

# NAVFAC Atlantic Environmental Technical Services

Contract # N62470-18D-7003; Delivery Order N40085-19-F-5682



## Public Review Pre-Final Integrated Natural Plan for Marine Corps Logistics Base Albany 2020



Prepared for: NAVFAC Atlantic  
1322 Patterson Ave. SE, Suite 1000  
Washington Navy Yard, DC 20374-5065



Prepared by:  
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# **INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**

## **MARINE CORPS LOGISTICS BASE ALBANY**

**2020**

**Approving Officials:**

\_\_\_\_\_  
Commanding Officer, MCLB Albany

\_\_\_\_\_  
Date



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**2020**

**Approving Officials:**

\_\_\_\_\_  
U.S. Fish and Wildlife Service

\_\_\_\_\_  
Date

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**2020**

**Approving Officials:**

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Georgia Department of Natural Resources

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Date

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**2020**

**Approving Officials:**

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Natural Resources Manager,  
Naval Facilities Engineering Command

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Natural Resources Manager, MCLB Albany

\_\_\_\_\_  
Date

# INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

## MARINE CORPS LOGISTICS BASE ALBANY

2020

### Annual Reviews

**Name and Title of Reviewer**

**Date**

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**PLAN UPDATES TRACKING FORM**

<b>DATE</b>	<b>SECTION/PAGE</b>	<b>COMMENT</b>	<b>REVIEWER</b>

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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 Sikes Act, 16 United States Code (U.S.C.) § 670a *et seq.*, requires 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 Sikes Act amendments require the Secretaries of military departments to “prepare and implement an 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 that installation inappropriate. The primary purpose of this INRMP is to guide the Marine Corps Logistics Base Albany, Georgia, (MCLB Albany or Installation) natural resource management program from 2021 until updated/revised. The U.S Department of the Navy (Navy) has prepared and will implement this INRMP in accordance with the following regulations and guidance documents:

- Sikes Act (16 U.S.C. § 670a *et seq.*), as amended;
- Department of Defense Instruction (DODINST) 4715.03, *Natural Resources Conservation Program* (18 March 2011; incorporating Change 2, 31 August 2018);
- DOD Manual (DODM) 4715.03: *Integrated Natural Resources Management Plan (INRMP) Implementation Manual* (25 November 2013; incorporating Change 2, 31 August 2018);
- Headquarters, U.S. Marine Corps (HQMC) *Environmental Compliance and Protection Program*, MCO 5090.2 (11 June 2018);
- HQMC *Handbook for Preparing, Revising, and Implementing Integrated Natural Resources Management Plans on Marine Corps Installations* (October 2007).

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 INRMP ensures that natural resources conservation measures and military operations on the Installation are integrated and consistent with stewardship and legal requirements through cooperation among DOD, U.S. Fish and Wildlife Service (USFWS), and State fish and wildlife agencies. DOD will annually review the INRMP and determine adjustments needed to keep the INRMP current. Formal reviews of the INRMP as to operation and effect will be completed no less often than every five years to determine whether it meets the requirements of the Sikes Act and contributes to the conservation and restoration of natural resources.

When implemented, this INRMP will replace the MCLB Albany INRMP update that was completed in 2014. There have been substantial changes to the Installation’s natural resources in recent years as a result of extensive destruction caused by two natural disasters—an EF3 tornado



40 in 2017 and Hurricane Michael in 2018. Therefore, this document constitutes a formal revision  
41 rather than a simple update to the INRMP.

### 42 **ES.3 Goals and Objectives of the INRMP**

43 This INRMP describes and implements an ecosystem-based conservation program that: provides  
44 for conservation and rehabilitation of natural resources in a manner consistent with the military  
45 mission; integrates and coordinates all natural resources management activities; provides for  
46 sustainable multipurpose uses of natural resources; and provides public access for use of natural  
47 resources subject to safety and military security considerations. The Installation will apply an  
48 adaptive management approach, which allows flexibility to adjust management as necessary to  
49 accommodate the evolving scientific understanding of the ecosystem.

50 Goals and objectives have been identified for MCLB Albany's INRMP, including 10 Installation-  
51 wide ecosystem management goals and 35 objectives, each of which corresponds to one of the  
52 goals. The objectives developed to implement each goal are related to natural resources issues  
53 facing the Installation. The INRMP goals and objectives for MCLB Albany are defined in Section  
54 1.6, *INRMP Goals and Objectives*. Modifications to the INRMP goals and objectives may be made  
55 as deemed necessary during future reviews.

### 56 **ES.4 Natural Resources Management Areas**

57 To facilitate effective management of MCLB Albany natural resources and to achieve the  
58 Installation-wide goals and objectives, natural resources projects and ongoing management actions  
59 are defined for five natural resources management areas: land; fish and wildlife; forestry; outdoor  
60 recreation management; and integrated ecosystem management and partnering. A program area  
61 includes the primary practices and activities necessary to achieve the long-term goals and  
62 objectives of the INRMP.

63 Land management at the Installation includes protection of land areas with natural resources value;  
64 water resources (including watersheds, floodplains, wetlands, riparian areas, and water quality;  
65 vegetation and habitats); invasive plant and noxious weeds; grounds maintenance, and  
66 landscaping; agricultural outleasings; wildland fire; forestry; and rare, threatened, and endangered  
67 plants.

68 Fish and wildlife management at MCLB Albany includes proactive management of wildlife and  
69 their habitats; fisheries and aquatic species; invasive and nuisance wildlife species; zoonosis  
70 prevention; and rare, threatened, and endangered wildlife species.

71 Forestry management includes a variety of management activities (e.g., timber  
72 harvesting/thinning, longleaf pine [*Pinus palustris*] restoration, prescribed burning) to provide for  
73 sustained yield of high-quality timber products while maintaining the long-term health and vigor  
74 of the forest. The Installation will utilize a multi-use integrated approach to forest management  
75 with a goal of providing sustained timber yield as well as facilitating the protection and  
76 development of other natural resources dependent on the forest communities.

77 Outdoor recreation management at MCLB Albany includes management of fishing and hunting  
78 resources and programs, public access, and educational outreach. Outdoor recreation management  
79 actions include continuing the Installation's outdoor recreation program (including fish stocking

80 activities), retaining fish and wildlife funds obtained at the local level for use by the MCLB Albany  
81 natural resources program, and establishing harvest limits as a result of completion of game species  
82 density surveys.

83 Integrated ecosystems management and partnering includes training of natural resources  
84 personnel, geographic information systems, data integration, access, and reporting; and partnering  
85 with federal and state agencies, universities, and non-governmental organizations. Integrated  
86 ecosystems management actions include providing adequate staffing, equipment, technology and  
87 training for the MCLB Albany natural resources program; and implementing training, education,  
88 and stewardship initiatives. Partnering actions include maintaining interagency cooperation with  
89 federal and state agencies, and development of partnerships to implement wildlife monitoring and  
90 protection programs.

### 91 **ES.5 Physical Environment and Ecosystems**

92 MCLB Albany occupies 3,326 acres of land located in Dougherty County in southwest Georgia,  
93 approximately 5 miles to the southeast of the city of Albany (see Figure 1 in Section 1.1, *INRMP*  
94 *Purpose*). The closest large metropolitan areas are Columbus, Georgia, approximately 90 miles to  
95 the northwest, and Tallahassee, Florida, approximately 95 miles to the south.

96 The Installation lies within the Atlantic Coastal Plain physiographic province which extends  
97 landward from the coast of southern Georgia to North Carolina. This province is characterized by  
98 generally low-lying sedimentary soils, gentle slopes, dense forests, and marsh wetlands  
99 (SOUTHNAVFACENGCOM, 1993). Land uses in the area immediately surrounding the  
100 Installation consist of a mixture of agricultural, commercial, industrial, and residential  
101 development.

102 Within the Installation, three land use zones have been designated. These include  
103 industrial/warehouse (western one-third of the property), administrative (central one-third of the  
104 property), and residential (remaining eastern one-third of the property). Open fields, maintained  
105 fields, managed forests, orchards, ponds, and some wetlands are also found throughout MCLB  
106 Albany, which provide habitat for many wildlife species. To date, some 201 wildlife species  
107 (including 143 birds, 22 reptiles, 19 amphibians and 17 mammals) have been documented on the  
108 Installation. One intermittent stream, Piney Woods Creek, flows through the northeastern most  
109 corner of the base.

### 110 **ES.6 Projects of the INRMP**

111 The projects developed to support the INRMP goals and objectives incorporate sustainable  
112 practices and take advantage of ecosystem management principles, where practicable. The projects  
113 defined for MCLB Albany's natural resources management program help the Commanding  
114 Officer effectively conserve and protect Installation lands and resources to support the military  
115 mission and ensure compliance with applicable environmental regulations. The INRMP projects  
116 that have been identified for implementation during the plan period are listed in Appendix F. Also  
117 included in Appendix F will be one-page descriptions for each project, presently under  
118 development.

119 Funding for implementation of the INRMP will come from the Installation Commander. The  
120 natural resources programs and projects described in this INRMP update are divided into  
121 compliance and stewardship categories to reflect implementation priorities. Funding will be  
122 acquired to implement DOD compliance projects in the timeliest manner possible. Stewardship  
123 projects will be funded through the Installation operations and management budget, and other  
124 funding sources. These other funding sources include but are not limited to partnerships with  
125 federal and state resource agencies, forestry revenues, fishing and hunting revenues, agriculture  
126 outleashes, and Legacy Funds.

### 127 **ES.7 Mission Sustainability**

128 As a component of the Marine Corps' supporting establishment, the MCLB Albany mission is to  
129 provide facilities, infrastructure, and a range of tailored support services enabling supported  
130 commands aboard the Installation to accomplish their assigned missions in support of the  
131 warfighter.

132 The Marine Corps recognizes that preserving and enhancing ecosystem integrity will support  
133 military readiness and sustainability. Over the long term, ecosystem-based management and  
134 natural resources conservation will provide the biodiverse environments required for realistic and  
135 sustainable military training and testing operation. Implementation of the INRMP will primarily  
136 focus on enhancing and sustaining the military mission, but at the same time MCLB Albany will  
137 implement projects designed to enhance and protect the natural resources under their jurisdiction.

### 138 **ES.8 Species Management**

139 The natural resource management actions described in this INRMP update will benefit the plants,  
140 animals, and ecosystems occurring on this Installation. Special attention is given to rare,  
141 threatened, and endangered species and their habitats through management actions discussed in  
142 Section 4, and referenced in Table ES-1, Table ES-2, Table ES-3, Table 3, and Table 4, as well as  
143 included in Appendix F. These actions are long-term measures that provide benefits for terrestrial  
144 and aquatic habitats on the Installation, and enhancement of the natural environment while  
145 promoting mission objectives. Soil conservation and stormwater management actions will control  
146 sediment and pollutant runoff to protect water quality for species such as wading birds, waterfowl,  
147 and fish. Forestry management actions such as prescribed burning, thinning, and reforestation help  
148 to re-establish the imperiled longleaf pine ecosystem and herbaceous low-lying vegetation that  
149 improve conditions for several rare plant species (woodland poppy-mallow [*Callirhoe papaver*],  
150 crestless plume orchid [*Pteroglossaspis ecristata*], and beakrush [*Rhynchospora* sp.]), and provide  
151 habitat and resources for rare, threatened and endangered wildlife species including gopher tortoise  
152 (*Gopherus polyphemus*), eastern diamondback rattlesnake (*Crotalus adamanteus*), eastern tiger  
153 salamander (*Ambystoma tigrinum*), Bachman's sparrow (*Peucaea aestivalis*), northern bobwhite  
154 (*Colinus virginianus*), loggerhead shrike (*Lanius ludovicianus*), and wood stork (*Mycteria  
155 americana*).

156 Actions that will benefit Installation flora and fauna include control of invasive species; grounds  
157 maintenance and landscaping management; internal project planning and agency consultation for  
158 projects that may impact federally listed species; and outdoor education and outreach. Routine  
159 monitoring of migratory birds will provide valuable information on the suite of avian species found  
160 on the Installation and facilitate monitoring of the nine State High Priority Species known to

161 currently occur there: Bachman’s sparrow, northern bobwhite, loggerhead shrike, wood stork, bald  
 162 eagle (*Haliaeetus leucocephalus*), little blue heron (*Egretta caerulea*), rusty blackbird (*Euphagus*  
 163 *carolinus*), prothonotary warbler (*Protonotaria citrea*), grasshopper sparrow (*Ammodramus*  
 164 *savannarum*); and three additional rare bird species, the yellow-crowned night-heron (*Nyctanassa*  
 165 *violacea*), winter wren (*Troglodytes hiemalis*), and least flycatcher (*Empidonax minimus*) (Barbour  
 166 et al. 2013, GDNR 2020a).

