomieu*, respectively), sunfish (*Lepomis* spp.), channel catfish (*Ictalurus punctatus*), bluecatfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), and white and black crappie (*Pomoxis annularis* and *P. nigromaculatus*, respectively).

2.3.1.3 Lacustrine Communities

Lacustrine communities, as used in this INRMP, include artificial lakes and beaver ponds. The artificial lakes are associated with the abandoned mines, which were pits



Photograph 2-4. Surface mine pond

that were left open and subsequently filled by rain and groundwater. These areas vary greatly in size and depth; some presumably support stable populations of game fish. Most of the abandoned pits contain open water, as mentioned previously. Some of the more shallow open water areas tend to attract wading and shorebirds, as well as numerous species of waterfowl during the winter migration. However, some are partially to completely vegetated and provide an emergent wetland habitat (15

acres). Beaver ponds occur sporadically throughout the Stennis WMA and provide valuable and diverse habitat that supports many species of reptiles, amphibians, waterfowl, and mammals. Depending on the age and size of the beaver pond, fishes can establish sustainable populations within the ponds as well.

2.3.2 Terrestrial Habitat

Based upon interpretation of aerial photographs and site reconnaissance, seven terrestrial habitat communities occur at Stennis WMA. Those areas were illustrated previously in Figure 2-4 and each community type is discussed in the following paragraphs. As more detailed surveys are conducted, these delineations and descriptions will be revised and refined in conjunction with future INRMP updates.

2.3.2.1 Mixed Pine Hardwood Uplands

The mixed pine hardwood forests on the Stennis WMA would typically be categorized as a “Dry to Moderately Moist Upland Forest” by MDWFP (2006). Upland forests have limited nutrient and moisture availability due to the characteristics of their soils. Fire maintenance is an important component of maintaining the health of this habitat type, especially the pine associations. Frequent fires reduce the density of understory shrubs and improve the quality and quantity of herbaceous ground cover (MDWFP 2006). Characteristic species of the mixed pine hardwood community are loblolly, longleaf pine, shortleaf pine, southern red oak (*Quercus falcata*), turkey oak (*Q. laevis*), blackjack oak (*Q. marilandica*), and mockernut hickory (*Carya tomentosa*). Shrubs or subcanopy trees associated with mixed pine hardwood uplands are bluebeech (*Carpinus caroliniana*), hophornbeam (*Ostrya caroliniana*), flowering dogwood (*Cornus florida*), and sourwood (*Oxydendrum arboreum*). Species that commonly occur in the shrub and ground cover layers include yaupon (*Ilex vomitoria*), farkleberry (*Vaccinium arboretum*), arrow-wood viburnum, devil's walking stick (*Aralia spinosa*), muscadine grape (*V. rotundifolia*), greenbriars (*Smilax* spp.), blackberry (*Rubus* spp.), and witchgrass (*Dichanthelium* sp.). This community type comprises about 21 percent (744 acres) of the Stennis WMA.

2.3.2.2 Mixed Hardwood Pine Uplands

This habitat type includes upland forests that are not limited by nutrient or moisture availability and is generally described by MDWFP (2006) as “Moderately Moist Upland Forests.” These forests are usually found on middle to lower slopes, low flats, or protected draws with deeper, more fertile loam or clay soils. Species composition is similar to the mixed pine hardwood community; however, this community contains abundantly more hardwood specimens and several other characteristic species that are not typically found in the mixed pine hardwood forests. These include American beech (*Fagus grandifolia*), southern magnolia (*Magnolia grandiflora*), white oak, cherrybark oak

(*Quercus pagoda*), and spruce pine (*Pinus glabra*). Subcanopy trees associated with this habitat type are sweetbay, bigleaf magnolia (*Magnolia macrophylla*), sourwood, American holly (*Ilex opaca*), flowering dogwood, yaupon, common sweetleaf (*Symplocos tinctoria*), red maple (*Acer rubrum*), sugarberry and pawpaw (*Asimina triloba*). Shrubs and ground cover within this community are similar to that described for the Mixed Pine Hardwood Uplands. Other species that are common to this community, however, include American beautyberry (*Callicarpa americana*), Louisiana blackberry (*Rubus louisianus*), poison ivy (*Toxicodendron radicans*), and winged sumac (*Rhus copallinum*). The mixed hardwood pine community comprises approximately 827 acres or 24 percent of the Stennis WMA.

2.3.2.3 Cypress-Tupelo Gum Swamps

Swamp forests occur in two subtypes throughout the Stennis WMA, cypress-tupelo gum swamps and small stream swamp forests. Meander scars, low floodplain terraces, bottomland flats, backwater areas, or springheads are common areas to find swamp forests. These communities encompass approximately 129 acres or 4 percent of the Stennis WMA. The soils are seasonally to semi-permanently flooded and remain saturated for long periods throughout the year. Common plants associated with cypress/gum swamps are baldcypress (*Taxodium distichum*), blackgum (*Nyssa sylvatica*), water tupelo (*Nyssa aquatica*), silver maple, red maple, green ash (*Fraxinus pennsylvanica*), water oak, persimmon (*Diospyros virginiana*), buttonbush (*Cephalanthus occidentalis*), swamp privet (*Foresteria* sp.), and planertree (*Planera aquatica*). Small stream swamp forests are typically composed of sweetbay, blackgum, pond cypress (*Taxodium ascendens*), red maple, slash pine, sweetgum, tulip poplar (*Liriodendron tulipifera*), water oak, swamp titi (*Cyrilla racemiflora*), gallberry (*Ilex glabra*), bayberry (*Morella* sp.), American holly, azalea (*Rhododendron* sp.), Florida anise (*Illicium floridanum*), giant cane (*Arundinaria gigantea*), panic grass (*Panicum virgatum*), cinnamon fern (*Osmunda cinnamomea*), and netted chainfern (*Woodwardia areolata*). Plants such as lizard's tail (*Saururus cernuus*) and smartweeds (*Polygonum* spp.) are also common in the moist soils that are exposed to sunlight. As noted above, the habitat ranking score for cypress-tupelo swamp forests is 67, while the ranking for small stream swamp forests is considerably higher at 91.

2.3.2.4 Hay and Pasture Lands/Old Fields

This habitat category includes relatively small sites throughout the Stennis WMA that were historically established as food plots by hunting clubs. These sites are placed sporadically and range in size from 0.5 acre to 4 acres (total of 16 acres). These sites are now used by SBT-22 as landing zones (LZ) or drop zones (DZ). These areas are maintained as such to support the military mission. Maintenance includes mowing and plowing to retain the herbaceous cover. Vegetation includes native and non-native grasses, clover (*Trifolium* spp.), sunflower (*Helianthus* spp.), aster (*Aster* spp.), and numerous other forbs and herbs.



Photograph 2-5. Landing zone

2.3.2.5 Cutover/Shrublands

Prior to the acquisition of the Stennis WMA, previous owners harvested much of the pine and hardwood timber in large blocks and conducted little or no replanting. In addition, large areas of natural forests were damaged by Hurricane Katrina in 2005, causing high levels of tree mortality. Expanses of hardwood shrublands are regenerating in the areas impacted by the hurricane as well as the recently harvested areas. Approximately 305 acres (9 percent) of the Stennis WMA are comprised of these regeneration areas. The regeneration on the installation contains a variety of opportunistic invasive species, primarily Chinese tallow tree (*Triadica sebifera*). The dominant woody vegetation in these areas includes poison ivy, Japanese honeysuckle (*Lonicera japonica*), blackberry (*Rubus* spp.), eastern baccharis (*Baccharis halimifolia*), gallberry, Chinese privet (*Ligustrum sinense*), greenbriars (*Smilax* spp.), grape vines (*Vitis* sp.), red maple saplings, black willow, Saint John's-wort (*Hypericum* spp.), dogwoods (*Cornus* spp.), winged sumac, sweetgum saplings, water oak saplings, and peppervine (*Ampleopsis arborea*). Herbaceous vegetation identified within the logged areas consists of rushes (*Juncus* spp.), sedges (*Carex* spp.), smartweeds, flatsedges (*Cyperus* spp.), and little bluestem (*Schizachyrium scoparium*). These areas are very dense and nearly impenetrable due to the abundance of young saplings and vines; however, SBT-22 currently uses these sites as jungle training areas.

2.3.2.6 Bottomland Hardwood Forests

Bottomland hardwood forest is the most prevalent community on the Stennis WMA, comprising approximately 1,233 acres or 35 percent of the land area. Bottomland hardwood forests are typically species-rich on moist or occasionally wet sites on lower slopes and terraces of streams and rivers. Their position on the landscape provides that the habitat remains moist during the growing season, and the water table may be elevated during late winter and early spring. This habitat type is dominated by hardwood species, as the name implies. Common tree species in bottomland hardwood forests include: sweetgum, water oak, cherrybark oak, white oak, swamp chestnut oak (*Quercus michauxii*), willow oak, American elm (*Ulmus americana*), green ash sugarberry and various pecans (*Carya* spp.) and hickories. Winged elm (*Ulmus alata*), red maple, possumhaw (*Viburnum nudum*), parsely hawthorn (*Crateagus marshallii*), mayhaw (*Crateagus opaca*), arrowwood viburnum and witch-hazel (*Hamamelis virginiana*) are common shrubs and small tree associates. Woody vines that occur within the bottomland hardwood forests include grapes, greenbriars, peppervine, trumpet-creeper (*Campsis radicans*), and poison ivy.

2.3.2.7 Abandoned Mines

Of the 3,483 acres on Stennis WMA, approximately 125 acres (4 percent) consist of abandoned aggregate mines that contain bare soils of clay, gravel and sand. These mines were presumably closed or abandoned prior to MDEQ permitting requirements, since they have not been restored. Isolated pockets of vegetation occur within the abandoned mine areas, consisting of pine, wax myrtle (*Morella cerifera*), Japanese honeysuckle, red maple, blackberry, and various grasses and forbs. Many of these areas are used by SBT-22 for HMMWV and terrestrial navigation training courses.

2.3.3 Rare, Threatened and Endangered Species

2.3.3.1 Federal

The Endangered Species Act (ESA) was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All Federal agencies are required to implement management programs for species listed under the ESA and to use their authorities to further the purposes of the ESA. Responsibility for the

identification of a threatened or endangered species and development of any potential recovery plan lies with the Secretary of the Interior and the Secretary of Commerce.

The USFWS is the primary agency responsible for implementing the ESA, and is responsible primarily for birds and other terrestrial and freshwater species. The USFWS's responsibilities under the ESA include: (1) identification of threatened and endangered species; (2) identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for these species; and (4) consultation with other Federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered. In addition, the USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence. The candidate designation includes those species for which the USFWS has sufficient information to support proposals to list as endangered or threatened under the ESA; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

The USFWS lists seven threatened species, six endangered species, and one candidate species in Hancock County, Mississippi (USFWS 2008), and five threatened species, four endangered species, and two candidate species in St. Tammany Parish, Louisiana (LDWF 2008). These species are listed in Table 2-4. Critical habitat has been designated (described in Section 2.3.4.2 below) for the piping plover (*Charadrius melodus*) in Hancock County and for the Gulf sturgeon in St. Tammany Parish and Hancock County. The following Rare, Threatened, and Endangered (RTE) species have the potential to occur within the vicinity of Stennis WMA: Louisiana black bear (*Ursus americanus luteolus*), Gulf sturgeon, gopher tortoise (*Gopherus polyphemus*), bald eagle (*Haliaeetus leucocephalus*), eastern indigo snake (*Drymarchon corais couperi*) and ringed map turtle (*Graptemys oculifera*). Suitable habitat for each of these species is discussed later in Section 4.3.2.4. Marginal quality habitat is present for Louisiana

Table 2-4. Federally Threatened and Endangered Species Known to Occur in the Vicinity of the Stennis WMA

Species	Federal Listing Status	County/ Parish Listed	Potential to Occur in the Stennis WMA
Mammals			
Louisiana black bear <i>Ursus americanus luteolus</i>	Threatened	Hancock and St. Tammany	Yes – inhabits tracts of heavily wooded bottomland hardwoods and swamps
West Indian manatee <i>Trichechus manatus</i>	Endangered	Hancock and St. Tammany	Yes – known to inhabit the Pearl River basin, but unlikely
Reptiles			
Ringed map turtle <i>Graptemys oculifera</i>	Threatened	St. Tammany	Yes – prefers river stretches with moderate currents, a lot of basking sites, and nests on sand bars
Gopher tortoise <i>Gopherus polyphemus</i>	Threatened	Hancock and St. Tammany	Yes – inhabits well-drained sandy soils, especially in low growing vegetation areas of longleaf pine
Eastern indigo snake <i>(Drymarchon corais couperi)</i>	Threatened	Hancock	Yes – varied habitats near freshwater streams and marshes; known to occupy gopher tortoise burrows
Loggerhead sea turtle <i>Caretta caretta</i>	Threatened	Hancock	No –commonly found marine open deep water and marine open shallow water
Green sea turtle <i>Chelonia mydas</i>	Threatened	Hancock	No – generally prefer warmer, southern waters of the Gulf of Mexico.
Kemp's Ridley sea turtle <i>Lepidochelys kempii</i>	Endangered	Hancock	No – found primarily in the vicinity of Rancho Nuevo beach in Mexico and along the Texas Gulf of Mexico coast
Leatherback turtle <i>Dermochelys comacea</i>	Endangered	Hancock	No – Primarily utilizes open ocean and deeper waters of the Gulf of Mexico and coastal bays

Table 2-4, continued

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Stennis WMA

Species	Federal Listing Status	County/ Parish Listed	Potential to Occur in the Stennis WMA
Amphibians			
Dusky gopher frog <i>Rana sevosa</i>	Endangered	St. Tammany	Yes – inhabits upland sandy habitats historically forested with longleaf pine and isolated, ephemeral wetland breeding sites
Birds			
Bald eagle <i>Haliaeetus leucocephalus</i>	Delisted*	Hancock and St. Tammany	Yes – nests in transitional area between forest and water
Piping plover <i>Charadrius melodus</i>	Threatened	Hancock	No – inhabits wash zones, intertidal ocean beach, wrack lines, washover passes, mud-, sand-, and algal flats, and shorelines of streams, ephemeral ponds, lagoons, and salt marshes
Red-cockaded woodpecker <i>Picoides borealis</i>	Endangered	Hancock and St. Tammany	Yes – marginal habitat exists, nests in cavities of mature longleaf pine forests and mixed pine-upland hardwood forests (60+ years old) and foraging habitats consist of 30+ old pine stands,
Brown pelican <i>Pelecanus occidentalis</i>	Delisted*	Hancock	No – inhabits tidal estuaries or along the coast , commonly nests in shrub thickets within dunes of barrier islands, and feeds in deep and shallow coastal waters
Fishes			
Gulf sturgeon <i>Acipenser oxyrhynchus desotoi</i>	Threatened	Hancock and St. Tammany	Yes – in LA, most commonly inhabits the Pearl, Bogue Chitto and Tchefuncte Rivers in St. Tammany and Washington Parishes
Alabama shad <i>Alosa alabamae</i>	Candidate	St. Tammany	No – historically inhabited the Pearl River, but none have been taken from the river since 1981
Pearl darter <i>Percina aurora</i>	Candidate	Hancock and St. Tammany	Yes – prefers firm gravel substrate and sandstone exposures

Table 2-4, continued

Species	Federal Listing Status	County/ Parish Listed	Potential to Occur in the Stennis WMA
Mussels			
Inflated heelsplitter <i>Potamilus inflatus</i>	Threatened	Hancock and St. Tammany	Yes – inhabits riffle and shoal areas with stable bottoms within the Pearl River basin
Plants			
Louisiana quillwort <i>Isoetes louisianensis</i>	Endangered	Hancock and St. Tammany	Yes – inhabits small shallow streams with scour channels or in very wet habitats

Source: USFWS 2008, LDWF 2008

* Removed from the list of threatened or endangered species, but are still monitored by USFWS and may be protected under one or more other Federal laws

quillwort (*Isoetes louisianaensis*), red-cockaded woodpecker (*Picoides borealis*), dusky gopher frog (*Rana sevosa*), inflated heelsplitter (*Potamilus inflatus*), and the West Indian manatee (*Trichechus manatus*) near the Stennis WMA; however, the presence of these species has not been documented.

2.3.3.2 Critical Habitat

The ESA requires the conservation of critical habitat, which is defined as the areas of land, water, and air space that an endangered species needs for survival. Critical habitat also includes such things as food and water, breeding sites, cover or shelter, and sufficient habitat area to provide for normal population growth and behavior. Section 7 of the ESA restricts destruction or adverse modification of critical habitat by any activity funded, authorized, or carried out by any Federal agency. One of the primary threats to many species is the destruction or modification of essential habitat by uncontrolled land and water development. Currently, the piping plover and the Gulf sturgeon have critical habitat designated in Hancock County and St. Tammany Parish.

Critical habitat for the Gulf sturgeon was designated on March 19, 2003 (68 *Federal Register* 13370). Unit 1 of this critical habitat is described as part of the Pearl River System in several parishes/counties in Louisiana and Mississippi, including St. Tammany and Hancock (Figure 2-5). The lateral extent of Unit 1 is the ordinary high water line on each bank of the associated rivers and shorelines.

Critical habitat for the piping plover was designated on July 10, 2001 (66 *Federal Register* 36038 – 36143). Unit MS-1 is located in Hancock County from Lakeshore through Bay St. Louis. There are no designated critical habitat units for the piping plover in the Stennis WMA.

2.3.3.3 State

The Mississippi Museum of Natural Science's Mississippi Natural Heritage Program (MNHP) maintains lists of species of special concern for each county in the state; animal species on the list are protected by the Mississippi Nongame and Endangered Species Conservation Act (Mississippi Code Annotated §§ 49-5-103-119(1999)). These species of special concern are not necessarily the same as those protected by the Federal government under the ESA; however, some of the same species are also Federally

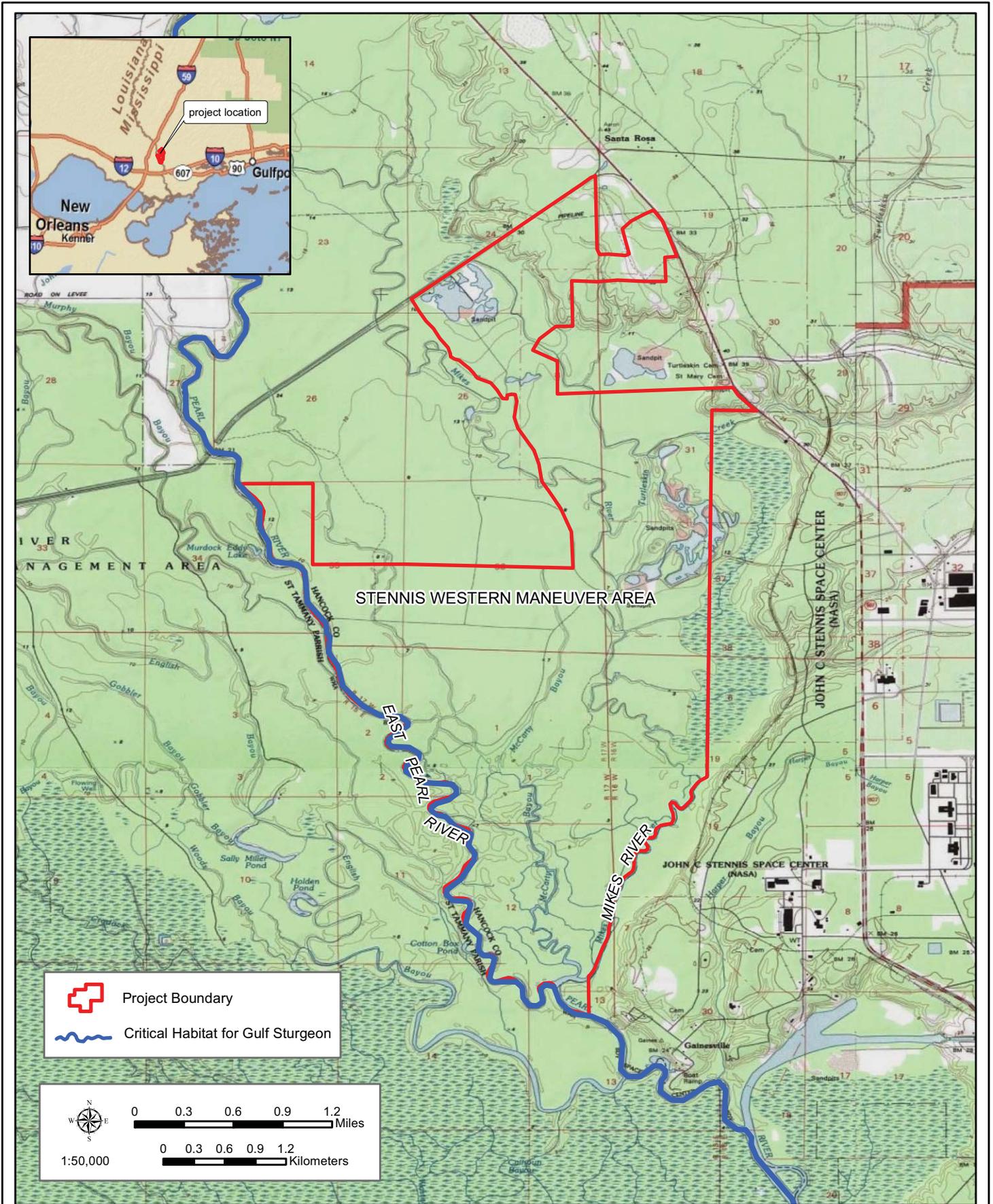


Figure 2-5: Critical Habitat on Stennis Western Maneuver Area

listed. Currently, 42 plant and 34 animal species within Hancock County are listed as species of special concern (MNHP 2006) (Appendix D).

RTE species of Louisiana are tracked by the Louisiana Natural Heritage Program. There are currently 100 plant and 38 animal species listed as species of special concern within St. Tammany Parish (LDWF 2008) (see Appendix D). Some of these same species are also Federally listed.

The lists of state-listed species were reviewed to determine the potential occurrence of those species in the vicinity, and state-listed species that could potentially occur at or in the vicinity of the Stennis WMA are listed in Table 2-5.

Table 2-5. State-Listed Species Potentially Occurring within the Vicinity of the Stennis WMA

Common/Scientific Name	Habitat	County/Parish Listed
MAMMALS		
Long-tailed weasel (<i>Mustela frenata</i>)	Usually found near water, though live in a wide variety of habitats including brushland, and open areas such as woodlands, marshes, swamps, field edges and riparian grasslands	St. Tammany
BIRDS		
Bachman's sparrow (<i>Aimophila aestivalis</i>)	Found in areas with scattered, scrubby vegetation and a dense herbaceous understory, dry open pine or oak woods with an undercover of grasses and shrubs, brushy or overgrown hillsides, or overgrown fields with thickets and brambles	Hancock and St. Tammany
Merlin (<i>Falco columbarius</i>)	Inhabits a variety of habitats, most commonly nests in open woods or wooded prairies	Hancock
Black-crowned night heron (<i>Nycticorax nycticorax</i>)	Various wetland habitats, including salt, brackish, and freshwater marshes, swamps, streams, lakes, and agricultural fields	Hancock
White-faced ibis (<i>Plegadis chihi</i>)	Breeding habitat is shallow freshwater marshland, especially where islands of vegetation are available; also uses agricultural lands, flooded pastures, fields, irrigated areas, and damp meadows	Hancock
American swallow-tailed kite (<i>Elanoides forficatus</i>)	Utilizes lowland areas particularly in the coastal plain along river systems and pines adjacent to swampland	St. Tammany
AMPHIBIANS AND REPTILES		
Gulf coast toad (<i>Bufo nebulifer</i>)	Prefers areas that are cool and moist, with an abundance of insects and other invertebrate prey, shrubbery and drainage ditches are common habitats	Hancock
River frog (<i>Rana heckscheri</i>)	Inhabits river swamps and swampy shores of ponds and bayous	Hancock
Ornate chorus frog (<i>Pseudacris ornata</i>)	Inhabits longleaf pine forests, pine flatwoods, and cypress ponds	St. Tammany

Table 2-5, continued

Common/Scientific Name	Habitat	County/Parish Listed
Four-toed salamander (<i>Hemidactylium scutatum</i>)	Inhabits areas under logs, moss, and rocks in mature hardwood and pine forests, larvae use flowing water or temporary pools with moss or sedges and without fish	St. Tammany
Alligator snapping turtle (<i>Macroclenys temminckii</i>)	Found in slow moving, deep water of rivers, sloughs, oxbows, and canals or lakes associated with rivers (e.g., impoundments), also swamps, bayous, and ponds near rivers, and shallow creeks that are tributary to occupied rivers	St. Tammany
Mole kingsnake (<i>Lampropelis calligaster rhombomaculata</i>)	In Louisiana, generally found in upland longleaf pine woods and pine flatwoods	St. Tammany
Eastern indigo snake (<i>Drymarchon corais couperi</i>)	Found in the lower coastal plain, requires deep sand ridges and is often associated with the gopher tortoise	Hancock
Rainbow snake (<i>Farancia erythrogramma</i>)	Found in a variety of aquatic habitats but are most common in cypress swamps and flowing-water habitats such as blackwater creeks, streams, and rivers	Hancock and St. Tammany
Gulf coast ribbon snake (<i>Thamnophis proximus orarius</i>)	Common along the edges of permanent and semi-permanent aquatic areas such as ponds, marshes, swamps, streams, and rivers	Hancock
Gulf crayfish snake (<i>Regina regida sinicola</i>)	Habitat include slow waters of lowland areas, swamps, nontidal and tidal freshwater marshes, sphagnum bogs, pocosins, seepage wetlands, ponds, lakes, flatwoods ponds, cypress ponds, bayous, rice fields, canals, drainage ditches, mucky areas along streams, floodplains, and also sometimes grassy or wooded upland habitats adjacent to wetlands	Hancock
Eastern coral snake (<i>Micrurus fulvius</i>)	Pine and scrub oak sandhill habitats, hardwood areas, and pine flatwoods that undergo seasonal flooding	Hancock
FISHES		
Crystal darter (<i>Crystallaria asprella</i>)	Occurs in clean sand and gravel runs of small to medium rivers; historically inhabited the Pearl River	Hancock
Black buffalo (<i>Ictiobus niger</i>)	Pools and backwaters of sloughs and small to large rivers, reservoirs, river-margin lakes, often in strong currents of large rivers; currently inhabits lower Pearl River	Hancock
Ironcolor Shiner (<i>Notropis chalybaeus</i>)	Common through parts of the Mississippi River to the Gulf of Mexico and along lower Gulf Coast; inhabits small to moderate-sized streams that drain pine woodlands	Hancock
Paddlefish (<i>Polyodon spathula</i>)	Generally inhabits slow-flowing water of large rivers; access to areas with sand or gravel bars is required during migratory breeding events	Hancock and St. Tammany
Least killifish (<i>Heterandria Formosa</i>)	Fresh and brackish swamps, bayous, and roadside ditches with abundant vegetation	Hancock
PLANTS		
Large beakrush (<i>Rhynchospora macra</i>)	Inhabits longleaf pine flatwoods savannahs	Hancock
Chapman beakrush (<i>Rhynchospora stenophylla</i>)	Inhabits longleaf pine flatwoods savannahs	Hancock
Ciliate beakrush (<i>Rhynchospora ciliaris</i>)	Found in longleaf pine flatwoods savannahs; can occur in roadside ditches and along utility corridors	St. Tammany
Flat-fruit beakrush (<i>Rhynchospora compressa</i>)	Inhabits longleaf pine flatwoods savannahs	St. Tammany

Table 2-5, continued

Common/Scientific Name	Habitat	County/Parish Listed
Coastal plain false-foxglove (<i>Agalinis aphylla</i>)	Found in wet pine savannas and flatwoods, depressions in pinelands and bogs, edges of cypress-gum ponds and depressions	St. Tammany
Purple false-foxglove (<i>Agalinis filicaulis</i>)	Found in wet longleaf pine flatwoods savannahs and hillside seepage bogs	St. Tammany
Flax-leaf false-foxglove (<i>Agalinis linifolia</i>)	Found in longleaf pine flatwoods savannahs	St. Tammany
Cypress knee sedge (<i>Carex decomposita</i>)	Inhabits cypress-tupelo swamps, cypress-studded lakes, isolated natural ponds, beaver ponds, and wet swales in bottomland hardwoods; almost always grows on woody substrate such as living trees, stumps and logs	St. Tammany
Lecont's thistle (<i>Cirsium lecontei</i>)	Longleaf pine flatwoods savannahs	St. Tammany
Slim spikerush (<i>Eleocharis elongate</i>)	Intermittent ponds, creeks, canals, and ditches	Hancock
Southern umbrella sedge (<i>Fuirena seirpodea</i>)	Louisiana's only known extant site is in sandy soil at the edge of a fresh to intermediate marsh near the Pearl River	St. Tammany
Shortleaf sneezeweed (<i>Helenium brevifolium</i>)	Inhabits bogs, boggy clearings, boggy stream banks, and seepage slopes, generally where the soil is saturated	St. Tammany
Sarvis holly (<i>Ilex ameranchier</i>)	Inhabits bayhead swamps, pondcypress-swamp black gum swamps, flatwoods ponds	St. Tammany
Myrtle holly (<i>Ilex myrtifolia</i>)	Inhabits bayhead swamps imbedded in the longleaf pine flatwoods	St. Tammany
Common water willow (<i>Justicia americana</i>)	Freshwater marshes and open swamps, floatant marshes, and river banks; in Louisiana, one of main footholds is Pearl River basin	St. Tammany
Carolina glasswort (<i>Lilaeopsis carolinensis</i>)	Open mud flats of freshwater marshes	Hancock
Golden crest (<i>Lophiola aurea</i>)	Longleaf pine flatwoods savannahs	St. Tammany
Flame flower (<i>Macranthera flammea</i>)	Bogs and wet boggy thickets, edges of shrub-tree bogs or bays, occasionally in shallow water of cypress-gum ponds or depressions	St. Tammany
Paronychia corymbosa (<i>Paronychia erects var. corymbosa</i>)	One record from Louisiana in sandy soil along US 190 near the Pearl River	St. Tammany
Correll's false dragon head (<i>Physostegia correllii</i>)	All Louisiana occurrences are in roadside ditches. Elsewhere it occurs along river banks, often growing in flowing water and in disturbed areas. Non-natural habitats such as drainage and irrigation ditches and wet utility ROWs represent potential habitat.	St. Tammany
Scalloped milkwort (<i>Polygala crenata</i>)	Inhabits longleaf pine flatwoods savannahs	St. Tammany
Hooker milkwort (<i>Polygala hookeri</i>)	Inhabits pine savannahs and flatwoods	St. Tammany
Parrot pitcherplant (<i>Sarracenia psittacina</i>)	Found in wet longleaf pine savannahs and hillside seepage bogs	St. Tammany
Pineland scalypink (<i>Stipulicidia setacea</i>)	One extant occurrence on the sandy roadside of US 90 near Pearl River	St. Tammany
Hoary pea (<i>Tephrosia hispida</i>)	Inhabits longleaf pine flatwoods savannahs	St. Tammany

Table 2-5, continued

Common/Scientific Name	Habitat	County/Parish Listed
Purple bladderwort (<i>Utricularia purpurea</i>)	Inhabits bayhead swamps, pondcypress-swamp black gum swamps, flatwoods ponds	Hancock
INVERTEBRATES		
Flatwoods Digger (<i>Fallicambarus oryktes</i>)	Generally chooses wet places such as meadows where the surface remains dry for extended periods of time	St. Tammany
Mississippi pigtoe (<i>Pleurobema beadleanum</i>)	Interior rivers and streams	Hancock
Purple pimpleback (<i>Quadrula refulgens</i>)	Interior streams and rivers with mud, sand, or gravel bottoms	Hancock

Source: MNHP 2006, LDWF 2008

2.3.4 Waters of the U.S. and Wetlands

Waters of the U.S. and wetlands occur throughout the Stennis WMA as streams, swamps, depressions, and potentially as abandoned mine pits. Large tracts of forested wetlands are found throughout the proposed Stennis WMA except for the northeastern corner of the area. These wetland communities are regularly saturated to inundated. These areas are hydrologically influenced by East Pearl River, Mike's River, other small creeks, groundwater, and rainwater. The dominant trees in the inundated areas are water tupelo, baldcypress, and swamp red maple (i.e., swamps). Herbaceous vegetation, such as smartweed and lizard's tail, are often found in areas where sufficient sunlight to support these plants reaches the forest floor. In areas that are saturated (i.e., bottomland hardwoods), green ash, overcup oak (*Quercus lyrata*), and swamp chestnut oak are the dominant overstory species.

Smaller wetlands are found in the northeast corner of the Stennis WMA and within the cutover-scrub areas. These wetlands are typically emergent wetlands that occur in swales and depressions, which are poorly drained. The majority of these depressions are caused by logging operations or small swales in the landscape. Within the inundated portion of the wetlands, the dominant plants include rushes, sedges, flatsedges, sundew (*Drosera* spp.), pitcher plants (*Sarracenia* spp.), smartweeds, seedboxes (*Ludwigia* spp.), and spikerushes (*Eleocharis* spp.).

NSW (2004) reported that approximately 4,637 acres of the total 5,362 acres studied for the proposed acquisition at the Stennis WMA contained potentially jurisdictional wetlands. Of these approximately 280 acres were sand and gravel mines that may potentially include waters of the U.S.

The abandoned mines have filled with water and currently function as deepwater ponds or freshwater marshes. Several of these ponds may be hydrologically influenced by other waters of the U.S. (NSW 2004), and, if so, these mines would be considered regulated waters by the USACE. Abandoned mines that are not associated with a waters of the U.S. would likely be determined as non-jurisdictional by the USACE. Within the edges of many of the abandoned mines, dominant plants include rushes, sedges, flatsedges, smartweeds, seedboxes, and spikerushes. Red maples and occasionally buttonbush are also found growing throughout these wetland areas.

Other open water areas that can be classified as waters of the U.S. are scattered across the Stennis WMA. In particular, the East Pearl River and Mike's River are both considered navigable streams and, thus, activities along either are subject to regulations of Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Projects that impact jurisdictional wetlands/U.S. Waters require permit review with the local U.S. Army Corps of Engineers (USACE) district.

2.3.5 Fauna

The outer coastal plain provides habitat for a wide variety of animals. Currently at Stennis WMA, there is no habitat management strategy or faunal surveys to determine the presence or relative abundance of wildlife species. Consequently, the following discussions are derived from NSW (2004), general knowledge of the area and associated habitats, and observations made during site reconnaissance trips.

Fish

The East Pearl River south of the Stennis WMA is designated as EFH and provides deep water habitat for gamefish, and smaller streams, shallow ponds, and marsh provide habitat for smaller forage fish. Common fish species likely to be found in the waters of the Stennis WMA are: bluegill (*Lepomis macrochirus*), red-eared sunfish (*L. microlophus*), largemouth bass, white and black crappie, channel catfish, mosquito fish (*Gambusia affinis*), various shiners (*Notropis* spp.) and darters (*Etheostoma* spp. and *Percina* spp.) (NSW 2004).

Amphibians and Reptiles

Reptiles and amphibians are common throughout the area due to the abundance of moist habitats available for nesting and breeding. Several surveys have been conducted on the adjacent SSC Fee Area, which have reported the presence of approximately 68 species of amphibians and reptiles. Common species include southern cricket frog (*Acris gryllus*), green treefrog (*Hyla cinerea*), spring peeper (*Pseudacris crucifer*), southern toad (*Bufo terrestris*), longtail salamander (*Eurycea longicauda*), Mississippi slimy salamander (*Plethodon mississippi*), green anole (*Anolis carolinensis*), five-lined skink (*Eumeces fasciatus*), southern fence lizard (*Sceloporus undulates*), cottonmouth (*Agkistrodon piscivorus*), copperhead (*A. contortrix*), southern black racer (*Coluber constrictor*), Mississippi green water snake (*Nerodia cyclopion*), slider (*Trachemys scripta*), cooter (*Pseudemys floridana*), ringed map turtle, and American alligator (*Alligator mississippiensis*) (NSW 2004).

Mammals

The Stennis WMA installation supports many mammals, including white-tailed deer (*Odocoileus virginianus*), feral pigs (*Sus scrofa*), eastern cottontail rabbits (*Sylvilagus floridanus*), squirrels (*Sciurus niger* and *S. carolinensis*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis* and *Spilogale putorius*), opossums (*Didelphis virginiana*), woodrats (*Neotoma floridana*), field mice (*Peromyscus* spp. and *Reithrodontomys* spp.), and bats.