167 **Table ES-1. Habitat Management Actions at MCLB Albany.**

Habitat Management Actions	Section
Water Resources	4.1.1
Vegetation and Habitat	4.1.3
Agricultural Outleases	4.1.4
Rare, Threatened, and Endangered Plant Species and Natural Communities	4.1.5
Wildlife Habitat	4.2.1
Migratory Birds	4.2.2
Fish and Aquatic Species	4.2.3
Invasive and Nuisance Wildlife	4.2.5
Rare, Threatened, and Endangered Wildlife Species	4.2.7
General Forestry	4.3
Fire Management	4.3.7

168 In addition, the “Rare, Threatened, and Endangered Wildlife Species” section of this INRMP  
 169 (Section 4.2.2.7) includes additional goals, objectives, strategies, and specific projects for the  
 170 benefit and long-term conservation of RTE species found, or may potentially occur, on the  
 171 Installation. Forty-five (45) animal species and 41 plant species of high priority have the potential  
 172 to occur on the Installation based on their life history, home ranges, and habitat preferences, and  
 173 have been the target of recent biological studies on the Installation (Barbour et al. 2013, GDNR  
 174 2020a), those species include:

175 **Table ES-2. Federal and State Rare, Threatened, and Endangered Species with**  
 176 **Potential Occurrence on MCLB Albany.**

Amphibians and Reptiles	
• Carolina gopher frog	• Eastern diamondback rattlesnake
• Eastern tiger salamander	• Eastern indigo snake
• Frosted flatwoods salamander	• Florida pinesnake
• Reticulated flatwoods salamander	• Southern hognose snake
• Southern dusky salamander	• American alligator
• Striped newt	• Gopher tortoise
• Mimic glass lizard	• Spotted turtle

177

Birds	
• King rail	• Red-cockaded woodpecker
• Black-necked stilt	• Loggerhead shrike
• Wood stork	• Henslow's sparrow
• Swallow-tailed kite	• Bachman's sparrow
• Southeastern American kestrel	• Painted bunting
• Northern bobwhite	• Bald eagle
• Golden eagle	• Least tern
• Golden-winged warbler	• Cerulean warbler
• Least bittern	• Little blue heron
• Nelson's sharp-tailed sparrow	• Whooping crane
• Swainson's warbler	• Black rail
• Tricolored heron	• Yellow-crowned night-heron
• Barn owl	
Mammals	
• Northern yellow bat	• Southeastern pocket gopher
• Little brown myotis	• Southeastern myotis
• Spotted skunk	
Plants	
• Georgia purple foxglove	• Drummond's yellow-eyed grass
• Harper's fimbry	• Harper yellow-eyed grass
• Sandhill angelica	• Florida finger grass
• Wagner spleenwort	• Chapman's fringed orchid
• Purple honeycomb head	• Green-fly orchid
• Velvet sedge	• Southern white fringed orchid
• Godfrey's sedge	• Yellow fringeless orchid
• Florida senna	• Crestless plume orchid
• Elliott croton	• Awned meadowbeauty
• Cream-flowered tick-trefoil	• Spotted beakrush
• Hirst's panic grass	• Solitary beakrush
• Tracy's dew-threads	• Yellow flytrap
• Dwarf witch-alder	• Whitetop pitcherplant
• Michaux orchid	• Hooded pitcherplant
• Narrowleaf water-willow	• Parrot pitcherplant
• Southern bog-button	• American Chaffseed
• Pondberry/Southern spicebush	• Wire-leaf dropseed
• Southern twayblade	• Pan-American balsamscale
• Pond spice	• Swamp buckthorn
• Boykin lobelia	• Canby dropwort
• Hummingbird flower	• Stokes aster
• Trailing milkvine	• Cooley's meadowrue
• Trailing bean-vine	• Relict trillium
• Savanna cowbane	• Virginia Stewartia

Clams	
• Gulf moccasinshell	• Oval pigtoe
• Shinyrayed pocketbook	

179  
 180 Based on biological inventories conducted on the Installation by GDNR between 1990 and 1992  
 181 and in 1995, as well as surveys conducted by ANHP and Auburn University in 2013, two plant  
 182 species and thirteen animals, which are either state or federally listed or identified as species of  
 183 special concern, have been confirmed on the Installation (Barbour et al. 2013, GDNR 1995, MCLB  
 184 2007) and are listed in Table ES-2 and Table ES-3. Crestless plume-orchid is identified as state  
 185 threatened, and beakrush species are considered high priority species, but are not federally listed.  
 186 Six of the fourteen wildlife species documented are federally protected species. The bald eagle is  
 187 protected under the federal *Bald and Golden Eagle Protection Act*; the wood stork is federally  
 188 listed as threatened; the gopher tortoise, eastern diamondback rattlesnake, and monarch butterfly  
 189 are candidate species for federal listing; the American alligator is federally listed as similarity of  
 190 appearance (threatened). Those with additional state status protection are the gopher tortoise and  
 191 bald eagle designated as threatened, and the wood stork as endangered. Further, Bachman’s  
 192 sparrow is listed as rare by the state. The remaining seven species—eastern tiger salamander, little  
 193 blue heron, northern bobwhite, loggerhead shrike, rusty blackbird, prothonotary warbler, and  
 194 grasshopper sparrow—are state High Priority species.

195  
 196 **Table ES-3. Federal and State Listed Species and High Priority Species**  
 197 **Confirmed on MCLB Albany.**

Amphibians and Reptiles	
• Eastern diamondback rattlesnake	• Gopher tortoise
• Eastern tiger salamander	• American alligator
Birds	
• Bachman’s sparrow	• Northern bobwhite
• Little blue heron	• Loggerhead shrike
• Wood stork	• Bald eagle
• Rusty blackbird	• Prothonotary warbler
• Grasshopper sparrow	
Plants	
• Crestless plume orchid	• Beakrush species
Invertebrates	
• Monarch butterfly	

198 **ES.9 INRMP Crosswalk Table**

199 This INRMP has been prepared to comply with the Office of the Under Secretary of Defense  
 200 INRMP format (Office of the Under Secretary of Defense 2006). Table ES-4 provides a cross-  
 201 reference of the recommended format and the corresponding sections of this INRMP update.



202 **Table ES-4. Cross Reference of the Office of the Under Secretary of Defense Integrated**  
 203 **Natural Resources Management Plan (INRMP) Template to the Contents of this INRMP.**

Office of the Secretary of Defense 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	1.0 Introduction
1.a – Purpose	1.1 INRMP Purpose
1.b – Scope	1.2 INRMP Scope
1.c – Goals and Objectives Summary	1.6 INRMP Goals and Objectives
1.d – Responsibilities of Stakeholders	1.7 Roles and Responsibilities 1.7.1 INRMP Funding 1.7.2 INRMP Implementation Responsibilities
1.e – Commitment of Regulatory Agencies	1.7.3 Agency Coordination 1.7.4 Internal Stakeholders 1.7.5 External Stakeholders
1.f – Authority	1.8 Authority
1.g – Stewardship of Compliance Statement	1.7.6 Stewardship and Compliance
1.h – Review and Revision Process	1.4 INRMP Review and Revision Process
1.i – Management Strategies	1.5 Natural Resources Management Strategies and Focus Areas
1.j – Integration with Other Plans	2.2 Integration with Other Plans
Chapter 2 – Current Conditions and Use	2.0 Current Conditions and Use
2.0 – Installation Information	2.1 Installation Information
2.a.1 – Location Statement (concise)	2.1.3 Installation Location, History and Military Mission
2.a.2 – Regional Land Use	2.3.3.3 Regional Land Use
2.a.3 – History and Pre-Military Land Use (abbreviated)	2.1.3.2 Pre-Military Land Use and Installation History
2.a.4 – Military Mission (concise)	2.1.3.3 Military Mission
2.a.5 – Operations and Activities	2.1.3.4 Operations and Activities
2.a.6 – Constraints Map	2.1.2 Natural Resources Constraints and Opportunities, Figure 3
2.a.7 – Opportunities Map	Figure 6, Figure 7, Figure 8, Figure 9, and 2.1.2 Natural Resources Constraints and Opportunities
2.b – General Physical Environment and Ecosystems	2.3 Land Resources, 2.3.1 Climate; 2.3.4 Geology; 2.3.5 Topography; 2.3.6 Soils
2.c – General Biotic Environment	2.3.7 Water Resources; 2.3.8 Terrestrial Vegetation and Communities; 2.4 Fish and Wildlife Resources
2.c.1 – Threatened and Endangered Species and Species of Concern	2.3.10 Sensitive Habitats and Rare Ecosystems; 2.3.11 Rare, Threatened and Endangered Plant Species; and 2.4.6 Rare, Threatened and Endangered Wildlife Species

Office of the Secretary of Defense Recommended INRMP Format	Cross Reference to Required Information in this Document
2.c.2 – Wetlands and Deep-Water Habitats	2.3.7 Water Resources; 2.3.7.3 Wetland Habitats; 2.3.7.4 Aquatic Habitats
2.c.3 – Fauna	2.4 Fish and Wildlife Resources
2.c.4 – Flora	2.3.8 Terrestrial Vegetation and Communities; 2.3.10 Sensitive Habitats and Rare Ecosystems; 2.3.11 Rare, Threatened and Endangered Plant Species; and 2.3.9 Nuisance and Invasive Plant Species
Chapter 3 – Environmental Management Strategy and Mission Sustainability	3.0 Environmental Planning 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 Integration of the Military Mission and Land Use
3.a.2 – Define Impact to the Military Mission	3.1.2 Impacts to the Military Mission
3.a.3 – Describe Relationship to Range Complex Management Plan or Other Operational Area Plans	Not Applicable
3.b – Natural Resources Consultation Requirements (Section 7, EFH)	3.3 Natural Resources Consultation Requirements
3.c – NEPA Compliance	3.4 National Environmental Policy Act Compliance
3.d – Opportunities for Beneficial Partnerships and Collaborative Resource Planning	4.5.4 Partnering with Federal and State Agencies, Universities, and NGOs
3.e – Public Access and Outreach	4.4.2 Public Access; 4.4.3 Educational Outreach
3.e.1 – Public Access and Outdoor Recreation	4.4 Outdoor Recreation Management; 4.4.2 Public Access; 4.4.1 Fishing and Hunting Management
3.e.2 – Public Outreach	4.4.3 Educational Outreach
3.e.3 – Encroachment Partnering	3.5 Encroachment Partnering
3.e.4 – State Comprehensive Wildlife Plans (SCWP) Integration	4.2.1 Wildlife Management and Habitat Enhancement
Chapter 4 – Program Elements	4.0 Natural Resources Management
4.a – Threatened and Endangered Species and Species Benefit, Critical Habitat, Species of Concern Management	4.1.5 Rare, Threatened, and Endangered Plant Species and Natural Communities Management; 4.2.7 Rare, Threatened, and Endangered Wildlife Species Management
4.b – Wetlands and Deep-Water Habitats	4.1.1 Water Resources Management
4.c – Law Enforcement	4.5.2 Natural Resources Law Enforcement
4.d – Fish and Wildlife	4.2 Fish and Wildlife Management
4.e – Forestry	4.3 Forestry Management
4.f – Vegetation	4.1.3 Vegetation and Habitat Management
4.g – Migratory Birds	4.2.2 Migratory Bird Management
4.h – Invasive Species	4.1.3.1 Invasive Plant and Noxious Weed Management; 4.2.5 Invasive and Nuisance Wildlife Management



Office of the Secretary of Defense Recommended INRMP Format	Cross Reference to Required Information in this Document
4.i – Pest Management	4.1.3.1 Invasive Plant and Noxious Weed Management; 4.1.3.2 Grounds Maintenance and Landscaping Management; 4.2.5 Invasive and Nuisance Wildlife Management
4.j – Land Management	4.1 Land Management
4.k – Agricultural Outleasing	4.1.4 Agricultural Outlease Management
4.l – GIS Management, Data Integration, Access, and Reporting	4.5.3 GIS, Data Integration, Access, and Reporting
4.m – Outdoor Recreation	4.4 Outdoor Recreation Management
4.n – Bird Aircraft Strike Hazard	4.2.4 BASH Reduction
4.o – Wildland Fire	4.3.7 Fire Management
4.p – Training of Natural Resource Personnel	4.5.1 Training of Natural Resources Personnel
4.q – Coastal/Marine	4.1.2 Coastal Zone Management
4.r – Floodplains	4.1.1.1 Watershed and Floodplains Management
4.s – Other Leases	4.1.4 Agricultural Outlease Management
Chapter 5 – Implementation	5.0 INRMP Implementation
5.a – Summary of Project Prescription Development Process	5.1 Project Development and Classification
5.b – Achieving No Net Loss	3.2 Achieving No Net Loss
5.c – Use of Cooperative Agreements	4.5.4 Partnering with Federal and State Agencies, Universities, and NGOs
5.d – Funding Process	5.2 Funding Sources
Appendices	
Appendix 1. Acronyms	Appendix A – Acronyms and Abbreviations
Appendix 2. Detailed Natural Resources Prescriptions	4.0 Natural Resources Management; and Appendix F – INRMP Project Data
Appendix 3. List of Projects	Appendix F – INRMP Project Data
Appendix 4. Surveys: Results of Planning Level Surveys	Appendix C –Flora and Fauna Lists; Sections 2.3.9 Nuisance and Invasive Plant Species; 2.3.10 Sensitive Habitats and Rare Ecosystems; 2.3.11 Rare, Threatened and Endangered Plant Species; 2.4 Fish and Wildlife Resources; and 2.4.6 Rare, Threatened and Endangered Wildlife Species
Appendix 5. Research Requirements	Appendix F – INRMP Project Data
Appendix 6. Migratory Bird Management	4.2.2 Migratory Bird Management
Appendix 7. Benefits for Endangered Species	4.1.5 Rare, Threatened, and Endangered Plant Species and Natural Communities; 4.2.7 Rare, Threatened, and Endangered Wildlife Species Management; 4.2.7.3 Other Species of Special Concern
Appendix 8. Critical Habitat	Not applicable

204 Source: Office of the Under Secretary of Defense 2006

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206

207

208

209

## TABLE OF CONTENTS

210	Section	Page
211	1.0 INTRODUCTION .....	1
212	1.1 INRMP Purpose .....	1
213	1.2 INRMP Scope .....	2
214	1.3 INRMP Organization .....	2
215	1.4 INRMP Review and Revision Process .....	3
216	1.5 Natural Resource Management Strategies and Focus Areas .....	4
217	1.6 INRMP Goals and Objectives.....	6
218	1.6.1 Definitions .....	7
219	1.6.2 Goals and Objectives Specific to MCLB Albany.....	7
220	1.7 Roles and Responsibilities .....	10
221	1.7.1 INRMP Funding .....	10
222	1.7.2 INRMP Implementation Responsibilities.....	10
223	1.7.3 Agency Coordination.....	11
224	1.7.4 Internal Stakeholders .....	11
225	1.7.5 External Stakeholders .....	11
226	1.7.6 Stewardship and Compliance .....	14
227	1.7.7 Policies and Regulations.....	14
228	1.8 Authority.....	14
229	2.0 CURRENT CONDITIONS AND USE .....	17
230	2.1 Installation Information .....	17
231	2.1.1 Installation Site Condition .....	17
232	2.1.2 Natural Resources Constraints and Opportunities.....	17
233	2.1.3 Installation Location, History and Military Mission .....	22
234	2.1.3.1 Location.....	22
235	2.1.3.2 Pre-military Land Use and Installation History.....	22
236	2.1.3.3 Military Mission.....	23
237	2.1.3.4 Operations and Activities .....	23
238	2.2 Integration with Other Plans .....	24
239	2.3 Land Resources.....	25
240	2.3.1 Climate.....	25
241	2.3.1.1 Climate Change .....	26
242	2.3.3 Land Use.....	27
243	2.3.3.1 Installation Land Use.....	27
244	2.3.3.2 Agricultural Outleases .....	29
245	2.3.3.3 Regional Land Use .....	29
246	2.3.4 Geology.....	30
247	2.3.4.1 General Geology.....	30
248	2.3.4.2 Surficial Geology.....	30
249	2.3.4.3 Seismicity .....	30
250	2.3.4.4 Petroleum and Minerals.....	30

251	2.3.5	Topography.....	30
252	2.3.6	Soils.....	31
253	2.3.7	Water Resources.....	36
254	2.3.7.1	Floodplains.....	36
255	2.3.7.2	Groundwater.....	36
256	2.3.7.3	Wetland Habitats.....	37
257	2.3.7.4	Aquatic Habitats.....	38
258	2.3.8	Terrestrial Vegetation and Communities.....	42
259	2.3.8.1	Riparian Habitat.....	42
260	2.3.8.2	Upland Habitat.....	42
261	2.3.9	Nuisance and Invasive Plant Species.....	47
262	2.3.10	Sensitive Habitats and Rare Ecosystems.....	48
263	2.3.10.1	Clayhill Longleaf Woodland.....	48
264	2.3.10.2	Limesink Pond/Pond Cypress Pond.....	50
265	2.3.10.3	South Atlantic Willow Oak Flatwoods Forest.....	51
266	2.3.11	Rare, Threatened, and Endangered Plant Species.....	51
267	2.3.12	Conservation Lands.....	52
268	2.4	Fish and Wildlife Resources.....	52
269	2.4.1	Invertebrates.....	52
270	2.4.2	Fish.....	53
271	2.4.3	Amphibians and Reptiles.....	53
272	2.4.4	Birds.....	54
273	2.4.5	Mammals.....	55
274	2.4.6	Rare, Threatened, and Endangered Wildlife Species.....	55
275	2.4.6.1	Bald Eagles.....	58
276	2.4.6.2	Eastern diamondback rattlesnakes.....	58
277	2.4.6.3	Gopher tortoise.....	59
278	2.4.6.4	Wood Stork.....	60
279	2.4.7	Nuisance and Invasive Wildlife Species.....	61
280	3.0	ENVIRONMENTAL PLANNING AND MISSION SUSTAINABILITY.....	63
281	3.1	Supporting Sustainability of the Military Mission and the Natural Environment.....	63
282	3.1.1	Integration of the Military Mission and Land Use.....	63
283	3.1.2	Impacts to the Military Mission.....	63
284	3.1.3	Relationship of Range Complex Management Plan or Other Operation Area	
285		Plan.....	64
286	3.2	Achieving No Net Loss.....	64
287	3.3	Natural Resources Consultation Requirements.....	64
288	3.4	National Environmental Policy Act Compliance.....	65
289	3.5	Encroachment Partnering.....	67
290	4.0	NATURAL RESOURCES MANAGEMENT.....	69
291	4.1	Land Management.....	69
292	4.1.1	Water Resources Management.....	70
293	4.1.1.1	Watershed and Floodplains Management.....	72
294	4.1.1.2	Wetland and Deepwater Habitats Management.....	73

295	4.1.1.3	Riparian Areas Management .....	77
296	4.1.1.4	Water Quality Management.....	78
297	4.1.2	Coastal Zone Management .....	81
298	4.1.3	Vegetation and Habitat Management .....	82
299	4.1.3.1	Invasive Plant and Noxious Weed Management.....	83
300	4.1.3.2	Grounds Maintenance and Landscaping Management.....	85
301	4.1.4	Agricultural Outlease Management.....	88
302	4.1.5	Rare, Threatened, and Endangered Plant Species and Natural Communities	
303		Management.....	90
304	4.2	Fish and Wildlife Management.....	97
305	4.2.1	Wildlife Management and Habitat Enhancement.....	97
306	4.2.2	Migratory Bird Management .....	101
307	4.2.3	Fisheries and Aquatic Species Management .....	105
308	4.2.4	BASH Reduction .....	107
309	4.2.5	Invasive and Nuisance Wildlife Management.....	108
310	4.2.6	Zoonosis Prevention .....	111
311	4.2.7	Rare, Threatened, and Endangered Wildlife Species Management .....	111
312	4.2.7.1	Federally Listed and Candidate Species.....	115
313	4.2.7.2	State Listed Species .....	119
314	4.2.7.3	Other Species of Special Concern (not state or federally protected).....	119
315	4.3	Forestry Management .....	122
316	4.3.1	Forest Inventory.....	124
317	4.3.2	Forest Stands Compartments .....	125
318	4.3.3	GIS Database Development and Maintenance .....	125
319	4.3.4	Management by Forest Cover Type .....	126
320	4.3.5	Forest Protection and Health .....	130
321	4.3.6	Incorporation of the Statewide Wildlife Action Plan .....	131
322	4.3.7	Fire Management.....	133
323	4.4	Outdoor Recreation Management.....	138
324	4.4.1	Fishing and Hunting Management.....	139
325	4.4.2	Public Access.....	146
326	4.4.3	Educational Outreach.....	147
327	4.5	Integrated Ecosystems Management and Partnering .....	149
328	4.5.1	Training of Natural Resources Personnel.....	149
329	4.5.2	Natural Resources Law Enforcement .....	151
330	4.5.3	GIS, Data Integration, Access, and Reporting.....	153
331	4.5.4	Partnering with Federal and State Agencies, Universities, and NGOs.....	155
332	4.5.5	Climate Change Management Strategies.....	158
333	5.0	INRMP IMPLEMENTATION .....	160
334	5.1	Project Development and Classification.....	160
335	5.2	Funding Sources.....	162
336	5.2.1	O&M, MC Funds.....	162

337	5.2.2	The Legacy Resource Management Program.....	163
338	5.2.3	Natural Resources Conservation Compliance Program .....	163
339	5.2.4	Forestry Revenues .....	164
340	5.2.5	Agricultural Outleasing .....	164
341	5.2.6	Fish and Wildlife Fees.....	165
342	5.2.7	Recycling Funds .....	165
343	5.2.8	Strategic Environmental Research and Development Program (SERDP) Funds....	165
344	5.2.9	Non-DOD Funds.....	166
345	5.3	Commitment .....	166
346	6.0	REFERENCES .....	167
347		APPENDICES .....	179

348  
349

## APPENDICES

350	APPENDIX A	ACRONYMS AND ABBREVIATIONS .....	A-1
351	APPENDIX B	APPLICABLE REGULATIONS AND PUBLIC LAWS.....	B-1
352	APPENDIX C	FLORA AND FAUNA SPECIES LISTS .....	C-1
353	APPENDIX D	FACT SHEETS FOR RARE, THREATENED, AND ENDANGERED	
354		SPECIES CONFIRMED TO OCCUR AT MARINE CORPS	
355		LOGISTICS BASE ALBANY.....	D-1
356	APPENDIX E	INTERNET RESOURCES .....	E-1
357	APPENDIX F	INRMP PROJECT DATA .....	F-1
358	APPENDIX G	EXTERNAL STAKEHOLDER CORRESPONDENCE.....	G-1

359  
360  
361  
362

363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378

**LIST OF FIGURES**

Figure 1. Location Map Showing Regional Context..... 19

Figure 2. Installation Map. Marine Corps Logistics Base Albany. Albany, GA. .... 20

Figure 3. Constraints on Mission-Related Activities. Marine Corps Logistics  
Base Albany. Albany, GA. .... 21

Figure 4. Land Use. Marine Corps Logistics Base Albany. Albany, GA. .... 28

Figure 5. Soil Types. Marine Corps Logistics Base Albany. Albany, GA. .... 35

Figure 6. Surface Water and Wetlands. Marine Corps Logistics Base Albany.  
Albany, GA. .... 41

Figure 7. Vegetation Communities. Marine Corps Logistics Base Albany.  
Albany, GA. .... 46

Figure 8. Sensitive Habitats and Rare-Threatened-Endangered Species. Marine  
Corps Logistics Base Albany. Albany, GA. .... 49

Figure 9. Hunting Areas. Marine Corps Logistics Base Albany. Albany, GA. .... 142

379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406

## LIST OF TABLES

Table ES-1.	Habitat Management Actions at MCLB Albany. ....	xiii
Table ES-2.	Federal and State Rare, Threatened, and Endangered Species with Potential Occurrence on MCLB Albany. ....	xiii
Table ES-3.	Federal and State Listed Species and High Priority Species Confirmed on MCLB Albany. ....	xv
Table ES-4.	Cross Reference of the Office of the Under Secretary of Defense Integrated Natural Resources Management Plan (INRMP) Template to the Contents of this INRMP. ....	xvi
Table 1.	Roles and Responsibilities of Stakeholders of Natural Resources on MCLB Albany. ....	12
Table 2.	Soils of Marine Corps Logistics Base Albany. ....	32
Table 3.	Occurrences of Rare, Threatened and Endangered Plants Confirmed on MCLB Albany. ....	52
Table 4.	Rare, Threatened and Endangered Wildlife Confirmed on MCLB Albany. ....	56
Table 5.	Potential Effects from Forest Management Practices on Rare Plant Species Found on MCLB Albany. ....	93
Table 6.	Potential Effects from Forest Management Practices on Longleaf Pine Communities. ....	95
Table 7.	Overview of Potential Forest Management Techniques for Federal and State-listed Wildlife Species of MCLB Albany. ....	117
Table 8.	Stand Ages and Acreage by Pine Species on MCLB Albany. ....	124
Table 9.	Prescribed Burn Data for Marine Corps Logistics Base Albany. ....	136
Table 10.	Hunter Harvest Data. <sup>1</sup> ....	143
Table 11.	Creel Limits ....	144

## 407 1.0 INTRODUCTION

### 408 1.1 INRMP PURPOSE

409 Section 101(a)(1)(B) of the Sikes Act Improvement Act (SAIA or Sikes Act) (16 United States  
410 Code [U.S.C.] §670a-o) requires that each Military Department prepare and implement an  
411 Integrated Natural Resources Management Plan (INRMP) for installations that contain significant  
412 natural resources, unless the Secretary of Defense determines that the absence of significant natural  
413 resources on a particular installation makes preparation of such a plan inappropriate. INRMPs  
414 serve as a planning tool for natural resources managers (NRMs) to conserve and restore an  
415 installation's natural resources in a coordinated manner within the context of the operational  
416 military mission.

417  
418 The primary purpose of this INRMP is to guide the Marine Corps Logistics Base Albany (MCLB  
419 Albany or Installation) natural resources management program from 2021 until updated/revised in  
420 accordance with the following regulations and guidance documents:

- 421 • Sikes Act (16 U.S.C. § 670a *et seq.*), as amended;
- 422 • Department of Defense Instruction (DODINST) 4715.03, Change 2, *Natural Resources*  
423 *Conservation Program* (18 March 2011; incorporating Change 2, 31 August 2018);
- 424 • DOD Manual (DODM) 4715.03, Change 2: *Integrated Natural Resources Management*  
425 *Plan (INRMP) Implementation Manual* (25 November 2013; incorporating Change 2, 31  
426 August 2018);
- 427 • Endangered Species Act (ESA) of 1973 (16 U.S.C. §1531–1544);
- 428 • Headquarters, U.S. Marine Corps (HQMC) *Environmental Compliance and Protection*  
429 *Program*, MCO 5090.2 (11 June 2018);
- 430 • HQMC *Handbook for Preparing, Revising, and Implementing Integrated Natural*  
431 *Resources Management Plans on Marine Corps Installations* (October 2007).

432  
433 Marine Corps installations are required to implement and maintain an integrated program to  
434 manage natural resources under their administration through sustainable management, multiple-  
435 use, protection, and enhancement of natural resources. Maintaining sustainable yield of forest  
436 products and ecosystem integrity are requirements under DODINST 4715.03 and MCO 5090.2.  
437 The primary INRMP user is the MCLB Albany NRM; however, environmental planning personnel  
438 will also find the INRMP useful for determining potential environmental impacts of proposed  
439 actions during environmental reviews. The INRMP provides for integrated management of land,  
440 fish and wildlife, forestry, and outdoor recreation resources. It also identifies the requirements of  
441 relevant natural resource laws and regulations with respect to the military mission and/or natural  
442 resources management actions.

443  
444 In accordance with the Sikes Act and DODINST 4715.03, this INRMP has been prepared in  
445 cooperation with United States Fish and Wildlife Service (USFWS) and Georgia Department of  
446 Natural Resources (GDNR), and must reflect the mutual agreement of those agencies, wherever  
447 practical. When implemented, this INRMP will replace the MCLB Albany INRMP update that  
448 was completed in 2014. There have been substantial changes to the Installation's natural resources



449 in recent years as a result of extensive destruction caused by two natural disasters—an EF3 tornado  
450 in 2017 and Hurricane Michael in 2018. Therefore, this document constitutes a formal revision,  
451 rather than a simple update, to the INRMP. Cooperating agencies were provided an opportunity  
452 to review and discuss the Pre-Final INRMP revision in August 2020. The USFWS did not have  
453 any comments, but a formal letter stating this has not been received to date. Upon receipt, USFWS  
454 letter shall be provided in the Final INRMP (Appendix G). The GDNR had one comment to fix  
455 the spelling of the bird common name bobwhite quail on page 162. An email from GDNR  
456 confirming this one comment is provided in Appendix G.

## 457 **1.2 INRMP SCOPE**

458 The Marine Corps will comply with all applicable laws and regulations related to the conservation  
459 of natural resources in the United States (U.S.) (HQMC 2018). This INRMP covers all  
460 conservation activities for MCLB Albany and establishes procedures to ensure compliance with  
461 applicable environmental laws and regulations. Such activities include management of threatened  
462 and endangered species, forestry operations, agricultural outleases, hunting and fishing, fire  
463 management, soil erosion control, invasive species control, and protection and enhancement of  
464 wetlands and Waters of the U.S. Whereas this INRMP provides the direction for natural resources  
465 management at MCLB Albany, it does not replace or affect any federal laws or state responsibility  
466 and authority for protecting fish and wildlife resources.

467  
468 This INRMP addresses natural resources management on those lands associated with MCLB  
469 Albany that are:

- 470 • Owned by the U.S. and administered by the U.S. Department of the Navy (Navy).
- 471 • Used by the Marine Corps via license, permit, or lease for which the Navy has been  
472 assigned management responsibility.
- 473 • Withdrawn from the public domain for use by the Marine Corps for which the Marine  
474 Corps has been assigned management responsibility.
- 475 • Leased on the installation and occupied by non-Department of Defense (DOD) entities.  
476

## 477 **1.3 INRMP ORGANIZATION**

478 Section 1.0 of the INRMP provides an overview of the INRMP purpose and organization,  
479 including a summary of natural resources management areas covered by each of the programmatic  
480 objectives and natural resources elements that are addressed in this INRMP, and the INRMP goals  
481 and objectives that have been established. Section 2.0 includes information on the Installation  
482 location, history and military mission, as well as information on responsibilities and authority  
483 associated with this INRMP. It also includes details on the existing natural resources, including  
484 species with known and potential occurrence on the Installation, and their current conditions.  
485 Section 3.0 provides information associated with INRMP implementation, including a summary  
486 of supporting sustainability of the military mission and the natural environment, agency  
487 consultation requirements, achieving no net loss, National Environmental Policy Act (NEPA)  
488 requirements, and encroachment partnering. Section 4.0 provides natural resources management  
489 recommendations and project information for the Installation, organized by the five natural  
490 resources management programmatic objectives: (1) land management; (2) fish and wildlife

491 management; (3) forestry management; (4) outdoor recreation management; and (5) integrated  
492 ecosystems management and partnering. Section 5.0 describes aspects of INRMP implementation,  
493 from project development and classification to funding, commitment, and use of cooperative  
494 agreements and partnerships. Section 6.0 includes the list of references cited in this document, and  
495 the INRMP's Appendices A–G follow at the back of the document.