Birds

Stennis WMA provides habitat for many resident and migratory species of birds. Breeding bird surveys conducted at the SSC Fee Area in 1991 and 1994 found 142 species of waterfowl, woodpeckers, wading birds, raptors and songbirds (Lago 1994, as cited in NSW 2004). Common birds expected to occur on Stennis WMA are red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*B. jamaicensis*), barred owl (*Strix varia*), prothonotary warbler (*Prothonotaria citrea*), eastern kingbird (*Tyrannus tyrannus*), American robin (*Turdus migratorius*), tufted titmouse (*Parus bicolor*), Carolina wren (*Thyrothorus ludovicianus*), field sparrow (*Spizella pusilla*), American coot (*Fulica americana*), osprey (*Pandion haliaetus*), wood duck (*Aix sponsa*), ring-necked duck (*Aythya collaris*), great egret (*Casmerodius albus*), and pied-billed grebe (*Podilymbus podiceps*).

Non-native or Invasive species

Several non-native or invasive faunal species are present at Stennis WMA. Nutria (*Myocastor coypus*) are known to occur in numerous streams, freshwater marshes, and rivers. Pigeons (*Columba livia*) are relatively common in mowed areas, developed areas and in hangars on the Installation and SSC, and house sparrows (*Passer domesticus*), like pigeons, are found in all developed and improved areas. Fire ants (*Solenopsis invicta*), as is the case for most of the southeastern U.S., are common throughout Stennis WMA. Armadillos (*Dasypus novemcinctus*) are also common.

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3.0 ENVIRONMENTAL MANAGEMENT STRATEGY AND MISSION SUSTAINABILITY

3.1 SUPPORTING SUSTAINABILITY OF THE MILITARY MISSION AND THE NATURAL ENVIRONMENT

Sustainability is the ability to provide for the needs of the current mission without damaging the ability of future missions to maintain their needs in coordination with natural resources adaptive management. A sustainable process can be carried out over and over without substantial negative environmental impacts, increased operational costs or a decrease in mission readiness/training.

Installation and management activities that are detrimental to the functional values of the bottomland hardwood forest on the Stennis WMA, East Pearl River or Mike's River can potentially affect the military mission of the Navy SOF. For example, if timber management is not conducted properly, prescribed burns and selective harvesting could result in even larger stands of invasive tree and shrub species, ultimately reducing the amount of forest that can be used for riverine insertion and jungle warfare training. Similarly, uncontrolled soil erosion has the potential to increase sediment loading in stormwater runoff, which may increase turbidity and reduce water quality in East Pearl and Mike's Rivers, jeopardizing vital aquatic habitat downstream of the Stennis WMA, including critical habitat for the Gulf sturgeon. Without reforestation, sites that were clear-cut immediately prior to the acquisition of the Stennis WMA or used by gravel mining operations may experience excessive erosion problems that could potentially increase levels of turbidity. Conditions detrimental to the water quality of the downstream areas would likely result in an enforcement action and may be ordered discontinued by USFWS or state agencies.

Inappropriate herbicide applications (e.g., excessive use or application of inappropriate pesticides) may potentially affect Federally and state-designated endangered or threatened species and/or water quality, and consequent regulatory actions by agencies such as the USFWS, MDWFP, or MDEQ could threaten the SOF military mission. Significant pest or disease outbreaks within the Stennis WMA forest stands may require restricting access to these areas to limit spreading which may pose a threat to the

continuance of the military mission on the installation. Nuisance wildlife and/or outbreak of disease on the installation could pose a threat to implementation of the military mission through the infection of military personnel and/or the consequent limitation of access to areas of the installation to control a problem.

Outdoor recreational use by the public can affect the security and safety of the military mission. Outdoor recreational opportunities must be planned, developed, and used consistently with the constraints of the military mission. Unplanned and uncontrollable use of the East Pearl River by the general public may also affect the military mission. Consequently, the management activities must be continually coordinated with MDFWP, LDWF, USFWS, and SSC to reduce the risks associated with the public use of these streams.

Monitoring and measurement is fundamental to adaptive natural resources management and mission sustainability. The Stennis WMA will follow legal mandates and requirements to ensure that the effectiveness of the management, plans, controls, and training is monitored. Furthermore, the use of Best Management Practices (BMPs) and established monitoring protocols will enable Stennis WMA managers to identify their progress toward achieving goals and objectives. Without effective monitoring and measurement it would be difficult for Stennis WMA to continually improve, which is the basis of sustainability.

3.1.1 Military Mission and Sustainable Land Use

The primary military mission on the Stennis WMA is to support the training requirements of SBT-22/Group 4. Merging the military mission with sustainable land use can be achieved by simulating forest and jungle environments in order to train students for military operations that may be encountered during mission assignments. This INRMP will create a framework for sustainable land use that is compatible with the military training requirements while encouraging native and natural species abundance. The mission requires limited maintenance of access routes, most of which already exist on the Stennis WMA, maintenance of existing LZ/DZs, improvements to abandoned mine areas to develop navigation courses, removal of snags and logs downed by Hurricane Katrina within Mike's River to ensure navigation, and the possible future construction of a moveable MOUT village. In an effort to simulate a natural riverine forest/jungle

environment, a variety of natural resources management tools could be used to enhance native flora and fauna (e.g., exotic/invasive species management/removal, prescribed burning, etc.) while improving mission training objectives and sustainability. Improvements in the existing natural environment will serve to enhance the military mission and, thus, will further the goals of this INRMP. The goals of NCBC Gulfport include the following:

- Achieve optimal sustained use of lands for the execution of realistic training by providing a sustainable core capability, which balances usage, condition, and level of maintenance.
- Implement a management and decision-making process which integrates U.S. Navy training and other mission requirements for land use with sound natural and cultural resources management.
- Advocate proactive conservation and land management.
- Align U.S. Navy training land management priorities with U.S. Navy training, testing, and readiness priorities.

Through the CNRSE and its constituent elements, NCBC Gulfport integrates the use of its lands for meeting the current and future military mission and ensuring the conservation of the natural resources on which effective training rely.

3.1.2 Defining Impact on the Military Mission

The military mission at the Stennis WMA requires safe, natural-state, and undeveloped land and riverine environments for the training of Navy SEALs and SWCC Crewmen. NCBC Gulfport will comply with environmental regulations and strive to conserve the natural resources while also conducting effective training. Through the coordination of the various environmental programs (e.g., Forest Management, Fish and Wildlife Management), NCBC Gulfport ensures the availability of quality training opportunities and the protection of the natural resources on the Stennis WMA. During the planning phase of natural resources projects and training missions, the Stennis WMA Natural Resources Manager and the Range Manager closely coordinate with each other to ensure compatibility between the military mission and natural resources management. During this planning process, resolutions are established to ensure that environmental regulations (e.g., ESA, Clean Water Act [CWA], etc.) are being satisfied while improving land/water resources and meeting the military mission.

3.1.3 Relationship to Range Complex Management Plan

Planning for training activities and natural resources activities are coordinated between the Stennis WMA Natural Resources Manager and Range Control. This ensures that the military mission is not compromised and that NCBC Gulfport is meeting the mandated environmental regulatory requirements. Environmental resources must be considered during the planning and development of future training ranges and facilities identified in the Range Development Plan (NSW 2009). This plan incorporates the existing proposals to acquire the Phase II and III lands, clear and de-snag Mike's River, and deploy one or more MOUTs to enhance training opportunities, as described in this INRMP. Other major developments proposed in the Range Development Plan include boat ramp improvements, construction of Range Control Tower and other facilities, upgrade of the small arms range, and expansion of the Stennis WMA to the south.

3.2 NATURAL RESOURCE CONSULTATION REQUIREMENTS

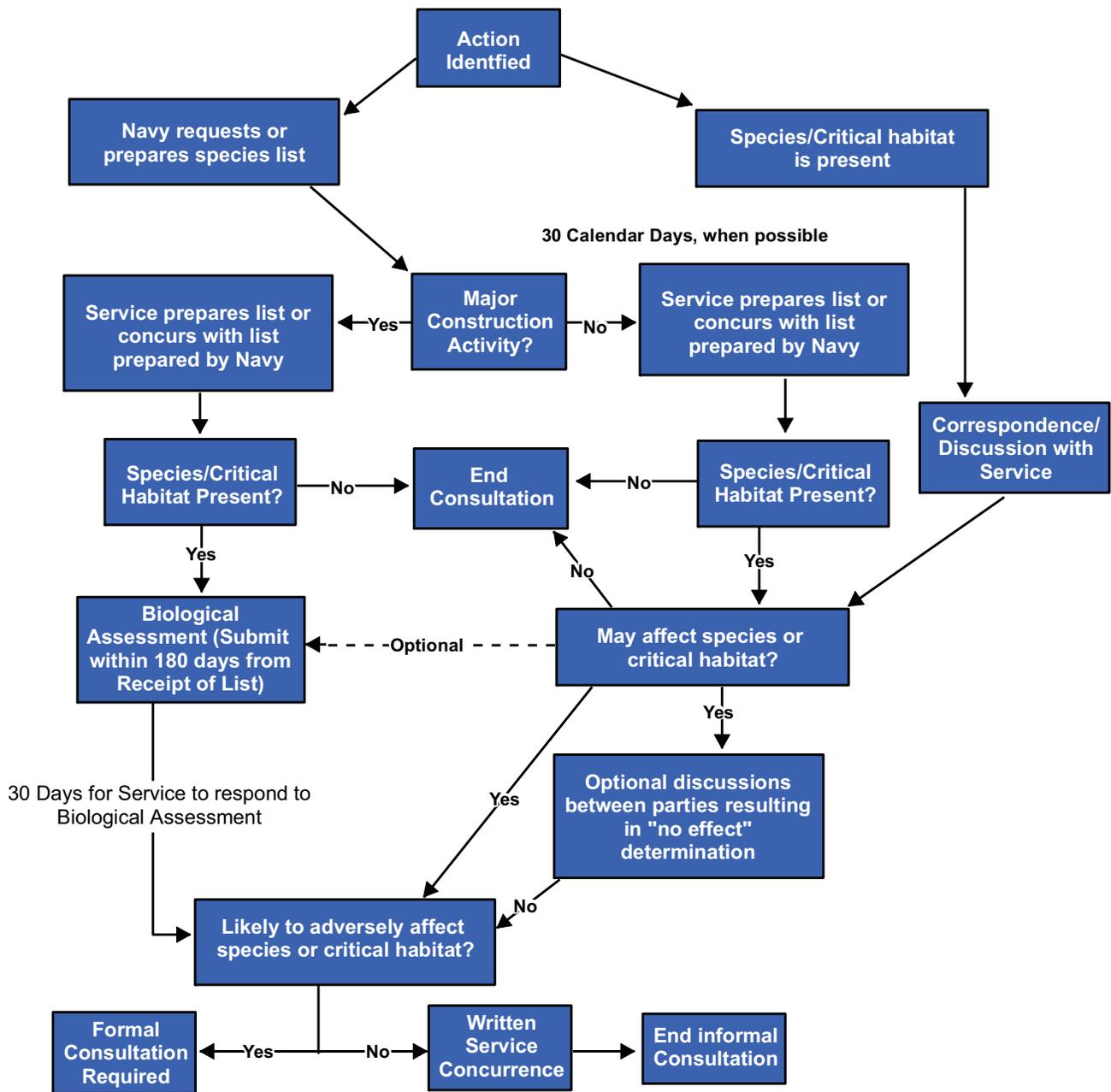
All Federal agencies are required to implement protection programs for designated species and to use their authorities to further the purposes of the ESA. Furthermore, if a Federal action of any kind is found to potentially impact any species protected by the ESA, the responsible Federal agency must enter into Section 7 consultation with the USFWS or National Marine Fisheries Service (NMFS). The USFWS is the primary agency responsible for implementing the ESA, except for actions involving marine animals or anadromous fish, such as the Gulf sturgeon, for which the NMFS is the acting agency. Several Federally listed species have the potential to occur on Stennis WMA and portions of the East Pearl River are designated critical habitat for the Gulf sturgeon, a Federally threatened species. Section 7 consultation could be required for future military projects that have a potential to impact Federally listed species and/or designated critical habitat, such as removing tree snags from Mike's River to permit safe training operations on/in a riverine environment.

The CO of NCBC Gulfport or his agent coordinates with the appropriate regulatory agency on any actions that have the potential to impact RTE species. Early informal consultation with the acting ESA agency is the key to resolving potential problems and addresses issues in a proactive and positive manner and is the preferred method of consultation. Informal consultation includes all discussions and correspondence, and

occurs prior to formal consultation to determine whether a proposed Federal action may affect listed species or critical habitat. A flow chart of the informal consultation process is provided in Figure 3-1.

NCBC Gulfport may determine, through the informal consultation process or simply by the nature of the proposed action, that formal consultation is required for an action. If NCBC Gulfport determines that an activity may have an adverse effect upon a Federally listed species and/or critical habitat, NCBC Gulfport will enter into formal consultation with USFWS or NMFS to determine whether a proposed action is likely to jeopardize the continued existence of listed species, destroy or adversely modify designated critical habitats, or potentially result in the incidental take of a species. The formal consultation process begins with a NCBC Gulfport written request and submittal of a complete initiation package and concludes with USFWS's or NMFS's issuance of a biological opinion and "incidental take" statement, if applicable. A flow chart detailing the steps of the formal consultation process is presented as Figure 3-2.

Migratory birds are specifically protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended, and EO 13186 of January 10, 2001, Responsibilities of Federal Agencies to Protect Migratory Birds. The MBTA makes it illegal to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products, except as allowed by the implementing regulations. EO 13186 requires that Federal agencies avoid or minimize the impacts of their activities on migratory birds and make efforts to protect birds and their habitat. Military preparedness and readiness activities such as small craft operations training are exempt from the MBTA. Although exempt per 50 Code of Federal Regulations (CFR) 21, the Navy is responsible for monitoring the potential impacts on migratory birds from military readiness activities. This monitoring will be carried out in conjunction with monitoring and management conducted under EO 13186 as specified in the Memorandum of Understanding (MOU) between DoD and USFWS to Promote the Conservation of Migratory Birds dated 31 July 2006, and in DoD Guidance to Implement said memorandum dated 3 April 2007.

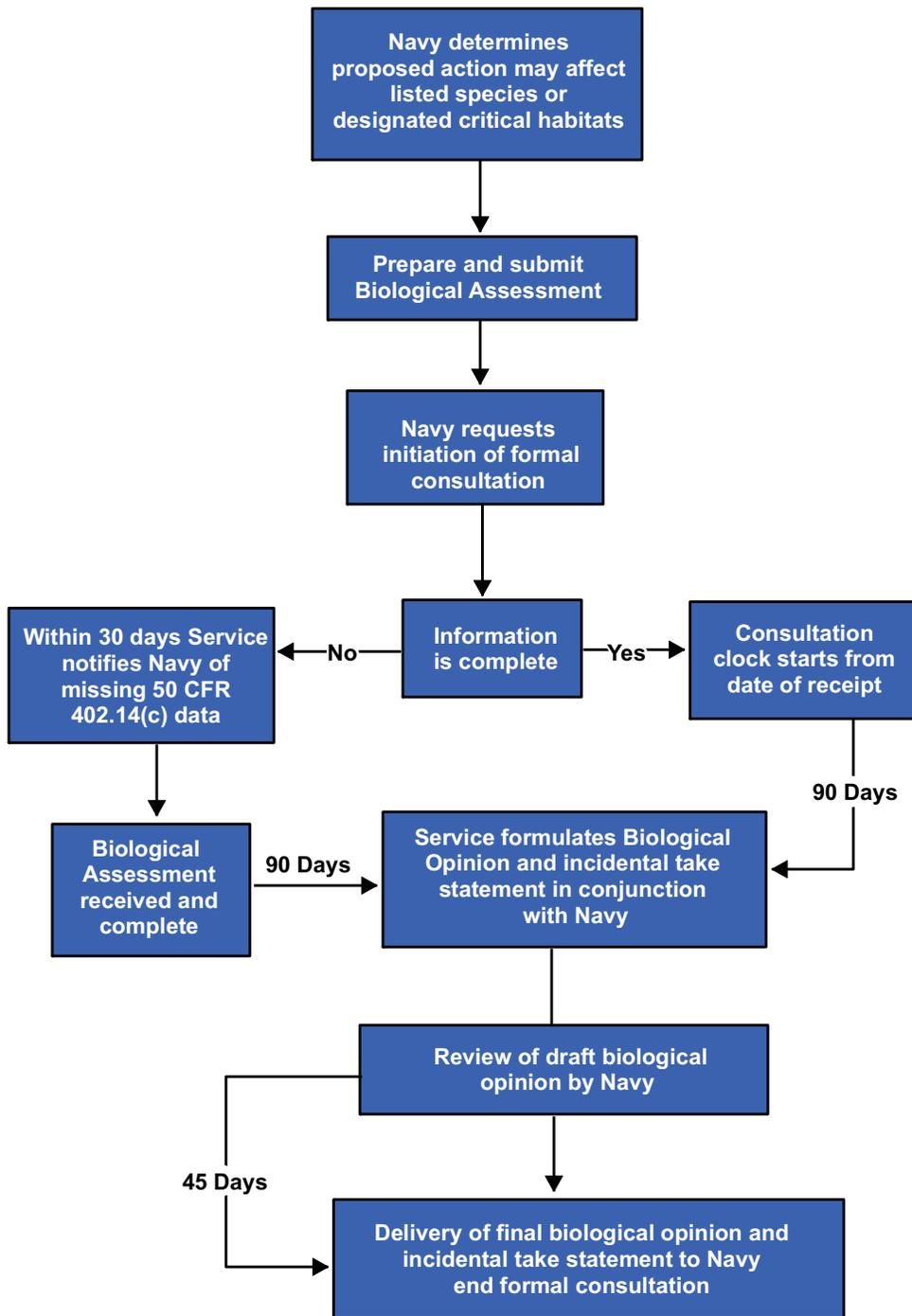


Source: USFWS 1998

Figure 3-1: Flow Chart for Informal Consultation Process



July 2010



Source: USFWS 1998

Figure 3-2: Flow Chart for Formal Consultation Process



July 2010

3.3 PLANNING FOR NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

NEPA requires an environmental analysis of major Federal actions, including actions that occur with Federal funding or on Federal lands. NEPA requires the evaluation of the environmental effects of proposed land use, development, and military training activities. Some Navy actions fall under existing categorical exclusion and require no further analysis. For those actions not covered by an existing categorical exclusion, the initial environmental document, the Environmental Assessment (EA) determines the potential for significant project impacts and the feasibility of proposed actions. The NEPA process requires coordination with appropriate Federal and state agencies and the general public. The public review process scopes or identifies significant issues to develop/evaluate alternatives. The preparation of an Environmental Impact Statement (EIS) occurs only if significant impacts are identified. If the EA finds “no significant impacts”, the Navy would complete the preparation of a formal Finding of No Significant Impact and make it available for public review.

An EIS and Record of Decision were prepared for the acquisition of lands that comprise the Stennis WMA (NSW 2004). An EA has been prepared to address the implementation of this INRMP. The EA will be provided to the public for a 30-day review and comment period. A copy of the Final EA will be included as an appendix to this INRMP once it is completed.

3.4 BENEFICIAL PARTNERSHIPS AND COLLABORATIVE RESOURCE PLANNING

The current staffing level of natural resource personnel at Stennis WMA and the need for outside expertise increases the importance of developing cooperative projects with other agencies, universities, contractors, other installations, local residents, conservation organizations, and the Navy command. Cooperating Federal and state agencies, universities, and non-governmental organizations (NGO) can provide a beneficial exchange of technical information, natural resources services, and field assistance.

Examples of such agencies include MDWFP, MDEQ, local Soil and Water Conservation Districts, and the Mississippi Forestry Commission, which can address environmental

quality, soil conservation issues, and control and suppression of wildfire. Federal agencies that can provide future technical assistance include NASA, NRCS, U.S. Forest Service, the National Park Service, U.S. Geological Survey, National Interagency Prescribed Fire Training Center, and USFWS. Cooperation with LDWF is also encouraged since LDWF's Pearl River Wildlife Management Area borders the Stennis WMA. In the future, there may be potential to work with NGOs like The Nature Conservancy, other non-profit entities, and/or Universities in a partnership effort to protect and conserve natural resources, maintain environmental compliance, and enhance the Navy's ability to meet its mission critical objectives.

3.5 PUBLIC ACCESS AND OUTREACH

3.5.1 Public Access and Outreach

Recreational opportunities on Stennis WMA have not yet been developed. However, potential recreational opportunities exist on Stennis WMA and include bird-watching, camping, hiking, fishing, hunting, and picnicking. Several gravel mines could be developed into fishing lakes with associated picnicking and camping areas. Camp Tawiki was a developed campground open to the general public prior to land acquisition and provides potential opportunities for fishing, camping and picnicking. Fishing within the Stennis WMA or within the East Pearl River requires a current Louisiana or Mississippi fishing license. Fishing will be in accordance with Mississippi fishing regulations and daily limits.

Hunting opportunities for white-tailed deer and feral hogs are abundant in the Stennis WMA, and development of a hunting program is being proposed to allow the harvest of these two species. It is envisioned that only active duty, reserve, and retired military personnel, their dependents and accompanied guests would be able to participate in all available recreational activities at Stennis WMA, with the exception of feral hog hunting. These restrictions are required due to the relatively small area, safety issues due to the size of the area, the lack of enforcement personnel available and the sensitivity of training requirements.

In order to control feral hog population on the Stennis WMA, NCBC Gulfport may sponsor permitted hunts open to government employees. Participants would be

required to have a hunting permit issued by NCBC Gulfport for Stennis WMA in order to hunt during a permitted hunt. All hunting would be regulated and administered through the WMA Natural Resources Manager.

Hunting and fishing regulations for the Stennis WMA will be developed in the future and, at a minimum, will mirror Federal and MDWFP regulations and requirements. These regulations will be updated to reflect changes in the management and use of the Stennis WMA as more military operations are scheduled on the range and the additional land acquisition comes to fruition.

NCBC Gulfport allows local law enforcement agencies access to train at the shooting range on SSC property. The law enforcement agency must schedule with and obtain approval from the range manager.

3.5.2 Public Outreach

NCBC Gulfport currently does not participate in public outreach programs related to natural resources due to staff limitations and the nature of the military mission at the Stennis WMA. NCBC Gulfport maintains and operates an information system, Stennis WMA Safety Line, which the general public can access via telephone (800-327-7135 or 228-813-4007) to obtain the status of training missions.

3.6 ENCROACHMENT PARTNERING

All of the land in the Stennis WMA is located within the SSC noise buffer zone, where construction of habitable structures is prohibited. Encroachment of civilian structures is, therefore, not a concern for interference with the military mission or natural resources management at this time. The boundaries of the Stennis WMA were established to provide sufficient live fire safety zones and buffer areas in order to prevent any encroachment into the military mission areas of concern. NCBC Gulfport will continue coordination with SSC and the tenant commands stationed there in order to avoid any conflicting encroachment activity that would jeopardize the military mission, natural resource conditions or values, or the safety of personnel in the area.

3.7 STATE COMPREHENSIVE WILDLIFE PLANS (SCWP)

The U.S. Congress asked each state to develop a comprehensive wildlife conservation plan. Each plan was required to include the species and habitats to be conserved, the conservation actions proposed, procedures to review the plan, and coordination with the public and other agencies. The Mississippi Comprehensive Wildlife Conservation Plan was used in Section 2.5 of this INRMP to identify and discuss the habitat types present on Stennis WMA and the conservation species associated with each habitat type. The plan will also be used during cooperative management planning with MDWFP and USFWS.

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4.0 PROGRAM ELEMENTS

This section presents the framework of goals, objectives, management strategies, and projects for natural resources at the Stennis WMA. Goals are general expressions that are compatible with the military mission of the Stennis WMA and provide conservation and ecosystem management targets and direction. Objectives can be defined as defensible targets or specific components of a goal, the achievement of which represents measurable progress toward that goal. Objectives help to focus management activities and provide a yardstick against which to evaluate and communicate results. Management strategies establish the approach and expected end result for actions that are necessary to accomplish stated objectives. Projects are discrete actions for fulfilling a particular management strategy. Projects may be required to fulfill obligations by SUBASE in meeting regulatory requirements regarding natural resources management, may enhance existing measures to ensure compliance, or may simply provide for sound natural resources stewardship. Projects require labor resources and funding, in addition to the day-to-day requirements of the installation.

The natural resources actions described in this INRMP are for the benefit of the plants, animals, and ecosystems occurring on the Stennis WMA. Special attention is given to rare, threatened, and endangered (RTE) species and their habitats, through management actions referenced in Table 4-1. These actions are long-term conservation measures that provide benefits for terrestrial and aquatic habitats on the Installation. Management actions such as soil conservation and storm water management, for example, control sediment and pollutant runoff to protect nearshore water quality for species such as manatees, shorebirds, and fish. Forestry actions such as prescribed burning, thinning, and reforestation help to establish longleaf pine stands and herbaceous low-lying vegetation that provide habitat and resources for gopher tortoises, as another example.

Table 4-1. Habitat Management Actions at the Stennis WMA

Habitat Management Actions	Section
Wetland Management	4.1.1
Erosion Control and Stormwater Control	4.1.2
Floodplain Management	4.1.3
Vegetative Management	4.1.4
Invasive Species Management	4.1.5
Land Leases	4.1.6
Forestry Management	4.2.1
Wildland Fire Management	4.2.2
Agricultural Outleasing	4.2.3
Fish and Wildlife Management	4.3.1
Rare, Threatened and Endangered Species	4.3.2
Migratory Birds	4.3.3
Bird Aircraft Strike Hazard	4.3.4
Aquatic Species Management	4.3.5

The Fish and Wildlife Management section of this INRMP (see Section 4.3.2) includes additional goals, objectives, strategies, and projects for the benefit and long-term conservation of RTE species found, or potentially found, on the installation. Animal and plant species explicitly accounted for in this INRMP are:

- Bald Eagle
- Dusky Gopher Frog
- Gopher Tortoise
- Gulf Sturgeon (fish)
- Inflated Heelsplitter (mussel)
- Louisiana Black Bear
- Louisiana Quillwort (plant)
- Red-cockaded Woodpecker (bird)
- Ringed Map Turtle
- West Indian Manatee

4.1 LAND MANAGEMENT

This section addresses the development and implementation of programs and techniques for managing lands. The land management issues of this INRMP are wetlands, erosion and stormwater control, floodplains protection, vegetative management, invasive species management, and land leases.

4.1.1 Wetland Management

The loss of wetlands in the contiguous U.S. has caused increases in flooding, property damage, and land erosion. Destruction and degradation of wetlands has, in turn, caused declines in aquatic productivity and native biodiversity, loss of fish and wildlife habitat, loss of income from timber production and commercial fisheries. Other values of wetlands include filtration of pollutants, replenishment of ground water supplies, and outdoor recreational uses.

Aquatic habitat types at Stennis WMA include swamps, streams and alluvial floodplains, lakes, ponds, sand and gravel mines and ephemeral pools. Management may differ for various wetland and aquatic habitat types based on mission requirements and legislative mandates. In addition to jurisdictional wetlands, selected wetland types are considered in this plan to address fish and wildlife management and biological diversity goals.

Numerous waters of the U.S. are present across the Stennis WMA (NSWC 2004), in particular the East Pearl River and Mike's River. As mentioned previously, preliminary jurisdictional determinations by USACE revealed that approximately 4,637 acres of potentially jurisdictional wetlands and other waters of the U.S. could occur on the Stennis WMA, after acquisition of all property proposed for purchase. Preliminary investigation of potential wetland acreage on the present Stennis WMA property utilizing NRCS soil survey data, aerial photography, and LIDAR data, indicates that 88 percent of the 3,371 acres could be potentially jurisdictional waters of the U.S., including wetlands, but that 6 percent of the land could be isolated non-jurisdictional waters (i.e., open water associated with abandoned mines).

Hurricane Katrina caused extensive damage to bottomland hardwoods and riparian communities throughout the region, including Stennis WMA. Many of the downed or

damaged trees fell into Mike's River, creating extreme hazards to the Special Operations Craft-Riverine (SOC-Rs) and the training units. This is especially true during nighttime training when the SOC-R operators navigate the rivers using only night-vision goggles (NVG). To sustain training opportunities within Mike's River (which is the only navigable stream that is fully restricted from the public), snags, logs, and downed trees need to be removed from Mike's River following appropriate and necessary coordination, consultation, and permitting with required regulatory agencies.

Several abandoned mines occur throughout the Stennis WMA, some of which are used by SBT-22 for HMMWV and navigation course training. For the remaining abandoned mines, wetland restoration could be implemented to enhance functional values, and wildlife habitat. These efforts would also be intended to provide wetland impact credits and additional cover for concealment training.

Ponds at the former Camp Tawiki will be managed primarily for recreational purposes and will be open seasonally for fishing and other recreation activities. Fish removal and stocking plans would be developed and implemented to enhance populations of desired species and the recreational experience.

4.1.1.1 Goals and Objectives

- Identify and map all wetlands, streams, and aquatic habitats and build and maintain a geographic information system (GIS) database of these features to obtain a programmatic jurisdictional determination from USACE Mobile.
- Achieve a no net loss of wetlands and floodplains and maintain wetland habitat quality while supporting the training mission.
- Ensure compliance of installation actions with Federal, state, and local laws, and DoD policy and instruction.
- Identify mitigation opportunities that could be implemented to offset future impacts, thereby reducing compensatory mitigation ratios.
- Maintain, or re-establish where practicable, native ecosystems.
- Maintain a navigable channel within Mike's River and major tributaries required to access interior ranges.

4.1.1.2 Projects

No projects are currently identified to specifically address wetland management in the Stennis WMA. Goals and objectives relate to operations and maintenance.

4.1.1.3 Management Strategies

Management strategies to protect the Stennis WMA's wetlands, streams, and floodplains include the following:

1. Minimize direct and indirect impacts on wetlands, streams and aquatic habitats while supporting the training mission to the extent practicable.
2. Coordinate with USACE Mobile District regarding potential to develop a wetland "bank" on the Stennis WMA.
3. Monitor wetlands, streams, and floodplains using ground surveys and aerial photography.
4. Review wetland, stream and floodplain protection during implementation of other natural resource management initiatives.
5. Protect water quality of wetlands and streams from non-point source and point source pollution, including erosion, bank destabilization, chemical and fuel spills, and sewage disposal.
6. Maintain protective buffer strips or corridors around wetlands and along streams.

4.1.1.4 Additional Sources of Information

USACE – Mobile District
Wetlands and Waters of the U.S., Regulatory Division
<http://www.sam.usace.army.mil/RD/reg/reg.htm>

Environmental Protection Agency (EPA)
Wetlands, Oceans and Watersheds
<http://www.epa.gov/owow/>

USFWS – National Wetlands Inventory
<http://www.fws.gov/nwi/>

MDEQ
Water Quality Certification Branch
Wetlands Protection

4.1.2 Erosion Control and Stormwater Control

Excessive soil erosion and soil sedimentation reduces the capacity of land to sustain current and future mission uses. Failure to identify and prevent excessive soil erosion and soil sedimentation can jeopardize the long-term, usable life of an installation.

Navy policy is that management of soils for sustainment on U.S. Navy installations is accomplished by developing and implementing soil erosion and sediment control as a component of the INRMP. NASA SSC currently operates under a number of plans, permits and programs in compliance with Federal and state regulations. The plans are the Phase II Municipal Stormwater Management Plan (MS4) and Industrial Stormwater Pollution Prevention Plan (SWPPP). The State of Mississippi also regulates the numerous active surface mines and a Class II Rubbish Site located within the current and proposed boundaries of the Stennis WMA to prevent soil erosion during mining activities and to require restoration following completion of mining activities to prevent future soil erosion.

The Navy, as part of the Operations and Maintenance plans, will develop a SWPPP specific to the management of the Stennis WMA that will address road maintenance, ground disturbance for training activities, such as clearing and grading landing areas and maneuver areas, maintenance of existing erosion control practices at existing surface mines, maintenance of ground cover and trees in high erosion potential areas, and repair of ruts and other ground disturbances caused by vehicle maneuvers to prevent excessive erosion and runoff into nearby streams.

The SWPPP will be developed to ensure implementation of Best Management Practices (BMPs). A Stormwater Pollution Prevention Team should be formed to determine the adequacy of the SWPPP, perform inspections, perform required record keeping, and carry out the annual update and certification of the SWPPP. The three major components of the SWPPP are stormwater monitoring, BMP implementation, and site compliance evaluations.

4.1.2.1 Goal and Objectives

The goal of the land and grounds management is to maintain soil productivity as a prerequisite for ecological sustainment and mission accomplishment in perpetuity. Objectives for achieving the goal are as follows:

- Keep soil erosion within limits defined in the SWPPP, and restore and stabilize degraded soils.
- Keep soil from developing gullies, and stabilize and repair existing active gullies.

- Keep soil sediment in the Stennis WMA's waterways within SWPPP limits.
- Provide for road maintenance as necessary.
- Minimize use of pesticide.

4.1.2.2 Projects

Erosion control and grounds maintenance are the responsibility of the operations and maintenance program for Stennis WMA, and no INRMP projects are designated for this program.

4.1.2.3 Management Strategies

Monitoring of soil loss is required to correlate impacts with land-use practices. The Navy will protect water quality of wetlands and other bodies of water from non-point source and point source pollution including erosion. Estimating soil loss is critical to defending land-use practices or finding where actual problems exist. The Navy will utilize Range and Training Land Assessment (RTLTA) procedures to monitor and estimate the following:

- Acres exceeding soil loss tolerances from sheet and rill erosion.
- Length of active gullies.

RTLTA monitoring of installation-wide soil erosion conditions is done every 5 years, and each major plan revision quantifies observed trends in soil erosion. The results from monitoring serve as the basis for developing measurable objectives describing the effectiveness of the previous plan and changes in management necessary to ensure that the revised plan is effective.

Woody debris and trash generated from regular maintenance of navigable streams, roads and general forest maintenance will be disposed of at an existing Class II Rubbish Site located in the northeast corner of the proposed Stennis WMA property. The permit for this site will be transferred to the Navy, and the rubbish site will be used and maintained according to MDEQ regulations for Navy use only.

4.1.2.4 Additional Sources of Information

International Erosion Control Association:
www.icea.org

Mississippi Forestry Commission
<http://www.mfc.ms.gov/>

4.1.3 Floodplain Management

The majority of land within the Stennis WMA is located in the floodplain of the East Pearl River (Figure 4-1). As such, management of land use and development is regulated by EO 11988, Floodplain Management, which directs Federal agencies to avoid construction in the floodplain and prescribes management of land use in floodplains to avoid uses that would increase the amount and rate at which flooding occurs or decrease the flood attenuation capacity of the floodplain.

4.1.3.1 Goals and Objectives

Manage land resources to avoid activities that would reduce floodplain capacity or increase flooding rates.

4.1.3.2 Projects

There are no projects directly related to floodplain management, as this is a function of the Stennis WMA operations and maintenance program.

4.1.3.3 Management Strategies

1. Avoid activities, particularly vegetation clearing and ground-disturbing activities that would adversely affect flood attenuation.
2. Clear stream or drainage blockages such as beaver dams, obstructed culverts, etc. that would increase flood levels or prevent flood waters from subsiding. This effort is the responsibility of operational and maintenance programs, but should be accomplished in concert with the Natural Resources Manager.