#### 496 **1.4 INRMP REVIEW AND REVISION PROCESS**

497 In accordance with the Sikes Act, DODINST 4715.03, and MCO 5090.2, DOD components, the  
498 USFWS, and the appropriate State fish and wildlife agency must formally review each INRMP for  
499 operation and effect on a regular basis, but *no less often than every five years*, to determine whether  
500 it is implemented pursuant to the Sikes Act and contributes to the conservation and rehabilitation  
501 of natural resources on military installations. The formal review conducted in coordination with  
502 USFWS and State partners shall verify that all environmental compliance projects have been  
503 budgeted for and implemented on schedule; that all required natural resource positions are filled  
504 with trained staff, or are in the process of being filled; that projects and activities identified for the  
505 coming year are included in the INRMP; that all required coordination has been conducted; and  
506 that all significant changes to the installation's mission requirements or its natural resources have  
507 been identified.

508  
509 DOD installations are required to perform informal reviews of their INRMP annually. The annual  
510 reviews provide an opportunity to incorporate changes in accepted environmental conservation  
511 practices and scientific advances associated with evaluation and implementation of natural  
512 resources management. As applicable, the annual review will include documentation of changes  
513 in natural ecosystems or their management, updates to INRMP projects and activities, updates to  
514 species listing status, and details on any changes to the operational mission that may impact natural  
515 resources. Minor revisions to the INRMP should be completed annually to reduce the need for a  
516 more costly and time-consuming update following the formal, not less often than, the five-year  
517 review. Forms to document annual reviews and plan updates are included at the front of this  
518 INRMP and should be used to note changes to the INRMP that will improve natural resources  
519 management. Each entry in this section should reference the plan section and page number that is  
520 being updated to facilitate quick cross-referencing.

521  
522 If USFWS and state partners agree, the completed annual review forms may be used in lieu of a  
523 formal review. Annual reviews should be fully documented each year to provide each installation  
524 the option to utilize their annual review documentation to fulfill the formal review requirement  
525 whenever possible. If results of the formal review determine that the existing INRMP is effective,  
526 the INRMP need not be revised. Any changes to the authorities and guidance documents driving  
527 INRMP requirements would be addressed as appropriate during the annual review or update  
528 process.

529  
530 During the INRMP review process, the DOD Components, USFWS, and appropriate state fish and  
531 wildlife agencies should determine whether it is necessary to update or revise the document.  
532 INRMP updates are usually covered by the original NEPA documentation (usually an  
533 Environmental Assessment [EA]) prepared for the INRMP; however, INRMP modifications will  
534 be reviewed to determine if those modifications are significant. If INRMP modifications are

535 deemed to be not significant, updated actions will be covered by the original NEPA  
536 documentation.

537

538 Circumstances that may suggest that a revision is necessary include: (a) the current INRMP no  
539 longer provides adequately for the conservation and rehabilitation of the natural resources on the  
540 base; (b) the installation mission or physical features have changed significantly; or (c) there are  
541 substantial natural resources effects anticipated from base realignment and closure, such as: a new  
542 species listing, new construction, new training, changes to training type or tempo, or other factors  
543 that were not addressed in the existing INRMP (DODM 4715.03, Change 2). Any of these  
544 activities should be brought to the attention of the USFWS and GDNR during the formal review  
545 process. All such revisions require approval by all parties to the INRMP and will usually call for  
546 a new or supplemental NEPA analysis.

547

548 As is described in further detail in Section 2.3.8, *Terrestrial Vegetation and Communities*, since  
549 the INRMP update in 2014, MCLB Albany has experienced severe damage to its forest resources  
550 as a result of two natural disasters: an EF-3 tornado that struck in 2017, and Hurricane Michael in  
551 2018. Due to the substantial physical and ecological changes incurred to the Installation, this  
552 document constitutes an INRMP revision.

## 553 **1.5 NATURAL RESOURCE MANAGEMENT STRATEGIES AND FOCUS AREAS**

554 Marine Corps policy on natural resources management, as summarized from MCO 5090.2, is to  
555 manage natural resources to support and to be consistent with the installation mission, while  
556 protecting and enhancing those resources for multiple use, sustainable yield, and biological  
557 integrity. Land use practices and decisions must be based on scientifically sound conservation  
558 procedures and techniques, use scientific methods, and use an ecosystem-based management  
559 approach.

560

561 DODINST 4715.03 also requires that INRMPs incorporate the guidance for ecosystem  
562 management of natural resources under the stewardship and control of DOD. In accordance with  
563 this policy, and the U.S. Marine Corps *Handbook for Preparing, Revising, and Implementing*  
564 *Integrated Natural Resources Management Plans on Marine Corps Installations* (HQMC 2007),  
565 the Marine Corps will strive to maintain healthy, contiguous ecosystems on its own lands; where  
566 ecosystem boundaries extend onto adjoining lands, the Marine Corps will strive to work  
567 cooperatively with neighboring landowners to manage these ecosystems. The use of ecosystem  
568 management on military lands supports present and future training and testing requirements while  
569 preserving, improving, and enhancing ecosystem integrity. Over the long-term, this approach  
570 maintains and improves the sustainability and biological diversity of terrestrial and aquatic  
571 ecosystems while supporting sustainable economies, human use, and an environment that supports  
572 recreational use. In accordance with MCO 5090.2 and DODINST 4715.03, ecosystem-based  
573 management on installations will:

574 1) Avoid single-species management and implement an ecosystem-based multiple species  
575 management approach, insofar as that is consistent with the requirements of the ESA.

576 2) Use an adaptive management approach to manage natural resources such as climate  
577 change.

- 578 3) Evaluate and engage in the formation of local or regional partnerships that benefit the goals  
579 and objectives of the INRMP.
- 580 4) Use the best available scientific information in decision-making and adaptive management  
581 techniques in natural resource management.
- 582 5) Foster long-term sustainability of ecosystem services.  
583

584 An ecosystem-based management approach encourages management decisions to be made on the  
585 community or ecosystem level rather than at a single species level. Maintaining or improving the  
586 quality, integrity, and connectivity of the ecosystem benefits both natural communities and  
587 individual species. Efforts to maintain, enhance, and restore natural ecosystems may be the most  
588 appropriate management strategy. In accordance with DODINST 4715.03, biodiversity  
589 conservation on DOD lands and waters should be followed whenever practicable.  
590

591 Management goals and objectives are identified and assessed on a periodic basis to maintain the  
592 function and integrity of MCLB Albany's ecosystems. However, these goals and target objectives  
593 must be adapted as unknown factors arise and change occurs. Adaptive management is an iterative  
594 cycle of planning, monitoring, evaluating, and adjusting management as needed. Periodic reviews  
595 of management goals and practices provide the opportunity to incorporate new science and  
596 information as well as assess the performance of management actions. An ecosystem-based  
597 management approach is applied at MCLB Albany, with management strategies adapted as  
598 needed, to the following focus areas:  
599

#### 600 1. Land Management

- 601 • Water Resources Management
- 602 • Watersheds and Floodplain Management
- 603 • Surface Waters, Groundwater, Wetlands, and Riparian Areas Management
- 604 • Water Quality Management
- 605 • Vegetation and Habitat Management
- 606 • Natural Communities
- 607 • Maintained Land
- 608 • Invasive Plant Species Management
- 609 • Rare Communities and Significant Wildlife Habitat
- 610 • Regional Conservation Lands
- 611 • Agricultural Outleases

#### 612 2. Fish and Wildlife Management

- 613 • General Fish and Wildlife Management
- 614 • Aquatic Species
- 615 • Terrestrial Species
- 616 • Rare, Threatened, and Endangered Species and Special Concern Species  
617 Management
- 618 • Migratory Bird Management
- 619 • Critical Habitat Management for Protected Species
- 620 • Invasive Species and Nuisance Wildlife Management
- 621

- 622
- 623 3. Forestry Management
  - 624 • General Forestry Management
  - 625 • Fire Management
  - 626
- 627 4. Outdoor Recreation Management
  - 628 • Fishing and Hunting Management
  - 629 • Special Natural Areas Management, including Watchable Wildlife Areas
  - 630 • Public Access
  - 631 • Educational Outreach
  - 632
- 633 5. Integrated Ecosystems Management and Partnering
  - 634 • Training of Natural Resources Personnel
  - 635 • Natural Resources Law Enforcement
  - 636 • GIS Management, Data Integration, Access, and Reporting
  - 637 • Staffing and Equipment
  - 638 • Partnerships with Federal and State Agencies, Universities, and NGOs
  - 639

640 This INRMP also includes a review of potential projects to be implemented over the duration of  
641 the plan and has been prepared to accommodate anticipated changes in land use and habitat  
642 management. Projects and actions to achieve INRMP goals with measurable objectives are  
643 described in Section 4.0. Appendix F provides a summary table of INRMP projects, followed by  
644 project details. Annual reviews of the INRMP are required and will be used to assess and review  
645 updates that should be incorporated into the plan, including changes affected by environmental  
646 regulation and/or scientific advancement related to management of natural resources at MCLB  
647 Albany. This INRMP is scheduled to be formally reviewed, revised as necessary, and reapproved  
648 five years after its initial approval; and will incorporate updates to natural resources projects and  
649 activities, and describe any changes to the operational mission.

## 650 **1.6 INRMP GOALS AND OBJECTIVES**

651 This INRMP is a long-term planning document designed to guide the Installation NRM in the  
652 management of natural resources in support of the military mission while protecting and enhancing  
653 Installation resources for multiple use, sustainable yield, and biological integrity. In accordance  
654 with Integrated Natural Resources Management Program (32 CFR Appendix to Part 190), the  
655 Sikes Act, and MCO 5090.2, this plan must provide for the following goals, consistent with  
656 military operations at the Installation:

- 657 • Management of fish and wildlife, land, and forest resources.
- 658 • Identification of fish- and wildlife-oriented recreational use activities and areas.
- 659 • Enhancement or modification of fish and wildlife habitat.
- 660 • Protection, enhancement, and restoration of wetlands where necessary for support of fish,  
661 wildlife, or plants.
- 662 • Integration of, and consistency among, the various activities conducted under the INRMP.

- 663 • Establishment of specific natural resources management goals and objectives, and time  
664 frames for proposed actions.
- 665 • Sustainable use by the public of natural resources to the extent that such use is consistent  
666 with the needs of natural resources management and subject to Installation safety and  
667 security requirements.
- 668 • Enforcement of natural resources laws and regulations.
- 669 • No net loss in the capability of military lands to support the military mission of the  
670 Installation.
- 671 • Review this INRMP and its effects on a regular basis, but no less often than every five  
672 years, with informal annual reviews.

673 The goals and objectives that follow have been defined to address INRMP regulatory requirements  
674 and the Installation-specific needs.  
675  
676

### 677 **1.6.1 Definitions**

678 **Goals:** Goals are general expressions of desired future conditions that represent the long-range  
679 aim of management. For this INRMP, goals are compatible with the military mission of the  
680 Installation and provide conservation and ecosystem management targets and direction.

681 **Objectives:** Objectives are defensible targets or specific components of a goal that enable staff to  
682 measure progress toward meeting that goal. Objectives help focus management activities and  
683 provide a measurement tool for evaluating and communicating results. One or more objectives  
684 may be identified for successfully achieving a specific goal. Objectives are comprised of strategies  
685 and defined actions or projects.  
686  
687

### 688 **1.6.2 Goals and Objectives Specific to MCLB Albany**

689 **Goal 1. Restore, manage, preserve, and/or enhance ecologically significant plant**  
690 **communities, including wetlands.**

691 *Objective 1.1 Assess current native groundcover and develop guidelines for maintaining*  
692 *species diversity and abundance.*

693 *Objective 1.2 Restore native groundcover.*

694 *Objective 1.3 Enhance pollinator habitats by converting non-native landscaped areas to*  
695 *native wildflowers and forbs.*

696 **Goal 2. Assess the impact of invasive species on MCLB Albany, prioritize treatment, and**  
697 **conduct control measures.**

698 *Objective 2.1 Develop protocols for reducing the spread of invasive species.*

699 *Objective 2.2 Identify invasive species infestation locations.*



700 *Objective 2.3 Treat invasive species with appropriate chemical or mechanical means of*  
701 *control that are not harmful to sensitive inhabitants of the ecosystem.*

702 **Goal 3. Rare, Threatened and Endangered Species (RTE) Habitat Management and Surveys.**

703 *Objective 3.1 Identify existing locations of rare, threatened or endangered species.*

704 *Objective 3.2 Conserve and manage RTE species and habitats to promote biodiversity.*

705 **Goal 4. Address issues related to nuisance domestic animals, feral animals, and wildlife**  
706 **aboard MCLB Albany.**

707 *Objective 4.1 Correspond with, utilize and cooperate with state and federal wildlife agencies,*  
708 *local animal control or other organizations on nuisance control activities.*

709 *Objective 4.2 Employ appropriate abatement and/or removal techniques to address nuisance*  
710 *wildlife, feral animal, and domestic animal complaints.*

711 *Objective 4.3 Manage database of MCLB Albany nuisance animal interactions.*

712 **Goal 5. Review pest management at the Installation and ensure utilization of integrated**  
713 **pest management (IPM) techniques.**

714 *Objective 5.1 Perform functions of the Integrated Pest Management Coordinator.*

715 *Objective 5.2 Update Integrated Pest Management Plan.*

716 **Goal 6. Implement a sound forest and fire management program.**

717 *Objective 6.1 Conduct prescribed burns and manage wildfire risk by creating and*  
718 *maintaining firebreaks, reducing fuel loads, and improving wildland-urban*  
719 *interfaces.*

720 *Objective 6.2 Plan and implement a longleaf pine restoration program.*

721 *Objective 6.3 Manage timber in a manner compatible with multiple-use strategies.*

722 *Objective 6.4 Monitor forest health and implement actions to address forest insect, disease*  
723 *or other mortality threats.*

724 *Objective 6.5 Submit Quarterly Forestry Reports.*

725 *Objective 6.6 Update forestry databases, GIS layers, and inventory.*

726 **Goal 7. Support outdoor recreation involving the consumptive or non-consumptive**  
727 **utilization of natural resources.**

728 *Objective 7.1 Manage game populations to provide hunting opportunity consistent with*  
729 *ecological and cultural carrying capacity.*

730 *Objective 7.2 Manage woods, roads, and trails to provide multiple user benefits.*

731 *Objective 7.3 Provide angling opportunity and support game fish populations in Covella*  
732 *Pond, Robinson Pond, Horseshoe Pond, and Indian Lake by maintaining*  
733 *facilities to make this possible.*

734 *Objective 7.4 Work with Marine Corps organizations, NGOs, local clubs, societies, and other*  
735 *organizations, to support opportunities for outdoor recreation.*

736 **Goal 8. Enforce compliance with Federal and State environmental, natural, and cultural**  
737 **resources laws, Marine Corps policies, and other guidelines.**

738 *Objective 8.1 Collect and track data related to violations of environmental, natural, or*  
739 *cultural resource laws (Conservation Law Enforcement Program).*

740 *Objective 8.2 Define clear boundaries for hunting, fishing, and other outdoor recreational*  
741 *areas.*

742 *Objective 8.3 Enforce applicable environmental, natural, and cultural laws in accordance*  
743 *with DODINST 5525.17 (Conservation Law Enforcement Program).*

744 *Objective 8.4 Provide education and training to authorized personnel on MCLB Albany to*  
745 *prevent violation of environmental, natural, and cultural resource laws*  
746 *(Conservation Law Enforcement Program).*

747 *Objective 8.5 Provide training and equipment to the Conservation Law Enforcement Officer*  
748 *to enforce applicable Federal and State laws.*

749 *Objective 8.6 Provide training to Natural and Cultural Resources Manager in MCLB Albany*  
750 *compliance with applicable Federal and State conservation laws.*

751 **Goal 9. Conduct educational outreach activities for natural and cultural resources in**  
752 **partnership with local organizations.**

753 *Objective 9.1 Collaborate with wildlife agencies, universities, colleges, and others to achieve*  
754 *regional conservation goals.*

755 *Objective 9.2 Contribute to news articles, Welcome Aboard Brief, and other media events.*

756 *Objective 9.3 Coordinate Conservation Volunteer Program.*

757 *Objective 9.4 Coordinate National Bowhunters Education Foundation course.*

758 *Objective 9.5 Oversee opening and daily operations of the Natural and Cultural Resources*  
759 *Center and the Indian Lake Boardwalk.*

760 **Goal 10. Provide technical and other support for the completion of the 2021 Integrated**  
761 **Natural Resources Management Plan for MCLB Albany.**

762 *Objective 10.1 Prepare Integrated Natural Resources Management Plan for MCLB Albany*  
763 *2021.*

764  
765 As described in Section 1.5, a process of adaptive management will be used in implementing this  
766 INRMP and modifications may be made if needed to reach the desired goal. For example, a change  
767 may become necessary because of an unforeseeable and large-scale disturbance (e.g., a hurricane  
768 or a drought). An adaptive management approach allows the Installation flexibility to adjust  
769 management as necessary to accommodate the evolving scientific understanding of the ecosystem.  
770



771 Some of the INRMP projects covered by this plan may require some level of construction and/or  
772 ground disturbance; however, these activities are not expected to substantially affect natural  
773 resources. If impacts to sensitive natural resources are expected from implementation of  
774 management actions associated with this INRMP, MCLB Albany will coordinate as early as  
775 possible during the construction planning process with the appropriate resource agencies that have  
776 jurisdictional oversight of the natural resources involved. Section 5.3 of this document describes  
777 agency consultation requirements for potential impacts to federally listed species.

## 778 **1.7 ROLES AND RESPONSIBILITIES**

### 779 **1.7.1 INRMP Funding**

780 In accordance with MCO 5090.2, the MCLB Albany Commanding Officer is responsible for  
781 funding the INRMP and the Natural Resources Program (NRP) by including them in annual  
782 Program Objective Memorandum submittals. Funds may also be sought from other sources.  
783 Potential sources of funding for specific INRMP projects are discussed in Section 6.2.

### 784 **1.7.2 INRMP Implementation Responsibilities**

785 The MCLB Albany Commanding Officer has the primary responsibility for implementing this  
786 INRMP and ensuring compliance with laws associated with implementation of the plan. The  
787 concept of integrated management of natural resources both justifies and requires that internal and  
788 external stakeholders contribute to the development and implementation of the natural resource  
789 recommendations identified in this document and management of natural resources at the  
790 Installation. As such, the Commanding Officer will use available technical assistance as needed,  
791 including NRMs at MCLB Albany and Naval Facilities Engineering Command (NAVFAC) Mid-  
792 Atlantic (MIDLANT), in developing and maintaining an effective, integrated program to protect,  
793 conserve, and utilize natural resources on MCLB Albany properties.

794 Although the Commanding Officer has overall responsibility for the INRMP, the MCLB Albany  
795 NRM is responsible for implementing the INRMP. Additional assistance will be obtained, as  
796 needed, from outside federal and state agencies, including USFWS, U.S. Army Corps of Engineers  
797 (USACE), U.S. Environmental Protection Agency (EPA), Natural Resources Conservation  
798 Service (NRCS), GDNR and NAVFAC. The Marine Corps Community Services (MCCS) is  
799 responsible for developing and coordinating the outdoor recreation and educational program  
800 covered by this INRMP with the NRM.

801  
802 Additionally, the Installation and Environment Division directs, supervises and coordinates the  
803 planning, organizing, staffing and controlling of all facilities engineering. Divisions that are under  
804 the supervision and management of the Installation and Environment Division include the  
805 Environmental Branch, which among other duties directs and coordinates the management and  
806 maintenance of natural resources at MCLB Albany. The Environmental Branch and its Natural  
807 Resources section, as designated by the Commanding Officer, are responsible for the development  
808 and implementation of this INRMP.

809  
810 The NAVFAC MIDLANT is the major command assisting MCLB Albany in developing and  
811 implementing conservation programs, as well as reviewing and providing final signatory approval  
812 for this INRMP.

813 **1.7.3 Agency Coordination**

814 During the planning process for Marine Corps actions and projects that impact sensitive natural  
815 resources, the Marine Corps will coordinate as early as practical with appropriate federal and state  
816 natural resource agencies. When actions or projects are mission essential and/or severely time-  
817 constrained, agency coordination may not occur except as required by laws or regulations for  
818 impacts to wetlands and/or federally threatened or endangered plant and wildlife species. This  
819 INRMP has been prepared to provide guidance on avoiding or minimizing impacts to natural  
820 resources, and to limit disturbance to natural resources located in non-priority mission areas.  
821 Mitigation actions will be coordinated with appropriate regulatory agency for unavoidable natural  
822 resources impacts that result from military mission or INRMP activities.

823 **1.7.4 Internal Stakeholders**

824 The MCLB Albany Commanding Officer and the NRM are directly involved in implementation  
825 of this INRMP, while ensuring successful implementation of the military mission. The MCLB  
826 Albany Commanding Officer is responsible for ensuring that MCLB Albany personnel comply  
827 with the laws and requirements relevant to the conservation and management of natural resources.  
828 The Environmental Branch Head and NRM has the responsibility of ensuring this INRMP is  
829 reviewed annually and updated as necessary to reflect current natural resources conditions, and  
830 formally reviewed and updated every five years as required by the Sikes Act.

831 **1.7.5 External Stakeholders**

832 Stakeholders of MCLB Albany natural resources include federal and state natural resource  
833 agencies, local governments and landowners, civic and conservation groups and the Marine Corps.  
834 For this INRMP, a stakeholder is an individual, group, or agency that has the responsibility or  
835 mandate to preserve and manage natural resources on MCLB Albany, that has a right or privilege  
836 to make use of the natural resources, or that may be affected directly or indirectly by natural  
837 resources management actions conducted on MCLB Albany.

838  
839 State and federal agencies, such as USFWS and GDNR are the primary stakeholders responsible  
840 for natural resources protection and preservation. Other stakeholders, including the MCLB  
841 Environmental Branch, Public Works Office, and contractors working at MCLB Albany, are  
842 responsible for managing access to natural resources for economic and recreational purposes,  
843 and/or with natural resources management and protection. Other stakeholders include non-  
844 governmental organizations (NGOs) and individuals who make use of those natural resources,  
845 such as civilian groups, including residents of the surrounding communities who have access to,  
846 or are affected by, the condition of MCLB Albany natural resources, and private conservation  
847 organizations. Table 1 provides a list of stakeholders currently involved with natural resources  
848 management at MCLB Albany.

849

850  
851

**Table 1. Roles and Responsibilities of Stakeholders of Natural Resources on MCLB Albany.**

Stakeholder	Roles and Responsibilities
<b>Federal, State and Local Agencies</b>	
U.S. Fish and Wildlife Service	USFWS provides signatory agreement concerning the conservation, protection, and management of the fish and wildlife resources presented in the INRMP. USFWS is the primary federal agency for issues regarding fish and wildlife management, as well as the regulatory authority for the Endangered Species Act of 1973 and the Migratory Bird Treaty Act (16 U.S.C. 703-712).
U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)	The NRCS works in cooperation with MCLB Albany to protect and enhance Installation lands by preventing soil erosion, restoring eroded areas, maintaining vegetative cover, protecting watersheds, providing pest management and wildlife habitat management, and reducing impacts downstream both on and off military lands through planned conservation treatments and vegetative surveys.
USDA, U.S. Forest Service (USFS)	The USFS provides technical assistance for control and prevention of forest insect and disease outbreaks.
USDA, Animal and Plant Health Inspection Service (APHIS)	APHIS provides assistance with animal damage control problems.
U.S. Geological Survey (USGS)	The USGS provides assistance with water and wildlife issues.
U.S. Environmental Protection Agency	The EPA provides limited input on wetland delineations and federally listed threatened and endangered species.
State of Georgia Department of Natural Resources (GDNR)	GDNR provides signatory agreement concerning the conservation, protection, and management of the fish and wildlife resources presented in the INRMP. GDNR is the primary state agency in Georgia for issues regarding fish and wildlife management and state listed threatened and endangered species, as well as the regulatory and enforcement authority for hunting, fishing, and trapping. GDNR is also a consulting agency under the U.S. Fish and Wildlife Coordination Act (48 State, 401, as amended; 16 U.S.C. 661 et. seq.).
Georgia Forestry Commission.	The Georgia Forestry Commission provides technical assistance for aerial detection of insect infestations, and personnel support for fire suppression.

Stakeholder	Roles and Responsibilities
Shawnee Tribe	Open communication regarding sites of religious or cultural significance to the Tribe, and potential soil-disturbing activities that rise to the level of an EA or EIS.
Dougherty County*	Adjacent landowner, including County Landfill southeast of Base, and partner on maintenance of the Marine Ditch Canal.
City of Albany*	Adjacent landowner, partner on maintenance of the Marine Ditch Canal, and other water use issues.
<b>Marine Corps and Navy</b>	
Commanding Officer	The Commanding Officer is directly responsible for operating and maintaining MCLB Albany, including the implementation and enforcement of this INRMP.
Installation and Environment Division (I&E)	Supervises and coordinates the planning, organizing, staffing and controlling of all facilities engineering. Branches under the supervision and management of I&E Division include the Public Works Office, Housing, and Environmental Branch, which among other duties directs and coordinates the management and maintenance of natural resources at MCLB Albany. The Environmental Branch and its Natural Resources section are responsible for the development and implementation of this INRMP.
Environmental Branch - Natural Resource Section	Directs and coordinates the management and maintenance of natural resources at MCLB Albany. Responsible for the development and implementation of this INRMP.
Naval Facilities Engineering Southeast Command	Assist MCLB Albany in developing and implementing conservation programs, as well as reviewing and providing final signatory approval for this INRMP.
<b>Non-Governmental Organizations and Individuals</b>	
Contractors	Contractors provide MCLB Albany with technical support for natural resources and environmental management projects. This technical support includes preparation of the INRMP, National Environmental Policy Act (NEPA) analyses and documentation, and cultural and biological resource surveys.

**Note:** Asterisk (\*) denotes adjacent landowner

## 852 **1.7.6 Stewardship and Compliance**

853 Compliance in terms of an INRMP refers to the actions that must be taken in order to abide by the  
854 statutes and regulations applicable to natural resources at the Installation. These are actions that an  
855 installation is legally mandated or obligated to take in order to meet current or recurring natural  
856 and cultural resources conservation management requirements, and for which it *must* obtain  
857 funding. Examples of compliance actions include developing, updating, and revising INRMPS;  
858 conducting biological surveys to determine population status of rare, threatened, and endangered  
859 species; and conducting wetland surveys for planning, monitoring and/or permit condition  
860 requirements. Compliance is essential, so these projects are of the utmost priority.

861 Stewardship is the responsibility to survey, inventory, manage, conserve, protect, and enhance the  
862 natural resources entrusted to one's care in a way that respects the intrinsic value of these resources  
863 and the needs of present and future generations (MCO 5090.2). Installations are required to  
864 recognize and balance environmental stewardship with mission readiness in retaining control and  
865 use of Marine Corps land, sea, and air space for the purpose of maintaining the military mission.  
866 Conscious and active consideration for the inherent value of natural resources must be given in all  
867 Marine Corps plans, actions, and programs (MCO 5090.2). Stewardship projects and programs  
868 enhance an installation's natural resources, promote proactive conservation measures, and support  
869 investments that demonstrate Marine Corps environmental leadership. Examples include  
870 education and public awareness projects, biological surveys or habitat protection for non-listed  
871 species, or management and execution of volunteer and partnership programs. Stewardship is an  
872 important component of the Marine Corps Environmental Program, and, because stewardship  
873 projects can occur on an indefinite time scale, these projects are prioritized after compliance  
874 projects.

## 875 **1.7.7 Policies and Regulations**

876 Appendix B provides a list of all regulations and policies that are applicable to development and  
877 implementation of this INRMP. More detailed summaries of the federal statutes, federal  
878 regulations, executive orders (EOs), and DOD policies are found in MCO 5090.2, Volume 11,  
879 Appendix A. The sections of Chapter 4.0, Natural Resources Management, also lists the relevant  
880 laws, EOs, regulations, directives, and memoranda relevant to each of the goals and objectives  
881 described for natural resources management at MCLB Albany.