4.1.3.4 Additional Sources of Information

MDEQ Flood Insurance Rate Maps –
<http://www.geology.deq.state.ms.us/floodmaps/panels>

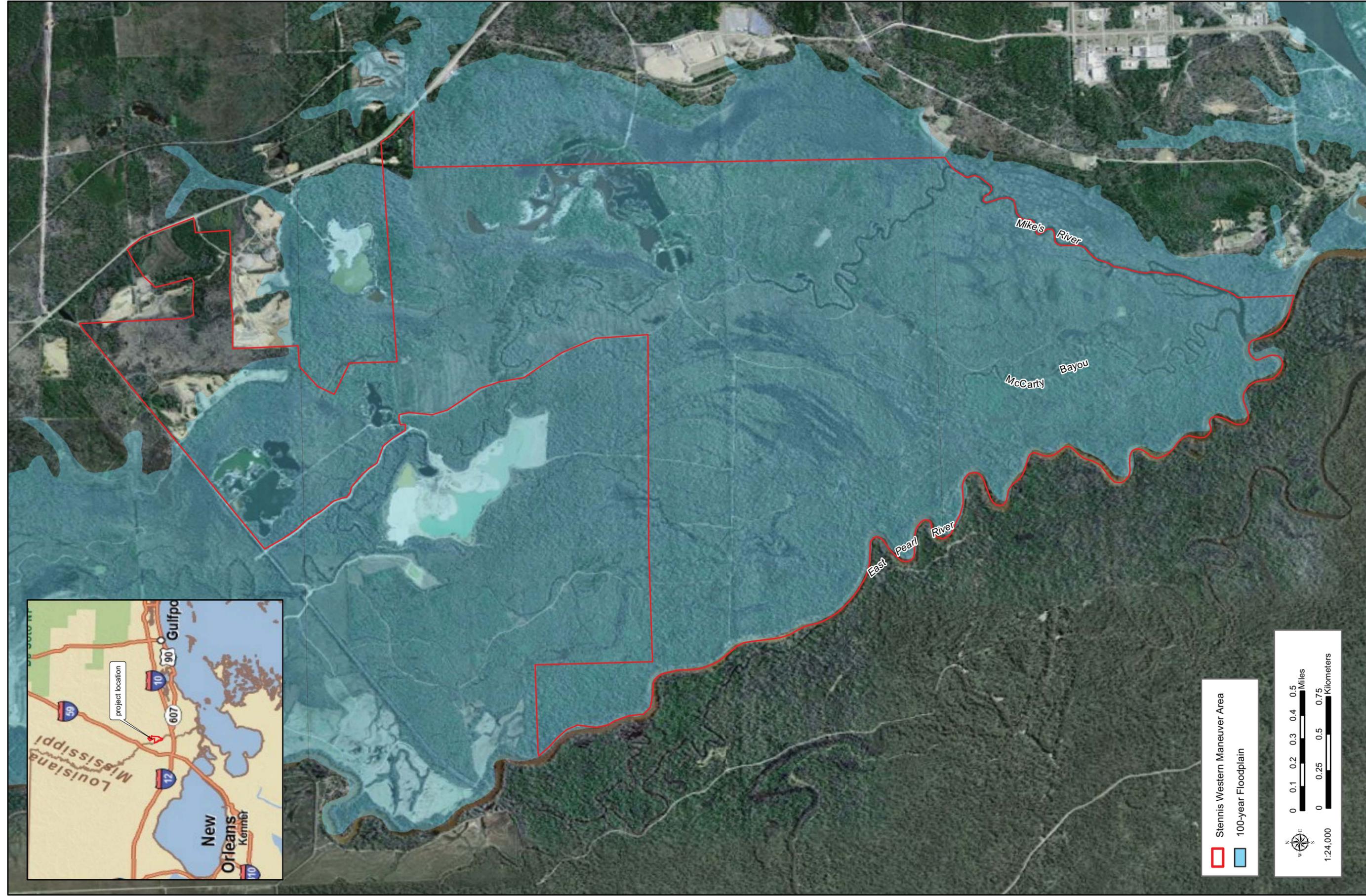


Figure 4-1: 100-Year Floodplain

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4.1.4 Vegetative Management

Vegetative management on Stennis WMA is accomplished through Land Management (Section 4.1) and Forest Management (Section 4.2).

4.1.5 Invasive Species Management

4.1.5.1 Goals and Objectives

- Control invasive species such as Chinese tallow, Japanese climbing fern, privet, kudzu, cogon grass, and feral hogs.
- Survey for invasive plant and animal species as needed to ensure control and eradication.
- Restore altered or degraded communities.
- Maintain, or re-establish where practicable, native ecosystems and viable populations of endemic species.

4.1.5.2 Projects

Participation in the following project will occur in support of the goals and objectives for invasive species management.

- Project No. 3: Conduct surveys on the Stennis WMA to identify and map occurrences of invasive plant species, and establish and implement an invasive plant species eradication and control program.

4.1.5.3 Management Strategies

1. Select herbicides with low toxicities to fauna.
2. Apply herbicides at times with highest effectiveness rates.
3. Pre-treatment and post-treatment monitoring is essential to ensure elimination of invasive plant species.
4. Invasive plant species should be detected and controlled before seed production to avoid spreading by seed dissemination. This is especially important in the control of cogon grass, mimosa, or other species with wind-disseminated seeds. Seeds of other species, such as kudzu, privet, and Chinese tallow, are spread by seed-eating rodents and birds. Cogon grass sprouts readily from stolons and is spread easily by tractor mowing and disking equipment. For that reason, no disking will occur within or around any cogon grass-infested areas. All mowers and tractor equipment will be inspected for cogon grass stems, stolons, and rhizomes, following work on infested sites, and any grass contamination found will be removed prior to the next use of the equipment.

4.1.5.4 Additional Sources of Information

The Nature Conservancy
<http://www.nature.org/initiatives/invasivespecies/>

Southeast Exotic Pest Plant Council
Mississippi Chapter
<http://www.se-eppc.org/mississippi/>

Mississippi Forestry Commission
http://www.mfc.ms.gov/fh_cogongrass.htm

EPA Office of Pesticide Programs
<http://www.epa.gov/pesticides/>

4.1.6 Land Leases

4.1.6.1 Goals and Objectives

- Identify sand and gravel pits to be retained for training courses.
- Identify abandoned sand and gravel pits that offer potential wetland mitigation, or that can be developed into fishing and outdoor recreational areas.
- Develop operation and maintenance plan to use existing sand and gravel pits for future road aggregate needs.

4.1.6.2 Projects

No projects are designated, since this is a function of the Stennis WMA operations and maintenance program.

4.1.6.3 Management Strategies

1. Maintain existing erosion controls at mine pits to prevent off-site migration of sediment.
2. Continue to use sand, gravel and dirt resources, as necessary, to maintain roads and other facilities on the Installation.

4.1.6.4 Additional Sources of Information

MDEQ Mining and Reclamation Division-
http://www.deq.state.ms.us/MDEQ.nsf/page/Geology_mining_and_reclamation?opendocument

4.2 FOREST MANAGEMENT

This section addresses the development and implementation of programs and techniques for managing forests. The forest management issues of this INRMP are forestry, wildland fires, and agricultural outleasing.

4.2.1 Forestry Management

Forest management applies scientific principles to accomplish the objectives described below (in Section 4.4.1) which have been chosen to support the training mission while conserving native biological diversity and ecosystem integrity as outlined in DoDINST 4715.3. Forest management practices complement the goals and objectives of threatened and endangered species preservation (Section 4.1), wetland management (Section 4.2), fish and wildlife management (Section 4.3), vegetative management (Section 4.5), migratory birds (Section 4.6), invasive species control (Section 4.7), land management (4.8), outdoor recreation (Section 4.11), and wildland fire management (Section 4.12). A healthy, well-managed, sustainable forest is the basis for the achievement of the goals for the Stennis WMA's natural resources. Healthy forests provide better wildlife habitat, improve water quality, limit invasive species establishment and growth, improve recreational experiences, reduce chance of stand-replacing fire, enhance aesthetics, and provide the simulated jungle-type environs desired for training.

4.2.1.1 Goals and Objectives

- Integrate ecosystem management with traditional timber management to develop multiple use (including jungle warfare opportunities), sustained yield, and biological diversity.
- Update the forest inventory and GIS database to establish, implement, and monitor the Forest Management Plan on a 10-year basis or more frequently as dictated by catastrophic events such as hurricanes.

4.2.1.2 Projects

Participation in the following projects will occur in support of the goals and objectives for forest management.

- Project No. 2: A land management and fire management plan will be completed and implemented for the Stennis WMA.

Project No. 5: Timber stand improvement activities, such as herbicide application, mechanical treatment, fertilization and timber harvesting, will be implemented.

4.2.1.3 Management Strategies

Once the resource assessment is completed and an environmental baseline is established, the following five forest management principles will be used on the Stennis WMA to integrate mission-specific objectives and conserve biological diversity and promote ecosystem integrity. Specific management tasks would involve the delineation of management units which would be further broken down into forest stands. Forest management activities would be conducted at the forest stand level. Specific silvicultural objectives would be determined after the baseline forest conditions are assessed.

The following five forest management strategies have been established.

1. Determine the desired forest condition.
2. Trees will be removed where needed for the training mission, particularly for helicopter safety, such as clear zones and radar, radio, and navigation signal interference areas. As previously discussed, the Stennis WMA exists to support the military mission. Trees will also be removed to eliminate or restrict movement of pests and diseases. Forest and other natural resources management is subordinate to and supports the military mission. Monitoring will be done by comparing mission requirements to the latest aerial photos and GIS coverages, and by meeting the standards of periodic safety and compliance inspections.
3. Insure the conservation, restoration, and/or maintenance of native ecosystem integrity and native biological diversity which involves several emphases:
 - a. Restore native biological diversity in forests.
 - b. Establish and maintain a prescribed burning regime, where practicable, to mimic pre-settlement regimes.
 - c. Inventory forest stands for species composition and volume every 10 years or more frequently as needed.
4. Forest management provides for multiple uses of forest resources on a sustained-yield basis, including generation of timber products, outdoor recreation and education, aesthetic quality, and habitat for native flora and fauna.
5. Erosion would be minimized by exceeding the minimum standards contained in the Mississippi Best Management Practices (BMP) for forestry. BMPs (i.e., waterbars, revegetation, low water crossings) were developed in order to reduce soil erosion and nonpoint source pollution during forest management activities. Mississippi BMP guidelines are minimum standards set for voluntary compliance.

Exceeding the minimum specifications for the distance between water bars, for example, will minimize soil movement on sloping forest roads in the northeast portion of the Stennis WMA. The WMA Natural Resources Manager will apply upgraded BMPs during timber sale inspections, forest road layout and repairs, trail inspections, silviculture management, and other management activities. Forest management includes the protection of cultural resources from damage by forest operations in compliance with the forthcoming Integrated Cultural Resource Management Plan.

Additional discussions and more detailed descriptions of specific forest management techniques, such as silviculture practices, prescribed fire, managing natural disturbances, erosion and sedimentation control, and aesthetic and scenic preservation, will be developed within the next 5 to 10 years.

4.2.1.4 Additional Sources of Information

USDA Forest Service Southern Research Station:
<http://www.srs.fs.usda.gov/>

Mississippi Forestry Commission:
<http://www.mfc.state.ms.us/>

Mississippi State University, College of Forest Resources:
<http://www.cfr.msstate.edu>

4.2.2 Wildland Fire Management

Prescribed fires are a management tool used to reduce forest fuels that could generate a high intensity fire and destroy natural resources. Frequent prescribed fires are required by the INRMP to protect forest resources within forest stands identified as pine or pine-hardwood dominated forests. Growing season (summer) fires are used to reduce midstory hardwood trees and encourage the reproduction and growth of herbaceous vegetation. Fuel reduction fires are generally conducted during the dormant season (winter) when temperatures are low and the weather is more predictable. Dormant season burns also minimize damage to desirable vegetation. However, such burns are likely to be successful only within the northeastern portions of the Stennis WMA. Mixed hardwood pine and bottomland hardwood forests would be more difficult to burn due to the moist soil and fuel conditions associated with these communities. Management of any wildfire and/or human-caused ignition will be evaluated on a case-by-case basis to determine if the fire will need to be controlled or will be allowed to burn out.

Stennis WMA will establish a prescribed burn plan within the forest management plan to meet forest management and vegetation management goals while meeting the needs of the military mission and providing the appropriate habitat for wildlife. The burn plan will include a wildland fire management plan as well.

4.2.2.1 Goals and Objectives

Goals and objectives to achieve land management and fire control and management on the Stennis WMA are as follows:

- Support the mission by maintaining a healthy forest habitat.
- Improve and maintain pine forests to control invasive hardwoods.
- Maintain habitat to support protection and development of protected species.

4.2.2.2 Projects

Participation in the following projects will occur in support of the goals and objectives for wildland fire management.

- Project No. 2: A land management and fire management plan will be completed and implemented for the Stennis WMA.
- Project No. 5: Timber stand improvement activities, such as herbicide application, mechanical treatment, fertilization and timber harvesting, will be implemented to reduce excessive understory vegetation.

4.2.2.3 Management Strategies

1. Implement prescribed burns where consistent with the mission and sound ecological practices.
2. Control wildland fires with fire breaks understory vegetation management.

4.2.2.4 Additional Sources of Information

Southern Regional Fire Training Center
http://www.mfc.ms.gov/southern_regional_fire_training_center.htm

U.S. Forest Service
http://www.fs.fed.us/fire/fireuse/rxfire/rx_index.html

4.2.3 Agricultural Out-Leasing

Stennis WMA does not maintain an agricultural out-leasing program, and the existing agricultural operations (turf farm) will be phased out when the Stennis WMA is established.

4.3 FISH AND WILDLIFE MANAGEMENT

This section addresses the development and implementation of programs and techniques for managing fish and wildlife resources. The fish and wildlife management issues of this INRMP are threatened and endangered species, migratory birds, bird aircraft strike hazard, and aquatic species management.

4.3.1 Fish and Wildlife Management

Fish and wildlife conservation and sensitive habitat protection is conducted through ecosystem management approaches. Ecosystem management encompasses four important initiatives: (1) shift toward managing resources on an ecological basis, (2) formation of public agency partnerships, (3) public involvement; and (4) adaptive management. Interagency and multiple landowner cooperation is important because ecosystem processes do not conform to property boundaries. Additionally, natural characteristics of the land base and habitat use by organisms may extend across landscapes and regions. Examples of landscape concerns would be management of watersheds and migratory animals, such as bats and neo-tropical migratory birds. The Stennis WMA INRMP seeks to implement forest, fish, and wildlife management and wetland conservation that will support conservation on a landscape level.

Managers must identify and analyze geographic and cumulative impacts of land management to minimize undesired disruption of ecosystem processes. Planned biological surveying and forest, wetland, and habitat mapping through the use of GIS databases are anticipated to indicate trends in ecosystem integrity and diversity of indicator species.

Ecosystem management is closely linked to modern theories of conservation biology; therefore, it involves protection of biological diversity (Cubbage *et al.* 1993). Biological diversity protection at Stennis WMA includes conservation of native organisms and their

habitats at three major levels: genetic diversity, species diversity, and ecosystem diversity. The Stennis WMA will sustain and enhance wildlife habitats of flora and fauna consistent with the military mission.

4.3.1.1 Goals and Objectives

- Maintain or enhance biological diversity.
- Manage fish and wildlife using an ecosystem management approach.
- Build interagency relationships with MDWFP, LDWF, and USFWS to cooperatively manage fish and wildlife resources and their habitats.
- Develop natural resource-based recreation programs including hunting and fishing programs and potential wildlife viewing opportunities where appropriate throughout the installation.
- Develop tools to educate users of fish and wildlife resources on promoting healthy and robust ecosystems and in the principles of sound natural resources management.
- Develop, implement, and manage fishing and hunting regulations.
- Maintain, or re-establish where practicable, native ecosystems.
- Develop, implement, and manage compliance of depredation program (i.e., feral hogs).

4.3.1.2 Projects

Participation in the following project will occur in support of the goals and objectives for fish and wildlife management.

- Project No. 1: Survey Stennis WMA for all identified habitat types and indicator species as identified by the Mississippi Comprehensive Wildlife Conservation Strategy and listed in Section 2.5.1 of this INRMP.

4.3.1.3 Management Strategies

As habitat types are identified and ground-truthed on the Stennis WMA through the completion of Project Number 1 (identified above), the management of the habitats for indicator species and overall habitat health will include the implementation of a fish and wildlife management plan through use of the strategies enumerated below.

1. Conduct presence/absence and available habitat surveys for all identified habitat types on the Stennis WMA.

2. Where possible, NCBC Gulfport will enter into conservation partnerships with Federal, state and local agencies and non-governmental organizations to improve habitat and allow for species-specific research on the installation.
3. Where possible, site military readiness activities will be planned in ways to avoid or minimize impacts on protected species or vulnerable habitat areas.
4. Control invasive and non-native floral and faunal species that compete with native species and their habitats.
5. Enhance abandoned mine sites, where feasible, to improve wildlife habitat and species diversity.
6. Conduct long-term planning to reestablish old growth bottomland hardwoods and pine forests.

4.3.1.4 Additional Sources of Information

Mississippi Natural Heritage Program
<http://museum.mdwfp.com/science/nhp.html>

Mississippi Department of Wildlife, Fisheries, and Parks
<http://home.mdwfp.com/>

U.S. Fish and Wildlife Service Ecological Services
Jackson Field Office
6578 Dogwood View Parkway, Ste A
Jackson, MS 39213
<http://www.fws.gov/southeast/es/>

U.S. Fish and Wildlife Service
Southeast Louisiana Refuges Complex
61389 Hwy 434
Lacombe, Louisiana
<http://www.fws.gov/southeastlouisiana/index.html>

4.3.2 Rare, Threatened and Endangered (RTE) Species

4.3.2.1 Goals and Objectives

- Protect and manage for the recovery of RTE species.
- Conduct a survey for rare, threatened, or endangered flora and fauna. Depending upon results of the initial survey, schedule appropriate surveys at regularly scheduled intervals.
- Identify any designated Critical Habitat.
- Develop tools to educate installation personnel regarding sensitive species.
- Build interagency relationships with MDWFP, USFWS, and other entities, as appropriate, to cooperatively manage for rare, threatened and endangered species and their habitats.

4.3.2.2 Projects

Participation in the following project will occur in support of the goals and objectives for threatened and endangered species.

Project No. 1: Survey Stennis WMA for all potential RTE species and identify areas that support suitable habitat for these species.

4.3.2.3 Management Strategies

As no presence/absence surveys have been conducted on the Stennis WMA, Project Number 1 (identified above) is extremely important for RTE species management on the installation. Protected species that could occur are bald eagle, Louisiana quillwort, gopher tortoise, and Gulf sturgeon. If occurrences of other protected species are found during the survey, management strategies specific to the species found will be added.

1. Conduct presence/absence and available habitat surveys for all potential state and Federally listed RTE species on the Stennis WMA.
2. Where possible, site military readiness activities will be planned in ways to avoid or minimize impacts on protected species. If NCBC Gulfport or SBT-22 notes clear evidence of a “take” as a result of military readiness activities, NCBC Gulfport will document the take, evaluate these activities and, where practicable, reduce or eliminate the potential for take in the future. If the take cannot be avoided, the amount of take will be documented and, where practicable, mitigated for by other management.
3. Control invasive species that compete with native species and their habitats.

4.3.2.4 Federally Threatened and Endangered Species

Louisiana Black Bear (Threatened)

The Louisiana black bear is one of 16 subspecies of the American black bear (Photograph 4-1). There have been no confirmed reports of the Louisiana black bear at the Stennis WMA, although sightings of the bear have been reported in the vicinity.

The Louisiana black bear is listed as threatened. The key habitat requirements of Louisiana black



Photograph 4-1. Louisiana Black Bear

bears are food, water, cover, and denning sites which are spatially arranged across sufficiently large, relatively remote blocks of land. Historical habitat of the Louisiana black bear has suffered extensive modification and has been reduced in quality by fragmentation and conversion to agriculture. Habitat reduction and human-induced mortality are primary factors limiting recovery of the species. This INRMP protects habitat for Louisiana black bears by managing factors such as wetlands (Section 4.1.1), floodplains (Section 4.1.3), forestry (Section 4.2.1), and wildland fires (Section 4.3.2).

Gulf Sturgeon (Endangered)

The Gulf sturgeon (Photograph 4-2), a subspecies of the Atlantic sturgeon, has been collected in the Pearl River system upstream to Madison County (more than 175 miles upstream from the mouth), in Mike's River (USFWS and Gulf States Marine Fisheries Commission [GSMFC] 1995), and in the Bogue Chitto River upstream to Pike County (MDWFP no date). The range of the Gulf sturgeon extends along the Gulf Coast from the Suwannee River in Florida west to the Mississippi River.



Photograph 4-2. Gulf sturgeon

The Gulf sturgeon is anadromous, meaning the adults spawn in freshwater and migrate into marine waters in the fall to forage and over winter. Subadults and adults typically spend 8 to 9 months in freshwater river systems, spending the coolest 3 to 4 months of the year in estuaries and Gulf waters. Individuals less than 2 years of age remain in riverine and estuarine systems year-round. Gulf sturgeon begin migrating to rivers from the Gulf when river temperatures increase to 55°F to 75°F and continue to migrate through early May. Most individuals return to estuaries or the Gulf by mid-November to early December (USFWS and GSMFC 1995). Most subadult and adult Gulf sturgeon feed for 3 to 4 months in the marine environment, but once they migrate to spawning areas, they do not feed for the next 8 to 9 months. While in freshwater environments, the sturgeon's diet consists of aquatic insects and other aquatic invertebrates, in contrast to mollusks, shrimp, other invertebrates, and small fish while in marine environments.

The decline of this species is due to incidental take and the loss or alteration of spawning habitat. River modification through dam construction, dredging, and channelization may prevent sturgeon from gaining access to spawning grounds or destroy substrates on which eggs are deposited. Additionally, widespread pollution from industrial and domestic sources has reduced feeding and spawning habitat.

This INRMP protects habitat for Gulf sturgeon by managing water quality through factors such as wetlands (Section 4.1.1), erosion and stormwater control (Section 4.1.2), and floodplains (Section 4.1.3).

Eastern Indigo Snake (Threatened)

The eastern indigo snake (*Drymarchon corais couperi*) is the longest snake in North America, reaching a maximum size of 8.5 feet. The average adult size varies 5 feet to 6



Photograph 4-3. Eastern Indigo Snake

feet. The most notable feature of the eastern indigo snake is the lustrous, glossy, iridescent, blue-black coloration of the head and body (Photograph 4-3). The chin and throat is reddish or white, and the color may extend down the body. The eastern indigo snake is harmless and seldom bites people, but they do bite their prey, enemies, or each other during aggressive competition between males. Historically the eastern indigo snake occurred throughout Florida and in the coastal plain of Georgia, Alabama, and Mississippi. However it primarily occurs in peninsular Florida and southeast Georgia, persists in

the Florida panhandle, and has been extirpated from Alabama and Mississippi.

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammock, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. Eastern indigo snakes are also known to inhabit gopher tortoise burrows. The eastern indigo snake was listed as a threatened species as a result of dramatic population declines caused by over-collecting for domestic and international

pet trade as well as mortalities caused by rattlesnake collectors who gassed gopher tortoise burrows to collect snakes.

Gopher Tortoise (Threatened)

Gopher tortoises (Photograph 4-4) have been found in the buffer zone at the north edge of the SSC Fee Area, just outside the north gate (NASA 2001; Esher and Bradshaw 1988; Keiser 1994). This population was restricted to the sandy ridge along Old Highway 43 (Highway 607), northwest of the north gate. Keiser (1994) observed a single adult gopher tortoise and single burrow in the SSC Fee Area just north of the south Hazardous Waste Dump entrance road. No other specific location references were found during the literature search for this species; therefore, no specific evidence was found of gopher tortoise occupation within the Stennis WMA. The SSC Environmental Resources Document (NASA 2001) indicated that gopher tortoises are “either absent as site residents or present in very small numbers where habitats may be suitable.” No gopher tortoises, or gopher tortoise burrows, were observed during either the April 2003 or April 2004 field reconnaissance (Turner Collie & Braden Inc. [TC&B] 2003 and 2004). However, suitable habitat does occur in the northeastern portion of the Stennis WMA.



Photograph 4-4. Gopher tortoise

Grass and small herbaceous plants make up most of the diet, although carrion, berries, and fungi are also eaten. Gopher tortoise habitats generally consist of upland longleaf pine forests and mixed pine-hardwood forests with soils that are very sandy and well-drained.

The primary reason for declines in this species' populations include the following: conversion of natural forests of longleaf pine to loblolly plantations, agriculture, and urban areas; absence of fire, which creates a thick understory and midstory, thereby blocking the sunlight from reaching the ground layer and preventing the growth of

grasses for gopher tortoises to eat; illegal take of the tortoises for food or pets; harassment by dogs; and mortality of eggs and hatchlings from fire ants.

This INRMP protects habitat for gopher tortoises through proper management of factors such as invasive species management (Section 4.1.5), forestry (Section 4.2.1) and wildland fire management (Section 4.2.2). Primary management practices for the gopher tortoise include regular prescribed burns within pine stands. Pine stands can be thinned every 7 to 10 years once trees have attained a merchantable size to enhance gopher tortoise habitat. In the future there may be the potential for habitat rehabilitation via reforestation. Reforestation using longleaf pines creates an ideal ecological community for the gopher tortoise. Furthermore, invasive and nuisance predators such as fire ants, foxes, and feral cats, which cause gopher tortoise mortality, may be controlled and exterminated in the Stennis WMA to enhance gopher tortoise habitat. Gopher tortoise surveys are presently being conducted and will continue to be conducted to assess the species' usage of the installation and provide information to further enhance management.

Bald Eagle (Delisted, but Protected)

Bald eagles (Photograph 4-5) have been sighted at SSC in proximity of the Pearl River during earlier surveys. This species likely nests along the Pearl River in cypress snags,



Photograph 4-5. Bald Eagle

particularly near areas of open water. This species was sighted at the SSC during 1991 and 1994 surveys, along the Pearl River and on Endeavor Boulevard, respectively. Esher and Bradshaw (1988) mentioned the presence of an active bald eagle nest west of Pearlinton, Mississippi, approximately 10 miles downriver from the Stennis WMA. No bald eagles, or eagle nests, were observed within the Stennis WMA during either an April 2003 or April 2004 field reconnaissance (NSW 2004).

Bald eagles are opportunistic foragers and diet varies across the range based on prey species available. They prefer fish, but will eat a great variety of mammals, amphibians,

crustaceans, and birds, including many species of waterfowl. The current range of the bald eagle includes all of the coterminous U.S. and Alaska.

The breeding range of the bald eagle is associated with aquatic habitats, forested shorelines, and cliffs. Throughout their range, they select large, super-canopy roost trees that are open and accessible. They winter primarily in coastal estuaries and river systems of the lower 48 states and Alaska. The decline of bald eagle populations coincided with the introduction of the pesticide dichlorodiphenyldichloroethylene (DDE) in 1947. Eagles contaminated with DDE failed to lay eggs or produced thin eggshells that broke during incubation. Other causes of decline include habitat loss, shooting, trapping, and poisoning. However, the bald eagle has since recovered to population levels that allowed this species to be delisted.

This INRMP protects habitat for bald eagles by managing factors such as wetlands (Section 4.1.1), floodplains (Section 4.1.3), forestry (Section 4.2.1), and Bird/Animal Aircraft Strike Hazard (BASH) (Section 4.3.4).

Ringed Map Turtle (Threatened)

The relatively small ringed map turtle (Photograph 4-6) inhabits sand/mud bottom rivers with open canopies, basking logs, and open nesting beaches. The ringed map turtle is associated with brush piles (trees that have died and fallen into the river). It spends much of the day basking on these fallen trees and quickly jumps into the water when approached. These turtles seek refuge on the bottom of the river and in between the branches of the falling trees. Males generally reach a length of 4 inches, and females reach 7 inches. A yellow ring, bordered inside and outside with dark olive-brown, appears on each shield of the carapace (upper shell). A large yellow spot appears behind the eye, two yellow stripes extend back from the orbit, and a characteristic yellow stripe covers the whole lower jaw (Cagle 1953). Jones and Hartfield (1995) determined that males matured at 3.5 years, females at 10 to 16 years.



Photograph 4-6. Ringed map turtle

The ringed map turtle occurs in the main channel of the Pearl River from Neshoba County, Mississippi, downstream to its mouth, and in the Bogue Chitto River from its confluence with the Pearl River upstream to near Franklinton, Louisiana (USFWS 1992). The greatest concentration of ringed map turtles is on the Pearl River, upstream of Ross Barnett Reservoir (near Jackson, Mississippi), where the area of habitat per mile of stream length is much larger than at any other locations. Keiser (1994) observed ringed map turtles from multiple locations on the Pearl and Mike's Rivers, as well as possible nesting sites near Building 2423 at SSC in 1994. He also found ringed map turtles in several gravel pit ponds and in the access canal between the locks and the Pearl River. Several map turtles were observed along the Pearl River during the April 2003 field reconnaissance; however, none were confirmed to be the ringed map turtle (TC&B 2003). No map turtles were observed in the area of the proposed additional acreage during the April 2004 field reconnaissance (TC&B 2004). However, due to previous records of ringed map turtles on Mike's River (Keiser 1994), it is presumed that ringed map turtles still occur within and adjacent to the Stennis WMA.

Ringed map turtle population numbers are declining primarily due to the loss or alteration of habitat for flood control and navigation, water quality degradation from such things as siltation and pollution, and shooting and collection by humans.

Preferred nesting sites consist of islands of clean, fine-grain sand with minimal vegetative cover, and are at least 3.3 to 9.8 feet above river level (McCoy and Vogt 1980, Dickerson and Reine 1996).

This INRMP protects habitat for ringed map turtles by managing factors such as wetlands (Section 4.1.1), erosion and stormwater control (Section 4.1.2), and floodplains (Section 4.1.3).

West Indian Manatee (Endangered)

West Indian manatees (Photograph 4-7) are known to inhabit the Pearl River basin in Louisiana; however, there have been no confirmed reports of the West Indian manatee in the vicinity of the Stennis WMA. They are found along the coasts of North Carolina to Louisiana, as well as in the Caribbean.

Manatees utilize marine open water, bay, and riverine habitats. They move between saltwater, brackish, and freshwater slow-moving rivers, river mouths, and shallow coastal areas such as coves and bays. They may travel great distances as they migrate between winter and summer grounds. West Indian manatees often prefer waters with submerged aquatic beds or floating vegetation.



Photograph 4-7. West Indian manatee

Manatees face many threats to their survival. The greatest threats to manatee survival are collisions with boats and loss of warm water habitat. Natural factors, such as unusually cold weather and outbreaks of red tide, may also influence population levels.

Standard protection and avoidance procedures have been developed by the Navy for use where manatees are present, and these procedures will be used at Stennis WMA if manatees are observed in the area. This INRMP protects habitat for manatees by managing water quality through factors such as wetlands (Section 4.1.1), erosion and stormwater control (Section 4.1.2), and floodplains (Section 4.1.3).

Red-cockaded Woodpecker (Endangered)

The red-cockaded woodpecker (RCW) (Photograph 4-8) is found in the pine forests of the southeastern U.S. Although marginally suitable habitat exists within the vicinity of the Stennis WMA, there have been no confirmed reports of the RCW, according to MDWFP.

The RCW historically ranged from New Jersey to Texas, and inland to Oklahoma, Missouri, Kentucky, and Tennessee. However, the species currently ranges from Virginia to Oklahoma and eastern Texas.



Photograph 4-8. Red-cockaded Woodpecker

The RCW is approximately 7 inches long, with a wingspan of about 15 inches. Its back is barred with black and white horizontal stripes.

The RCW's most distinguishing feature is a black cap and nape (the back of the neck) that encircle large white cheek patches. Rarely visible, except perhaps during the breeding season and periods of territorial defense, the male has a small red streak on each side of its head (USFWS 2003).

The RCW makes its home in mature pine forests; more specifically, those with longleaf pines averaging 80 to 120 years old and loblolly pines averaging 70 to 100 years old. Recent observations have also been made in North Carolina of pond pines being used as cavity trees. The older pines favored by the RCW often suffer from a fungus called red heart disease which attacks the center of the trunk, causing the inner wood to become soft. Cavities generally take 1 to 3 years to excavate. Loss of mature pine forest habitat is the primary cause of RCW population declines.

This INRMP protects habitat for RCW's by managing factors such as invasive species (Section 4.1.5), forestry (Section 4.2.1), wildland fires (Section 4.2.2), and migratory birds (Section 4.3.3).

Inflated Heelsplitter (Threatened)

The inflated heelsplitter is a freshwater mussel (Photograph 4-9) that historically ranged throughout the Amite and Tangipahoa Rivers in Louisiana, the Pearl River in Mississippi,



Photograph 4-9. Inflated heelsplitter

and the Tombigbee, Black Warrior, Alabama, and Coosa Rivers in Alabama (Hurd 1974, Stern 1976, Hartfield 1988; as cited in *Federal Register* 55:39868). The inflated heelsplitter is currently limited to the Amite River in Louisiana and the Tombigbee and Black Warrior rivers in Alabama and was discovered in the West Pearl in Louisiana in 1996 (Miller and Payne 1996, George and Reine 1995). The only known collection of this species from the Pearl River was reported in 1911 (*Federal Register* 55:39868). Suitable habitat likely exists within the East Pearl River near the Stennis WMA, but no surveys have been conducted.

This species has been found in sand, mud, silt, and sandy gravel. The preferred habitat is soft, stable substrate in slow to moderate currents (Stern 1976). The limited

distribution of the mussel and threats to the species are cause for its threatened listing. Threats to the species include channel alterations and impoundments for navigation and flood control, and sand and gravel mining. This INRMP protects habitat for inflated heelsplitters by managing water quality through factors such as wetlands (Section 4.1.1), erosion and stormwater control (Section 4.1.2), and floodplains (Section 4.1.3).

Dusky Gopher Frog (Endangered)

The dusky gopher frog (Photograph 4-10) occurs in breeding ponds in southeastern Mississippi. The north-eastern portion of the Stennis WMA provides marginally suitable habitat for this species. Historical distribution of the dusky gopher frog included the Coastal Plain west of Mobile Bay from Alabama to Mississippi and eastern Louisiana.

The dusky gopher frog has dorsolateral ridges and is uniformly dark above or with irregular dorsal spots lacking light borders. Its throat and belly region are generally pigmented, often heavily, and warts are prominent on dorsum. The frog requires open, grassy seasonal wetlands that do not contain fish populations for successful reproduction. Adults move to breeding sites in association with heavy rains, usually in February and March. Fist-sized egg masses, containing 2,000 or more eggs, are typically attached to stems of emergent vegetation. Metamorphs typically exit the ponds in May.



Photograph 4-10. Dusky gopher frog

The frogs utilize upland sandy habitats, which were historically forested with longleaf pine, and isolated temporary wetland breeding sites imbedded within this forested landscape. Dusky gopher frogs spend the majority of their lives in or near underground refugia such as abandoned mammal or gopher tortoise burrows and holes in or under old stumps.

Loss of suitable habitat caused by modern silviculture practices and fire suppression, as well as the degradation of breeding ponds by ditching, off-road vehicle use, and fish stocking, genetic isolation, inbreeding, and drought have all contributed to a decline in this species. This INRMP protects habitat for dusky gopher frogs by managing factors

such as wetlands (Section 4.1.1), floodplains (Section 4.1.3), forestry (Section 4.2.1), and wildland fires (Section 4.2.2).

Louisiana quillwort (Endangered)

The Louisiana quillwort (Photograph 4-11) is a small, grass-like, aquatic plant. They are known to grow in five locations in Washington and St. Tammany parishes in Louisiana (LDWF 2008) and Jackson and Perry counties in Mississippi (Center for Plant Conservation 2008). Potential habitat for Louisiana quillwort occurs within the smaller streams that are tributaries to Mike's River and East Pearl River.



Photograph 4-11. Louisiana quillwort

Louisiana quillwort inhabits sand and gravel bars in small streams. They prefer small blackwater streams and often grow on sand/gravel/mud bars and stream banks. During higher water, plants may be partially submersed and leaves may be seen trailing in the current. Common adjacent forest types along small stream habitats include laurel oak, water oak, loblolly pine, sweetbay magnolia, and swamp blackgum. Coarser, more stable substrate is preferred, and Louisiana quillwort is not usually rooted in soft fine mucky substrate.

The Louisiana quillwort is extremely vulnerable due to its small range. This species is also threatened by any activities that would affect the hydrology or stability of the streams in which the plant occurs, including dredging and channelizing streams, damming of streams to create ponds or reservoirs, siltation of streams from upslope activities, and habitat destruction from off-road vehicles and logging equipment. This INRMP protects habitat for Louisiana quillwort by managing water quality through factors such as wetlands (Section 4.1.1), erosion and stormwater control (Section 4.1.2), and floodplains (Section 4.1.3).