## 882 **1.8 AUTHORITY**

883 This INRMP was prepared to comply with the Sikes Act, DODINST 4715.03, and MCO 5090.2.  
884 These regulations require that the Secretary of Defense implement a program to provide for the  
885 conservation and rehabilitation of natural resources on military installations. The Secretaries of  
886 each military department are authorized to carry out the program, consistent with the use of  
887 military installations, to ensure the preparedness of the U.S. Armed Forces. The Secretary of the  
888 Navy implements and maintains a balanced and integrated natural resources management program  
889 for all Navy and U.S. Marine Corps installations.

890  
891 To facilitate the NRP, the Secretary of each military department is directed to prepare and  
892 implement an INRMP for each military installation under the jurisdiction of the Secretary. The  
893 INRMP must be prepared in cooperation with the Secretary of the Interior, acting through the

894 Director of the USFWS, and the head of the appropriate fish and wildlife agencies of the state in  
895 which the military installation is located.

896

897 The Sikes Act acknowledges that the principal use of military installations is to ensure the  
898 preparedness of the U.S. Armed Forces. In accordance with the Sikes Act, the INRMP shall, to the  
899 extent appropriate and applicable, provide for the following:

900 • Implementation of an ecosystem-based program that provides for conservation and  
901 rehabilitation of natural resources consistent with the military mission.

902 • Integration and coordination of all natural resources management activities.

903 • Provision for sustainable multipurpose uses of natural resources.

904 • Provision for public access for use of natural resources subject to safety and military  
905 security considerations.

906 • Enforcement of applicable natural resource laws (including regulations).

907

908 The Sikes Act also requires that the INRMP, and subsequent revisions, be submitted for public  
909 review and comment before being finalized. To satisfy NEPA requirements (HQMC 2018), an EA  
910 is under preparation. To fulfill public review requirements, the Pre-Final Public Review INRMP  
911 revision and Pre-Final EA will be made available for public review with appropriate public  
912 notifications. Comments will be addressed as appropriate in the Final INRMP and EA documents.  
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936 **2.0 CURRENT CONDITIONS AND USE**

937 **2.1 INSTALLATION INFORMATION**

938 MCLB Albany is a DOD Installation that comprises one parcel of approximately 3,326 acres in  
939 Dougherty County, southern Georgia (Figure 1 and Figure 2). This property is strategically located  
940 to meet operational and training requirements of the Navy. The Installation’s primary mission is  
941 to rebuild and repair ground combat and combat support equipment and to support installations on  
942 the East Coast of the United States (U.S.). More broadly, MCLB Albany serves as a military  
943 logistics hub responsible for basing, maintaining, storing, repurposing, and transporting  
944 equipment, vehicles, and systems for all branches of the U.S. military from across the globe—  
945 particularly Marine Corps Logistics Command and its components.

946 **2.1.1 Installation Site Condition**

947 The entire Installation is surrounded by high security fence line, and each entrance is controlled  
948 by gates and manned security access points. Three primary land use areas have been established  
949 within the facility to focus similar activities in designated use areas of the facility:  
950 industrial/warehouse; administrative; and residential (MCLB 2013a). The western one-third of the  
951 Installation is occupied by industrial and warehousing activities. The middle third is primarily for  
952 administrative functions. The remaining eastern one-third is Family Housing (Figure 2).

953 **2.1.2 Natural Resources Constraints and Opportunities**

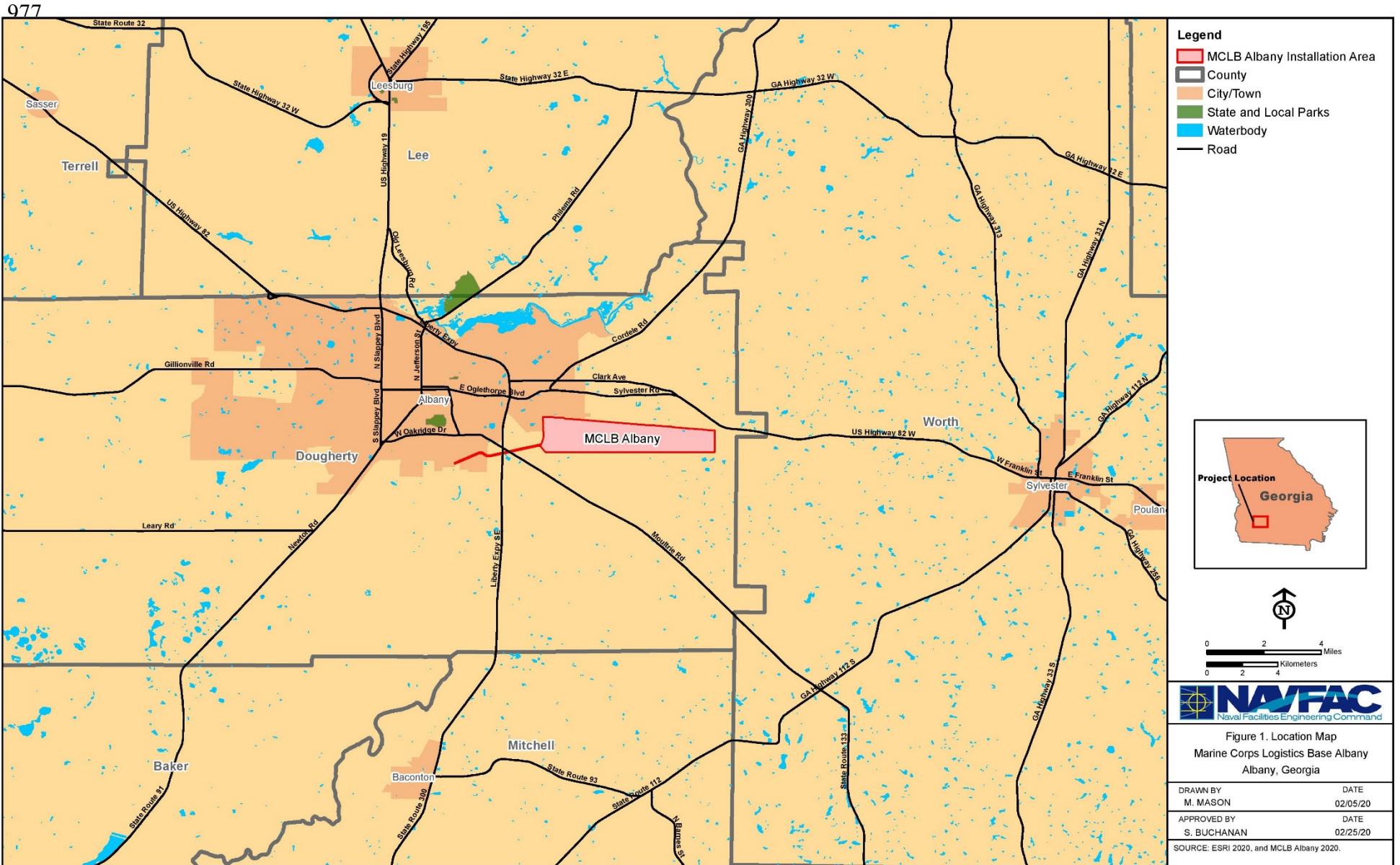
954 MCLB Albany works to ensure that ongoing mission-related activities are confined to currently  
955 existing facilities and roads in order to minimize impacts to existing natural resources. These  
956 natural resources lend support to the mission at MCLB Albany by controlling erosion, reducing  
957 the hazards associated with wildfires, and improving overall operational safety and efficiency. This  
958 helps the Installation to reduce costs associated with repairs to damaged facilities, roads and  
959 fences, and wildfire control.

960  
961 Although natural resources provide benefits to MCLB Albany, their existence also has the  
962 potential to impose constraints on the military mission and on further development activities.  
963 Identified constraints, which for purposes of facilitating planning also include cultural resources,  
964 are shown on Figure 3 and include:

- 965 • Need for conservation and management of federally protected species known to occur at  
966 MCLB Albany.
- 967 • Limitation on new construction in wetlands, floodplains, and riparian buffer areas.
- 968 • Avoidance of historic, cultural, and pre-historic features (e.g., Native American artifacts).
- 969 • Restrictions on future uses of sites where hazardous substances were released (e.g., land  
970 use controls might preclude residential development or recreational use).

971  
972 Outside of these constraints, the remaining areas of MCLB Albany represent opportunity areas  
973 where mission activities would not be restricted by natural resources management issues  
974 (Figure 3). In addition, although they are not mapped, agricultural lands surrounding MCLB

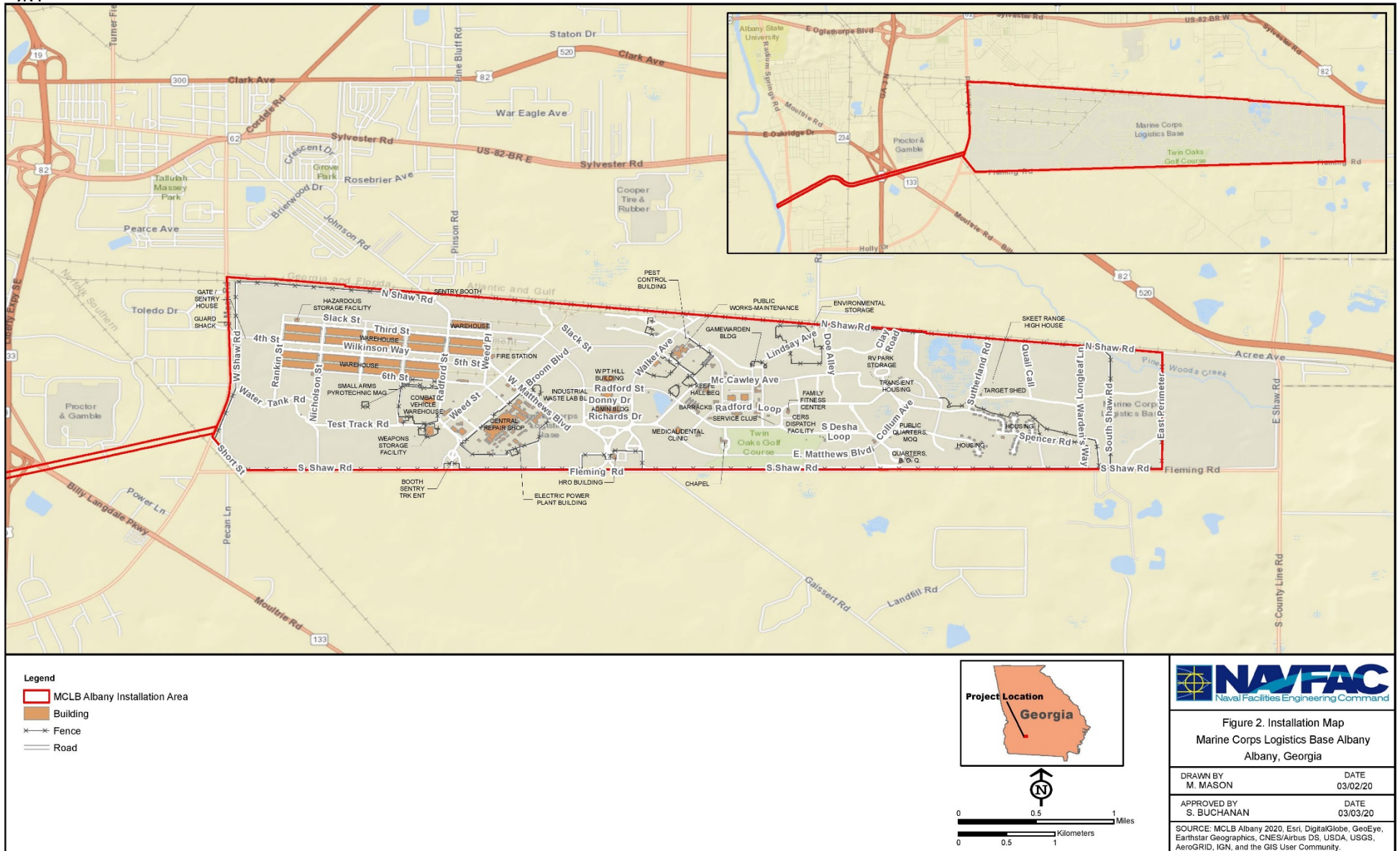
975 Albany serve as encroachment buffers preventing conflict with the public along the base perimeter  
976 (i.e., opportunities); whereas industrial sites along the Installation's boundary pose constraints.





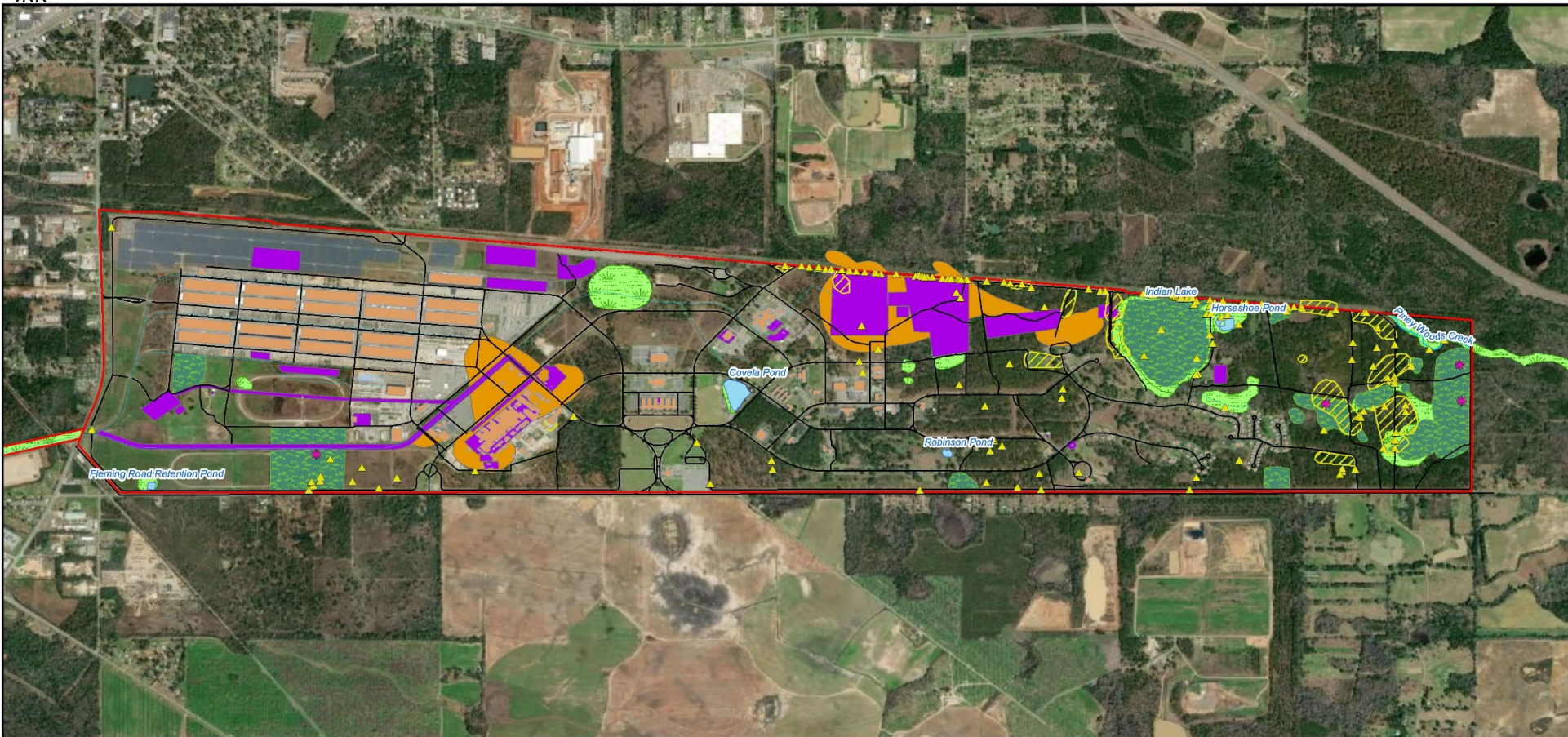
Marine Corps Logistics Base Albany  
Pre-Final Integrated Natural Resources Management Plan