4.3.2.5 Additional Sources of Information

Mississippi Natural Heritage Program
<http://museum.mdwfp.com/science/nhp.html>

Mississippi Department of Wildlife, Fisheries, and Parks
<http://home.mdwfp.com/>

U.S. Fish and Wildlife Service Ecological Services
Jackson Field Office
Ray Aycock, Field Supervisor
6578 Dogwood View Parkway, Ste A
Jackson, MS 39213
<http://www.fws.gov/southeast/es/>

4.3.3 Migratory Birds

The MBTA of 1918, as amended, and EO 13186 of January 10, 2001, Responsibilities of Federal Agencies to Protect Migratory Birds specifically protects migratory birds. The MBTA makes it illegal to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products, except as allowed by the implementing regulations. EO 13186 requires that Federal agencies avoid or minimize the impacts of their activities on migratory birds and make efforts to protect birds and their habitat. Migratory birds face serious challenges, including reductions in habitat quality and quantity, direct bird mortality attributable to human activities, invasive species, collisions with artificial structures, and environmental contaminants, resulting in species decline. Because migratory birds cross the boundaries of nations, watersheds, and ecosystems, protecting them requires a coordinated effort involving multiple jurisdictions and interests. However, the 2003 National Defense Authorization Act exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities. Military readiness activities include all training and operations of the Armed Forces that relate to combat and the adequate testing of military equipment, vehicles, weapons and sensors for proper operation and suitability for combat use. The MBTA also requires that the Secretaries of Defense and Interior identify ways to minimize, mitigate and monitor the take of migratory birds during military readiness activities. Table 4-2 provides a list of birds of conservation concern that have the potential to occur on Stennis WMA.

Table 4-2. List of Birds of Conservation Concern with Potential to Occur at Stennis WMA

Common Name	Scientific Name	BCC	USFWS
Little Blue Heron	<i>Egretta caerulea</i>	X	X
Swallow-tailed Kiate	<i>Elanoides forficatus</i>	X	X
American Kestrel (resident <i>paulus</i> ssp. only)	<i>Falco sparverius</i>	X	X
Peregrine Falcon	<i>Falco peregrinus</i>	X	X
Semipalmated Sandpiper	<i>Calidris pusilla</i>	X	
Stilt Sandpiper	<i>Calidris himantopus</i>	X	X
Common Ground-Dove	<i>Columbina passerina</i>	X	
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	X	X
Brown-headed Nuthatch	<i>Sitta pusilla</i>	X	X
Bewick's Wren	<i>Thryomanes bewickii</i>	X	X
Wood Thrush	<i>Hylocichla mustelina</i>	X	X
Northern Parula	<i>Parula americana</i>	X	
Black-throated Green Warbler	<i>Dendroica virens</i>	X	
Golden Winged Warbler	<i>Vermivora chrysoptera</i>		X
Prothonotary Warbler	<i>Protonotaria citrea</i>		X
Wormeating Warbler	<i>Helmitheros vermivorus</i>		X
Prairie Warbler	<i>Dendroica discolor</i>	X	X
Cerulean Warbler	<i>Dendroica cerulea</i>	X	X
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	X	X
Bachman's Sparrow	<i>Peucaea aestivalis</i>	X	X
Henslow's Sparrow	<i>Ammodramus henslowii</i>	X	X
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	X	X
Painted Bunting	<i>Passerina ciris</i>	X	X
Orchard Oriole	<i>Icterus spurius</i>	X	
Red headed Woodpecker	<i>Melanerpes erythrocephalus</i>		X
Black Whiskered Vireo	<i>Vireo altiloquus</i>		X

Source: USFWS 2002.

Implementation of the INRMP is expected to benefit migratory birds on the Stennis WMA through the implementation of projects, including preservation of wetlands and migratory bird surveys.

4.3.3.1 Goals and Objectives

- Conduct a bird survey and, depending upon results of the initial survey, schedule appropriate surveys at regularly scheduled intervals.
- Prevent loss of wetland acreage and maintain wetland habitat quality, especially in habitats of particular importance to birds while supporting the training mission.
- Maintain, or re-establish where practicable, native ecosystems.

4.3.3.2 Projects

Participation in the following project will occur in support of the goals and objectives for migratory birds.

Project No. 7: Conduct neotropical migratory bird surveys on the Stennis WMA to develop a baseline of migratory and resident bird populations.

4.3.3.3 Management Strategies

No known baseline inventories or breeding surveys have been conducted on the Stennis WMA. However, a breeding survey conducted at the adjacent SSC Fee Area in 1991 and 1994 documented 138 species of migratory birds, including several species of waterfowl, woodpeckers, wading birds, raptors, and songbirds (Lago 1994 as cited in NSW 2004). The Stennis WMA is located in the Mississippi Flyway and provides excellent habitats for neotropical migrants. Implementation of the following management measures will minimize, mitigate and monitor the take of migratory birds from military readiness activities at the Stennis WMA.

1. Conduct bird surveys to monitor the bird populations at the Stennis WMA (see Appendix E for characteristics and life histories of common migratory bird species at SSC and, thus, likely present).
2. Where possible, NCBC Gulfport will enter into conservation partnerships with Federal, state and local agencies and non-governmental organizations to improve habitat.
3. Where possible, site military readiness activities in ways to avoid or minimize impacts on migratory birds. If NCBC Gulfport notes clear evidence of a take as a result of military readiness activities, the WMA Natural Resources Manager will document the take, evaluate these activities and, where practicable, reduce or eliminate the take of migratory birds.
4. Implement habitat enhancement for migratory bird species.
5. Control invasive bird species that compete with native migratory bird species and their habitats.
6. For non-military readiness activities, compliance with the MBTA is mandatory.

4.3.3.4 Additional Sources of Information

Partners in Flight

<http://www.partnersinflight.org>

Bird Conservation Plan for East Gulf Coastal Plain

http://www.blm.gov/wildlife/pl_04sum.htm

Smithsonian National Zoological Park
Migratory Bird Center
Washington, DC 20008
<http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/>

USFWS Division of Migratory Bird Management
<http://www.fws.gov/migratorybirds/>

MBTA
<http://www.fws.gov/laws/lawsdigest/migtrea.html>

The Nature Conservancy Migratory Bird Program
<http://www.nature.org/initiatives/programs/birds/>

4.3.4 Bird/Animal Aircraft Strike Hazard

Bird and other wildlife strikes to aircraft annually cause over \$600 million in damage to U.S. civil and military aviation. Furthermore, these strikes put the lives of aircraft crew members and their passengers at risk. A Wildlife Hazard Assessment is an important safety measure to protect pilots and crew from bird and other wildlife strikes by evaluating wildlife presence and activity. Bird and wildlife strikes are possible, but rarely occur. Daily and seasonal bird movements create hazardous conditions. The air traffic at Stennis WMA is limited to helicopter landings and takeoffs. The areas of potential hazardous encounters with birds are limited to these helicopter landing and training areas. Most of the strikes occur during fall and spring, and involve birds migrating through the airspace. Bird strikes can also include local species such as waterfowl and song birds which live at the installation. The goals and objectives of the BASH program are to reduce the potential for collisions between aircraft and birds or other animals.

4.3.4.1 Goals and Objectives

The natural resources goals and objectives relevant to the Bird Strike Management are presented below.

The operations and maintenance program will develop a Migratory Bird Management Plan to implement a BASH program and conduct bird surveys to reduce aircraft collisions with wildlife. The BASH plan should include the following:

- Establish a Bird Hazard Working Group (BHWG) and designate responsibilities to its members.
- Establish training for all base members concerning responsibilities and actions.
- Establish procedures to identify high hazard situations and to aid supervisors and aircrews in alerting/discontinuing flying operations when required.
- Establish aircraft and helispot operating procedures to avoid high hazard situations.
- Provide a method for disseminating information to all tenant and transient aircrews on bird hazards and procedures for bird avoidance.
- Establish passive techniques to decrease helispot attractiveness to birds and wildlife.
- Establish active/static techniques to disperse birds from the helispots.
- Establish local procedures for reporting of damaging/non-damaging bird strikes.
- Establish procedures for collecting bird strike remains.
- Monitor for the presence of threatened and endangered species, and neo-tropical migratory birds.
- Manage fish and wildlife and their habitats in order to reduce BASH occurrences.

4.3.4.2 Projects

No projects are proposed to specifically address BASH.

4.3.4.3 Management Strategies

- Establishment of a BHWG.
- Develop procedures for reporting hazardous bird activity and altering or discontinuing flying operations.
- Develop provisions to disseminate information to all assigned and transient aircrews for specific bird hazards and procedures for avoidance.
- Develop procedures to eliminate or reduce environmental conditions that attract birds and other wildlife to the helispots.
- Develop procedures to disperse birds and other wildlife from the helispots.

4.3.4.4 Additional Sources of Information

Smithsonian National Zoological Park
 Migratory Bird Center
 Washington, DC 20008
<http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/>

USFWS Division of Migratory Bird Management
<http://www.fws.gov/migratorybirds/>

Birds of Conservation Concern www.fws.gov/migratorybirds/reports/BCC2002.pdf.
http://www.blm.gov/wildlife/pl_04sum.htm

4.3.5 Aquatic Species Management

The southern end of Stennis WMA is located about 13 miles from the coast and positioned in Mississippi's Coastal Zone Management Area, where fresh surface water mixes with sea water from the Gulf of Mexico. The distribution of marine and fresh water species is associated with water salinity.

Freshwater species are found in the aquatic habitats within the installation grounds. Primary aquatic habitats within installation grounds include old gravel pits, canals, forested wetlands and swamps, rivers and streams, wet pine savannahs, and temporary pools (vernal and ephemeral pools in forests and savannahs). Surface mining has created a number of small man-made lakes located in the northeast corner of the Stennis WMA.

These freshwater habitats are highly valued by sport fishermen who pursue freshwater species, such as largemouth bass, alligator gar (*Atractoosteus spatula*), channel catfish, white crappie, black crappie, various species of sunfish, crawfish (*Procambarus clarkii*), channel catfish, blue catfish, flathead catfish, and spotted gar (*Lepisosteus oculatus*).

Immediately south of the installation grounds are coastal estuarine habitats with brackish water, where shallow estuaries receive fresh water from various lakes, rivers, bayous, and canals, while receiving salt water from the Gulf of Mexico.

Aquatic habitats south of the installation vary in salinity, but generally, the water gets saltier towards the coast. The brackish waters are home to a wide variety of economically important invertebrates, such as brown shrimp (*Penaeus aztecus*), pink shrimp (*Penaeus duorarum*), white shrimp (*Penaeus setiferus*), blue crabs (*Callinectes sapidus*), oysters (*Crassostrea virginica*), and estuarine fish, such as red drum (*Sciaenops ocellatus*), speckled trout (*Cynoscion nebulosus*), and Atlantic croaker (*Micropogonias undulates*). The estuarine habitats produce many species of fish that are

not harvested for recreation or seafood; however, the fish serve as prey species for large predators along the coast and offshore. These prey species include rainwater killifish (*Lucania parva*), naked goby (*Gobiosoma bosc*), Gulf pipefish (*Syngnathus scovelli*), clown goby (*Microgobius* sp.), pinfish (*Lagodon rhomboids*), bay anchovy (*Anchoa mitchilli*), and speckled worm eel (*Myrophis punctatus*).

The Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSFCMA) requires that the NMFS, the regional fishery management councils, and the Secretary of Commerce describe and identify EFH for important marine and anadromous fish species under Federal Fishery Management Plans. EFH includes all waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity, and extends from offshore habitats to inland areas, where the salt-water influence subsides.

The MSFCMA requires Federal agencies to consult with NMFS when any activity proposed to be permitted, funded, or undertaken by a Federal agency may have adverse impacts on designated EFH. Impacts on EFH were considered when preparing this document, and would not be expected to adversely affect EFH. However, implementation of the INRMP would be expected to improve water quality and estuarine and marine habitats. More information on EFH (e.g., location and types of EFH and the species managed), is presented in Appendix G.

In accordance with EO 13089, Coral Reef Protection of 11 June 1998, which requires Federal agencies to protect and enhance coral reefs and coral reef systems, the Navy recognizes that coral reefs and related endemic mangrove and sea grass ecosystems are biologically rich and diverse habitats. There are no coral reef systems within the area of influence of this INRMP.

4.3.5.1 Goals and Objectives

- Maintain or enhance biological diversity.
- Conserve wetlands, floodplains, stream and lake riparian areas, soils, and habitat diversity.
- Develop, implement, and manage fishing and hunting regulations.
- Develop, implement, manage and ensure compliance of depredation program.

4.3.5.2 Projects

No projects are designated in support of the goals and objectives for coastal/marine management, as this is a function of the Stennis WMA operations and maintenance program.

4.3.5.3 Management Strategies

1. Assist in the management and recovery of RTE species.
2. Integrate outdoor recreation and ecosystem management with military mission.
3. Manage fish and wildlife using an ecosystem management approach.
4. Build interagency relationships with Mississippi Department of Marine Resources (MDMR), MDWFP, NMFS, GMFMC and USFWS to cooperatively manage fish and wildlife resources and their habitats.
5. Develop natural resource-based recreation programs, including hunting and fishing programs, as well as wildlife viewing opportunities consistent with the desires of users.
6. Develop tools to educate users of fish and wildlife resources on promoting healthy and robust ecosystems and in the principles of sound natural resources management.

4.3.5.4 Additional Sources of Information

Mississippi Coastal Program, MDMR
<http://www.dmr.state.ms.us/>

Ocean and Coastal Resource Management Program, NOAA/NMFS
<http://coastalmanagement.noaa.gov/mystate/ms.html>

Grand Bay National Estuarine Research Reserve, National Estuarine Research Reserve System
<http://nerrs.noaa.gov/GrandBay/welcome.html>

4.4 OUTDOOR RECREATION

This section addresses the development and implementation of programs and techniques for managing outdoor recreation. The outdoor recreation issues of this INRMP include conservation law enforcement.

4.4.1 Outdoor Recreation

The Navy supports outdoor recreation as outlined in OPNAVINST 5090.1C and the Sikes Act. NCBC Gulfport will develop an outdoor recreation program coordinated with appropriate government agencies. Responsibility for outdoor recreation is shared by Morale, Welfare, and Recreation (MWR) and the Natural Resource Program. The CNRSE MWR/NR agreement will be used to define responsibilities between MWR and the Natural Resources Program. The program is compatible with national defense and security requirements and is part of multiple use management. Natural resources personnel will make on-site management decisions concerning site rehabilitation, maintenance, and monitoring of use. Additional assistance is available from CNRSE, USFWS and the MDWFP.

4.4.1.1 Goals and Objectives

- Conserve wetlands, floodplains, stream networks, soils, and habitat diversity.
- Maintain and enhance biological diversity.
- Integrate outdoor recreation and ecosystem management with military mission.
- Enforce fishing and hunting regulations.
- Take advantage of opportunities to develop programs for non-consumptive uses of natural resources (e.g., watchable wildlife areas).
- Coordinate natural resource activities with local community and conservation organizations.
- Manage fisheries consistent with accepted fishery management practices.

4.4.1.2 Projects

No projects are currently proposed to address outdoor recreation in the Stennis WMA.

4.4.1.3 Management Strategies

NCBC Gulfport will strive to provide recreational opportunities for employees and troops during training sessions. These opportunities will also be in concert with the goals and objectives of the Fish and Wildlife wetlands management plans. Potential hunting opportunities would likely be focused on feral hogs, white-tailed deer, and waterfowl. Hunting and fishing activities could be limited due to security concerns, training/mission requirements, and activity demands on the Stennis WMA. Fishing, swimming, picnicking, and wildlife observation opportunities are more probable, and areas/facilities

at or near the former Lake Tawiki provide the most suitable area. The strategy of the recreation plan would be to provide the greatest amount of opportunities without adversely impacting training missions.

4.4.1.4 Additional Sources of Information

Mississippi Department of Wildlife, Fisheries and Parks
<http://www.mdwfp.com/>

Bureau of Land Management
Jackson Field Office
411 Briarwood Drive Suite 404
Jackson, MS 39206
(601) 977-5400

Resource Management Plan
http://www.es.blm.gov/AL_MS_RMP/index.php

4.4.2 Conservation Law Enforcement

Section 107 of the Sikes Act (16 U.S.C. 670e-2) requires sufficient numbers of professionally trained natural resources management personnel and natural resources law enforcement personnel to be available and assigned responsibility to perform tasks necessary to carry out Title I of the Sikes Act, including the preparation and implementation of INRMPs.

4.4.2.1 Goals and Objectives

- Develop a wildlife law enforcement program and ensure that personnel are qualified and trained to carry out all assigned duties and responsibilities.
- Enforce Federal, state, and installation laws and regulations pertaining to fish and wildlife.
- Build interagency relationships with MDWFP and USFWS to support the Wildlife and Fisheries law enforcement program.
- Identify staffing needs to manage hunting, fishing, GIS and natural resource management programs

4.4.2.2 Projects

No projects are designated to address conservation and law enforcement, as this is a function of the Stennis WMA operations and maintenance program.

4.4.2.3 Management Strategies

A number of laws and regulations apply to the natural resources management at Stennis WMA and military bases around the country. Table 4-3 lists the Federal laws and regulations applicable to Stennis WMA.

Table 4-3. Laws, Regulations, Executive Orders, and Instructions Applying to Natural Resources Management at Navy Installations

NUMBER	TITLE	DESCRIPTION (where necessary)
Public Law (PL) 65-186 (16 USC 703)	MBTA, as amended	Prohibits taking or harming a migratory bird, its eggs, nest, or young without the appropriate permit.
PL 85-337 (10 USC 2671)	Military Reservation and Facilities - Hunting, Fishing, and Trapping	Provides that hunting, fishing, and trapping on military lands will be in accordance with state laws.
PL 86-624 & 96-366 (16 USC 661 <i>et. seq.</i>)	Fish and Wildlife Coordination Act, as amended	Provides for effective integration of the fish and wildlife conservation programs with Federal water resource development and construction projects having impact on water resources.
PL 86-797 (16 USC 670a – 670f)	Sikes Act as amended by Public Law 99-561	Requires that each military department manage natural resources, including all fish and wildlife species, in accordance with a tripartite cooperative plan agreed to by USFWS and state wildlife agency; to train personnel in fish and wildlife management, and prioritize contracting work with Federal/state agencies.
PL 88-29 16 USC 2901 <i>et. seq.</i>	Outdoor Recreation Program/ Organic Act	Requires consultations with the National Park Service regarding management for outdoor recreation.
PL 89-669 (16 USC 2901 <i>et seq.</i>)	Fish and Wildlife Conservation Act	Provides for conservation, protection, restoration, and propagation of native species of fish and wildlife, including migratory birds threatened with extinction.
PL 90-542	Wild and Scenic Rivers Act	Requires identification and protection of any river or stream that qualifies under the Act.
PL 90-543	National Trails Systems Act of 1986	Promotes development of recreational, scenic, historic trails for persons for diverse interest and abilities.
PL 91-190 42 USC 4321 <i>et seq.</i>	National Environmental Policy Act, as amended	Preserves important natural aspects of national heritage & enhances quality of renewable resources.
PL 92-500	Federal Water Pollution Control Act (Clean Water Act)	Regulates dredging/filling of wetlands and regulates nonpoint sources into waterways
PL 92-205	Endangered Species Act (ESA)	Provides for the identification and protection of threatened and endangered species and critical habitats
PL 93-639	Non-game Species Act	Encourages management for non-game species
PL 93-639	Federal Noxious Weed Act	Establishes control and eradication of noxious weeds and regulates them in interstate and foreign commerce

Table 4-3, continued

NUMBER	TITLE	DESCRIPTION (where necessary)
10 USC 2665	Military Construction Authorization Act - Sale of Certain Interest in Lands; Logs.	The sale of forest products is authorized to finance the cost of managing forest resources for commercial production.
10 USC 2667	Leases; Non-Excess Property	Provides for outleasing public lands for agricultural purposes and retention of cash receipts for administration of the program; improvement of existing leased areas; preparing new areas for outleasing.
16 USC 590a	Soil Conservation Act	Provides for application of soil conservation practices on federal lands.
16 USC 668 et seq.	Bald and Golden Eagle Protection Act	Prohibits the taking (harassment, sale, or transportation) of bald or golden eagles, alive or dead, whole or parts, nest and/or eggs.
42 USC 1962d	Water Resources Planning Act of 1965, as amended	Provides for the optimum development of the Nation's natural resources through water resources planning.
PL 1972	Federal Insecticide, Fungicide, & Rodenticide Act	Governs the use and application of pesticides in natural resource management programs
PL 56-510 42 USC 9601	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	As amended by Superfund Amendments and Reauthorization Act (SARA) of 1986, CERCLA establishes programs for the cleanup of hazardous waste disposal and spill sites nationwide. Requires protection of human health and the environment. Work under this legislation is conducted under the Navy Installation Restoration Program
PL 101-380 33 USC 2701	Oil Pollution Act of 1990 (OPA 90)	Redefines requirements of the National Contingency Plan (NCP) to include planning for rescue of, minimization of injury to, and assessment of damages/injury to fish and wildlife resources
PL 94-265 16 USC 1801	Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSFCMA)	Provides for the conservation and management of marine and anadromous fish species.
PL 94-580 42 USC 6901	Resource Conservation and Recovery Act	Limits landfills, stimulus for recycling, regulates handling and disposal of solid wastes, regulates underground storage tanks.
PL 91-604 42 USC 7401	Clean Air Act	Regulates emissions, delegates authority to regulate prescribed burning to the states
5 USC 551	Administrative Procedures Act	Allows public to sue to enforce other laws or for not following established procedures or other abuse of discretion.
5 USC 552	Freedom of Information Act	Must provide access to the public for most federal documents.
PL 101-511 section 8120	Defense Appropriations Act of 1991 Legacy Program	Establishes program for stewardship of biological, geophysical, cultural and historic resources on DoD lands.
40 CFR 300.600 40 CFR 300.615	Natural Oil and Hazardous Substances Pollution Contingency Plan, Designation of Federal Trustees, Responsibilities of Trustees	Requirements of the National Contingency Plan (NCP) to include planning for rescue of, minimization of injury to, and assessment of damages/injury to fish and wildlife resources.

Table 4-3, continued

NUMBER	TITLE	DESCRIPTION (where necessary)
50 CFR 1-end	Wildlife and Fisheries	50 CFR 402 Inter-agency Cooperation – ESA of 1973, 50 CFR 10.13, List of Migratory Birds
EOs 11514 and 11991	Protection and Enhancement of Environmental Quality	Directs issuance of instructions and guidelines relative to preparation of EIS.
EO 11990	Protection of Wetlands	Requires agencies to take action to minimize destruction, loss, or degradation of wetlands.
EO 11988	Floodplain Management, as amended by EO 12608	Directs Federal agencies to avoid developments within floodplains.
EOs 11989 and 12608	Off-Road Vehicles on Public Lands	Provides for closing areas to off-road vehicle use where natural resources are adversely affected.
EO 13089	Coral Reef Protection	Directs Federal agencies to identify effects of their actions on coral reefs, protects and enhances such ecosystems, and ensures their actions will not degrade existing conditions.
DODDIR 6050.2	Use of Off-Road Vehicles on DOD Lands	Off-road vehicles prohibited without environmental assessment.
MOU – 7 April, 1978	MOU - Outdoor Recreation on Military Installations	Memorandum of Understanding between DoI and DoD for the development of public outdoor recreation resources on military Installations.
OPNAVINST 5090.1B	Environmental and Natural Resources Program Manual	Navy instruction governing land, forest, fish and wildlife, outdoor recreation, NEPA, and all other environmental concerns.
NAVFACINST 6250.3F	Performance and Reporting of Pest Control Operations in the Naval Shore Establishment	Navy instructions and regulations regarding pest control and pesticide use.
NAVFACINST 7110	Fish and Wildlife and Game Conservation and Rehabilitation; Funds Management	Fish and Wildlife conservation funds management.
NAVFACINST 11010.70	Facility Planning and the Protection of Cultural Resources	Part of a comprehensive planning approach for land use and the utilization of existing facilities to support mission needs, while protecting cultural resources on the installation.
NAVFACINST MO-110.1	Natural Resources Land Management	All installations and facilities with appropriate land and water areas are to have active, progressive programs for the management and conservation of natural resources.
NAVFACINST MO-110.2	Forest Management	A technical management plan must be established and maintained for all installations that have land areas suitable for forest resources management programs. Such plans should be developed by professional foresters within the Department of the Navy, or with the aid of Federal or State Forestry agencies or consulting foresters where additional assistance is needed.
NAVFACINST MO-110.3	Fish and Wildlife Management	A management plan should provide for a continuing program of fish and wildlife habitat management, and the integration of the aspects of natural beauty and conservation of other natural resources.

Table 4-3, continued

NUMBER	TITLE	DESCRIPTION (where necessary)
NAVFACINST MO-100.4	Guidance on Special Interest Areas	Provides guidance for outdoor recreation management and planning and Cultural Resources protection.
SECNAVINST 6240.6E	Environmental Protection and Natural Resources Management Program	Implementation of DOD directives under DOD Instruction 4700.4
DODINST 4700.2	The Secretary of Defense Natural Resources Conservation Award	The Navy annually recognizes those installations which have maintained and improved the natural beauty of the installation using progressive conservation programs.
DODINST 4715.3	Environmental Conservation Program	Implements policy, assigns responsibilities, prescribes procedures for integrated management of natural and cultural resources.
DODINST 7310.5	Accounting for Production and Sale of Forest Products	Prescribes policies and procedures for an integrated program for multiple-use management of natural resources on a DOD-controlled property.
DODDIR 4700.4 (also 32 CFR 190)	Natural Resources Management Program	Provides DoD policy on natural resources management.
NAVCOMPT Manual Volume 3	Navy Comptroller Manual Volume 3	Provides Navy guidance on tracking of timber sale receipts.
NAVFAC P-73	Real estate operations and Natural Resources Procedural Manual	Provides comprehensive guide on all CNO natural resources program requirements and standards.

4.4.2.4 Additional Sources of Information

The Federal Register is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations as well as EOs and other presidential documents:

<http://www.gpoaccess.gov/fr/index.html>

MBTA

<http://www.fws.gov/permits/mbpermits/regulations/mbta.html>

The Nature Conservancy

Migratory Bird Program

<http://www.nature.org/initiatives/programs/birds/>

4.5 TRAINING

This section addresses the development and implementation of programs and techniques for training natural resources personnel. The training issues of this INRMP include training of GIS data integration, access, and reporting.

4.5.1 Training of Natural Resource Personnel

4.5.1.1 Wildland Fire Personnel Training

DoD has recently adopted the National Wildfire Coordination Group's (NWCG) Federal Wildland Fire Policy to govern all wildland fire activities carried out by DoD personnel. DoD is presently exploring the possibility of seeking membership in the NWCG. The NWCG is made up of all Federal agencies (except DoD) with wildland fire responsibilities and the National Association of State Foresters. The Federal Wildland Fire Policy requires that all personnel involved in prescribed fire and/or wildfire activities meet certain training and physical qualifications. DoD is presently reviewing how it will implement this requirement. Some military installations have already implemented this requirement with most of them making it mandatory for new hires and positions and voluntary for current employees. Stennis WMA's requirements for personnel qualifications will be reviewed and the Prescribed Fire Plan within the Forest Management Plan will contain complete information on personnel qualifications.

4.5.1.2 Timber Marking

All personnel engaged in timber marking at Stennis WMA, at a minimum, must meet the qualifications established by the Office of Personnel Management for Forestry Technician GS 462-05. Additional training will be given as to local requirements and procedures. This training will be under actual field conditions in a productive capacity.

4.5.1.3 Pesticide Applicator Training

Pest Management is provided through implementation of the Integrated Pest Management Plan (IPMP). The IPMP provides a comprehensive, long-range document that captures all the pest management operations and pesticide-related activities conducted at NCBC Gulfport and the Stennis WMA. All Stennis WMA personnel who apply pesticides shall have received and maintained DoD (government staff) or Mississippi (contractors) certification as pesticide applicators for the categories of pest control engaged.

4.5.1.3.1 Federal Personnel

Federal personnel applying any pesticide on Federal land need DoD certification in accordance with OPNAVINST 6250.4B. Only Federal employees under hiring programs with duties as pesticide applicators can participate in the on-the-job (OTJ) training

program. During this time, the new employee works under the direct supervision (see paragraph 2 below) of a certified pesticide applicator until they are qualified (1 year OTJ experience) and satisfactorily complete the DoD Pest Management Certification Course and can work independently.

4.5.1.3.2 Civilian Contractors

Civilian contractors applying any pesticide on Stennis WMA require a Mississippi certification in the category or applicable sub-categories of work performed. All of the contractor's pest management staff who apply pesticides must be certified as pesticide applicators. Non-certified contractor employees are prohibited from applying pesticides.

4.5.1.3.3 Inspectors

Individuals who evaluate the quality of work of pest control contracts (QAEs) should also be trained in the pest management category or categories of work being performed.

4.5.1.3.4 Supervisor

Direct supervision is defined in DoD Instruction 4150.7 as supervision that includes being at the specific location where pest management work is conducted, providing instruction and control, and maintaining a line-of-sight view of the work performed. Certain circumstances may temporarily remove the line-of-sight view of the application of pesticide from the supervisor such as topographic, vegetation, or structural constraints. Under these temporary circumstances, the supervisor shall be responsible for the actions of the pesticide applicators.

4.5.1.3.5 Training and Certification

Training and certification will be conducted at government expense for DoD personnel. Certified pest control personnel shall be re-certified in accordance with Mississippi or DoD requirements as specified above. Employed pesticide applicators must be certified and the quality assurance evaluator must be trained in the following categories when appropriate. Certification and training is required when performing pest control operations that involve restricted-use or state-limited-use pesticides, to supervise other employees conducting pest control involving restricted-use or state-limited-use pesticides, or to evaluate contractor performance relating to pest control within these categories:

- a. Forest pest control (DoD & EPA category 2; MS C).
- b. Ornamental and turf pest control (DoD & EPA category 3; MS D).
- c. Aquatic pest control (DoD & EPA category 5; MS B).
- d. Right-of-way pest control (DoD & EPA category 6; MS C).
- e. Industrial, Institutional, Structural, and Health-related pest control (DoD & EPA category 7; MS E).
- f. Public health (DoD & EPA category 8; MS VIII).
- g. Aerial Application (DoD & EPA category 11; MS IB) if planned to be used.

4.5.1.4 Continuing Education and Training

Personnel, who are involved in pesticide applications on a regular or seasonal basis, especially when mixing formulations is required, are encouraged to attend local pest management classes, workshops and seminars. This is important in order to keep abreast of pest problems and pest management techniques, which are unique to the area surrounding the installation. This is particularly true when dealing with vegetation control since many of the herbicide labels indicate that choices in strength and application technique should be based on local conditions. The time and labor expended in this type of training is easily recouped through improved efficiency in pest management. Local pest management training may include on-site training in addition to any off-site re-certification training, such as the DoD course or state re-certification requirements. Other personnel who deal directly with pest control operations, but who may not need to be certified, are also encouraged to attend local seminars to better understand pest management needs.

4.5.2 Geographical Information Systems, Data Integration, Access, and Reporting

Mapping and spatial analysis are integral components of natural resources management that are fulfilled through the use of GIS data and software. Data provide documentation for the location and attributes of resources while software contains the tools necessary for the management, display, and analysis of these data. A major goal of any GIS is the development of rigorous organization and accuracy standards. These standards provide for a sound base dataset needed for rigorous analysis used in managing natural resources.

4.5.2.1 Goals and Objectives

- Develop a GIS database, which can be used to interactively and proactively manage the natural resources on the Stennis WMA.
- Prevent conflicts with long-term management goals and training missions.

4.5.2.2 Projects

No projects are developed to address GIS development since this is a function of the Stennis WMA Operations and Maintenance program.

4.5.2.3 Management Strategies

GIS databases and mapping capabilities will be used for daily decisions as well as long-term planning of natural resources management and its integration with the Navy Mission. This work is driven by laws such as the NEPA, ESA, and Clean Water Act. For NEPA compliance, all impacts on Federal land from a proposed project must be considered before the project can be implemented. These impacts may affect natural resources such as endangered species, water, and timber, so detailed maps are required to assess the impacts potential on resources. A list of data layers that the WMA Natural Resources Manager and CNRSE plans to develop and maintain is provided below.

- Rare, threatened and endangered species occurrences
- Streams and wetlands
- Archaeological sites
- Hunting and fishing areas
- Food plots
- Forest stand inventory data
- Fire breaks and prescribed burning areas
- Cemeteries
- Solid waste management areas
- Hazardous waste management
- Groundwater and soil remediation areas
- Stormwater pollution prevention
- Air pollution emission sources

Along with these data layers, the WMA Natural Resources Manager will also have access to ancillary data via NAVFACSE Georeadiness Center that can affect a project, such as infrastructure, installation boundaries, and geodetic reference points. Data for

the Navy's training mission, such as training area boundaries, short range fire ranges, and training impact areas, are maintained by NCBC Gulfport.

All of the aforementioned types of GIS analysis require accurate, updated datasets and the ability to share current data and communicate data updates with users. The NAVFACSE Georeadiness Center will maintain a server where finalized data, intermediate working data, and all supporting files are stored.

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5.0 IMPLEMENTATION

Over the course of its implementation, the INRMP will:

- enable Stennis WMA to make progress towards achieving a sustainable natural resources base and a realistic training environment which is embodied in the diversity of the wetlands ecosystem;
- establish appropriate stewardship policies that serve to protect both natural and cultural resources;
- ensure compliance with environmental laws;
- provide a continuity of direction and effort that can accommodate changes in personnel and leadership;
- promote cost-effectiveness through better planning and coordination;
- promote good public relations by demonstrating the Installation's commitment to stewardship, as well as a multiple-use concept for the general public; and
- make use of innovative strategies to accomplish specific management objectives.

5.1 PLAN IMPLEMENTATION AND REVIEW

The annual INRMP reviews and metrics located at the Natural Resources Data Call Station website (<https://clients.emainc.com/dcs/navfac/>) will be used to assess implementation. A general summary of major actions/projects during the next 5 years and programs they support are provided in Section 5.4. Projects will be developed during the budgetary process and coordinated with CNRSE natural resources personnel.

5.2 PLANNING AND MISSION SUSTAINABILITY

The goal at Stennis WMA is to maintain or enhance the capability of military lands to support the training mission while conserving natural resources. NCBC Gulfport has the primary role and responsibility for the implementation of the INRMP.

The implementation of projects, future revisions and updates of this INRMP will assist NCBC Gulfport in maintaining natural habitats, assessing the impacts of military training activities on flora and fauna populations, controlling erosion and sedimentation in stream channels, roads and unvegetated areas, implementing ecosystem management, managing the Installation's forest areas and providing for recreational opportunities.

Frequent and close coordination between the WMA Natural Resources Manager and the Range Control office will be necessary. To implement this plan and ensure minimal impacts or conflicts with military training. The Range Control office will schedule and manage training land use and must be aware of proposed management actions within the training areas. All actions that involve contractors or workers must coordinate with Stennis WMA natural resources staff. These actions will include, but are not limited to, timber harvest, invasive species control, and plant or animal surveys. In addition, the natural resources staff must know when and where military training is occurring so work can be coordinated with those activities. Range Control provides a list of the range and training areas scheduled for use on a regular basis to assist with work planning.

5.3 PARTNERSHIPS

The magnitude and complexity of the management requirements necessitate outside assistance. This assistance can vary, but usually takes the form of a partnership, which may include funding, technical and logistical support, GIS or use of LDWF biologists, or an agreement between agencies to achieve common goals. Agencies with shared goals include:

- NRCS to provide expertise on soil erosion control and aggregate mine reclamation
- USACE to develop wetland restoration and mitigation credit banks
- USFWS to assist in identifying conservation measures for enhancement of threatened and endangered species and their habitat
- MDWFP to assist in developing and implementing hunting and fishing regulations, feral hog depredation, and fish pond stocking
- LDWF to assist in informing their visitors of the training missions that occur on the East Pearl River and the need to avoid those reaches of the river during training exercises.

5.4 FUNDING

Funding for implementation of the INRMP will come from the CNRSE or NAVFAC SE natural resources fund. The natural resources programs and projects described in this INRMP are divided into mandatory and stewardship categories to reflect implementation priorities. Every effort will be made to acquire O & M(N) Environmental or other funding

to implement DoD mandatory projects, in the timeliest manner possible. Stewardship projects will be funded through fish and wildlife licenses or other fund sources as funds and personnel become available.

Forestry funding is provided through NAVFAC SE from the sale of timber products. Funding for special projects in natural resources may be available from NAVFAC SE through surplus funding sources or forestry reserve accounts. Non-compliance funding may come from Legacy Act. Funding for compliance with environmental legislation and regulations is requested through the Navy Environmental Program Requirements Web (EPRWeb). Compliance projects falling under the EPRWeb include species surveys, assessments, management, protection, INRMPs, wetlands delineation and protection, conservation mapping, nonpoint source pollution, watershed management, cultural resource surveys, protection and plans, archaeological curation, conservation of soil and water or fish and wildlife, forest management and outdoor recreation (wildlife). All projects must be conducted in strict compliance with the Anti-Deficiency Act (13 USC 1341), which requires that all obligations or commitments made by the Federal government be funded at levels that do not exceed the Congressional appropriations.

Table 5-1 summarizes the projects and provides the estimated costs for project implementation by Fiscal Year (FY) for Stennis WMA. One of the objectives of the INRMP is to plan for no net loss of military mission. Partnerships, proper funding, and compliance with NEPA requirements will ensure that the Navy will achieve its military mission.

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Table 5-1. Summary of Recommended Projects

Stennis WMA Projects														
Project No.	Project Description	INRMP Goal	Scheduled Implementation (FY)	Prime Legal Driver	Navy Assessment Level ^a	Funding Priority ^b	FY 2010*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	Cost Estimate ^c \$
1	Biological Monitoring	Fish and Wildlife Management (Section 4.3)	2010	ESA	1	M	\$175,000	\$25,000	\$25,450	\$25,908	\$150,000	\$26,849	\$27,332	455,539
2	Land/Fire Management	Land and Forest Management (Sections 4.1 and 4.2)	2012	Management of Undesirable Plants on Federal Lands, Sikes Act Improvement Amendment, and EO 13112	1	S		\$65,000	\$48,225	\$49,093	\$49,997	\$50,876	\$51,972	316,163
3	Invasive Plant Control	Invasive Species Management (Section 4.1.5)	2012	Management of Undesirable Plants on Federal Lands and EO 13112	1	S		\$50,000	\$50,900	\$51,816	\$52,749	\$53,698	\$54,665	313,838
4	Species Protection and Habitat Development	RTE Species (Section 4.3.2)	2012	ESA	1	M		\$20,000	\$20,360	\$20,726	\$21,100	\$21,479	\$21,866	125,531
5	Timber Stand Improvement	Forestry Management (Section 4.2.1)	2012	Management of Undesirable Plants on Federal Lands, Sikes Act Improvement Amendment, and EO 13112	1	S		\$13,500	\$13,743	\$13,990	\$14,242	\$14,449	\$14,760	84,864
6	Nuisance Wildlife Management	Invasive Species Management (Section 4.1.5) and Fish and Wildlife Management (Section 4.3.1)	2012	ESA and DOD INST 4715.3 Environmental Conservation Program	1	S		\$25,000	\$25,450	\$25,908	\$26,374	\$26,849	\$27,332	156,913
7	Neotropical Migratory Bird Surveys ^e	Migratory Birds (Section 4.3.3)	2014	MBTA and EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds	1	M				\$40,000				40,000
							\$175,000	\$198,500	\$184,128	\$227,441	\$314,462	\$194,200	\$197,927	\$1,491,658

Notes:

- a From EPR "Guidebook" (Cookbook)
- b From DOD Instruction 4715.3, Enclosure (4) M= Mandatory S= Stewardship
- c Contract underway that includes surveys for protected terrestrial species, invasive plants, and general wildlife species
- d Recommended Projects are dependent on natural resources management priorities and amounts are subject to available funding allocations
- e Non-recurring project; Projects 1 through 6 are recurring projects

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APPENDIX A
ABBREVIATIONS AND ACRONYMS



BASH	Bird/Animal Aircraft Strike Hazard
BHWG	Bird Hazard Working Group
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNO	Chief of Naval Operations
CNRSE	Commander, Navy Region Southeast
CO	Commanding Officer
CWA	Clean Water Act
DDE	dichlorodiphenyldichloroethylene
DoD	Department of Defense
DoDINST	Department of Defense Instruction
DZ	drop zone
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EOD	explosive ordnance specialist
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
°F	Degrees Fahrenheit
FBI	Federal Bureau of Investigation
FY	Fiscal Year
GIS	Geographic Information System
GSMFC	Gulf States Marine Fisheries Commission
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HUC	hydrologic unit code
INRMP	Integrated Natural Resource Management Plan
IR	Installation Restoration
JAG	Judge Advocate General
LDWF	Louisiana Department of Wildlife and Fisheries
LNHP	Louisiana Natural Heritage Program
LZ	landing zone
MATC	Mini Armor Troop Carriers
MBTA	Migratory Bird Treaty Act
MDEQ	Mississippi Department of Environmental Quality
MDMR	Mississippi Department of Marine Resources
MDWFP	Mississippi Department of Wildlife, Fisheries, and Parks
MILCON	Military Construction
MNHP	Mississippi Natural Heritage Program
MOU	Memorandum of Understanding
MOUT	Military Operations on Urban Terrain
MS4	Municipal Stormwater Management Plan
MSAAP	Mississippi Army Ammunition Plant
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
msl	mean sea level
MWR	Morale, Welfare and Recreation
NASA	National Aeronautics and Space Administration
Navy	U.S. Department of the Navy
NAVFAC	Naval Facilities Engineering Command
NAVSCIATTS	Naval Small Craft Instruction and Technical Training School
NCBC	Naval Construction Battalion Center
NCP	National Contingency Plan

NEPA	National Environmental Policy Act
NGO	non-governmental organizations
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRM	Natural Resources Manager
NSW	Naval Special Warfare
NVG	night-vision goggles
NWCG	National Wildfire Coordination Group
OGC	Office of General Counsel
OPA	Oil Pollution Act of 1990
OPNAVINST	Chief of Naval Operations Instruction
OTJ	on-the-job
OUSD	Office of Under Secretary of Defense
PBL	Patrol Boats Light
PBR	Patrol Boats Riverine
PL	Public Law
PRWMA	Pearl River Wildlife Management Area
QAE	quality of work of pest control contract
R & D	Research and Development
RCW	red-cockaded woodpecker
RDP	Range Development Plan
RTE	rare, threatened, and endangered
RTLA	Range and Training Land Assessment
SAIA	Sikes Act Improvement Amendment
SARA	Superfund Amendments and Reauthorization Act
SBT-22	Special Boat Team 22
SDSFIE	Spatial Data Standards for Facilities, Infrastructure and Environment
SECNAV	Secretary of the Navy
SIT	Squadron Integration Training
SOCOM	Special Operations Command
SOC-R	Special Operations Craft Riverine
SOF	Naval Special Operations Forces
SRTA	Short Range Training Ammunition
SSC	John C. Stennis Space Center
SWCC	Special Warfare Combatant Crewmembers
SWPPP	Stormwater Pollution Prevention Plan
TC&B	Turner Collie & Braden Inc.
ULT	Unit Level Training
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USN	U.S. Navy
WMA	Western Maneuver Area

APPENDIX B
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APPENDIX C
TIER 1 AND TIER 2 SPECIES OF CONCERN



Table C-1. Tier 1 and Tier 2 Species of Concern by Aquatic Habitat Type

Name	Scientific Name	Habitat Type				
		Riverfront	Lacustrine	Swamps	Streams	Bogs/Marshes
TIER 1						
Mammal						
Louisiana black bear	<i>Ursus americanus luteolus</i>	✓				
southeastern myotis	<i>Myotis austroriparius</i>					✓
southeastern myotis	<i>Myotis austroriparius</i>			✓		
Fish						
Ironcolor shiner	<i>Notropis chalybaeus</i>		✓		✓	
freckled darter	<i>Percina lenticula</i>				✓	
Alabama shad	<i>Alosa alabamae</i>				✓	
crystal darter	<i>Crystallaria asprella</i>				✓	
frecklebelly madtom	<i>Noturus munitus</i>				✓	
Alabama spike	<i>Elliptio arca</i>				✓	
delicate spike	<i>Elliptio arctata</i>				✓	
blackmouth shiner	<i>Notropis melanostomus</i>		✓			
Mollusk						
black sandshell	<i>Ligumia recta</i>				✓	
Plant						
Southern hickorynut	<i>Obovaria jacksoniana</i>				✓	
Alabama hickorynut	<i>Obovaria unicolor</i>				✓	
Amphibian						
Mississippi gopher frog	<i>Rana sevosa</i>		✓			
one-toed amphiuma	<i>Amphiuma pholeter</i>					✓
Bird						
Mississippi sandhill crane	<i>Grus canadensis pulla</i>		✓			✓
yellow rail	<i>Coturnicops noveboracensis</i>		✓			✓

Table C-1, continued

Name	Scientific Name	Habitat Type				
		Riverfront	Lacustrine	Swamps	Streams	Bogs/Marshes
black rail	<i>Laterallus jamaicensis</i>		✓			✓
TIER 2						
Mammal						
hoary bat	<i>Lasiurus intermedius</i>	✓				
gray myotis	<i>Myotis grisescens</i>	✓	✓	✓		✓
northern yellow bat	<i>Lasiurus intermedius</i>	✓		✓		
northern myotis	<i>Myotis septentrionalis</i>	✓				✓
little brown myotis	<i>Myotis lucifugus</i>	✓		✓		✓
black bear	<i>Ursus americanus</i>	✓				
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>			✓		✓
little brown myotis	<i>Myotis lucifugus</i>					✓
Fish						
striped bass	<i>Morone saxatilis</i>				✓	
bluenose shiner	<i>Pteronotropis welaka</i>		✓		✓	
river redhorse	<i>Moxostoma carinatum</i>				✓	
southeastern blue sucker	<i>Cycleptus meridionalis</i>				✓	
chestnut lamprey	<i>Ichthyomyzon castaneus</i>				✓	
northern starhead topminnow	<i>Fundulus dispar</i>				✓	✓
saltmarsh topminnow	<i>Fundulus jenkinsi</i>		✓			
southern redbelly dace	<i>Phoxinus erythrogaser</i>			✓		✓
blacknose dace	<i>Rhinichthys atratulus</i>			✓		✓
stripetail darter	<i>Etheostoma kennicotti</i>			✓		✓
blackfin darter	<i>Etheostoma nigripinne</i>			✓		✓
Mollusk						
rayed creekshell	<i>Anodontooides radiatus</i>				✓	
rock pocketbook	<i>Arcidens confragosus</i>				✓	

Table C-1, continued

Name	Scientific Name	Habitat Type				
		Riverfront	Lacustrine	Swamps	Streams	Bogs/Marshes
Mississippi pigtoe	<i>Pleurobema beadleianum</i>				✓	
Amphibian						
mud salamander	<i>Pseudotriton montanus</i>				✓	
crawfish frog	<i>Rana areolata</i>		✓			
four-toed salamander	<i>Hemidactylium scutatum</i>		✓	✓		✓
ornate chorus frog	<i>Pseudacris ornata</i>		✓			
spring salamander	<i>Gyrinophilus porphyriticus</i>			✓		✓
Webster's salamander	<i>Plethodon websteri</i>			✓		✓
southern zigzag salamander	<i>Plethodon ventralis</i>					✓
mud salamander	<i>Pseudotriton ruber</i>			✓		✓
spring salamander	<i>Gyrinophilus porphyriticus</i>					✓
southern zigzag salamander	<i>Plethodon ventralis</i>			✓		✓
mud salamander	<i>Pseudotriton ruber</i>					✓
Bird						
red knot	<i>Calidris canutus</i>	✓	✓			
pipin plover	<i>Charadrius melodus</i>	✓	✓			
cerulean warbler	<i>Dendroica cerulea</i>	✓		✓		✓
bald eagle	<i>Haliaeetus leucocephalus</i>	✓				
little blue heron	<i>Egretta caerulea</i>	✓	✓			✓
rusty blackbird	<i>Euphagus carolinus</i>	✓	✓	✓		✓
white ibis	<i>Eudocimus albus</i>	✓	✓			✓
marbled godwit	<i>Limosa fedoa</i>	✓	✓			
wood stork	<i>Mycteria americana</i>	✓	✓			✓
interior least tern	<i>Sterna antillarum athalassos</i>	✓	✓			✓
swallow-tailed kite	<i>Elanoides fortificatus</i>				✓	✓
mottled duck	<i>Anas fulvigula</i>		✓			✓
king rail	<i>Rallus elegans</i>		✓			✓

Table C-1, continued

Name	Scientific Name	Habitat Type				
		Riverfront	Lacustrine	Swamps	Streams	Bogs/Marshes
Swainson's warbler	<i>Limnothlypis swainsonii</i>			✓		✓
short-eared owl	<i>Asio flammeus</i>					✓
Reptile						
black-knobbed map turtle	<i>Graptemys nigrinoda</i>	✓			✓	
Alabama map turtle	<i>Graptemys pulchra</i>	✓			✓	
Pascagoula map turtle	<i>Graptemys gibbonsi</i>	✓			✓	
ringed map turtle	<i>Graptemys oculifera</i>	✓			✓	
yellow-blotched map turtle	<i>Graptemys flavimaculata</i>	✓			✓	
alligator snapping turtle	<i>Macrochelys temminckii</i>				✓	
rainbow snake	<i>Farancia erythrogramma</i>				✓	
delta crayfish snake	<i>Regina rigida deltae</i>			✓		✓
Crustacean						
ribbon crayfish	<i>Procambarus bivittatus</i>				✓	
Pearl blackwater crayfish	<i>Procambarus penni</i>				✓	
least crayfish	<i>Cambarellus diminutus</i>		✓			
crayfish	<i>Cambarellus lesliei</i>		✓			

Table C-2. Tier 1 and Tier 2 Species of Concern by Terrestrial Habitat Type

Name	Scientific Name	Habitat Type				
		Mixed Pine Hardwood	Mixed Hardwood Pine	Pastures/ Shrublands	BLH	Urban/ Suburban
TIER 1						
Mammal						
Louisiana black bear	<i>Ursus americanus luteolus</i>	✓	✓		✓	
southeastern myotis	<i>Myotis austroriparius</i>		✓		✓	✓
Amphibian						
Mississippi gopher frog	<i>Rana sevosa</i>	✓	✓			
Bird						
Bewick's wren	<i>Thryomanes bewickii</i>	✓		✓		✓
southeastern American kestrel	<i>Falco sparverius paulus</i>	✓	✓	✓	✓	
yellow rail	<i>Coturnicops noveboracensis</i>		✓			
Mississippi sandhill crane	<i>Grus canadensis pulla</i>			✓	✓	
migrant songbirds					✓	
Reptile						
mimic glass lizard	<i>Ophisaurus mimicus</i>	✓				
black pine snake	<i>Pituophis melanoleucus lodingi</i>	✓				
TIER 2						
Mammal						
northern myotis	<i>Myotis septentrionalis</i>	✓				
oldfield mouse	<i>Peromyscus polionotus</i>	✓		✓		
Louisiana black bear	<i>Ursus americanus luteolus</i>	✓	✓		✓	
hoary bat	<i>Lasiurus intermedius</i>	✓	✓	✓	✓	
northern yellow bat	<i>Lasiurus intermedius</i>	✓	✓		✓	

Table C-2, continued

Name	Scientific Name	Habitat Type				
		Mixed Pine Hardwood	Mixed Hardwood Pine	Pastures/ Shrublands	BLH	Urban/ Suburban
little brown myotis	<i>Myotis lucifugus</i>	✓	✓	✓	✓	
gray myotis	<i>Myotis grisescens</i>	✓	✓		✓	
northern myotis	<i>Myotis septentrionalis</i>	✓	✓		✓	
eastern spotted skunk	<i>Spilogale putorius</i>	✓		✓		
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>		✓		✓	✓
meadow jumping mouse	<i>Zapus hudsonius</i>			✓		
Amphibian						
ornate chorus frog	<i>Pseudacris ornata</i>	✓	✓			
Webster's salamander	<i>Plethodon websteri</i>		✓			
crawfish frog	<i>Rana areolata</i>		✓	✓		
Bird						
cerulean warbler	<i>Dendroica cerulea</i>	✓	✓		✓	
red-cockaded woodpecker	<i>Picoides borealis</i>	✓	✓		✓	
Bachman's sparrow	<i>Aimophila aestivalis</i>	✓		✓		
common ground dove	<i>Columbina passerina</i>	✓		✓		✓
grasshopper sparrow	<i>Ammodramus savannarum</i>	✓	✓	✓		
Le Conte's sparrow	<i>Ammodramus leconteii</i>	✓		✓	✓	
Swainson's warbler	<i>Limnothlypis swainsonii</i>		✓	✓	✓	
Henslow's sparrow	<i>Ammodramus henslowii</i>		✓			
rusty blackbird	<i>Euphagus carolinus</i>		✓		✓	
painted bunting	<i>Passerina ciris</i>			✓		
short-eared owl	<i>Asio flammeus</i>			✓		
wood stork	<i>Mycteria americana</i>				✓	
Swallow-tailed kite	<i>Elanoides fortificatus</i>				✓	
white ibis	<i>Eudocimus albus</i>				✓	

Table C-2, continued

Name	Scientific Name	Habitat Type				
		Mixed Pine Hardwood	Mixed Hardwood Pine	Pastures/ Shrublands	BLH	Urban/ Suburban
Reptile						
gopher tortoise	<i>Gopherus polyphemus</i>	✓		✓		
eastern coral snake	<i>Micrurus fulvius</i>	✓	✓			
eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	✓	✓	✓		
slender glass lizard	<i>Ophisaurus attenuatus</i>	✓	✓	✓		
southern coal skink	<i>Eumeces anthracinus pluvialis</i>	✓	✓	✓		
prairie kingsnake	<i>Lampropeltis calligaster calligaster</i>	✓	✓	✓		
mole kingsnake	<i>Lampropeltis calligaster rhombomaculata</i>	✓	✓	✓		
red milk snake	<i>Lampropeltis triangulum sypila</i>	✓	✓	✓		

APPENDIX D
RARE SPECIES OCCURRENCES IN HANCOCK COUNTY, MISSISSIPPI
AND ST. TAMMANY PARISH, LOUISIANA

Table D-1. State Listed Animal Species in Hancock County, Mississippi

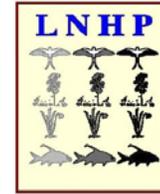
Scientific Name	Common Name	Global Rank	State Rank
<i>Acipenser Oxyrinchus Desotoi</i>	Gulf Sturgeon	G3T2	S1
<i>Aimophila Aestivalis</i>	Bachman's Sparrow	G3	S3?B, SZN
<i>Alosa Alabamae</i>	Alabama Shad	G3	S1
<i>Anas Fulvigula</i>	Mottled Duck	G4	S3B,S4N
<i>Bufo Nebulifer</i>	Gulf Coast Toad	G5	S3
<i>Corynorhinus Rafinesquii</i>	Rafinesque's Big-Eared Bat	G3G4	S3B,S3?N
<i>Crystallaria Asprella</i>	Crystal Darter	G3	S1
<i>Drymarchon Corais Couperi</i>	Eastern Indigo Snake	G4T3	S1
<i>Euphyes Bayensis</i>	Bay St. Louis Skipper	G1G3	S1
<i>Falco Columbarius</i>	Merlin	G5	SZN
<i>Farancia Erythrogramma</i>	Rainbow Snake	G5	S2
<i>Fundulus Jenkinis</i>	Saltmarsh Topminnow	G2	S3
<i>Gastrocopta Pellucida</i>	Slim Snaggletooth	G4G5	S?
<i>Gopherus Polyphemus</i>	Gopher Tortoise	G3	S2
<i>Haliaeetus Leucocephalus</i>	Bald Eagle	G4	S1B,S2N
<i>Heterandria Formosa</i>	Least Killifish	G5	S3
<i>Heterodon Simus</i>	Southern Hognose Snake	G2	SH
<i>Ictiobus Niger</i>	Black Buffalo	G5	S3
<i>Malaclemys Terrapin Pileata</i>	Mississippi Diamondback Terrapin	G4T3	S2
<i>Micrurus Fulvius</i>	Eastern Coral Snake	G5	S3S4
<i>Nerodia Clarkii Clarkii</i>	Gulf Salt Marsh Snake	G4T3	S2?
<i>Notropis Chalybaeus</i>	Ironcolor Shiner	G4	S2
<i>Nycticorax Nycticorax</i>	Black-Crowned Night-Heron	G5	S3?B,SZN
<i>Plegadis Chihi</i>	White-Faced Ibis	G5	SZN
<i>Polyodon Spathula</i>	Paddlefish	G4	S3
<i>Pseudotriton Montanus</i>	Mud Salamander	G5	S2S3
<i>Pteronotropis Welaka</i>	Bluenose Shiner	G3G4	S3
<i>Puma Concolor Coryi</i>	Florida Panther	G5T1	SH
<i>Rana Heckscheri</i>	River Frog	G5	S1
<i>Regina Rigida Sinicola</i>	Gulf Crayfish Snake	G5T5	S3?
<i>Rhadinaea Flavilata</i>	Pine Woods Snake	G4	S3?
<i>Sterna Maxima</i>	Royal Tern	G5	S1B,S4N
<i>Thamnophis Proximus Orarius</i>	Gulf Coast Ribbon Snake	G5T4	S?
<i>Tyrannus Forficatus</i>	Scissor-Tailed Flycatcher	G5	SAB,SAN

Table D-2. State Listed Plant Species in Hancock County, Mississippi

Scientific Name	Common Name	Global Rank	State Rank
<i>Agalinis Aphylla</i>	Coastal Plain False-Foxglove	G3G4	S2S3
<i>Agalinis Filicaulis</i>	Thin Stemmed False-Foxglove	G3G4	S2?
<i>Amsonia Ludoviciana</i>	Creole Phlox	G3	SH
<i>Burmannia Biflora</i>	Northern Burmannia	G4G5	S3S4
<i>Calopogon Barbatus</i>	Bearded Grass-Pink	G4?	S2S3
<i>Calopogon Multiflorus</i>	Many-Flower Grass-Pink	G2G3	S1
<i>Carex Exilis</i>	Coast Sedge	G5	S2
<i>Chamaecyparis Thyoides</i>	Atlantic White Cedar	G4	S2
<i>Cleistes Divaricata</i>	Spreading Pogonia	G4	S3
<i>Coreopsis Nudata</i>	Georgia Tickseed	G3?	S1S2
<i>Eleocharis Elongata</i>	Slim Spike-Rush	G5?	S1
<i>Epidendrum Conopseum</i>	Green-Fly Orchid	G4	S2
<i>Eriocaulon Texense</i>	Texas Pipewort	G4	S2
<i>Eryngium Aquaticum</i>	Marsh Eryngo	G4	S1
<i>Eulophia Ecristata</i>	Smooth-Lipped Eulophia	G2	S1S2
<i>Gordonia Lasianthus</i>	Loblolly Bay	G5	S3S4
<i>Hibiscus Coccineus</i>	Brilliant Hibiscus	G4?	S2
<i>Ilex Amelanchier</i>	Juneberry Holly	G4	S3
<i>Ilex Myrtifolia</i>	Myrtle Holly	G5?	S3S4
<i>Juniperus Silicicola</i>	Southern Red Cedar	G5T4T5	S2
<i>Lachnocaulon Digynum</i>	Pineland Bogbutton	G3	S2
<i>Lilaeopsis Carolinensis</i>	Carolina Lilaeopsis	G3G5	S2S3
<i>Macranthera Flammea</i>	Flame Flower	G3	S3?
<i>Melanthium Virginicum</i>	Virginia Bunchflower	G5	S2S3
<i>Panicum Nudicaule</i>	Naked-Stemmed Panic Grass	G3Q	S2
<i>Phaseolus Sinuatus</i>	Sandhill Bean	G3?	S1S2
<i>Physalis Angustifolia</i>	Coast Ground-Cherry	G3G4	S3S4
<i>Pinguicula Planifolia</i>	Chapman's Butterwort	G3?	S2
<i>Pinguicula Primuliflora</i>	Southern Butterwort	G3G4	S3
<i>Platanthera Integra</i>	Yellow Fringeless Orchid	G3G4	S3S4
<i>Polygala Hookeri</i>	Hooker's Milkwort	G3	S1S2
<i>Rhynchospora Curtissii</i>	Curtiss's Beakrush	G4	S1
<i>Rhynchospora Macra</i>	Large Beakrush	G3	S3
<i>Rhynchospora Stenophylla</i>	Chapman Beakrush	G4	S1?
<i>Ruellia Noctiflora</i>	Night-Flowering Ruellia	G2	S2
<i>Ruellia Pedunculata</i> SSP <i>Pinetorum</i>	Pine Barren Ruellia	G5T3?	S3
<i>Sageretia Minutiflora</i>	Tiny-Leaved Buckthorn	G4	S2
<i>Spiranthes Longilabris</i>	Giant Spiral Ladies'-Tresses	G3	S2S3
<i>Syngonanthus Flavidulus</i>	Yellow Pipewort	G5	S2?
<i>Utricularia Purpurea</i>	Purple Bladderwort	G5	S2S3
<i>Xyris Drummondii</i>	Drummond's Yellow-Eyed Grass	G3	S2
<i>Xyris Scabrifolia</i>	Harper's Yellow-Eyed Grass	G3	S1S2



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Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Acipenser oxyrinchus desotoi</i>	Gulf Sturgeon	S1S2	G3T2	Threatened	LT
<i>Agalinis aphylla</i>	Coastal Plain False-foxglove	S1	G3G4		
<i>Agalinis filicaulis</i>	Purple False-foxglove	S2	G3G4		
<i>Agalinis linifolia</i>	Flax-leaf False-foxglove	S2	G4?		
<i>Aimophila aestivalis</i>	Bachman's Sparrow	S3	G3		
<i>Alosa alabamae</i>	Alabama Shad	S1	G3		C
<i>Ambystoma tigrinum</i>	Eastern Tiger Salamander	S1	G5	Prohibited	PS
<i>Asclepias michauxii</i>	Michaux Milkweed	S2	G4G5		
<i>Bayhead swamp</i>	Bayhead Swamp	S3	G3?		
<i>Bottomland hardwood forest</i>	Bottomland Hardwood Forest	S4	G4G5		
<i>Burmannia biflora</i>	Northern Burmannia	S3	G4G5		
<i>Calopogon barbatus</i>	Bearded Grass-pink	S1	G4?		
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	S1	G2G3		
<i>Calopogon pallidus</i>	Pale Grass-pink	S2	G4G5		
<i>Carex decomposita</i>	Cypress-knee Sedge	S3	G3		
<i>Carex turgescens</i>	Pine barren sedge	S1S2	G4G5		
<i>Carex venusta</i>	Caric Sedge	S1	G4		
<i>Chamaelirium luteum</i>	Fairy Wand	S2S3	G5		
<i>Chasmanthium ornithorhynchum</i>	Bird-bill Spikegrass	S2	G4		
<i>Chrysopsis gossypina ssp. hyssopifolia</i>	A Golden Aster	S1	G5T3T5		
<i>Cirsium lecontei</i>	Lecont's Thistle	S2	G2G3		
<i>Cleistes divaricata</i>	Spreading Pogonia	S1	G4		
<i>Cliftonia monophylla</i>	Buckwheat-tree	S1	G4G5		
<i>Coastal live oak-hackberry forest</i>	Coastal Live Oak-hackberry Forest	S1S2	G2		
<i>Collinsonia canadensis</i>	richweed	S2?	G5		
<i>Collinsonia serotina</i>	southern horse-balm	S1	G3G4		
<i>Coreopsis nudata</i>	Georgia Tickseed	S2	G3?		



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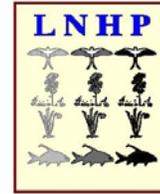


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Crystallaria asprella</i>	Crystal Darter	S2S3	G3		
<i>Cycleptus meridionalis</i>	Southeastern Blue Sucker	S1	G3G4		
<u>Cypress-tupelo swamp</u>	Cypress-tupelo Swamp	S4	G3G5		
<i>Deparia acrostichoides</i>	Silvery Glade Fern	S2	G5		
<i>Dichanthelium strigosum</i> var. <i>glabrescens</i>	roughhair witchgrass	SH	GNR		
<i>Drosera intermedia</i>	Spoon-leaved Sundew	S2	G5		
<i>Dulichium arundinaceum</i>	Three-way Sedge	S2	G5		
<u>Eastern hillside seepage bog</u>	Eastern Hillside Seepage Bog	S2	G2		
<u>Eastern longleaf pine savannah</u>	Eastern Longleaf Pine Savannah	S1	G1		
<u>Eastern upland longleaf pine forest</u>	Eastern Upland Longleaf Pine Forest	S1S2	G1G2		
<u>Elanoides forficatus</u>	American Swallow-tailed Kite	S1S2B	G5		
<u>Eleocharis elongata</u>	Slim Spike-rush	S3	G5?		
<i>Eleocharis fallax</i>	Creeping Spike-rush	S1?	G4G5		
<i>Elliptio crassidens</i>	Elephant-ear	S2S3	G5		
<u>Fallicambarus oryktes</u>	Flatwoods Digger	S2S3	G4		
<u>Farancia erythrogramma</u>	Rainbow Snake	S2	G4		
<u>Freshwater marsh</u>	Freshwater Marsh	S1S2	G3G4		
<u>Fuirena scirpoidea</u>	Southern Umbrella-sedge	S1	G5		
<i>Fuirena simplex</i>	Western Umbrella-grass	SU	G5		
<i>Fusconaia ebena</i>	Ebonysell	S3	G4G5		
<u>Gopherus polyphemus</u>	Gopher Tortoise	S1	G3	Threatened	PS:LT
<i>Graptemys gibbonsi</i>	Pascagoula Map Turtle	S3	G3G4		
<u>Graptemys oculifera</u>	Ringed Map Turtle	S2	G2	Threatened	LT
<i>Gratiola ramosa</i>	Hedgehyssop	S1S2	G4G5		
<u>Haliaeetus leucocephalus</u>	Bald Eagle	S2N,S3B	G5	Endangered	Delisted
<u>Hardwood slope forest</u>	Hardwood Slope Forest	S3S4	G2G3		
<u>Helenium brevifolium</u>	Shortleaf Sneezeweed	S1	G3G4		



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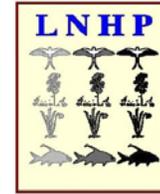


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Hemidactylum scutatum</i>	Four-toed Salamander	S1	G5		
<i>Ilex amelanchier</i>	Sarvis Holly	S2	G4		
<i>Ilex myrtifolia</i>	Myrtle Holly	S2	G5?		
<i>Intermediate marsh</i>	Intermediate Marsh	S3S4	G4?		
<i>Isoetes louisianensis</i>	Louisiana Quillwort	S2	G2		LE
<i>Isotria verticillata</i>	Large Whorled Pogonia	S3	G5		
<i>Justicia americana</i>	Common Water-willow	S2	G5		
<i>Lachnanthes caroliniana</i>	Carolina Redroot	S2	G4		
<i>Lachnocaulon digynum</i>	Pineland Bog Button	S3	G3		
<i>Lampropeltis calligaster rhombomaculata</i>	Mole Kingsnake	S1S2	G5T5		
<i>Lampsilis ornata</i>	Southern Pocketbook	S3	G5		
<i>Liatris tenuis</i>	Slender Gay-feather	S1	G3		
<i>Lilium catesbaei</i>	Southern Red Lily	S1	G4		
<i>Lilium superbum</i>	Turk's Cap Lily	S1	G5		
<i>Linum macrocarpum</i>	big fruit flax	SH	G2		
<i>Lophiola aurea</i>	Golden Crest	S2S3	G4		
<i>Ludwigia alata</i>	winged primrose willow	S1	G3G5		
<i>Lupinus villosus</i>	Lady Lupine	S2	G5		
<i>Lycopodiella cernua var. cernua</i>	Staghorn Clubmoss	S2	G5T5		
<i>Macranthera flammea</i>	Flame Flower	S2	G3		
<i>Macrolemys temminckii</i>	Alligator Snapping Turtle	S3	G3G4	Restricted Harvest	
<i>Malaclemys terrapin</i>	Diamondback Terrapin	S2	G4	Resticted Harvest	
<i>Mayaca fluviatilis</i>	Bog Moss	S2	G5		
<i>Micrurus fulvius</i>	Harlequin Coral Snake	S2	G5T5		
<i>Moxostoma carinatum</i>	River Redhorse	S1S3	G4		
<i>Mustela frenata</i>	Long-tailed Weasel	S2S4	G5		



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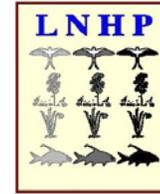


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Myrica inodora</i>	Odorless Bayberry	S2	G4		
<i>National champion tree</i>	National Champion Tree	SNR	GNR		
<i>Noturus munitus</i>	Frecklebelly Madtom	S2S3	G3		
<i>Obovaria unicolor</i>	Alabama Hickorynut	S1	G3		
<i>Ophisaurus ventralis</i>	Eastern Glass Lizard	S3	G5		
<i>Pandion haliaetus</i>	Osprey	S2B,S3N	G5		
<i>Panicum tenerum</i>	Southeastern Panic Grass	S4	G4		
<i>Paronychia erecta var. corymbosa</i>	Paronychia Corymbosa	S1	G3G4T2T4		
<i>Percina aurora</i>	Pearl Darter	SH	G1		C
<i>Percina lenticula</i>	Freckled Darter	S1	G2		
<i>Physalis carpenteri</i>	Carpenter's Ground-cherry	S1	G3		
<i>Physostegia correllii</i>	Correll's False Dragon-head	S1	G2		
<i>Picoides borealis</i>	Red-cockaded Woodpecker	S2	G3	Endangered	LE
<i>Pine flatwoods</i>	Pine Flatwoods	S3	G2G3		
<i>Pinguicula lutea</i>	Yellow Butterwort	S2	G4G5		
<i>Platanthera blephariglottis var. conspicua</i>	White-fringe Orchid	S1	G4G5T3T4		
<i>Platanthera integra</i>	Yellow Fringeless Orchid	S3	G3G4		
<i>Podostemum ceratophyllum</i>	Riverweed	S1	G5		
<i>Polygala chapmanii</i>	Chapman's milkwort	S1	G3G5		
<i>Polygala crenata</i>	scalloped milkwort	S2	G4?		
<i>Polygala hookeri</i>	Hooker Milkwort	S1	G3		
<i>Polyodon spathula</i>	Paddlefish	S3	G4	Prohibited	
<i>Potamilus inflatus</i>	Inflated Heelsplitter	S1	G1G2Q	Threatened	LT
<i>Potamogeton perfoliatus</i>	Clasping-leaf Pondweed	SH	G5		
<i>Procambarus bivittatus</i>	Ribbon Crawfish	S1S2	G5		
<i>Procambarus shermani</i>	Plain Brown Crawfish	S2	G4		
<i>Pseudacris ornata</i>	Ornate Chorus Frog	S1	G5		



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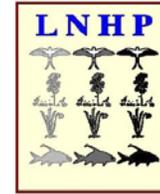


PARISH: St. Tammany

Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Pseudotriton montanus</i>	Gulf Coast Mud Salamander	S1	G5	Prohibited	
<i>Pteroglossaspis ecristata</i>	A Wild Coco	S2	G2G3		
<i>Pteronotropis welaka</i>	Bluenose Shiner	S1S2	G3G4		
<i>Quercus arkansana</i>	Arkansas Oak	S2	G3		
<i>Quercus rubra</i>	Red Oak	S1S3	G5		
<i>Rana sevosia</i>	Dusky Gopher Frog	SH	G1		LE
<i>Reithrodontomys humulis</i>	Eastern Harvest Mouse	S3S4	G5		
<i>Rhadinaea flavilata</i>	Pine Woods Snake	S1	G4		
<i>Rhynchospora chapmanii</i>	Chapman Beakrush	S2	G4		
<i>Rhynchospora ciliaris</i>	Ciliate Beakrush	S2	G4		
<i>Rhynchospora compressa</i>	Flat-fruit Beakrush	S2	G4		
<i>Rhynchospora debilis</i>	Savannah Beakrush	S3	G4?		
<i>Rhynchospora decurrens</i>	Swamp-forest Beakrush	SH	G3G4		
<i>Rhynchospora divergens</i>	Spreading Beakrush	S1	G4		
<i>Rhynchospora miliacea</i>	Millet Beakrush	S2	G5		
<i>Rhynchospora perplexa</i>	pineland beaksedge	S4	G5		
<i>Ruellia noctiflora</i>	Night-flowering Wild-petunia	S1	G2		
<i>Sabatia arenicola</i>	Sand Rose-gentian	S1	G3G5		
<i>Saccharum brevibarbe</i>	Short-beard Plumegrass	S1	G3G5		
<i>Salix caroliniana</i>	Coastal Plain Willow	S1	G5		
<i>Sanicula marilandica</i>	Maryland's Black Snake-root	SH	G5		
<i>Sarracenia psittacina</i>	Parrot Pitcherplant	S3	G4		
<i>Scirpus etuberculatus</i>	Bulrush	S1	G3G4		
<i>Scleria verticillata</i>	Low Nutrush	S1	G5		
<i>Sclerolepis uniflora</i>	Pink Bob Button	S1	G4		
<i>Selaginella ludoviciana</i>	Louisiana Spikemoss	S1	G3G4		
<i>Serenoa repens</i>	Saw Palmetto	S1	G4G5		



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Scientific Name	Common Name	State Rank	Global Rank	State Status	Federal Status
<i>Sericocarpus linifolius</i>	Narrowleaf Aster	S2	G5		
<i>Sida elliotii</i>	Elliott Sida	SH	G4G5		
<i>Sium suave</i>	Hemlock Water-parsnip	S1S2	G5		
<i>Slash pine/post oak</i>	Slash Pine/Post Oak Forest	S3S4	GNR		
<i>Slash pine-cypress/ hardwood forest</i>	Slash Pine-Pondcypress/Hardwood Forest	S2S3	G2?		
<i>Small stream forest</i>	Small Stream Forest	S3	G3		
<i>Smilax auriculata</i>	Eared Greenbrier	S2	G4?		
<i>Stewartia malacodendron</i>	Silky Camellia	S2S3	G4		
<i>Stipulicida setacea</i>	Pineland Scaly-pink	S1	G4G5		
<i>Submergent vascular vegetation (estuarine)</i>	Estuarine Submergent Vascular Vegetation	S1S2	G4?		
<i>Tephrosia hispidula</i>	hoary pea	S2?	G4G5		
<i>Tofieldia racemosa</i>	Coastal False-asphodel	S2S3	G5		
<i>Trichechus manatus</i>	Manatee	SZN	G2	Endangered	LE
<i>Trichomanes petersii</i>	Dwarf Filmy-fern	S2	G4G5		
<i>Tridens carolinianus</i>	Carolina Fluff Grass	S2	G3		
<i>Uniola paniculata</i>	Sea Oats	S2	G5		
<i>Ursus americanus luteolus</i>	Louisiana Black Bear	S2	G5T2	Threatened	LT
<i>Utricularia juncea</i>	Southern Bladderwort	S3	G5		
<i>Utricularia purpurea</i>	Purple Bladderwort	S3	G5		
<i>Waterbird Nesting Colony</i>	Waterbird Nesting Colony	SNR	GNR		
<i>Xyris fimbriata</i>	Fringed Yellow-eyed Grass	S2?	G5		
<i>Zigadenus leimanthoides</i>	Death Camus	S1	G4Q		

EXPLANATION OF RANKING CATEGORIES EMPLOYED BY NATURAL HERITAGE PROGRAMS NATIONWIDE

Each element is assigned a single global rank as well as a state rank for each state in which it occurs. Global ranking is done under the guidance of NatureServe, Arlington, VA. State ranks are assigned by each state's Natural Heritage Program, thus a rank for a particular element may vary considerably from state to state. Federal ranks are designated by the U.S. Fish & Wildlife Service under the provisions of the Endangered Species Act of 1973. **DISCLAIMER:** This document is not an official copy of the laws in effect and should not be utilized or relied upon as such. For this reason, the accuracy of the information contained within this document cannot be guaranteed and the reader is cautioned that it is his/her responsibility to be apprised of the laws in effect at any given time. These laws include those contained within the Louisiana Revised Statutes, particularly Title 56, the official regulations of the Louisiana Wildlife and Fisheries Commission, federal laws, and any local or parish ordinances.