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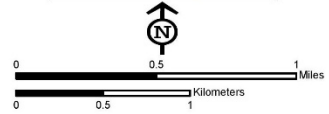


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**Legend**

MCLB Albany Installation Area	Pollution Area
Building	Environmental Remediation Site Area
Road	Rare, Threatened, or Endangered Animal Observation
Stream	Rare Plant Observation
Cultural Resource	
Natural Community	
Waterbody	
Wetland	



**Figure 3. Constraints on Mission-Related Activities Marine Corps Logistics Base Albany Albany, Georgia**

DRAWN BY M. MASON	DATE 08/07/20
APPROVED BY S. BUCHANAN	DATE 08/07/20

SOURCE: MCLB Albany 2020, Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

995 **2.1.3 Installation Location, History and Military Mission**

996 **2.1.3.1 Location**

997 MCLB Albany is in Dougherty County in southwest Georgia, southeast of the city of Albany  
998 (Figure 1). The Installation encompasses one 3,326-acre parcel and does not have any satellite  
999 installations. The majority of Dougherty County is typified by level to gentle relief, with most of  
1000 the area having a slope less than (<) 5 percent. Open fields, maintained fields, managed forests,  
1001 and multiple water bodies are found throughout MCLB Albany. Primary land uses on the  
1002 Installation include industrial/warehouse (western one-third of the property), administrative  
1003 (central one-third of the property), and residential (remaining eastern one-third of the property)  
1004 (Figure 2).

1005 **2.1.3.2 Pre-military Land Use and Installation History**

1006 Southwest Georgia was occupied by Native Americans from the Paleo-Indian to Historic Periods.  
1007 The Creek Indians, who called the area along the riverbank “Thronateeska,” meaning “the place  
1008 where flint is picked up.” established villages in and around Albany from the middle of the  
1009 eighteenth century until the time of the Indian Removal. Fittingly, the river that flows through  
1010 Albany is called the Flint (Albany Convention & Visitors Bureau 2013). Nine potential  
1011 archaeological sites and over 200 artifacts have been unearthed within the Installation (MCLB  
1012 2007). The flint knives, scrapers, drills, agricultural tools, arrowheads and spearheads recovered  
1013 on the Installation are believed to date back some 8,000 to 10,000 years. These items are evidence  
1014 that Native Americans also used the site where MCLB Albany is located as a center of resupply  
1015 or a supply base. Artifacts also indicate that a Native American hunting camp once stood on the  
1016 high ground at the east end of the Installation. The Creek Indians inhabited the Albany area until  
1017 treaties imposed by the United States in the early 1800s ended Native American claims to lands in  
1018 Georgia and opened the area to settlement (Explore Southern History 2013).

1019  
1020 Nelson Tift founded the city of Albany in 1836, hoping that the settlement would prosper as a trade  
1021 center. Albany grew to incorporate several plantations during the mid-1800s. During the Civil War  
1022 (1861–1865), the town served as a key cotton producer for the Confederacy and its factories  
1023 producedhardtack and beef for soldiers. No battles occurred in the city and it rebounded quickly  
1024 following the Civil War (Explore Southern History 2013). Peanuts and pecans became increasingly  
1025 profitable crops following the war. Low water and sandbars in the Flint River made steamboat  
1026 navigation an unreliable method of transportation. Albany eventually focused on developing its  
1027 railroad infrastructure, and by the turn of the 20th century Albany’s Union Station united seven  
1028 railroads and served as many as 55 trains daily. Industry and commerce followed the railroads, and  
1029 an active arts community ensured cultural as well as economic growth.

1030  
1031 The Installation was established on 1 March 1952 when the Marine Corps Depot of Supplies was  
1032 commissioned at the current MCLB Albany site. The location was selected because of its level  
1033 ground, convenient location to the Gulf of Mexico and Atlantic Ocean, and road and rail  
1034 infrastructure. Expansion progressed at a rapid pace until the Installation was large enough to  
1035 adequately supply all Marine Corps activities east of the Rocky Mountains. In 1954, the command  
1036 was renamed the Marine Corps Supply Center. In the 1950s and 1960s, the base managed and  
1037 controlled Marine Corps supply distribution for the eastern half of the United States, and the



1038 Atlantic, Caribbean, and Mediterranean areas. In 1976, support functions such as inventory control  
1039 and financial management were relocated from the closing of the Philadelphia, Pennsylvania  
1040 facility to the Marine Corps Supply Center. The name of the facility in Albany, Georgia was  
1041 renamed to its current designation of Marine Corps Logistics Base Albany in 1978  
1042 (SOUTHNAVFACENGCOM 2006).

### 1043 **2.1.3.3** *Military Mission*

1044 The Installation provides facilities infrastructure and a range of tailored support services that  
1045 enable supported commands aboard the Installation to accomplish their assigned missions in  
1046 support of the warfighter (MCLB 2015a). MCLB Albany is one of seven commands under Marine  
1047 Corps Installations East (headquartered in Camp Lejeune, N.C.). Although the Installation's  
1048 priority is to support Installation tenants, whose focus of effort is the warfighter, the facility is also  
1049 committed to providing service members, civilian-Marines and their families a safe and secure  
1050 environment to work and live. Within capabilities, MCLB Albany also serves as a designated safe  
1051 haven for the Marine Corps and other DOD entities within the Southeast and Gulf Coast regions  
1052 during times of threat and recovery from destructive weather and emergency situations.

### 1053 **2.1.3.4** *Operations and Activities*

1054 MCLB Albany is home to the Marine Corps Logistics Command's Headquarters. Additional units  
1055 within the Installation include:

- 1056 • Critical Asset Rapid Distribution Facility (CARDF) Marine Forces Reserve Supply –  
1057 functions as an intermediate supply point for the acquisition, storage and fielding of  
1058 material, as well as the central control point for the management of the individual combat  
1059 equipment for Marine reserve units.
- 1060 • Defense Distribution Depot Albany, Georgia (DDAG) – the primary source for storage,  
1061 distribution, packaging and preservation of secondary repair parts and expendables such as  
1062 meals ready-to-eat, clothing and textiles, construction materials, electrical supplies, and  
1063 electronic components.
- 1064 • Detachment 2 Supply Company – field, train, and provide qualified supply augmentees  
1065 and capabilities to the active component.
- 1066 • Defense Reutilization and Marketing Service (DRMS/DRMO) – specializes in distributing  
1067 “ready-to-reuse” property.
- 1068 • Department of Defense Humanitarian Assistance-Excess Property Program (HAP-EP) –  
1069 prepares and transports non-lethal excess property to foreign countries.
- 1070 • Joint Equipment Assessment Program for Chemical and Biological Defense (JEAP) –  
1071 responsible for integrated technical and business processes which support the surveillance,  
1072 assessment, life-cycle testing, reuse and disposal of chemical and biological defense  
1073 equipment.
- 1074 • Marine Corps Logistics Command (LOGCOM) – specializes in providing logistics  
1075 solutions for the warfighter, including fielded weapons systems, support services, and  
1076 supplies.



- 1077 • Marine Depot Maintenance Command (MDMC) – a multi-commodity depot maintenance  
1078 center which provides logistics support to ensure continuous readiness and sustainment  
1079 necessary to meet military operational requirements.
- 1080 • Naval Facilities Engineering Command (NAVFAC) – enhances the readiness and  
1081 capabilities of supported commands by safely delivering quality services and construction  
1082 on time and within budget. Responsible for awarding and administering service,  
1083 construction and engineering contracts.
- 1084 • Marine Corps Systems Command (SYSCOM) – outfits Marines with everything they  
1085 drive, shoot and wear to equip and sustain Marine forces with a full spectrum, current, and  
1086 future expeditionary and crisis-response capabilities.

1087  
1088 In addition to the supported military commands and unit operations and facilities, MCLB Albany  
1089 also provides substantial resources to service members, civilian-Marines and their families to  
1090 ensure a safe and secure environment to work and live. Other tenant organizations and resources  
1091 on the Installation include Naval branch health and dental clinics, Naval audit service, Naval  
1092 Criminal Investigative Service (NCIS), Naval Facilities Contracts Office (OICC/ROICC),  
1093 commissary and restaurants, federal union, newspaper production, document automation and  
1094 production facility, bachelor and family housing, pass/ID office and pet/vehicle/weapon registry,  
1095 banks, chapel, convenience store, offices for legal advice, employment and labor relations,  
1096 counseling services, and recreational facilities such as a youth and teen center, theatre, RV park,  
1097 skeet and pistol range, auto repair, fitness center, bowling, and pool hall.

1098  
1099 Outdoor military training activities on the base include day use only small arms firing at the pistol  
1100 range, occasional bivouac training exercises by the Marines and Georgia Army National Guard,  
1101 land navigation training, and refueling training operations by National Guard units 1 to 2 times per  
1102 year. Recreational use of the base includes hunting, fishing, hiking, bird watching, and is generally  
1103 limited to active duty and retired military and civil service personnel, their dependents, and guests.  
1104 However, in the future recreational uses of the Installation may be expanded to include the general  
1105 public.

## 1106 **2.2 INTEGRATION WITH OTHER PLANS**

1107 In addition to this INRMP, there are several other plans and management documents that address  
1108 specific issues of natural resources management at MCLB Albany. These plans are listed below  
1109 and are described, where applicable, in this document:

- 1110 • Burn Plan (MCLB 2019b)
- 1111 • Wildfire Protection Plan (USACE 2010)
- 1112 • Lake and Pond Management Recommendations (MCLB 2012b, MCLB 2013c)
- 1113 • Integrated Pest Management Plan (MCLB 2015b, 2013b)
- 1114 • Forest Management Plan (MCLB 2015c)
- 1115 • Stormwater Management Plan (MCLB 2008)
- 1116 • Integrated Cultural Resources Management Plan (MCLB 2015d)

- 1117 • Encroachment Control Plan Update (MCLB 2016)
- 1118 • State Wildlife Action Plan (SWAP; GDNR 2015)
- 1119 • Landscape management and approved planting list

1120 Although current management activities on the Installation often encompass a broad coverage of  
1121 natural resource areas and issues, many are being performed without specific detailed and long-  
1122 term plans. This INRMP also provides recommendations for development of additional specific  
1123 natural resources plans as identified in Appendix F. Implementation of these plans, once available,  
1124 will be integrated with this INRMP and include:

- 1125 • Indian Lake management
- 1126 • Erosion control plan
- 1127 • Utility right-of-way management
- 1128 • Open area management
- 1129 • Brush pile management
- 1130 • Orchard management
- 1131 • Invasive flora management
- 1132 • Species-specific RTE habitat improvement plans
- 1133 • Migratory bird conservation plan
- 1134 • Nuisance animal control plan
- 1135 • Longleaf pine (*Pinus palustris*) restoration plan

1136

## 1137 **2.3 LAND RESOURCES**

### 1138 **2.3.1 Climate**

1139 An understanding of general climate patterns is important to the planning and success of natural  
1140 resources management and construction activities. Albany, Georgia has a humid subtropical  
1141 climate typical of the southeastern United States, with long, warm summers and short, mild  
1142 winters. The average annual high temperature is 78.3°F, and the average annual low temperature  
1143 is 54.9°F (Western Regional Climate Center 2020); the average temperature in the summer 81°F  
1144 and 50°F in the winter (NOAA 2013). Precipitation occurs throughout the year, with an average  
1145 annual precipitation of 50.01 inches (Western Regional Climate Center 2020). Much of the  
1146 precipitation originates in the Gulf of Mexico, and water-laden air masses pass through the Albany  
1147 region as thunderstorms or along with cold fronts. On average, 26 tornadoes or hurricanes strike  
1148 Georgia in a given year (NOAA 2020). Historically, January and July were the peak months for  
1149 rainfall (NOAA 2013); while July remains the wettest month, the precipitation patterns have  
1150 shifted, and the next two months with greatest precipitation for the period 1891 to 2016 were  
1151 March and August (Western Regional Climate Center 2020). October is typically the driest month  
1152 (NOAA 2013; Western Regional Climate Center 2020). Snowfall is rare, with an annual mean of  
1153 0.1 inches.

1154  
1155 During the 30-year period from 1989–2018, the temperature in southern Georgia has remained  
1156 stable, with average minimum, average maximum, and average mean temperatures changing by  
1157 less than  $\pm 0.5^{\circ}\text{F}$  per decade (NOAA NCDC 2020b). The years 2012, 2017, and 2018 were the  
1158 warmest on record (NOAA NCDC 2020a). In some areas of the region, the average minimum  
1159 temperature during summer and autumn are increasing by  $0.5^{\circ}\text{F}$  to  $1.0^{\circ}\text{F}$  per decade (NOAA  
1160 NCDC 2020b), indicating a trend toward seasonally warmer nights. During the same 30-year  
1161 period, southwestern Georgia has trended toward drier autumns, receiving an average of 0.5 to 2.0  
1162 inches fewer of precipitation per decade, countered by wetter winters, with 0.5 to 1.5 inches more  
1163 of precipitation per decade (NOAA NCDC 2020b).