FEDERAL RANKS (USES A FIELD):

LE = Listed Endangered

LT = Listed Threatened

PE = Proposed endangered

PT = Proposed Threatened

C = Candidate

PDL = Proposed for delisting

E (S/A) or T (S/A) = Listed endangered or threatened because of similarity of appearance

XE = Essential experimental population

XN = Nonessential experimental population

No Rank = Usually indicates that the taxon does not have any federal status. However, because of potential lag time between publication in the Federal Register and entry in the central databases and state databases, some taxa may have a status which does not yet appear.

(Rank, Rank) = Combination values in parenthesis = The taxon itself is not named in the Federal Register as having U.S. ESA status; however, all of its infraspecific taxa (worldwide) do have official status. The statuses shown in parentheses indicate the statuses that apply to infraspecific taxa or populations within this taxon. *THE SPECIES IS CONSIDERED TO HAVE A COMBINATION STATUS IN LOUISIANA*

(PS) = partial status = Status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population has U.S. ESA status, but the entire species does not. *THE SPECIES DOES NOT HAVE A STATUS IN LOUISIANA*

(PS: Rank) = partial status = Status in only a portion of the species' range. The value of that status appears because the entity with status does not have an individual entry in NatureServe. *THE SPECIES MAY HAVE A STATUS IN LOUISIANA*

GLOBAL ELEMENT RANKS:

G1 = critically imperiled globally because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extinction

G2 = imperiled globally because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extinction throughout its range

G3 = either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single physiographic region) or because of other factors making it vulnerable to extinction throughout its range (21 to 100 known extant populations)

G4 = apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery (100 to 1000 known extant populations)

G5 = demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery (1000+ known extant populations)

GH = of historical occurrence throughout its range; i.e., formerly part of the established biota, with the possibility that it may be rediscovered (e.g., Bachman's Warbler)

GU = possibly in peril range-wide, but status uncertain; need more information

G? = rank uncertain. Or a range (e.g., G3G5) delineates the limits of uncertainty

GQ = uncertain taxonomic status

GX = believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered

T = subspecies or variety rank (e.g., G5T4 applies to a subspecies with a global species rank of G5, but with a subspecies rank of G4)

STATE ELEMENT RANKS:

S1 = critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation

S2 = imperiled in Louisiana because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation

S3 = rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)

S4 = apparently secure in Louisiana with many occurrences (100 to 1000 known extant populations)

S5 = demonstrably secure in Louisiana (1000+ known extant populations)

(B or N may be used as qualifier of numeric ranks and indicating whether the occurrence is breeding or nonbreeding)

SA = accidental in Louisiana, including species (usually birds or butterflies) recorded once or twice or only at great intervals hundreds or even thousands of miles outside their usual range

SH = of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly still persisting

SR = reported from Louisiana, but without conclusive evidence to accept or reject the report

SU = possibly in peril in Louisiana, but status uncertain; need more information

SX = believed to be extirpated from Louisiana

SZ = transient species in which no specific consistent area of occurrence is identifiable

STATE PROTECTION STATUS:

State status are contained in Title 56 of the Louisiana Revised Statutes as well as relevant rules and regulations adopted by the Louisiana Wildlife and Fisheries Commission and the Secretary of the Department of Wildlife and Fisheries. The Secretary of the Department of Wildlife and Fisheries is authorized to implement additional restrictions in emergency situations in order to protect fish and wildlife resources.

Endangered = Taking or harassment of these species is a violation of state and federal laws.

Threatened = Taking or harassment of these species is a violation of state and federal laws.

Threatened/Endangered = Taking or harassment of these species is a violation of state and federal laws.

Prohibited = Possession of these species is prohibited. No legal harvest or possession.

Restricted Harvest = There are restrictions regarding the taking and possession of these species

APPENDIX E
MIGRATORY BIRD OBSERVED AT STENNIS SPACE CENTER
(FROM SSC INRMP)

Birds species and abundance detected in point count surveys in forested habitat types at Stennis Space Center, Mississippi in May 2001.

Bird Species	Migratory Status ^c	Hardwood	Pine-Hardwood	Pine	Hardwood	Pine Hardwood	Pine	Total
		Sawtimber N ^a =10	Sawtimber N=11	Sawtimber N=20	Pulpwood N=5	(Pulpwood) N=6	(Pulpwood) N=11	
Acadian Flycatcher ^b	breeding migrant	4	2	1	3	1		11
American Crow	resident	3	9	30	3	4	5	54
Barred Owl	resident	1		2				3
Barn Swallow	breeding migrant						3	3
Blue-gray Gnatcatcher	resident/breeding migrant	2	3	1	3	3	1	13
Brown-headed Nuthatch ^b	resident			6	2		13	21
Bluejay	resident		7	3	2	2	9	23
Brown Thrasher ^b	resident		4	3	1			8
Carolina Chickadee ^b	resident		7	3		2		12
Carolina Wren	resident	7	8	11	2	3	2	33
Cedar Waxwing	winter migrant		8					8
Chipping Sparrow	year round/winter resident		2	2			1	5
Common Yellowthroat	year round resident			3				3
Eastern Kingbird ^b	breeding migrant			1			3	4
Eastern Meadowlark ^b	year round resident			2			5	7
Eastern Towhee	year round resident		8	12	2	1	9	32
Eastern Wild Turkey	year round resident	3		1				4
Fish Crow ^b	resident		3	8			1	12
Field Sparrow ^b	year round resident		2	1				12
Gray Catbird ^b	Breeding Migrant			2				2
Great Blue Heron	year round resident			1				1
Great-crested Flycatcher ^b	breeding migrant	6		2	2	3	2	15
Great Egret	resident	1						1
Hooded Warbler ^b	breeding migrant	1	5					6

Table continued

Bird Species	Migratory Status^c	Hardwood Sawtimber N^a=10	Pine-Hardwood Sawtimber N=11	Pine Sawtimber N=20	Hardwood Pulpwood N=5	Pine Hardwood (Pulpwood) N=6	Pine (Pulpwood) N=11	Total
Indigo Bunting	breeding migrant		2	5			1	8
Kentucky Warbler ^b	breeding migrant	4	1	2		1		8
Little Blue Heron	year round resident	1		1				2
Mourning Dove	year round resident			6			3	9
Northern Bobwhite ^b	year round resident		2	9	2	2	6	21
Northern Cardinal	year round resident	12	9	19	9	2	6	57
Northern Flicker	year round resident			2			1	3
Northern Mockingbird	year round resident		1	7			1	9
Northern Parula ^b	breeding migrant	15	3	3	3	8		32
Pine Warbler ^b	year round resident	1	10	11	1	2	5	30
Pileated Woodpecker	year round resident	6	2	6	2	4	1	21
Prothonotary Warbler ^b	breeding migrant	18	1	2	2	6		29
Prairie Warbler ^b	breeding migrant		1	1				2
Purple Gallinule	year round resident			1				
Red-bellied Woodpecker ^b	year round resident	13	7	18	3	8	9	58
Red-eyed Vireo	breeding migrant	15	2	6	3	6	1	33
Red-headed Woodpecker ^b	year round resident	1		1	2		1	5
Red-shouldered Hawk	year round resident	3	1	1	1			6
Ruby-throated Hummingbird	breeding migrant	1						1
Red-winged Blackbird	year round resident			5			2	7
Summer Tanager ^b	breeding migrant	1						1
Swainson's Warbler ^b	breeding migrant		1					1

Table continued

Bird Species	Migratory Status^c	Hardwood Sawtimber N^a=10	Pine-Hardwood Sawtimber N=11	Pine Sawtimber N=20	Hardwood Pulpwood N=5	Pine Hardwood (Pulpwood) N=6	Pine (Pulpwood) N=11	Total
Tufted Titmouse	year round resident	10	9	13	9	4	6	51
White-eyed Vireo ^b	year round resident		13	19	4	1	6	43
Wood Thrush ^b	breeding migrant		3				2	5
Yellow-breasted Chat	breeding migrant	3	18	23	2		10	56
Yellow-billed Cuckoo ^b	breeding migrant	5	1	6	2	1	1	16
Yellow-throated Vireo ^b	breeding migrant	8		1		1		2
Yellow-throated Warbler ^b	breeding migrant	3		1	1			5
Unknown Bird	unknown		3	2		1	2	8
Total Species		27	33	46	24	22	30	56

^a N represents number of point counts within the habitat type; ^b Bird species has a Partners-in Flight concern rating of 18 or greater indicating conservation concern due to population declines globally and within the geographic distribution range; ^c Migratory Status – Year round resident indicates that the species occurs on SSC the entire year – some individuals may be transitory and migrating as well as permanent residents; Breeding Migratory indicates that the species occurs on SSC during the breeding season with some transient individuals and some individuals remaining on SSC to breed.

Bird species surveyed in treated and non-treated pine forest /savannah habitat types at Stennis Space Center, April-May 2002.

Common Name (Migratory Status)	Pine Forest >60% Midstory, n = 7		Early Succession Pine Savannah, n = 4		Pine Forest Mitigation, n = 2	
	Mean	SD	Mean	SD	Mean	SD
American Crow (Resident)	3.29	2.69	0	0	0	0
American Goldfinch (Winter Resident)	0	0	0.5	1	0	0
Barn Swallow (Breeding Migrant)	0	0	0.25	0.5	0	0
Blue Grosbeak (Breeding Migrant)	1.43	1.51	0.5	0.58	0	0
Brown-headed Cowbird (Resident)	0	0	0	0	0	0
Blue Jay (Resident)	1.71	1.70	0.25	0.5	0	0
Carolina Chickadee (Resident)	1.86	1.21	0.25	0.5	1	0.71
Carolina Wren (Resident)	2.43	1.99	0.25	0.5	1.33	0.71
Chipping Sparrow (Winter and Resident)	0	0	2.5	2.38	0	0
Common Grackle (Resident)	0.29	0.76	0	0	0	0
Common Yellowthroat (Resident)	0.43	1.13	0	0	0	0

Table continued

Common Name (Migratory Status)	Pine Forest >60% Midstory, n = 7		Early Succession Pine Savannah, n = 4		Pine Forest Mitigation, n = 2	
	Mean	SD	Mean	SD	Mean	SD
Eastern Bluebird (Resident)	0.43	1.13	0	0	1	1.41
Eastern Kingbird (Breeding Migrant)	0	0	1.25	2.5	1	0
Eastern Meadowlark (Resident)	0	0	4.75	2.22	0	0
Eastern Towhee (Resident)	1.43	2.15	0.25	0.5	0	0
Eastern Wood Pewee (Breeding Migrant)	0	0	0	0	0	0
Field Sparrow (Resident)	0	0	1.25	1.5	0	0
Fish Crow (Resident)	0.14	0.38	0	0	0	0
Grasshopper Sparrow (Winter Migrant)	0	0	1.5	3	0	0
Gray Catbird (Breeding Migrant)	0.14	0.38	0	0	0	0
Indigo Bunting (Breeding Migrant)	1.14	1.46	0.5	1	1.33	0
Kentucky Warbler (Breeding Migrant)	0.57	0.98	0	0	0	0

Table continued

Common Name (Migratory Status)	Pine Forest >60% Midstory, n = 7		Early Succession Pine Savannah, n = 4		Pine Forest Mitigation, n = 2	
	Mean	SD	Mean	SD	Mean	SD
Mourning Dove (Resident)	0.14	0.38	0.5	1	0	0
Northern Bobwhite (Resident)	0	0	2	1.41	0	0
Northern Cardinal (Resident)	3	2.58	0.5	1	1	1.41
Northern Mockingbird (Resident)	0.14	0.38	0	0	0	0
Northern Parula (Breeding Migrant)	0.14	0.38	0	0	0	0
Orchard Oriole (Breeding Migrant)	0	0	0.5	1	0	0
Pileated Woodpecker (Resident)	0	0	0	0	1.33	2.12
Pine Warbler (Resident)	1	1.53	0.75	0.96	0	0
Prairie Warbler (Breeding Migrant)	1.29	2.36	0	0	0	0
Purple Martin (Breeding Migrant)	0	0	0.75	0.96	0	0
Red-eyed Vireo (Breeding Migrant)	0.86	1.57	0	0	0	0

Table continued

Common Name (Migratory Status ^a)	Pine Forest >60% Midstory, n = 7		Early Succession Pine Savannah, n = 4		Pine Forest Mitigation, n = 2	
	Mean	SD	Mean	SD	Mean	SD
Red-bellied Woodpecker(Resident)	2.14	1.57	0.75	0.5	4.33	0.71
Red-headed Woodpecker(Resident)	0.57	1.51	0	0	0	0
Red-shouldered Hawk (Resident)	0.14	0.38	0.25	0.5	0	0
Red-tailed Hawk (Resident)	0	0	0.25	0.5	0	0
Sedge Wren (Winter Migrant)			0.25	0.5		
Summer Tanager (Breeding Migrant)	0.14	0.38	0	0	0	0
Tufted Titmouse (Resident)	4.14	2.97	0	0	0	0
White-eyed Vireo (Resident)	3.71	1.89	0.75	0.96	0	0
Yellow-billed Cuckoo (Breeding Migrant)	0.14	0.38	0	0	0	0
Yellow-breasted Chat (Breeding Migrant)	2	2.08	1.25	0.5	4.67	8.49

^a Migratory Status: Breeding Migrant – species present during spring and summer months, breeding on the SSC or migrating as a transient. Resident – species remains in area year round with some individuals moving through the area. Winter migrant – species winters in area and migrates to other regions to breeding during spring and/or early summer.

Nongame birds featured at Stennis Space Center, listed with general habitat types and recommended management.

Species Associations	Habitat Type/Requirements	Recommended Management
Henslow Sparrow Bachmann's Sparrow Brown-headed Nuthatch Orchard Oriole Grasshopper Sparrow Sedge Wren	Longleaf pine – grass ecotype Mature pine forests (<70 BA), Wet pine savannahs with herbaceous ground cover and limited midstory	Use prescribed fire in pine stands and wetland savannahs. Restoration of longleaf pine and growing season burns in selected areas Selective harvest mature pine to 50 - 65 BA
Prairie Warbler Yellow-breasted Chat Orchard Oriole Rufous-sided Towhee Field Sparrow Indigo Bunting Catbird Hooded Warbler Northern Cardinal	Shrub-sapling habitat Midstory (shrubs/saplings) in forests Shrub/vine dominated ecotones and forests	Reduce mowing under forests Small group selection, shelterwood and seed tree cuts Retention of shrub communities along field and road edges
Pine Warbler Carolina Chickadee Eastern Wood Peewee Red-headed Woodpecker Northern Parula Tufted Titmouse Red-bellied Woodpecker Wood Thrush Hooded Warbler White-eyed Vireo Red-eyed Vireo	Pine, pine-hardwood, hardwood forests with living cavity trees and snags	3-5 year prescribed burns in pines Retention of snags and cavity trees Uneven age forest management with older classes being retained (>70 years for hardwoods)
Wood Thrush Acadian Flycatcher Great-crested Flycatcher Pileated Woodpecker Yellow-billed Cuckoo Hooded Warbler Prothonotary Warbler Swainson's Warbler Blue-gray Gnatcatcher Red-eyed Vireo Barred, Screech Owls Great-horned Owl Herons/Egrets, Gallinules	Mature bottomland hardwoods and riparian hardwoods with midstory and switch can thickets, wetlands with cavity trees, snags and shrub cover Bottomland hardwoods Beaver and floodplain wetlands	Limit forest fragmentation Allow forests to mature (>70 years) Harvest through single tree selection Retain switch cane thickets, cavity trees and snags Retain soft mast producing shrubs and vines Maintain forest SMZ's of >100 foot widths on each side of streams Protect wetland vegetation Allow cypress, gum, oaks to reach >70 years of age

APPENDIX F
DoD MIGRATORY BIRD MANAGEMENT GUIDELINES
(from: Department of Defense and Partners in Flight
<http://www.dodpif.org/plans/stratplan.php>)

DoD MANAGEMENT STRATEGY

THE DoD PARTNERS IN FLIGHT POLICY

Promote and support our partnership role in the protection and conservation of birds and their habitats by protecting vital DoD lands and ecosystems, enhancing biodiversity, and maintaining healthy and productive natural systems consistent with the military mission.

The strategy described in this document will enable DoD to better integrate programs for migratory and resident birds into existing natural resources and land management programs. New and innovative management techniques aimed at protecting priority bird species will be an integral part of the planning and decision-making processes. Implementation of this strategy will allow DoD natural resources managers to determine best management practices based on regional or physiographic delineations rather than on a species basis. This ecosystem management approach provides a framework to consider the biological diversity on military lands in the context of the surrounding landscape. This approach will improve long-term planning and efficiency and promote better integration of mission and resource requirements.

PROGRAM - WIDE GOALS AND OBJECTIVES

The primary goals and objectives of the DoD Partners in Flight program are to:

- Apply information collected from this partnership program to support DoD mission requirements
- Take proactive management actions to prevent bird species from reaching threatened or endangered status
- Facilitate cooperative partnership efforts consistent with the military mission
- Determine the status of migratory and resident bird populations on DoD lands and the causes of population fluctuations
- Reduce bird aircraft strike hazard risks through implementation of mobile radar
- Maintain and restore priority habitats on DoD lands for migratory and resident bird populations
- Reduce or eliminate pesticide use in sensitive habitats, especially in and around wetlands and riparian areas
- Reduce the spread and impact to birds and their habitats of invasive and nuisance species on military lands, including feral and free-roaming cats



Black-bellied Whistling Duck
Photo by Michael Stobbsfeld

DOD MANAGEMENT STRATEGY

PARTNERSHIPS

The international Partners in Flight (PIF) program is an umbrella network of agencies, corporations, and non-governmental organizations. Department of Defense (DoD) bird conservation programs are a vital part of this network. Through the National Fish and Wildlife Foundation and other groups, DoD works to develop cooperative programs and projects with PIF partner organizations. Partnering ensures a focused and coordinated approach for the conservation of resident and neotropical migratory birds and their habitats.

As signatories to the federal PIF Memorandum of Agreement, the DoD military service branches are part of the national PIF Management and Joint Steering Committees. A lead DoD representative, appointed by the Assistant Deputy Under Secretary of Defense (Environment), and a fulltime program manager promote and coordinate PIF efforts within DoD. In addition, DoD has established a network of biologists and natural resource managers to represent DoD in the various regional and technical PIF working groups. The role of DoD PIF Working Group representatives is to cultivate and maintain positive working relationships with partners, develop cooperative agreements for implementing bird conservation programs and projects on military lands, and facilitate communication and information sharing across geographical and political boundaries. These working group representatives promote implementation of local and regional conservation objectives such as establishing habitat corridors that encompass DoD and adjacent lands. They also participate and provide leadership in various state, regional and national PIF working groups and committees.

A STRATEGY FOR DOD ACTION

The DoD PIF program includes four regional working groups (Northeast, Southeast, Midwest, West) and six technical working groups (Monitoring, Research, Communications, Education, BASH, International). These groups identify actions compatible with the military mission that achieve the overall PIF goal of maintaining secure populations of priority birds.

The following eight pages highlight key issues facing each of the national PIF regional and technical working groups, their goals and objectives, and DoD priority support efforts.



Snowy Owl
Photo by Michael Stubblefield



REGIONAL WORKING GROUPS

SOUTHEAST

ISSUES AND CHALLENGES

The conversion of pine forest, especially longleaf pine and associated grasslands, to short rotation pine plantations has impacted pine forest communities as well as the adjoining bottomland hardwood and riparian communities. Military installations in the Southeast contain some of the best remaining longleaf pine ecosystems and contribute to significant bottomland hardwood and floodplain forest acreage. Other significant conservation issues in this region include the conversion of grasslands and savannahs to agriculture and other uses, and grassland fragmentation and degradation. Several installations in the southeast can help fulfill this conservation need by maintaining warm season grasslands and providing year round habitat for grassland dependent species.

Shorebird and waterbird conservation issues are important along southeastern coasts. Loss of and disturbance to wetland and riparian habitats has reduced available avian habitat. Coastal development increases the pressure on military lands for use of open nesting beaches by priority shorebirds. Nuisance species, notably feral cats, also impact bird populations in these areas.

DOD PIF PRIORITIES



- Identify DoD sites that will meet the desired PIF acreage requirements for forested floodplain wetlands without affecting mission needs
- Maintain bottomland hardwood forests, especially in and near coastal areas
- Document maritime bird communities under DoD management
- Continue longleaf pine-wiregrass restoration and management to support priority species
- Maintain disturbance regimes and conduct habitat management where necessary to promote early successional hardwood shrub/scrub to support priority bird species
- Monitor and protect colonially nesting waterbirds and vulnerable shorebirds
- Identify and conserve critical shorebird and nongame waterbird habitats
- Educate installation personnel and military residents on the negative impact of cats to birds and other wildlife
- Identify military lands where restoration of native warm season grasses, longleaf pine communities, and associated fire regimes are feasible
- Support wintering grassland bird monitoring and research on military lands



Golden-cheeked Warbler Habitat, Ft. Hood, TX
Photo by Gil Leckrich



Backwater Swamp/Bottomland Hardwood Forest, Ft. Stewart, GA
Photo by Chris Tierly



TECHNICAL WORKING GROUPS

MONITORING ISSUES AND CHALLENGES

Avian monitoring projects on DoD lands typically occur on an as-needed basis. To facilitate sharing of data among our partners, we use existing protocols appropriate for the intended objective of the monitoring project. The Integrated Training Area Management program includes a protocol, Land Condition Trend Analysis (LCTA), which currently provides non-standardized avian monitoring data. DoD PIF will work with the Army to incorporate standard monitoring protocols into LCTA, making Army data compatible with the National Point Count Database and other sources. DoD PIF also supports the process of developing standardized regional and national monitoring strategies for various bird taxa and contributes DoD survey data to existing databases.



Photo by Chris Eberly

Proper management of natural resources cannot be accomplished without baseline knowledge of the habitats managed by DoD. We help identify DoD lands that lack baseline surveys of bird populations and document sites that satisfy criteria for identification as Important Bird Areas or potential core bird conservation areas. A key monitoring program used on DoD lands is Monitoring Avian Productivity and Survivorship (MAPS; see page 31), which provides specific habitat based management recommendations.



DoD PRIORITIES

- Identify installations lacking baseline avian surveys, and other monitoring needs
- Review and revise LCTA to include use of standard avian survey protocols
- Support MAPS program on DoD lands
- Contribute data to and utilize resources in the National Point Count Database
- Communicate and coordinate with adjoining landowner partners to coordinate monitoring efforts, where appropriate



Yellow-headed Blackbird
Photo by Mike Blair

TECHNICAL WORKING GROUPS

RESEARCH ISSUES AND CHALLENGES

Avian researchers frequently use military lands as research study sites because these lands provide high-quality habitats not found in otherwise fragmented and developed landscapes. DoD lands can provide needed study sites for several areas of research underway, including the study of the spread of diseases (such as West Nile Virus) by birds, determination of bird conservation area requirements, assessment of grassland bird breeding and wintering habitats, determination of optimal placement of MAPS stations and research to fill gaps in avian life history knowledge. This research will also benefit the military by helping us determine when and where species are at risk before they require state or federal protection.

The PIF Research and Monitoring Needs Database maximizes resource effectiveness and efficiency by linking research needs between partners. We contribute to the database, and access its data elements to assist in our own research needs and future projects. The DoD PIF Bird Conservation Database consolidates information on bird related projects and management on all DoD lands into a searchable web-based database.

DoD PRIORITIES

- Provide access, where conditions permit, to DoD lands to support PIF research priorities
- Update and maintain the DoD PIF Bird Conservation Database
- Contribute to the PIF Research and Monitoring Needs Database
- Identify DoD-wide research needs and issues and encourage research partnerships
- Identify DoD lands that can contribute to national PIF goals
- Maintain effective MAPS network



MAPS worker with bird in hand
Photo courtesy Ft. Riley, KS



MAPS Station, Camp Pendleton, Deluz Creek, CA
Photo by Tim Burr

Researcher with Parabolic Dish
Photo by Norman Famous



TECHNICAL WORKING GROUPS

COMMUNICATIONS

ISSUES AND CHALLENGES

PIF has made significant progress in communicating advances in bird conservation to its traditional partners. However, since bird conservation is ultimately habitat-based, there is an increasing need to reach out to non-traditional partners. Non-traditional partners include non-bird focused groups as well as federal-state, state-non-governmental organization (NGO), and private-public partnerships.

With the planning phase of PIF completed, the need to disseminate information about PIF bird conservation plans (BCPs), Important Bird Areas (IBAs) and Bird Conservation Areas (BCAs) to land managers is essential. Reaching the target audience may also involve publishing in agricultural, commodities, or other non-bird related media. Outreach efforts are underway to accomplish this objective.

DoD PRIORITIES

- Support International Migratory Bird Day and other PIF outreach efforts
- Ensure appropriate PIF BCP information is incorporated into installation INRMPs
- Provide support and assistance for PIF web site and outreach information for DENIX web site (<http://www.denix.osd.mil>)
- Contribute articles regarding DoD PIF activities to DoD publications, birding magazines, and PIF publications
- Enhance conservation objectives through partnerships that facilitate information exchange and coordinated management activities
- Continue to participate in state, regional and national PIF conferences

EDUCATIONAL

ISSUES AND CHALLENGES

Public and private land managers require technical information and educational tools to successfully incorporate bird habitat management into their management plans. These materials also serve to fill gaps in general bird conservation knowledge. By providing educational materials and hosting workshops in both the US and Latin America, we can improve bird habitat management, increase bird conservation knowledge and facilitate communication among educators.

DoD PRIORITIES

- Work with national PIF and other groups to develop materials for landowners and managers regarding grassland bird habitat and other management priorities
- Promote DoD accomplishments to the public and other agencies.
- Update DoD display and brochure as needed
- Give talks to bird clubs and school groups
- Identify and create needed educational materials



Interpretive Sign, Vandenberg AFB, CA
Photo by Chris Liberty

TECHNICAL WORKING GROUPS

BIRD AIRCRAFT STRIKE HAZARD ISSUES AND CHALLENGES

A successful Bird Aircraft Strike Hazard (BASH) prevention program reduces loss of human life and damage to aircraft. Historical reporting of bird strikes and near strikes has rarely exceeded 20% of actual strikes. Increasing this response rate is key to maintaining a successful BASH program. To accomplish this objective, we must enhance communications between Air Operations and Natural Resources personnel. Recent research also indicates that maintaining grasses at a height for certain grassland obligate bird species reduces the attractiveness of the habitat for traditional "problem" species like hawks, gulls and geese. By working together, we can achieve mutually beneficial results that will aid priority bird species while reducing the BASH risk for flight crews. Improving communication and education among all stakeholders is a top priority of this working group.

DoD PRIORITIES

- Implement use of radar, particularly mobile units, as a BASH tool
- Improve communication with Air Operations personnel
- Integrate BASH plans into INRMPS
- Publicize the importance of reporting all bird strike and near strike data
- Help provide all available current and future hazard detection technology for pre-flight planning
- Work with the Air Force BASH Team to update BASH guidelines to reflect advances in knowledge of grasslands, seasonal bird movements, and "problem" species



INTERNATIONAL ISSUES AND CHALLENGES

The reversion of lands to the Panamanian government in 1999, under terms of the Panama Canal Treaty, greatly reduced the amount of land under DoD management in Latin America. Most DoD lands are now located on the islands of Cuba and Puerto Rico. Ongoing studies on both islands seek to gain better knowledge of wintering habitat requirements of neotropical migrants.

Winter habitat associations of many neotropical migrants still are poorly understood. Following the example of Fort Hood (TX), DoD installations need to create partnerships with Latin American biologists and conservation organizations to work cooperatively on life history requirements of migrant species breeding on military lands. A biologist exchange program at Fort Hood has helped biologists studying the Golden-cheeked Warbler on its wintering grounds gain more complete knowledge of management issues on the breeding grounds. These biologists, in turn, are teaching US biologists about wintering ground issues.

DoD PRIORITIES

- Measure density and winter survival rates of migrants on the wintering grounds at DoD installations in Puerto Rico and Cuba
- Document wintering locations of priority neotropical migrants breeding on DoD lands, and establish partnerships with local groups in wintering areas
- Promote shade grown coffee use on military installations



APPENDIX G
EFH LOCATED NEAR STENNIS WMA



Essential Fish Habitat Located near Stennis WMA

Historical Conditions

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which was reauthorized and amended by the Sustainable Fisheries Act (1996), requires the eight regional fishery management councils to describe and identify essential fish habitat (EFH) in their respective regions, to specify actions to conserve and enhance that EFH, and to minimize the adverse effects of fishing on EFH. Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." The MSFCMA requires the National Oceanic Atmospheric Administration (NOAA) Fisheries Service to assist the regional fishery management councils in the implementation of EFH in their respective Fishery Management Plans (FMPs). The EFH descriptions and identifications for Gulf of Mexico FMPs were approved on February 8, 1999 for 26 selected species and coral complexes. Today the Gulf of Mexico Fisheries Management Council (GMFMC) manages 28 species of marine fish and invertebrates and associated EFH within their respective FMPs.

Affected Environment

The Stennis WMA is located approximately 13 miles from coastal aquatic habitats such as Lake Pontchartrain and Lake Borgne and adjacent to the Pearl River estuary system. These aquatic habitats are designated as EFH by the GMFMC where Federally managed fish, and the organisms they prey upon, live during the various stages of their life history. Specific categories of EFH include all estuarine waters and their mud, sand, shell, and rock substrate. Artificial reefs, oyster beds, and the associated biological communities, submerged aquatic vegetation (SAV) and adjacent inter-tidal vegetation (marshes and mangroves) are considered EFH habitat. EFH includes all of Lake Pontchartrain and Lake Borgne and the southern portion of the Pearl River and Mikes River. Figure A-1 presents the location of EFH south of the Stennis WMA installation.

Federally Managed Fish Species and EFH

EFH regulations protect the habitats of fish and shellfish managed by the Gulf Council. The most common Federally managed species in the project area are shrimp. The Gulf Council lists the following species as being potentially found in the estuaries south (downstream) of the Stennis WMA: brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*),

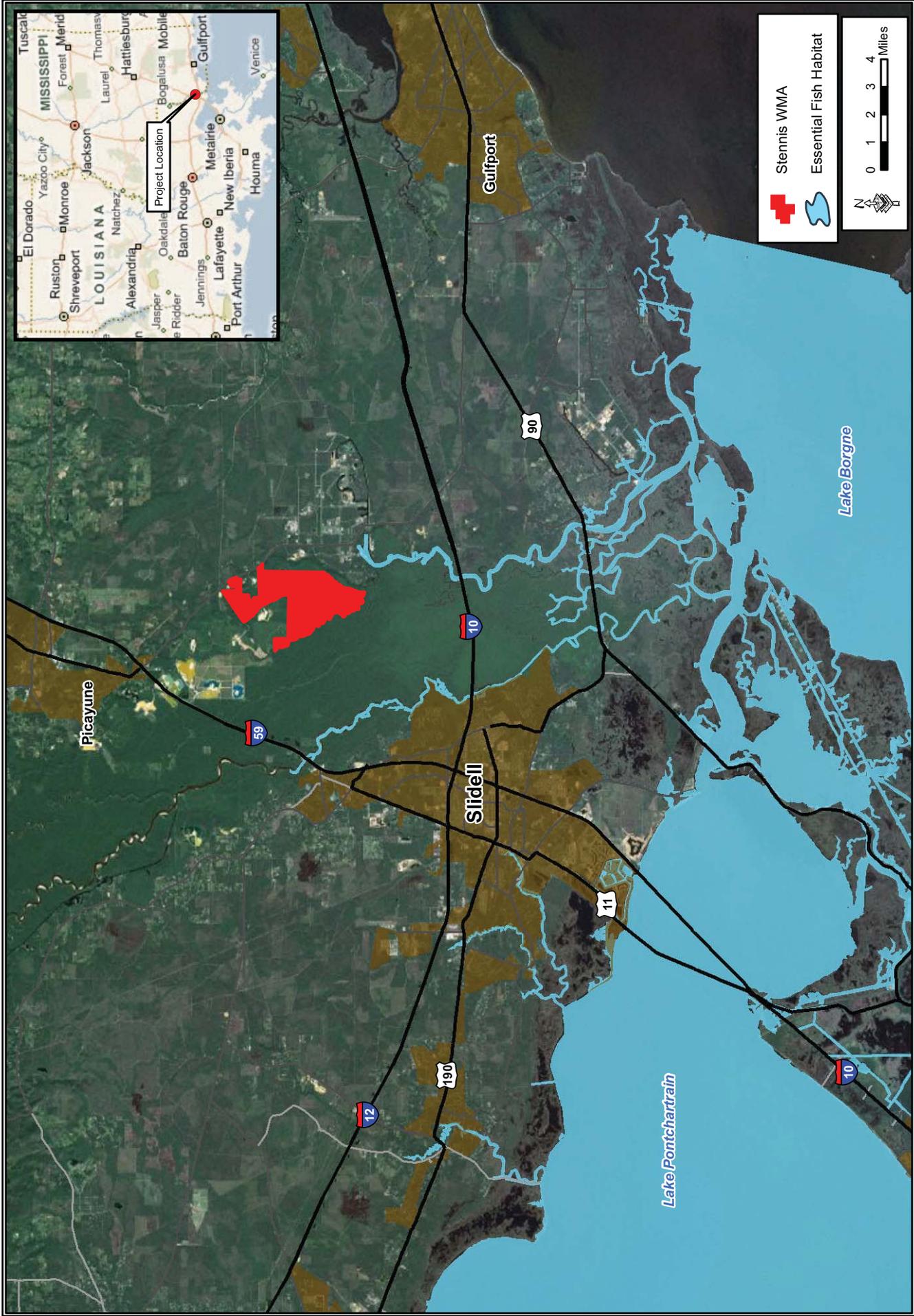


Figure A-1: Essential Fish Habitat in the Vicinity of NCBC Installation

pink shrimp (*Farfantepenaeus duorarum*), red drum (*Sciaenops ocellatus*), gray snapper (*Lutjanus griseus*), stone crab (*Menippe mercenaria*) and Spanish mackerel (*Scomberomorus maculatus*). Table 1 presents a list of species that are managed by NOAA Fisheries within this designated EFH.

Table 1. Life History Stages for which Essential Fish Habitat has been Designated near Stennis WMA

Managed Species	Life Stages	Designated EFH	Prey Species
Brown shrimp	eggs, larvae, juveniles	SAV, emergent marsh, oyster reef and sand, shell and soft bottom	some zooplankton, various fish species, polychaetes, amphipods, benthic infauna
White shrimp	eggs, larvae, adults	SAV, emergent marsh, oyster reef and sand, shell and soft bottom	phytoplankton, zooplankton, detritus, annelid worms, pericardid crustaceans, caridean shrimp, diatoms, gastropods, copepods, bryozoans, sponges, corals, various fish species, filamentous algae, vascular plants
Pink shrimp	Eggs, larvae, juveniles	Unconsolidated bottom, water column	copepods, small mollusks, benthic diatoms, blue-green algae, filamentous green algae, detritus of vascular plants, bacterial films, slime molds, yeast
Stone crab	Adult	Sand, shell and soft bottom and oyster reefs	copepods, small mollusks, benthic diatoms, blue-green algae, filamentous green algae, detritus of vascular plants, bacterial films, slime molds, yeast
Red drum	eggs, larvae, adults	SAV, emergent marsh, oyster reef and sand, shell and soft bottom	copepods, mysids, amphipods, shrimp, polychaetes, insects, small fish, isopods, bivalves, crabs, shrimp
Gray snapper	eggs, larvae, adults	Water column, structural features	small fish, shrimp, crabs, gastropods, cephalopods, amphipods
Spanish mackerel	adult	Water column	various larval fish species, crustaceans, gastropods, and squid

Source: GMFMC 1998

Abundance of Federally Managed Species in Study Area

Spawning of shrimp occur in offshore waters of the Gulf of Mexico. The larval populations are driven inshore by winds and currents. The various species have similar estuarine-dependent life history stages and vary seasonally in abundance. Adult white shrimp begin to appear in Lake Pontchartrain and Lake Borgne with a major peak of abundance beginning in August during the high salinity season extending through the end of January. They are common in the spring as salinity decreases and begin to migrate back to the sea during June when bay salinities begin to increase. In non-vegetated areas, postlarval and juvenile white shrimp inhabit mostly muddy substrates with large quantities of detritus. Subadult white shrimp move from the estuaries to coastal areas in late August and September (GMFMC 1998).

Brown shrimp utilize the same nursery grounds as the white shrimp during the juvenile growth period from the postlarval stage to the adult stage. Adult brown shrimp move offshore to reproduce. The presence of adults is rare all year in the estuarine habitats. The juvenile brown shrimp population is highly abundant in Lake Pontchartrain and Lake Borgne throughout the year. Adult pink shrimp are rarely found in Lake Pontchartrain and Lake Borgne; however, juveniles are common in the region year-round (GMFMC 1998).

Adult and juvenile red drum are common in the study area throughout the year. Most of the population spawns offshore and then moves inshore to fertile estuarine waters. Juveniles and young adults are common in the southern portion of the Pearl River and in Lake Pontchartrain; however, fully grown adults prefer the higher salinities along the coast. Seagrass and coastal marsh habitats typically serve as nursery areas for juvenile red drum (NOAA Fisheries 2007).

Gray snapper juveniles and adults are rare in the study area during all seasons. These marine fish are occasionally found in lower salinity areas such as Lake Pontchartrain and Lake Borgne; however, postlarval, juvenile, and adults prefer the higher salinities areas of the continental shelf (NOAA Fisheries 2007). Adult Spanish mackerel are not present in the study area; however, juveniles have been identified in the region. It is likely that larval and post-larval fish are driven inshore by wind and currents. Table 2 lists the Federally managed species found in the study area and their relative abundance during the year.

Table 2. Abundance of Federally Managed Species Found in EFH near Stennis WMA

Species	Life Stage	Relative Abundance			
		Low Salinity (Feb-Apr)	Increasing Salinity (May-July)	High Salinity (Aug-Oct)	Decreasing Salinity (Nov-Jan)
White Shrimp	Adult	Rare	Rare-Common	Common	Common
	Juvenile	Common	Abundant	Abundant	Abundant
Brown Shrimp	Adult	Rare	Rare	Rare	Rare
	Juvenile	Abundant	Abundant	Abundant	Common
Pink Shrimp	Adult	Rare	Rare	Rare	Rare
	Juvenile	Common	Common	Common	Common
Stone crab	Adult	Rare	Rare	Rare	Rare
	Juvenile	Not present	Not present	Not present	Not present
Red Drum	Adult	Common	Common	Common	Common
	Juvenile	Common	Common	Common	Common
Gray Snapper	Adult	Not present	Not present	Not present	Not present
	Juvenile	Rare	Rare	Rare	Rare
Spanish Mackerel	Adult	Not present	Not present	Not present	Not present
	Juvenile	Rare	Rare	Rare	Rare

Source: NOAA Fisheries 2007.

Prey Species of Federally Managed Species

In addition, coastal wetlands provide nursery and foraging habitat that supports economically important marine fishery species such as spotted seatrout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*), Atlantic croaker (*Micropogonias undulates*), gulf menhaden (*Brevoortia patronus*), striped mullet (*Mugil cephalus*), and blue crab (*Callinectes sapidus*). These species, and many others, serve as prey for Federally-managed fish species such as mackerels (*Scombridae*), snapper (*Lutjanidae*), groupers (*Serranidae*), billfishes (*Xiphiidae*) and sharks (Selachimorpha). The prey species' habitats are protected under the same Federal regulations as the habitat of the regulated species. The SAV areas are preferred by prey species. Duffy and Blatz (1998) found that fish assemblages of prey species were significantly more abundant in vegetated areas than adjacent un-vegetated areas. The GMFMC (2004) noted that mud and sand substrates, oyster reefs, and artificial reefs also provide refuge habitats to the prey organism.

EFH Structural Habitat

Designated EFH structure in the estuarine regions of the Gulf of Mexico consists of oyster reefs, SAV, wetlands and artificial structures (GMFMC 2004). These habitats can be found in the shallow waters of Lake Pontchartrain, Lake Borgne and the southern end of the Pearl River. The following sections briefly describe the variety of EFH substrate found within the water bodies in the study area.

Submerged Aquatic Vegetation

Duffy and Blatz (1998) compared fish assemblages associated with SAV and adjacent un-vegetated areas and found significantly higher ichthyofauna populations in SAV. Historically, SAV was abundant in the Pearl River and on all shores of Lake Pontchartrain; however, the total area in Lake Pontchartrain decreased by 90 percent between 1954 and 1998 (Suttkus et al. (1954); Darnell 1961; Montz 1978; Turner et al. 1980; Mayer 1986; Duffy and Baltz 1998). Shoreline modification, increased water turbidity and macroalgal overgrowth have contributed to this decline (Cho and Poirrier 2000).

In the late 1990s, Cho and Poirrer (2000) found that SAV populations in Lake Pontchartrain began to increase. Lake-wide shoreline surveys were conducted in 1997-2000 to quantify this increase. The area between the shoreline and a depth of 6.6 feet was surveyed. The north shore SAV was abundant and continuous. Widgeongrass (*Ruppia maritime*) was the most

abundant species. By 2000, widgeongrass was abundant near Lincoln Beach and scattered beds occurred west to the Jahncke Canal with a few beds between the canal and the Lakefront Airport. The estimated SAV coverage in 2000 was 371 acres of widgeongrass plus 30 acres of eel grass (*Vallisneria americana*). Total SAV habitat in Lake Pontchartrain was about 1,112 acres. In spite of the widgeongrass increase, eel grass continued to decline. It is not known whether the increase in widgeongrass was a short-term response to a temporary increase in water clarity caused by a severe drought or a long-term increase due to improved environmental quality (Cho and Poirrier 2000).

Oyster Reefs

Oyster reefs are not common in Lake Pontchartrain and Pearl River south of the WMA due to the low salinity levels, but are common in Lake Borgne. The increase of salinity presents opportunities for oyster growth in this part of Lake Borgne while the rest of the waters adjacent to the project corridor is absent of oyster beds due to low salinities.

Unconsolidated Marine Water Bottoms

As summarized by the GMFMC (1998), various authors have noted that sediment type is a major factor in determining the associated fish community in areas with non-vegetated bottoms. Surface sediments may affect shrimp and fish distributions directly in terms of feeding and burrowing activities, or indirectly through food availability, water column turbidity, and related factors. The faunal assemblages of the central and western Gulf of Mexico rely on the terrigenous muds and sands of the area as opposed to the calcareous sediments of the eastern GOM. For example, shrimp distribution closely matches sediment distribution; white and brown shrimp occupy the terrigenous muds, while pink shrimp occur on calcareous sediments. Similar sediment associated distribution also has been observed for many demersal fish (GMFMC 1998). Unconsolidated marine water bottoms occur in the southern portion of the Pearl River and Lake Pontchartrain and Lake Borgne.

Rangia Clams

Rangia clams (*Rangia cuneata*) are abundant in Lake Pontchartrain and the Pearl River; however, low populations densities have been recently documented, presumably due to high salinity levels, in the lake waters adjacent to the project corridor (Poirrier et al. In press). The clams are filter feeders and improve the water quality in the lake. The organisms sift out suspended clays and silts, particulate carbon, and nitrogenous wastes. They are prey species

for Atlantic croaker, white shrimp (juvenile rangia), speckled trout and many other lake predators. The rangia clam hard substrata provide surface area for a wide range of benthic copepods, polychaetes, benthic algae, mollusks, bryozoans, amphipods, and other zooplankton to feed and reproduce. Ichthyoplankton feed over the reefs. The rangia clam is a keystone species in Lake Pontchartrain. They suffer mortality due to a reduction in dissolved oxygen associated with dredging, severe weather events, high salinity levels and stratification, and non-point source pollution (Poirrier et al. In-press). Hurricane Katrina resulted in low dissolved oxygen in the bottom layer of Lake Pontchartrain, which reduced the abundance of rangia clams in the lake. Rangia clams and other community dominants were lost from 50 percent of the lake bottom, and have been slow to recover (Poirrier and Spalding 2007).

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APPENDIX H
COPIES OF PERTINENT MEMOS AND GUIDELINES



MBTA Exemption for DoD



§ 21.12 General exceptions to permit requirements.

The following persons or entities under the following conditions are exempt from the permit requirements:

(a) Employees of the Department of the Interior (DOI): DOI employees authorized to enforce the provisions of the Migratory Bird Treaty Act of July 3, 1918, as amended (40 Stat. 755; 16 U.S.C. 703–711), may, without a permit, take or otherwise acquire, hold in custody, transport, and dispose of migratory birds or their parts, nests, or eggs as necessary in performing their official duties.

(b) Employees of certain public and private institutions:

(b)(1) State game departments, municipal game farms or parks, and public museums, public zoological parks, accredited institutional members of the American Association of Zoological Parks and Aquariums (AAZPA) and public scientific or educational institutions may acquire by gift or purchase, possess, transport, and by gift or sale dispose of lawfully acquired migratory birds or their progeny, parts, nests, or eggs without a permit: Provided, That such birds may be acquired only from persons authorized by this paragraph or by a permit issued pursuant to this part to possess and dispose of such birds, or from Federal or State game authorities by the gift of seized, condemned, r sick or injured birds. Any such birds, acquired without a permit, and any progeny therefrom may be disposed of only to persons authorized by this paragraph to acquire such birds without a permit. Any person exercising a privilege granted by this paragraph must keep accurate records of such operations showing the species and number of birds acquired, possessed, and disposed of; the names and addresses of the persons from whom such birds were acquired or to whom such birds were donated or sold; and the dates of such transactions. Records shall be maintained or reproducible in English on a calendar year basis and shall be retained for a period of five (5) years following the end of the calendar year covered by the records.

(b)(2) Employees of Federal, State, and local wildlife and land management agencies; employees of Federal, State, and local public health agencies; and laboratories under contract to such agencies may in the course of official business collect, possess, transport, and dispose of sick or dead migratory birds or their parts for analysis to confirm the presence of infectious disease. Nothing in this paragraph authorizes the take of uninjured or healthy birds without prior authorization from the Service. Additionally, nothing in this paragraph authorizes the taking, collection, or possession of migratory birds when circumstances indicate reasonable probability that death, injury, or disability was caused by factors other than infectious disease and/or natural toxins. These factors may include, but are not limited to, oil or chemical contamination, electrocution, shooting, or pesticides. If the cause of death of

a bird is determined to be other than natural causes or disease, Service law enforcement officials must be contacted without delay.

(c) Licensed veterinarians: Licensed veterinarians are not required to obtain a Federal migratory bird permit to temporarily possess, stabilize, or euthanize sick and injured migratory birds. However, a veterinarian without a migratory bird rehabilitation permit must transfer any such bird to a federally permitted migratory bird rehabilitator within 24 hours after the bird's condition is stabilized, unless the bird is euthanized. If a veterinarian is unable to locate a permitted rehabilitator within that time, the veterinarian must contact his or her Regional Migratory Bird Permit Office for assistance in locating a permitted migratory bird rehabilitator and/or to obtain authorization to continue to hold the bird. In addition, veterinarians must:

(1) Notify the local U.S. Fish and Wildlife Service Ecological Services Office immediately upon receiving a threatened or endangered migratory bird species. Contact information for Ecological Services offices can be located on the Internet at <http://offices.fws.gov> ;

(2) Euthanize migratory birds as required by §21.31(e)(4)(iii) and §21.31(e)(4)(iv), and dispose of dead migratory birds in accordance with §21.31(e)(4)(vi); and

(3) Keep records for 5 years of all migratory birds that die while in their care, including those they euthanize. The records must include: the species of bird, the type of injury, the date of acquisition, the date of death, and whether the bird was euthanized.

(d) General public: Any person may remove a migratory bird from the interior of a building or structure under certain conditions.

(1) You may humanely remove a trapped migratory bird from the interior of a residence or a commercial or government building without a Federal permit if the migratory bird:

(i) Poses a health threat (for example, through damage to foodstuffs);

(ii) Is attacking humans, or poses a threat to human safety because of its activities (such as opening and closing automatic doors);

(iii) Poses a threat to commercial interests, such as through damage to products for sale; or

(iv) May injure itself because it is trapped.

(2) You must use a humane method to capture the bird or birds. You may not use adhesive traps to which birds may adhere (such as glue traps) or any other method of capture likely to harm the bird.

(3) Unless you have a permit that allows you to conduct abatement activities with a raptor, you may not release a raptor into a building to either frighten or capture another bird.

(4) You must immediately release a captured bird to the wild in habitat suitable for the species, unless it is exhausted, ill, injured, or orphaned.

(5) If a bird is exhausted or ill, or is injured or orphaned during the removal, the property owner is responsible for immediately transferring it to a federally permitted migratory bird rehabilitator.

(6) You may not lethally take a migratory bird for these purposes. If your actions to remove the trapped migratory bird are likely to result in its lethal take, you must possess a Federal Migratory Bird Permit. However, if a bird you are trying to remove dies, you must dispose of the carcass immediately unless you have reason to believe that a museum or scientific institution might be able to use it. In that case, you should contact your nearest Fish and Wildlife Service office or your State wildlife agency about donating the carcass.

(7) For birds of species on the Federal List of Threatened or Endangered Wildlife, provided at 50 CFR 17.11(h), you may need a Federal threatened or endangered species permit before removing the birds (see 50 CFR 17.21 and 50 CFR 17.31).

(8) You must have a permit from your Regional migratory bird permits office to remove a bald eagle or a golden eagle from a building (see 50 CFR Part 22).

(9) Your action must comply with State and local regulations and ordinances. You may need a State, Tribal, or Territorial permit before you can legally remove the bird or birds.

(10) If an active nest with eggs or nestlings is present, you must seek the assistance of a federally permitted migratory bird rehabilitator in removing the eggs or nestlings. The rehabilitator is then responsible for handling them properly.

(11) If you need advice on dealing with a trapped bird, you should contact your closest Fish and Wildlife Service office or your State wildlife agency.

[39 FR 1178, Jan. 4, 1974, as amended at 50 FR 8638, Mar. 4, 1985; 54 FR 38151, Sept. 14, 1989; 68 FR 61137, Oct. 27, 2003; 72 FR 56928, Oct. 5, 2007]

§ 21.13 Permit exceptions for captive-reared mallard ducks.

Captive-reared and properly marked mallard ducks, alive or dead, or their eggs may be acquired, possessed, sold, traded, donated, transported, and disposed of by any person without a permit, subject to the following conditions, restrictions, and requirements:

(a) Nothing in this section shall be construed to permit the taking of live mallard ducks or their eggs from the wild.

(b) All mallard ducks possessed in captivity, without a permit, shall have been physically marked by at least one of the following methods prior to 6 weeks of age and all such ducks hatched, reared, and retained in captivity thereafter shall be so marked prior to reaching 6 weeks of age.

(1) Removal of the hind toe from the right foot.

(2) Pinioning of a wing: Provided, That this method shall be the removal of the metacarpal bones of one wing or a portion of the metacarpal bones which renders the bird permanently incapable of flight.

(3) Banding of one metatarsus with a seamless metal band.

(4) Tattooing of a readily discernible number or letter or combination thereof on the web of one foot.

(c) When so marked, such live birds may be disposed of to, or acquired from, any person and possessed and transferred in any number at any time or place: Provided, That all such birds shall be physically marked prior to sale or disposal regardless of whether or not they have attained 6 weeks of age.

(d) When so marked, such live birds may be killed, in any number, at any time or place, by any means except shooting. Such birds may be killed by shooting only in accordance with all applicable hunting regulations governing the taking of mallard ducks from the wild: Provided, That such birds may be killed by shooting, in any number, at any time, within the confines of any premises operated as a shooting preserve under State license, permit, or authorization; or they may be shot, in any number, at any time or place, by any person for bona fide dog training or field trial purposes: Provided further, That the provisions:

(1) The hunting regulations (part 20 of this subchapter), with the exception of §20.108 (Nontoxic shot zones), and

(2) The Migratory Bird Hunting Stamp Act (duck stamp requirement) shall not apply to shooting preserve operations as provided for in this paragraph, or to bona fide dog training or field trial operations.

(e) At all times during possession, transportation, and storage until the raw carcasses of such birds are finally processed immediately prior to cooking, smoking, or canning, the marked foot or wing must remain attached to each carcass: Provided, That persons, who operate game farms or shooting preserves under a State license, permit, or authorization for such activities, may remove the marked foot or wing when either the number of his State license, permit, or authorization has first been legibly stamped in ink on the back of each carcass and on the container in which each carcass is maintained, or each carcass is identified by a State band on leg or wing pursuant to requirements of his State license,

permit, or authorization. When properly marked, such carcasses may be disposed of to, or acquired from, any person and possessed and transported in any number at any time or place.

[40 FR 28459, July 7, 1975, as amended at 46 FR 42680, Aug. 24, 1981; 54 FR 36798, Sept. 5, 1989]

§ 21.14 Permit exceptions for captive-bred migratory waterfowl other than mallard ducks.

You may acquire captive-bred and properly marked migratory waterfowl of all species other than mallard ducks (*Anas platyrhynchos*), alive or dead, or their eggs, and possess and transport such birds or eggs and any progeny or eggs for your use without a permit, subject to the following conditions and restrictions. Additional restrictions on the acquisition and transfer of muscovy ducks (*Cairina moschata*) are in paragraph (g) of this section.

(a) You may acquire live waterfowl or their eggs only from a holder of a valid waterfowl sale and disposal permit in the United States. You also may lawfully acquire them outside of the United States with appropriate permits (see §21.21 of subpart C of this part).

(b) All progeny of captive-bred birds or eggs from captive-bred birds must be physically marked as set forth in §21.13(b).

(c) You may not transfer or dispose of captive-bred birds or their eggs, whether alive or dead, to any other person unless you have a waterfowl sale and disposal permit (see §21.25 of subpart C of this part).

(d) Lawfully possessed and properly marked birds may be killed, in any number, at any time or place, by any means except shooting. Such birds may be killed by shooting only in accordance with all applicable hunting regulations governing the taking of like species from the wild (see part 20 of this subchapter).

(e) At all times during possession, transportation, and storage until the raw carcasses of such birds are finally processed immediately prior to cooking, smoking, or canning, you must leave the marked foot or wing attached to each carcass, unless the carcass was marked as provided in §21.25(b)(6) and the foot or wing was removed prior to your acquisition of the carcass.

(f) If you acquire captive-bred waterfowl or their eggs from a waterfowl sale and disposal permittee, you must retain the FWS Form 3–186, Notice of Waterfowl Sale or Transfer, from the permittee for as long as you have the birds, eggs, or progeny of them.

(g) You may not acquire or possess live muscovy ducks, their carcasses or parts, or their eggs, except to raise them to be sold as food, and except that you may possess any live muscovy duck that you lawfully acquired prior to March 31, 2010. If you possess muscovy ducks on that date, you may not propagate them or sell or transfer them to anyone for any purpose, except to be used as food. You may not release them to the wild, sell them to be hunted or released to the wild, or transfer them to anyone to be hunted or released to the wild.

(h) Dealers in meat and game, hotels, restaurants, and boarding houses may serve or sell to their customers the carcass of any bird acquired from a holder of a valid waterfowl sale and disposal permit.

[75 FR 9320, Mar. 1, 2010]

§ 21.15 Authorization of take incidental to military readiness activities.

top

(a) Take authorization and monitoring. (1) Except to the extent authorization is withdrawn or suspended pursuant to paragraph (b) of this section, the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects.

(2) When conservation measures implemented under paragraph (a)(1) of this section require monitoring, the Armed Forces must retain records of any monitoring data for five years from the date the Armed Forces commence their action. During Integrated Natural Resource Management Plan reviews, the Armed Forces will also report to the Service migratory bird conservation measures implemented and the effectiveness of the conservation measures in avoiding, minimizing, or mitigating take of migratory birds.

(b) Suspension or Withdrawal of take authorization. (1) If the Secretary determines, after seeking the views of the Secretary of Defense and consulting with the Secretary of State, that incidental take of migratory birds during a specific military readiness activity likely would not be compatible with one or more of the migratory bird treaties, the Secretary will suspend authorization of the take associated with that activity.

(2) The Secretary may propose to withdraw, and may withdraw in accordance with the procedures provided in paragraph (b)(4) of this section the authorization for any take incidental to a specific military readiness activity if the Secretary determines that a proposed military readiness activity is likely to result in a significant adverse effect on the population of a migratory bird species and one or more of the following circumstances exists:

(i) The Armed Forces have not implemented conservation measures that:

(A) Are directly related to protecting the migratory bird species affected by the proposed military readiness activity;

(B) Would significantly reduce take of the migratory bird species affected by the military readiness activity;

(C) Are economically feasible; and

(D) Do not limit the effectiveness of the military readiness activity;

(ii) The Armed Forces fail to conduct mutually agreed upon monitoring to determine the effects of a military readiness activity on migratory bird species and/or the efficacy of the conservation measures implemented by the Armed Forces; or

(iii) The Armed Forces have not provided reasonably available information that the Secretary has determined is necessary to evaluate whether withdrawal of take authorization for the specific military readiness activity is appropriate.

(3) When the Secretary proposes to withdraw authorization with respect to a specific military readiness activity, the Secretary will first provide written notice to the Secretary of Defense. Any such notice will include the basis for the Secretary's determination that withdrawal is warranted in accordance with the criteria contained in paragraph (b)(2) of this section, and will identify any conservation measures or other measures that would, if implemented by the Armed Forces, permit the Secretary to cancel the proposed withdrawal of authorization.

(4) Within 15 days of receipt of the notice specified in paragraph (b)(3) of this section, the Secretary of Defense may notify the Secretary in writing of the Armed Forces' objections, if any, to the proposed withdrawal, specifying the reasons therefore. The Secretary will give due consideration to any objections raised by the Armed Forces. If the Secretary continues to believe that withdrawal is appropriate, he or she will provide written notice to the Secretary of Defense of the rationale for withdrawal and response to any objections to the withdrawal. If objections to the withdrawal remain, the withdrawal will not become effective until the Secretary of Defense has had the opportunity to meet with the Secretary within 30 days of the original notice from the Secretary proposing withdrawal. A final determination regarding whether authorization will be withdrawn will occur within 45 days of the original notice.

(5) Any authorized take incidental to a military readiness activity subject to a proposed withdrawal of authorization will continue to be authorized by this regulation until the Secretary makes a final determination on the withdrawal.

(6) The Secretary may, at his or her discretion, cancel a suspension or withdrawal of authorization at any time. A suspension may be cancelled in the event new information is provided that the proposed activity would be compatible with the migratory bird treaties. A proposed withdrawal may be cancelled if the Armed Forces modify the proposed activity to alleviate significant adverse effects on the population of a migratory bird species or the circumstances in paragraphs (b)(2)(i) through (iii) of this section no longer exist. Cancellation of suspension or withdrawal of authorization becomes effective upon delivery of written notice from the Secretary to the Department of Defense.

(7) The responsibilities of the Secretary under paragraph (b) of this section may be fulfilled by his/her delegatee who must be an official nominated by the President and confirmed by the Senate.

[72 FR 8949, Feb. 28, 2007]

Federal Register Notice of MOU between DoD and USFWS



received without change, including any personal identifiers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings.

Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209-2133.

Dated: August 24, 2006.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 06-7241 Filed 8-29-06; 8:45 am]

BILLING CODE 5001-06-M

DEPARTMENT OF DEFENSE

Office of the Secretary

[No. DOD-2006-OS-0080]

Submission for OMB Review; Comment Request

ACTION: Notice. The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

DATES: Consideration will be given to all comments received by September 29, 2006.

Title, Associated Form and OMB Number: Application for Department of Defense Impact Aid for Children with Severe Disabilities; SD Form 816 and SD Form 816C, OMB Control Number 0704-0425.

Type of Request: Extension.

Number of Respondents: 50.

Responses per Respondent: 1.

Annual Responses: 50.

Average Burden per Response: 8 hours.

Annual Burden Hours: 400.

Needs and Uses: Department of Defense funds are authorized for local educational agencies (LEA)s that educate military dependent students with severe disabilities and meet certain criteria. Eligible LEAs are determined by their responses to the U.S. Department of Education (ED) from information they submitted on children with disabilities, when they completed the Impact Program form for the Department of Education. This application will be requested of LEAs who educate military dependent students with disabilities, who have been deemed eligible for the U.S. Department of Education Impact Aid program, to determine if they meet the criteria to receive additional funds

from the Department of Defense due to high special education costs of the military dependents with severe disabilities that they serve.

Affected Public: State, local or tribal government.

Frequency: On occasion.

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms. Hillary Jaffe. Written comments and recommendations on the proposed information collection should be sent to Ms. Jaffe at the Office of Management and Budget, Desk Officer for DoD, Room 10236, New Executive Office Building, Washington, DC 20503.

You may also submit comments, identified by docket number and title, by the following method:

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.

Instructions: All submissions received must include the agency name, docket number and title for this **Federal Register** document. The general policy for comments and other submissions from members of the public is to make these submissions available for public viewing on the Internet at <http://www.regulations.gov> as they are received without change, including any personal identifiers or contact information.

DOD Clearance Officer: Ms. Patricia Toppings. Written requests for copies of the information collection proposal should be sent to Ms. Toppings at WHS/ESD/Information Management Division, 1777 North Kent Street, RPN, Suite 11000, Arlington, VA 22209-2133.

Dated: August 24, 2006.

Patricia L. Toppings,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 06-7242 Filed 8-29-06; 8:45 am]

BILLING CODE 5001-06-M

DEPARTMENT OF DEFENSE

Office of the Secretary

Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds

AGENCY: Department of Defense.

ACTION: Notice.

SUMMARY: This notice announces a public notice of the signing of a Memorandum of Understanding (MOU) between the U.S. Department of Defense and the U.S. Fish and Wildlife Service to Promote the Conservation of

Migratory Birds. Pursuant to Executive Order 13186 (January 17, 2001), "Responsibilities of Federal Agencies to Protect Migratory Birds," this MOU outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU identifies specific activities where cooperation between the Parties will contribute substantially to the conservation of migratory birds and their habitats. It does not authorize the "take" of migratory birds. Take, as defined in 50 CFR 10.12, includes the pursuit, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

The complete text of the MOU is attached.

EFFECTIVE DATES: This notice is effective August 30, 2006. The MOU is effective July 31, 2006 and shall remain effective for a period of five years.

FOR FURTHER INFORMATION CONTACT:

Peter Boice, 703-704-0524.

SUPPLEMENTARY INFORMATION: The notice is required by Section 3(g) of Executive Order 13186 which states "Each agency shall advise the public of the availability of its MOU through a notice published in the **Federal Register**."

Dated: August 24, 2006.

L.M. Bynum,

OSD Federal Register Liaison Officer, DoD.

Memorandum of Understanding Between the U.S. Department of Defense and the U.S. Fish and Wildlife Service To Promote the Conservation of Migratory Birds

This Memorandum of Understanding (MOU) is entered into between the U.S. Department of Defense (DoD) and the U.S. Fish and Wildlife Service (FWS) (hereinafter "the Parties").

A. Purpose and Scope

Pursuant to Executive Order 13186 (January 17, 2001), Responsibilities of Federal Agencies to Protect Migratory Birds, this MOU outlines a collaborative approach to promote the conservation of migratory bird populations.

This MOU does not address incidental take during military readiness activities, which is being addressed in a rulemaking in accordance with section 315 of the National Defense Authorization Act for Fiscal Year 2003 (Pub. L. 107-314, 116 Stat. 2458).

This MOU specifically pertains to the following categories of DoD activities:

(1) Natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, agricultural

outleasing, conservation law enforcement, invasive weed management, and prescribed burning;

(2) Installation support functions, including but not limited to, the maintenance, construction or operation of administrative offices, military exchanges, road construction, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, non-tactical equipment, laundries, morale, welfare, and recreation activities, shops, landscaping, and mess halls;

(3) Operation of industrial activities;

(4) Construction or demolition of facilities relating to these routine operations; and

(5) Hazardous waste cleanup.

This MOU identifies specific activities where cooperation between the Parties will contribute substantially to the conservation of migratory birds and their habitats. This MOU does not authorize the take of migratory birds.

B. Authorities

The Parties' responsibilities under the MOU are authorized by provisions of the following laws:

Alaska National Interest Lands

Conservation Act of 1980 (16 U.S.C. 410hh–3233).

Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668–668d).

Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

Fish and Wildlife Act of 1956 (16 U.S.C. 742 *et seq.*).

Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901–2911).

Fish and Wildlife Coordination Act (16 U.S.C. 661–667).

Migratory Bird Conservation Act (16 U.S.C. 715–715d, 715e, 715f–715r).

Migratory Bird Treaty Act (16 U.S.C. 703–711).

National Environmental Policy Act of 1969 (42 U.S.C. 4321–4347).

Sikes Act Improvement Act of 1997 (16 U.S.C. 670a–670o).

Agreements to limit encroachments and other constraints on military training, testing, and operations (10 U.S.C. 2684a)

C. Background

The Parties have a common interest in the conservation and management of America's natural resources. The Parties agree that migratory birds are important components of biological diversity and that the conservation of migratory birds will both help sustain ecological systems and help meet the public demand for conservation education and outdoor recreation, such as wildlife viewing and hunting opportunities. The

Parties also agree that it is important to: (1) Focus on bird populations; (2) focus on habitat restoration and enhancement where actions can benefit specific ecosystems and migratory birds dependent upon them; and (3) recognize that actions taken to benefit some migratory bird populations may adversely affect other migratory bird populations.

The DoD mission is to provide for the Nation's defense. DoD's conservation program works to ensure continued access to land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD's care are sustained in a healthy condition.

The DoD is an active participant in international bird conservation partnerships including Partners in Flight (PIF) and the North American Bird Conservation Initiative (NABCI). Military lands frequently provide some of the best remaining habitat for migratory bird species of concern, and DoD plans to continue its leadership role in bird conservation partnerships.

Through the PIF initiative, DoD works in partnership with numerous Federal and State agencies and nongovernmental organizations for the conservation of migratory and resident birds and to enhance migratory bird survival. Through DoD PIF, a list of species of concern (see Definitions) has been developed for each Bird Conservation Region where DoD facilities occur, thus improving DoD's ability to evaluate any migratory bird conservation concerns on respective DoD lands.

Integrated Natural Resources Management Plans (INRMPs) offer a coordinated approach for incorporating habitat conservation efforts into installation management. INRMPs are a significant source of baseline conservation information and conservation initiatives used when preparing National Environmental Policy Act (NEPA) documents for all DoD management activities. This linkage helps to ensure that appropriate conservation and mitigation measures are identified in NEPA documents and committed to, when appropriate, in final decision documents.

The DoD PIF program provides a framework for incorporating landbird, shorebird and waterbird habitat management efforts into INRMPs. DoD's strategy focuses on inventorying and long-term monitoring to determine changes in migratory bird populations on DoD installations. Effective on-the-ground management may then be applied to those areas identified as

having the highest conservation value. DoD's PIF goal is to support the military's training and testing mission while being a vital and supportive partner in regional, national, and international bird conservation initiatives. DoD strives to implement cooperative projects and programs on military lands to benefit the health and well-being of birds and their habitats, whenever possible.

The Department of Defense implements bird inventories and monitoring programs in numerous ways including Monitoring Avian Productivity and Survivorship (MAPS) and Next Generation Radar (NEXRAD) for studying bird movements in the atmosphere. DoD also maintains an integrated pest management (IPM) program designed to reduce the use of pesticides to the minimum necessary.

The mission of the FWS is to work with others to conserve, protect, manage, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The FWS is legally mandated to implement the provisions of the Migratory Bird Treaty Act (MBTA), which include responsibilities for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulation development and enforcement. The FWS also promotes migratory bird conservation through its coordination and consultation efforts with other entities.

Many FWS programs are involved in bird conservation activities, including:

1. The Division of Migratory Bird Management and Regional Migratory Birds and Habitat Programs serve as focal points in the United States for policy development and strategic planning, developing and implementing monitoring and management initiatives that help maintain healthy populations of migratory birds and their habitat, and providing continued opportunities for citizens to enjoy bird-related recreation.

2. The Division of Bird Habitat Conservation is instrumental in supporting habitat conservation partnerships through the administration of bird conservation grant programs and development of Joint Ventures that serve as major vehicles for implementing the various bird conservation plans across the country.

3. Ecological Services Field Offices across the country serve as the primary contacts for environmental reviews that include, when requested, projects developed by local military installations and DoD regional offices involving

migratory bird issues. The Field Offices coordinate with the Regional Migratory Bird Offices, as necessary, during these reviews regarding permits and overall migratory bird conservation coordination for DoD activities.

4. The Office of Law Enforcement is the principal FWS program that enforces the legal provisions of the MBTA.

The Parties agree this MOU shall be implemented to the extent permitted by law and in harmony with agency missions, subject to the availability of appropriations and budgetary limits.

D. Responsibilities

1. Each Party shall:

a. Emphasize an interdisciplinary, collaborative approach to migratory bird conservation in cooperation with other governments, State and Federal agencies, and non-Federal partners within the geographic framework of the NABC Bird Conservation Regions

b. Strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent or minimize the loss or degradation of habitats on DoD-managed lands, by:

(1) Identifying and avoiding management actions that have the potential to adversely affect migratory bird populations, including breeding, migration, or wintering habitats; and by developing and implementing, as appropriate, conservation measures that would avoid or minimize the take of migratory birds or enhance the quality of the habitat used by migratory birds.;

(2) Working with partners to identify, conserve, and manage Important Bird Areas, Western Hemisphere Shorebird Reserve Network sites, and other significant bird conservation sites that occur on DoD-managed lands;

(3) Preventing or abating the pollution or detrimental alteration of the habitats used by migratory birds;

(4) Developing and integrating information on migratory birds and their habitats into outreach and education materials and activities; and

(5) Controlling the introduction, establishment, and spread of non-native plants or animals that may be harmful to migratory bird populations, as required by Executive Order 13112 on Invasive Species.

c. Work with willing landowners to prevent or minimize the loss or degradation of migratory bird habitats on lands adjacent or near military installation boundaries. This cooperative conservation may include:

(1) Participating in efforts to identify, protect, and conserve important migratory bird habitats or other significant bird conservation sites and

ecological conditions that occur in landscapes or watersheds that may be affected by activities on DoD lands;

(2) Developing and integrating information on migratory bird resources found on DoD lands into other partners' outreach and education materials and activities; and

(3) Using available authorities to enter into agreements with other Federal agencies, States, other governmental entities, and private conservation organizations to conserve and enhance habitat in a compatible manner so military operations are not restricted.

d. Promote collaborative projects such as:

(1) Developing or using existing inventory and monitoring programs, at appropriate scales, with national or regional standardized protocols, to assess the status and trends of bird populations and habitats, including migrating, breeding, and wintering birds;

(2) Designing management studies and research projects using national or regional standardized protocols and programs, such as MAPS to identify the habitat conditions needed by applicable species of concern, to understand interrelationships of co-existing species, and to evaluate the effects of management activities on habitats and populations of migratory birds;

(3) Sharing inventory, monitoring, research, and study data for breeding, migrating, and wintering bird populations and habitats in a timely fashion with national data repositories such as Breeding Bird Research and Monitoring Database (BBIRD), National Point Count Database, National Biological Information Infrastructure, and MAPS;

(4) Working in conjunction with each other and other Federal and State agencies to develop reasonable and effective conservation measures for actions that affect migratory birds and their natural habitats;

(5) Participating in or promoting the implementation of existing regional or national inventory and monitoring programs such as Breeding Bird Survey (BBS), BBIRD, Christmas Bird Counts, bird atlas projects, or game bird surveys (e.g., mid-winter waterfowl surveys) on DoD lands where practicable and feasible.

(6) Using existing partnerships and exploring opportunities for expanding and creating new partnerships to facilitate combined funding for inventory, monitoring, management studies, and research.

e. Provide training opportunities to DoD natural resources personnel on migratory bird issues, to include bird

population and habitat inventorying, monitoring methods, and management practices that avert detrimental effects and promote beneficial approaches to migratory bird conservation.

f. Participate in the Interagency Council for the Conservation of Migratory Birds to evaluate implementation of this MOU.

g. Promote migratory bird conservation internationally, as it relates to wintering, breeding and migration habitats of birds that breed on DoD lands.

h. Promote and undertake ecologically sound actions to curb the introduction in the wild of exotic or invasive species harmful to migratory birds.

2. The Department of Defense shall:

a. Follow all migratory bird permitting requirements for non-military readiness activities that are subject to 50 CFR Parts 21.22 (banding or marking), 21.23 (scientific collecting), 21.26 (special Canada goose permit), 21.27 (special purposes), or 21.41 (depredation). No permit is required to take birds in accordance with Parts 21.43–21.47 (depredation orders).

b. Encourage incorporation of comprehensive migratory bird management objectives in the preparation of DoD planning documents, including Integrated Natural Resource Management Plans, Pest Management Plans, Installation Master Plans, NEPA analyses, and non-military readiness elements of Bird Aircraft Strike Hazard documents.

Comprehensive planning efforts for migratory birds include PIF Bird Conservation Plans, the North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, and North American Waterbird Conservation Plan and associated regional plans where available.

c. Incorporate conservation measures addressed in Regional or State Bird Conservation Plans in INRMPS.

d. Consistent with imperatives of safety and security, allow the FWS and other partners reasonable access to military lands for conducting sampling or survey programs such as MAPS, BBS, BBIRD, International Shorebird Survey, and breeding bird atlases.

e. Prior to starting any activity that is likely to affect populations of migratory birds:

(1) Identify the migratory bird species likely to occur in the area of the proposed action and determine if any species of concern could be affected by the activity;

(2) Assess and document, through the project planning process, using NEPA when applicable, the effect of the proposed action on species of concern.

Use best available demographic, population, or habitat association data in the assessment of effects upon species of concern;

(3) Engage in early planning and scoping with the FWS relative to potential impacts of a proposed action, to proactively address migratory bird conservation, and to initiate appropriate actions to avoid or minimize the take of migratory birds.

f. Manage military lands and non-military readiness activities in a manner that supports migratory bird conservation, giving consideration to the following factors:

(1) Habitat protection, restoration, and enhancement. Military lands contain many important habitats for migratory birds. Some unique, sensitive, endangered and/or declining habitat types that may require special management attention include:

(a) Grasslands. Many native grassland communities require intensive management to maintain and restore vigor and species diversity and to provide habitat for migratory birds and other wildlife dependent on native grasslands. Grassland management and restoration tools include controlled burning, mowing, grazing, native species planting, and exotic plant removal. Many grasslands have evolved with a natural fire regime, and the management activities often emulate this fire regime.

(b) Riparian and wetland habitats. Military lands contain riparian and wetland habitats that may be critical for migratory birds. DoD will strive to prevent the destruction or degradation of wetlands and riparian vegetation, and also restore those habitats, when feasible, where they have been degraded.

(c) Coastal beach, salt marsh, and dune habitats. Military lands support some of the best remaining undisturbed coastal habitats. DoD will strive to protect, restore and prevent the destruction of coastal and island habitats that are important to breeding, migrating and wintering shorebirds, salt marsh land birds and colonial water birds.

(d) Longleaf pine ecosystem. Some of the best remaining examples of the longleaf pine ecosystem occur on military lands. Such habitats benefit from prescribed fire and other management measures which DoD regularly implements on thousands of acres in the Southeast. The DoD manages and will continue to manage this ecosystem to benefit and promote migratory bird conservation.

(2) Fire and fuels management practices. Fire plays an important role

in shaping plant and animal communities and is a valuable tool in restoring habitats altered by decades of fire suppression. Fire management may include fire suppression, but also involves fire prevention and fuels treatment, including prescribed burning and monitoring, to protect communities and provide for healthy ecosystems. Fire management planning efforts will consider the effects of fire management strategies on the conservation of migratory bird populations.

(3) Invasive Species and Aquatic Nuisance Species management practices. Invasive Species and Aquatic Nuisance Species are a threat to native habitats and wildlife species throughout the United States, including military lands. Efforts to control/contain these species must take into account both the impacts from invasive species and the effects of the control efforts on migratory bird populations. Invasive Species and Aquatic Nuisance Species that can threaten migratory birds and their habitats include, but are not limited to, exotic grasses, trees and weeds, terrestrial and aquatic insects and organisms, non-native birds, and stray and feral cats.

(4) Communications towers, utilities and energy development. Increased communications demands, changes in technology and the development of alternative energy sources result in impacts on migratory birds. DoD will review wind turbine and powerline guidelines published by FWS and the Avian Power Line Interaction Committee, respectively, and consult with FWS as needed, in considering potential effects on migratory birds of proposals for locating communications towers, powerlines or wind turbines on military lands. Construction of new utility and energy systems and associated infrastructure should be designed to avoid and minimize impacts on migratory bird populations. Existing utilities may also be considered for retrofitting to reduce impacts.

(5) Recreation and public use. The demand for outdoor recreational opportunities on public lands is increasing. Impacts on migratory birds may occur both through direct and indirect disturbances by visitors and through agency activities associated with providing recreational opportunities to visitors and installation personnel and morale facilities (e.g., facilities construction). DoD provides access to military lands for recreation and other public use, such as Watchable Wildlife and bird watching, where such access does not compromise security and safety concerns or impact migratory birds, other species, or their habitats.

Many conservation measures have been developed to benefit a variety of migratory bird species and their associated habitats. Some of these conservation measures may be directly applicable to DoD non-military readiness related activities; however, the appropriateness and practicality of implementing any specific conservation measure may have to be determined on a case-by-case basis. The FWS will work cooperatively with DoD in providing existing conservation measures and developing new ones as needed.

Examples of some conservation measures may be found at <http://www.partnersinflight.org/pubs/BMPs.htm> for landbird species.

g. Develop and implement new and/or existing inventory and monitoring programs, at appropriate scales, using national standardized protocols, to evaluate the effectiveness of conservation measures to minimize or mitigate take of migratory birds, with emphasis on those actions that have the potential to significantly impact species of concern.

h. Advise the public of the availability of this MOU through a notice published in the **Federal Register**.

i. In accordance with DoD INRMP guidance, promote timely and effective review of INRMPs with respect to migratory bird issues with the FWS and respective state agencies. During the INRMP review process, evaluate and coordinate with FWS on any potential revisions to migratory bird conservation measures taken to avoid or minimize take of migratory birds.

3. The Fish and Wildlife Service shall:

a. Work with DoD by providing recommendations to minimize adverse effects upon migratory birds from DoD actions.

b. Through the Division of Migratory Bird Management, maintain a Web page on permits that provides links to all offices responsible for issuing permits and permit application forms for take of migratory birds.

c. Provide essential background information to the DoD when requested to ensure sound management decisions. This may include migratory bird distributions, status, key habitats, conservation guidelines, and risk factors within each BCR. This includes updating the FWS publication of *Birds of Conservation Concern* at regular intervals so it can be reliably referenced.

d. Work to identify special migratory bird habitats (i.e., migration corridors, stop-over habitats, ecological conditions important in nesting habitats) to aid in collaborative planning.

e. Through the Ecological Service Field Office, provide to DoD, upon

request, technical assistance on migratory bird species and their habitats.

f. In accordance with FWS Guidelines for Coordination with DoD and Implementation of the 1997 Sikes Act (2005), work cooperatively with DoD in the development, review and revision of INRMPs.

g. Review and comment on NEPA documents and other planning documents forwarded by military installations.

E. It Is Mutually Agreed and Understood That

1. This MOU will not change or alter requirements associated with the MBTA, Endangered Species Act, NEPA, Sikes Act or other statutes or legal authority.

2. The responsibilities established by this MOU may be incorporated into existing DoD actions; however, DoD may not be able to implement some responsibilities identified in the MOU until DoD has successfully included them in formal planning processes. This MOU is intended to be implemented when new actions are initiated as well as during the initiation of new, or revisions to, INRMPs, Pest Management Plans, and non-military readiness elements of Bird Aircraft Strike Hazard plans. It does not apply to ongoing DoD actions for which a NEPA decision document was finalized prior to, or within 180 days of the date this MOU is signed.

3. This MOU in no way restricts either Party from participating in similar activities with other public or private agencies, governments, organizations, or individuals.

4. An elevation process to resolve any dispute between the Parties regarding a particular practice or activity is in place and consists of first attempting to resolve the dispute with the DoD military installation and the responsible Ecological Services Field Office. If there is no resolution at this level, either Party may elevate the issue to the appropriate officials at the applicable Military Service's Chain of Command and FWS Regional Offices. In the event that there is no resolution by these offices, the dispute may be elevated by either Party to the headquarters office of each agency.

5. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement, contribution of funds, or transfer of anything of value between the Parties will be handled in accordance with applicable laws, regulations, and procedures, including those for government procurement and printing.

Such endeavors will be outlined in separate agreements that shall be made in writing by representatives of the Parties and shall be independently authorized by appropriate statutory authority.

6. The Parties shall schedule periodic meetings to review progress and identify opportunities for advancing the principles of this MOU.

7. This MOU is intended to improve the internal management of the executive branch and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

8. Modifications to the scope of this MOU shall be made by mutual consent of the Parties, through issuance of a written modification, signed and dated by both Parties, prior to any changes.

9. Either Party may terminate this instrument, in whole or in part, at any time before the date of expiration by providing the other Party with a written statement to that effect.

The principal contacts for this instrument are as follows:

Brian Millsap, Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS4107, Arlington, VA 22203.

L. Peter Boice, Conservation Team, Leader, Office of the Secretary of Defense, 1225 S. Clark St., Suite 1500, Arlington, VA 22202-4336.

This MOU is executed as of the last date signed below and expires no later than five (5) years thereafter, at which time it is subject to review and renewal, or expiration.

F. Definitions

Action—a program, activity, project, official policy, rule, regulation or formal plan directly carried out by DoD, but not a military readiness activity.

Breeding Biology Research and Monitoring Database (BBIRD)—national, cooperative program that uses standardized field methodologies for studies of nesting success and habitat requirements of breeding birds (<http://pica.wru.umt.edu/BBIRD/>).

Breeding Bird Survey (BBS)—a standardized international survey that provides information on population trends of breeding birds, through volunteer observations located along randomly selected roadside routes in the United States, Canada and Mexico (<http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>).

Bird Conservation Region—a geographic unit used to facilitate bird

conservation actions under the North American Bird Conservation Initiative (<http://www.manomet.org/USSCP/bcrmaps.html>).

Birds of Conservation Concern—published by the FWS Division of Migratory Bird Management, refers to the list of migratory and non-migratory birds of the United States and its territories that are of conservation concern. The current version of the list Birds of Conservation Concern 2002 is available at (<http://migratorybirds.fws.gov/reports/bcc2002.pdf>).

Comprehensive Planning Efforts for Migratory Birds—includes Partners in Flight, North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, Western Hemisphere Shorebird Reserve Network, North American Waterbird Conservation Plan, and other planning efforts integrated through the North American Bird Conservation Initiative.

Conservation Measure—an action undertaken to improve the conservation status of one or more species of migratory birds. Examples include surveys and inventories, monitoring, status assessments, land acquisition or protection, habitat restoration, population manipulation, research, and outreach.

Conservation Planning—strategic and tactical planning of agency activities for the long-term conservation of migratory birds and their habitats.

Council for the Conservation of Migratory Birds—an interagency council established by the Secretary of the Interior to oversee the implementation of Executive Order 13186.

Ecological Condition—the composition, structure, and processes of ecosystems over time and space. This includes the diversity of plant and animal communities, the productive capacity of ecological systems and species diversity, ecosystem diversity, disturbance processes, soil productivity, water quality and quantity, and air quality. Often referred to in terms of ecosystem health, which is the degree to which ecological factors and their interactions are reasonably complete and functioning for continued resilience, productivity, and renewal of the ecosystem.

Effect (adverse or beneficial)—“effects” and “impacts,” as used in this MOU are synonymous. Effects may be direct, indirect, or cumulative, and refer to effects from management actions or categories of management actions on migratory bird populations, habitats, ecological conditions and/or significant bird conservation sites.

Important Bird Areas (IBAs)—a network of sites that provide essential habitat for the long-term conservation of birds. In the United States, the IBA network is administered by the American Bird Conservancy and the National Audubon Society. (<http://www.audubon.org/nird/iba/>)

Integrated Natural Resources Management Plan (INRMP)—an integrated plan based, to the maximum extent practicable, on ecosystem management that shows the interrelationships of individual components of natural resources management (e.g., fish and wildlife, forestry, land management, outdoor recreation) to military mission requirements and other land use activities affecting an installation's natural resources. INRMPs are required for all DoD installations with significant natural resources, pursuant to the Sikes Act Improvement Act.

International Shorebird Survey—a monitoring program started in 1974 to survey shorebirds (sandpipers, plovers, etc.) across the Western Hemisphere. (<http://www.manomet.org/programs/shorebirds/>)

Management Action—an activity by a government agency that could cause a positive or negative impact on migratory bird populations or habitats. Conservation measures to mitigate potential negative effects of actions may be required.

Migratory Bird—any bird listed in 50 CFR 10.13, Code of Federal Regulations.

Military Readiness Activity—all training and operations of the Armed Forces that relate to combat, including but not limited to the adequate and realistic testing of military equipment, vehicles, weapons and sensors for proper operation and suitability for combat use.

Monitoring Avian Productivity and Survivorship (MAPS)—a program that uses the banding of birds during the breeding season to track the changes and patterns in the number of young produced and the survivorship of adults and young (<http://www.birdpop.org/maps.htm>).

National Environmental Policy Act (NEPA)—a Federal statute that requires Federal agencies to prepare a detailed analysis of the environmental impacts of a proposed action and alternatives, and to include public involvement in the decision making process for major Federal actions significantly affecting the quality of the human environment 42 U.S.C. 4321, *et seq.*

North American Bird Conservation Initiative (NABCI)—an initiative to align the avian conservation community to implement bird conservation through

regionally-based, biologically driven, landscape-oriented partnerships across the North American continent. NABCI includes Federal agencies of Canada, Mexico and the United States, as well as most landbird, shorebird, waterbird, and waterfowl conservation initiatives (<http://www.nabci-us.org>).

North American Waterbird Conservation Plan—a partnership of Federal and State government agencies, non-governmental organizations, and private interests focusing on the conservation of waterbirds, primarily including marshbirds and inland, coastal, and pelagic colonial waterbirds (www.nacwcp.org/pubs/). The vision of the partnership is that the distribution, diversity and abundance of populations and breeding, migratory, and nonbreeding waterbirds are sustained throughout the lands and waters of North America, Central America, and the Caribbean.

North American Waterfowl Management Plan—a partnership of Federal and State agencies, non-governmental organizations, and private interests focusing on the restoration of waterfowl populations through habitat restoration, protection, and enhancement (<http://birdhabitat.fws.gov/NAWMP/nawmphp.htm>).

Partners in Flight (PIF)—a cooperative partnership program of more than 300 partners including Federal and State government agencies, non-governmental organizations, conservation groups, foundations, universities and industry focusing on the conservation of landbirds. DoD was an original signatory to the PIF Federal Agencies' MOA. (<http://www.partnersinflight.org> and <http://www.dodpif.org>).

Species of Concern—refers to those species listed in the periodic report *Birds of Conservation Concern*; priority migratory bird species documented in the comprehensive bird conservation plans (North American Waterbird Conservation Plan, U.S. Shorebird Conservation Plan, Partners in Flight Bird Conservation Plans); species or populations of waterfowl identified as high, or moderately high, continental priority in the North American Waterfowl Management Plan; listed threatened and endangered bird species in 50 CFR 17.11; and MBTA listed game birds below desired population sizes.

Take—as defined in 50 CFR 10.12, to include pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

U.S. Shorebird Conservation Plan—an effort undertaken by a partnership of Federal and State government agencies,

as well as non-governmental and private organizations to ensure that stable and self-sustaining populations of all shorebird species are restored and protected (<http://www.fws.gov/shorebird>).

The Parties hereto have executed this agreement as of the date shown below.

Signed: July 7, 2006.

H. Dale Hall,

Director, U.S. Fish and Wildlife Service.

Signed: July 31, 2006.

Alex Albert Beehler,

Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), U.S. Department of Defense.

[FR Doc. E6-14352 Filed 8-29-06; 8:45 am]

BILLING CODE 5001-06-P

DEPARTMENT OF DEFENSE

Department of the Army

[No. USA-2006-0016]

Submission for OMB Review; Comment Request

ACTION: Notice.

The Department of Defense has submitted to OMB for clearance, the following proposal for collection of information under the provisions of the Paperwork Reduction Act (44 U.S.C. Chapter 35).

DATES: Consideration will be given to all comments received by September 29, 2006.

Title, Associated Form and OMB Number: Disposition of Remains—Reimbursable Basis and Request for Payment of Funeral and/or Internet Expense; DD Forms 2065 and 1375; OMB Number 0704-0030.

Type of Request: Extension.

Number of Respondents: 3200.

Response per Respondent: 1.

Annual Responses: 3200.

Average Burden per Response: 20 minutes (DD 2065) and 10 minutes (DD 1375).

Annual Burden Hours: 550.

Needs and Uses: DD Form 2065 records disposition instructions and costs for preparation and final disposition of remains. DD Form 1375 provides next-of-kin an instrument to apply for reimbursement of funeral/interment expenses. This information is used to adjudicate claims for reimbursement of these expenses.

Affected Public: Individuals and households.

Frequency: On occasion.

Respondent's Obligation: Required to obtain or retain benefits.

OMB Desk Officer: Ms. Hillary Jaffe.

DoD Guidance to Implement MOW between DoD and USFWS





ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

APR 03 2007

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND OCCUPATIONAL
HEALTH)
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Guidance to Implement the Memorandum of Understanding to Promote the
Conservation of Migratory Birds

On July 31, 2006, the Department of Defense (DoD) and the U.S. Fish and Wildlife Service (FWS) entered into a Memorandum of Understanding (MOU) to Promote the Conservation of Migratory Birds, in accordance with Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds." This MOU describes specific actions that should be taken by DoD to advance migratory bird conservation; avoid or minimize the take of migratory birds; and ensure DoD operations—other than military readiness activities—are consistent with the Migratory Bird Treaty Act. The MOU also describes how the FWS and DoD will work together cooperatively to achieve these ends. The MOU does not authorize the take of migratory birds; the FWS, however, may develop incidental take authorization for federal agencies that complete an Executive Order MOU.

I strongly encourage all DoD personnel to work cooperatively with the FWS to implement the actions described in the MOU and to take steps to further migratory bird conservation. This MOU specifically pertains to the following categories of DoD activities:

- (1) Natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, agricultural outleasing, conservation law enforcement, invasive weed management, and prescribed burning;
- (2) Installation support functions, including but not limited to, the maintenance, construction or operation of administrative offices, military exchanges, road



construction, commissaries, water treatment facilities, storage facilities, schools, housing, motor pools, non-tactical equipment, laundries, morale, welfare, and recreation activities, shops, landscaping, and mess halls;

- (3) Operation of industrial activities;
- (4) Construction or demolition of facilities relating to these routine operations;
and
- (5) Hazardous waste cleanup.

This MOU does not address incidental take during military readiness activities, which was addressed in a rulemaking in accordance with section 315 of the National Defense Authorization Act for Fiscal Year 2003. The final rule, Migratory Bird Permits: Take of Migratory Birds by the Armed Force, was published as 50 CFR Part 21 in the February 28, 2007 Federal Register, pages 8931-8950.

Successful implementation of the MOU will require early planning and coordination between individual military bases and local FWS offices for particular projects that may affect migratory birds. A variety of useful tools are available to assist DoD natural resource managers in integrating bird conservation measures with DoD activities, as described in the attachment. If you have any questions, please contact Mr. Peter Boice at (703) 604-0524.



Alex A. Beehler
Assistant Deputy Under Secretary of Defense
(Environment, Safety and Occupational Health)

Attachments:
As stated

Resources for Migratory Bird Conservation



USEFUL TOOLS IN IMPLEMENTING MIGRATORY BIRD CONSERVATION BY THE DOD

The following is not an exhaustive list of tools available to help address migratory bird conservation but are excellent sources to start.

Partners in Flight (<http://www.partnersinflight.org>)

Partners in Flight is an umbrella network of which the DoD bird conservation program is a vital part. Partners in Flight was launched in 1990 in response to growing concerns about declines in the populations of many landbirds, and to address the conservation of birds not covered by existing conservation initiatives.

The PIF web site provides helpful information including links to regional plans that discuss bird conservation goals and objectives for individual species in a specific physiographic region.

DoD Partners in Flight (<http://www.dodpif.org/>)

The Management Strategy for DoD PIF is to promote and support a partnership role in the protection and conservation of birds and their habitats by protecting vital DoD lands and ecosystems, enhancing biodiversity, and maintaining healthy and productive natural systems consistent with the military mission. The DoD PIF web site provides a number of useful resources for addressing or learning more about migratory bird conservation, including fact sheets and a database of installation-specific information.

Installation Bird Checklist (<http://www.dodpif.org/>)

This is an ongoing effort to providing a list of birds known to occur on or in the vicinity of individual military bases in addition to seasonal occurrence records.

Species of Concern (<http://www.dodpif.org/>)

Although migratory bird conservation should address all migratory birds, the MOU places a priority on addressing the conservation of species of concern as resources are limited to effectively address all birds. Species of concern refers to those species listed in the periodic report FWS *Birds of Conservation Concern*; priority migratory bird species documented in the comprehensive bird conservation plans (North American Waterbird Conservation Plan, U.S. Shorebird Conservation Plan, Partners in Flight Bird Conservation Plans); species or populations of waterfowl identified as high, or moderately high, continental priority in the North American Waterfowl Management Plan; listed threatened and endangered bird species in 50 CFR. 17.11; and Migratory Bird Treat Act listed game birds below desired population sizes. To assist DoD staff in determining what species may be impacted by activities on military bases, DoD PIF is in the process of developing a list of species of concern for each military base in the continental U.S. Until these individual base lists are finalized, list of species of concern are available at the larger Bird Conservation Region (BCR) scale. BCRs are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.

The DoD Bird Conservation Database (Database) (<http://www.dodpif.org/projects/>)

This database was created to document, consolidate, and disseminate bird conservation efforts on or involving military lands and civil works projects and make that information available as a resource for planners, land managers and other professionals involved in bird conservation.

This database can provide a valuable resource for biologists to share natural resource management information on their base including species accounts, research and monitoring, bird surveys, etc. Base biologists are encouraged to insert abstracts on their natural resource projects into the database.

Conservation Measures (<http://www.partnersinflight.org/pubs/BMPs.htm>)

There is currently a lack of a single resource database that provides easy reference to migratory bird conservation measures that may be implemented for a diversity of species or habitat types. However, several efforts are underway and will be available in the future. One resource that is currently underdevelopment but readily available are Best Management Practices on the Partners in Flight web site.

DoD PIF-L List Serve (<http://www.dodpif.org/>).

This Listserve supports the natural resource managers at DoD sites to more effectively address migratory and resident bird issues, and incorporate bird habitat conservation plans into the INRMP process. The list should be used for items that will benefit natural resource managers with bird conservation issues, including as requests for information or assistance. See the web site for how to subscribe to the list.

US Shorebird Conservation Plan (<http://www.fws.gov/shorebirdplan/>) is an effort undertaken by a partnership of Federal and State government agencies, as well as non-governmental and private organizations to ensure that stable and self-sustaining populations of all shorebird species are restored and protected. Both the U.S. Plan and regional step down plans provide useful information regarding population goals and objectives for individual priority shorebird species.

North American Waterbird Conservation Plan

(<http://www.waterbirdconservation.org/>)

This partnership of Federal and State government agencies, non-governmental organizations, and private interests focuses on the conservation of waterbirds, primarily including marshbirds and inland, coastal, and pelagic colonial waterbirds). As with the Partners in Flight and Shorebird initiatives, waterbird conservation plans are available at both the continental and regional scale. These include population and habitat objectives for individual waterbird species and management recommendations.

FWS Course for DoD Natural Resource Managers: Migratory Bird Conservation – A Trust Responsibility

The FWS periodically offers a MBTA course specifically modified for DoD participants. FWS hopes to offer the course approximately once a year.

DoD Conservation Page (<http://www.denix.osd.mil/Conservation/>)

The Conservation Web page on DENIX offers a wide variety of bird conservation reports and other products. Of particular note are the sections on “Wildlife” and “Endangered Species.”

DoD Legacy Resource Management Program (<http://www.dodlegacy.org>)

The Legacy program funds efforts that preserve our nation’s natural and cultural heritage on DoD lands. Three principles guide the Legacy Program: *stewardship*, *leadership*, and *partnership*. Stewardship initiatives assist DoD in safeguarding its irreplaceable resources for future generations. By embracing a leadership role as part of the program, DoD serves as a model for respectful use of natural and cultural resources. Through partnerships, Legacy strives to access the knowledge and talents of individuals outside of DoD. The Legacy Web site describes proposal submittal guidelines, lists previously funded projects, and provides links to many products. Bird conservation is one of Legacy’s eleven areas of interest.

Strategic Environmental Research and Development Program (<http://www.serdp.org>)

SERDP is DoD’s environmental science and technology program, planned and executed in full partnership with the Department of Energy and the Environmental Protection Agency, with participation by numerous other federal and non-federal organizations. To address the highest priority issues confronting the Army, Navy, Air Force, and Marines, SERDP focuses on cross-service requirements and pursues high-risk/high-payoff solutions to the Department’s most intractable environmental problems. The development and application of innovative environmental technologies support the long-term sustainability of DoD’s training and testing ranges as well as significantly reduce current and future environmental liabilities. SERDP offers funding in the following four focus areas: Environmental Restoration, Munitions Management, Sustainable Infrastructure, and Weapons Systems and Platforms. Sustainable Infrastructure (SI) encompasses the technologies required to sustain training and testing ranges, as well as the installation infrastructure that supports those ranges and the deployed forces. SI is subdivided into natural resources, facilities, and cultural resources.

Environmental Security Technology Certification Program (<http://www.estcp.org>)

ESTCP is DoD’s environmental technology demonstration and validation program. The goal of ESTCP is to identify, demonstrate, and transfer technologies that address DoD’s highest priority environmental requirements. The Program promotes innovative, cost-effective environmental technologies through demonstrations at DoD facilities and sites. These technologies provide a return on investment through improved efficiency, reduced liability, and direct cost savings. ESTCP’s strategy is to select lab-proven technologies with broad DoD application and aggressively move them to the field for rigorous trials documenting their cost, performance, and market potential. ESTCP offers funding in the following four focus areas: Environmental Restoration, Munitions Management, Sustainable Infrastructure, and Weapons Systems and Platforms. Sustainable Infrastructure (SI) encompasses the technologies required to sustain training and testing

ranges, as well as the installation infrastructure that supports those ranges and the deployed forces. SI is subdivided into natural resources, facilities, and cultural resources.

North American Bird Conservation Initiative (NABCI)

The U.S. NABCI Committee is a forum of government agencies, non-profit organizations, and initiatives dedicated to advancing integrated bird conservation in North America. Its strategy is to foster coordination and collaboration among the bird conservation community on key issues of concern. Through annual work plans, NABCI focuses its efforts on advancing bird monitoring, conservation design, international conservation, and institutional support in state and federal agencies for bird habitat conservation.

DoD Coordinated Bird Monitoring Plan

A Coordinated Bird Monitoring (CBM) approach now is being followed in the United State and Canada by many public and private agencies. The CBM approach stresses clear specification of management issues that bird monitoring can help address, careful attention to quantitative issues, and coordination among the different bird initiatives and between these groups and managers who will use the information. DoD is undertaking a three-year project that will develop four products to help improve bird monitoring programs on DoD land -- a review of existing monitoring programs, guidelines for selected surveys, a plan for monitoring species of special concern on DoD land, and recommendations for DoD's role in continental bird monitoring programs.

EO 13186



Executive Order 13186

Presidential Documents

Executive Order 13186 -- Responsibilities of Federal Agencies To Protect Migratory Birds

January 10, 2001

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in furtherance of the purposes of the migratory bird conventions, the Migratory Bird Treaty Act (16 U.S.C. 703-711), the Bald and Golden Eagle Protection Acts (16 U.S.C. 668-668d), the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c), the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347), and other pertinent statutes, it is hereby ordered as follows:

Section 1. Policy. Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of Americans who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. Such conventions include the Convention for the Protection of Migratory Birds with Great Britain on behalf of Canada 1916, the Convention for the Protection of Migratory Birds and Game Mammals-Mexico 1936, the Convention for the Protection of Birds and Their Environment-Japan 1972, and the Convention for the Conservation of Migratory Birds and Their Environment-Union of Soviet Socialist Republics 1978.

These migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act (Act), the United States has implemented these migratory bird conventions with respect to the United States. This Executive Order directs Executive departments and agencies to take certain actions to further implement the Act. Sec. 2. Definitions. For purposes of this Order:

(a) "Take" means take as defined in 50 C.F.R. 10.12, and includes both "intentional" and "unintentional" take.

(b) "Intentional take" means take that is the purpose of the activity in question.

(c) "Unintentional take" means take that results from, but is not the purpose of, the activity in question.

(d) "Migratory bird" means any bird listed in 50 C.F.R. 10.13.

(e) "Migratory bird resources" means migratory birds and the habitats upon which they depend.

(f) "Migratory bird convention" means, collectively, the bilateral conventions (with Great Britain/Canada, Mexico, Japan, and Russia) for the conservation of migratory bird resources.

(g) "Federal agency" means an Executive department or agency, but does not include independent establishments as defined by 5 U.S.C. 104.

(h) "Action" means a program, activity, project, official policy (such as a rule or regulation), or formal plan directly carried out by a Federal agency. Each Federal agency will further define what the term "action" means with respect to its own authorities and what programs should be included in the agency-specific Memoranda of Understanding required by this Order. Actions delegated to or assumed by nonfederal entities, or carried out by nonfederal entities with Federal assistance, are not subject to this Order. Such actions, however, continue to be subject to the Migratory Bird Treaty Act.

(i) "Species of concern" refers to those species listed in the periodic report "Migratory Nongame Birds of Management Concern in the United States," priority migratory bird species as documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 C.F.R. 17.11.

Sec. 3. Federal Agency Responsibilities. (a) Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird populations.

(b) In coordination with affected Federal agencies, the Service shall develop a schedule for completion of the MOUs within 180 days of the date of this Order. The schedule shall give priority to completing the MOUs with agencies having the most substantive impacts on migratory birds.

(c) Each MOU shall establish protocols for implementation of the MOU and for reporting accomplishments. These protocols may be incorporated into existing actions; however, the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included them in each agency's formal planning processes (such as revision of agency land management plans, land use compatibility guidelines, integrated resource management plans, and fishery management plans), including public participation and NEPA analysis, as appropriate. This Order and the MOUs to be developed by the agencies are intended to be implemented when new actions or renewal of contracts, permits, delegations, or other third party agreements are initiated as well as during the initiation of new, or revisions to, land management plans.

(d) Each MOU shall include an elevation process to resolve any dispute between the signatory agencies regarding a particular practice or activity.

(e) Pursuant to its MOU, each agency shall, to the extent permitted by law and subject to the availability of appropriations and within Administration budgetary limits, and in harmony with agency missions:

(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;

(2) restore and enhance the habitat of migratory birds, as practicable;

(3) prevent or abate the pollution or detrimental alteration of the Environment for the benefit of migratory birds, as practicable;

(4) design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes (natural resource, land management, and environmental quality planning, including, but not limited to, forest and rangeland planning, coastal management planning,

watershed planning, etc.) as practicable, and coordinate with other agencies and nonfederal partners in planning efforts;

(5) within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance, ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as Partners-in-Flight, U.S. National Shorebird Plan, North American Waterfowl Management Plan, North American Colonial Waterbird Plan, and other planning efforts, as well as guidance from other sources, including the Food and Agricultural Organization's International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries;

(6) ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern;

(7) provide notice to the Service in advance of conducting an action that is intended to take migratory birds, or annually report to the Service on the number of individuals of each species of migratory birds intentionally taken during the conduct of any agency action, including but not limited to banding or marking, scientific collecting, taxidermy, and depredation control;

(8) minimize the intentional take of species of concern by: (i) delineating standards and procedures for such take; and (ii) developing procedures for the review and evaluation of take actions. With respect to intentional take, the MOU shall be consistent with the appropriate sections of 50 C.F.R. parts 10, 21, and 22;

(9) identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;

(10) within the scope of its statutorily-designated authorities, control the import, export, and establishment in the wild of live exotic animals and plants that may be harmful to migratory bird resources;

(11) promote research and information exchange related to the conservation of migratory bird resources, including coordinated inventorying and monitoring and the collection and assessment of information on environmental contaminants and other physical or biological stressors having potential relevance to migratory bird conservation. Where such information is collected in the course of agency actions or supported through Federal financial assistance, reasonable efforts shall be made to share such information with the Service, the Biological Resources Division of the U.S. Geological Survey, and other appropriate repositories of such data (e.g, the Cornell Laboratory of Ornithology);

(12) provide training and information to appropriate employees on methods and means of avoiding or minimizing the take of migratory birds and conserving and restoring migratory bird habitat;

(13) promote migratory bird conservation in international activities and with other countries and international partners, in consultation with the Department of State, as appropriate or relevant to the agency's authorities;

(14) recognize and promote economic and recreational values of birds, as appropriate; and

(15) develop partnerships with non-Federal entities to further bird conservation.

(f) Notwithstanding the requirement to finalize an MOU within 2 years, each agency is encouraged to immediately begin implementing the conservation measures set forth above in subparagraphs (1) through (15) of this section, as appropriate and practicable.

(g) Each agency shall advise the public of the availability of its MOU through a notice published in the Federal Register.

Sec. 4. Council for the Conservation of Migratory Birds. (a) The Secretary of Interior shall establish an interagency Council for the Conservation of Migratory Birds (Council) to oversee the implementation of this Order. The Council's duties shall include the following: (1) sharing the latest resource information to assist in the conservation and management of migratory birds; (2) developing an annual report of accomplishments and recommendations related to this Order; (3) fostering partnerships to further the goals of this Order; and (4) selecting an annual recipient of a Presidential Migratory Bird Federal Stewardship Award for contributions to the protection of migratory birds.

(b) The Council shall include representation, at the bureau director/administrator level, from the Departments of the Interior, State, Commerce, Agriculture, Transportation, Energy, Defense, and the Environmental Protection Agency and from such other agencies as appropriate.

Sec. 5. Application and Judicial Review. (a) This Order and the MOU to be developed by the agencies do not require changes to current contracts, permits, or other third party agreements.

(b) This Order is intended only to improve the internal management of the Executive branch and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

William J. Clinton

The White House,

January 10, 2001.