### 1164 *2.3.1.1 Climate Change*

1165 DODI 4715.03 requires the Navy and Marine Corps to consider climate change in the development  
1166 of INRMPs to help mitigate impacts on military installations. Impacts that must be considered  
1167 include shifts in species' ranges and distributions, changes in phenology, rising sea levels, and  
1168 variations in ecological processes such as drought, fire, and flood (DOD 2011a). Assessing the  
1169 impacts of climate change is best approached by identifying an environmental baseline for the  
1170 future that considers the differences in landscape form and function caused by climate change and  
1171 other stressors on the landscape (Commander, Navy Installations Command [CNIC] 2012).  
1172

1173 Climate change is causing rising annual average temperatures, altering precipitation patterns, and  
1174 increasing hurricane intensity, a rise in heat-related illness, declines in forest growth, and changing  
1175 to ecological systems and species distribution. The Marine Corps recognizes that climate change  
1176 will impact DOD's strategic, infrastructure, and natural resources considerations at MCLB Albany  
1177 for the foreseeable future. The frequent and intense heat extremes projected to occur with climate  
1178 change may limit outdoor training, strain personnel efficiency, degrade air quality through elevated  
1179 ozone caused by higher temperature, and strain electricity supply due to the increased demand on  
1180 the grid for cooling. Changes in precipitation patterns likely will reduce water supply, increase the  
1181 frequency and intensity of wildfires, damage local ecosystems, and cause shifts in species  
1182 composition or geographic range.

1183  
1184 According to the 2015 Georgia SWAP's *Climate Change Adaptation Technical Team Report*  
1185 (Pfaffko and Ambrose 2015), projected climate changes in Georgia by 2070 that are likely to  
1186 impact wildlife include:

- 1187 • Increased average day and night temperature with extreme maximum of 40–70 days above  
1188  $95^{\circ}\text{F}$ ;
- 1189 • Greater rates of evaporation and evapotranspiration;
- 1190 • Uncertain frequency changes in precipitation but with greater flood amplitude and deeper  
1191 and longer droughts;
- 1192 • Fewer but larger hurricanes and major storms; and
- 1193 • Sea level rise.

1194 **2.3.3 Land Use**

1195 **2.3.3.1 Installation Land Use**

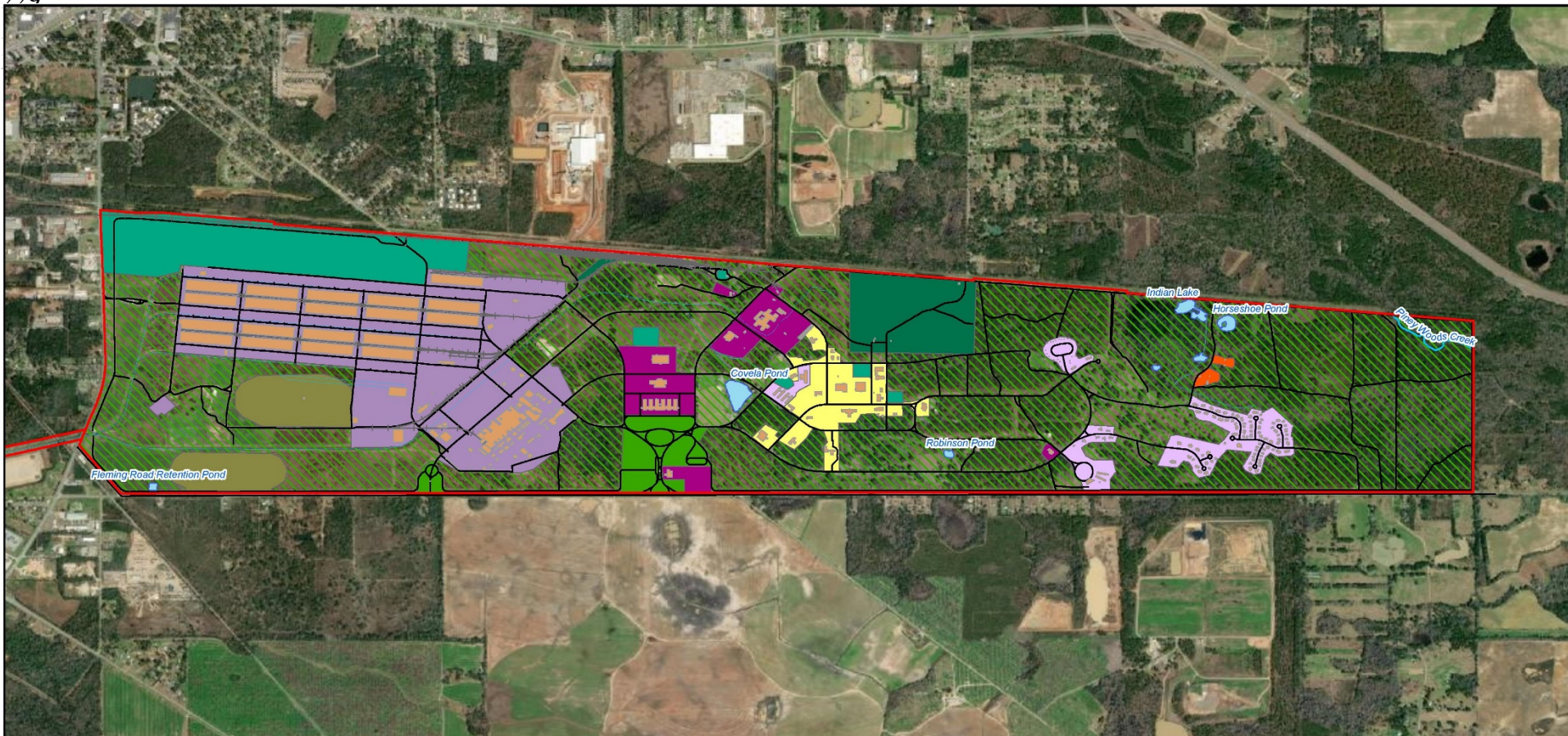
1196 MCLB Albany occupies 3,326 acres in Dougherty County, Georgia and is located approximately  
1197 five miles southeast of the city of Albany Central Business District (CBD). The Installation is not  
1198 currently threatened by adjacent land use encroachment (MCLB 2009b) and there are no  
1199 encroachment partnering agreements in place.

1200  
1201 Within the facility, three primary land use areas have been established to focus similar activities  
1202 in designated use areas of the facility: industrial/warehouse; administrative; and residential  
1203 (MCLB 2013a). Each land use zone is further described below, and specific land uses are shown  
1204 on Figure 4:

- 1205
- 1206 • **Industrial/Warehouse Area.** The industrial/warehouse area is generally located in the  
1207 western portion of the Installation and contains warehouses; the railway shipping and  
1208 receiving areas; and facilities serving Installation utilities. Access to this area from off base  
1209 is provided via the Industrial Gate, which is located off Fleming Road to the south and west  
1210 of the Main Gate. The major tenant for MCLB Albany, the Marine Depot Maintenance  
1211 Command (MDMC), is located in the administrative area and is responsible for repair  
1212 maintenance and testing of all Marine Corps vehicular equipment on the East Coast  
1213 (MCLB 2013a). This area also includes one agricultural outlease area (considered open  
1214 space) which is currently managed for the production of pecans.  
1215
  - 1216 • **Administrative Area.** The administrative area is located generally in the center portion of  
1217 the facility and accessed via the Main Gate off Fleming Road in the south-central part of  
1218 the Installation. Most of the central portion of the base has been developed with buildings,  
1219 roads, parking lots, and lawns. The central and western portions of the base contain an  
1220 extensive drainage system which has lowered the water table and dried out much of what  
1221 may have originally been wetland habitat in these portions of the base (Barbour et al. 2013).  
1222 This area contains all the facilities necessary to meet the administrative and community  
1223 support needs of MCLB Albany. The administrative area also includes public works  
1224 facilities; morale, welfare, and recreation facilities; bachelor enlisted quarters; and  
1225 recreational areas (MCLB 2013a). The administrative area plays a dual role in that it serves  
1226 the administrative functions of the Installation during daylight hours, and it serves as a  
1227 transition zone between two incompatible land uses, industrial and residential  
1228 (SOUTHNAVFACENGCOM 2006).



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Legend		Land Use	
	MCLB Albany Installation Area		Administrative
	Building		Community Support
	Waterbody		Industrial
	Railroad		Environmental Restoration
	Road		Open Land
	Stream		Outdoor Recreation
			Range
			Residential
			Research and Development
			Energy

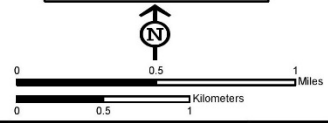


Figure 4. Land Use  
 Marine Corps Logistics Base Albany  
 Albany, Georgia

DRAWN BY M. MASON	DATE 02/05/20
APPROVED BY S. BUCHANAN	DATE 02/25/20
SOURCE: MCLB Albany 2020, Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.	

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- **Residential Area.** The residential area is located on the eastern portion of the Installation and includes Hill Village Family Housing Area (single family housing units), Indian Lake Wildlife Refuge which is located adjacent to and north of the housing area, a golf driving range, and an inactive golf course. Between 2007 and 2009, 250 housing units were demolished. During that time period, 110 new units were built. The open area footprint of the former units will be managed primarily for wildlife habitat through a combination of reforestation and restoration (MCLB 2012a). A small arms range is located northeast of the housing area. Access to the residential area is from the East Matthews Boulevard, through the administrative area from the Main Gate (MCLB 2013a).

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Although the majority of the land within Installation boundaries has been altered significantly by past agricultural use and the construction of Installation infrastructure, large tracts of open space throughout the Installation serve as buffer zones that interconnect the three land use areas, as well as buffer zones between the Installation and the surrounding off-base area. Open space includes approximately 1,452 acres of upland and wetland forest, the majority of which is planted or natural stands of pine, predominantly slash pine (*Pinus elliottii*) with a few smaller areas of remnant longleaf pine, 185 acres of orchard, and 802 acres of open land (CZR Incorporated 1996, Barbour et al. 2013) located predominantly in the eastern half of the Installation (Figure 4).

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### 2.3.3.2 *Agricultural Outleases*

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From 2011 to 2014, MCLB Albany had approximately 140 acres of pecan orchard in an agricultural outlease held by Turtle Shoals LLC. The annual lease fee offset the costs of maintaining the pecan grove, while providing low-cost opportunities for local farmers to produce crops. The lease eventually became commercially unviable. Since that time, most of the pecan orchard has been converted to other habitat types planted with native species. The 7.5 acres of remaining pecan orchard will be maintained for wildlife habitat and to provide for recreational nut production. There are currently no plans to outlease any of MCLB Albany's lands.

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### 2.3.3.3 *Regional Land Use*

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The Installation lies within the Atlantic Coastal Plain physiographic province which extends landward from the coast of southern Georgia to North Carolina, and within the Dougherty Plain subdivision of the Southeastern Plains ecoregion (Barbour et al. 2013). The Southeastern Plains ecoregion covers approximately 16,270,450 acres in middle and southwest Georgia. The Dougherty Plain subdivision is mostly flat to gently rolling and influenced by limestone near the surface of the soil. The karst topography contains numerous sinkholes and springs, with many shallow, flat-bottomed depressions (Grady ponds and limesink ponds) scattered throughout the region (GNDR 2005). Overall, the region is characterized by broad, flat uplands, numerous geographically isolated wetlands, and few, but deeply incised streams. The Dougherty Plain subdivision is the largest ecoregion in Georgia. However, it has the lowest percentage of lands in permanent protected conservation status (2.6 percent) (GDNR 2005).

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The predominant land uses surrounding the Installation include agricultural, silvicultural, and low-density residential (MCLB 2013a, SOUTHNAVFACENGCOM 2006). Row crops such as cotton, peanuts, and pecans, pasture, and both natural and planted pine forests are common. Land use north of MCLB Albany is predominantly agricultural with scattered low-density residential,



1275 industrial, and linear commercial development. Areas east and south of the Installation is also  
1276 mainly agricultural, with some forested areas and low-density residential areas along major  
1277 roadways. A large pecan grove is located just across Fleming Road from the Installation to the  
1278 south. Land use west of the Installation is industrial, with scattered low-density residential  
1279 development. High density residential and industrial lands are concentrated in the vicinity of  
1280 Albany, approximately 5 miles to the northwest of the Installation.

## 1281 **2.3.4 Geology**

### 1282 **2.3.4.1 General Geology**

1283 The Installation is located in the Dougherty Plain District of the Atlantic Coastal Plain  
1284 physiographic province (MCLB 2007). The regional geology is characterized by alternating layers  
1285 of sand, clay, sandstone, dolomite, and limestone that extend to a depth of over 5,000 feet below  
1286 the land surface. The flat to gently rolling topography of the area is characterized by numerous  
1287 sinkholes and associated marshes and ponds.

### 1288 **2.3.4.2 Surficial Geology**

1289 Undifferentiated sedimentary deposits of Quaternary (1.8 million years ago to present) age overlie  
1290 the Ocala and Suwannee Limestone formations at MCLB Albany. The Quaternary deposits consist  
1291 of interbedded layers of fine to coarse sands and clays (MCLB 2007).

### 1292 **2.3.4.3 Seismicity**

1293 MCLB Albany is located in earthquake Hazard Zone 1. Earthquake Hazard Zone 4 represents areas  
1294 with the highest potential of risk for damage or loss of life associated with earthquakes and Hazard  
1295 Zone 1 is assigned to areas with the least potential. In accordance with the Earthquake Hazards  
1296 Reduction Act of 1977, federally owned or leased buildings are required to be in compliance with  
1297 federally established standards for the reduction of seismic hazards. The Naval Facilities  
1298 Engineering Command's (NAVFACENGCOM) Earthquake Safety Program investigates facilities  
1299 located in Seismic Zones 3 and 4 and essential facilities located in Zone 2. The program also  
1300 identifies buildings that are vulnerable to serious potential damage from the maximum potential  
1301 earthquakes at Navy and Marine Corps sites. No seismically inadequate structures have been  
1302 identified at the Installation (SOUTHNAVFACENGCOM 2006).

### 1303 **2.3.4.4 Petroleum and Minerals**

1304 There are no petroleum or mineral resources extracted or produced at MCLB Albany.

## 1305 **2.3.5 Topography**

1306 Topography at the Installation is characterized as flat to gently rolling. Elevations range from  
1307 approximately 195 feet National Geodetic Vertical Datum (NGVD) to 275 feet NGVD. Higher  
1308 elevations occur in the central section of the east half of the base. Elevations decrease to the east  
1309 and west of the divide, with the lowest elevations occurring in the western half of the base (MCLB  
1310 2007).



1311 **2.3.6 Soils**

1312 Based on the Soil Survey of Dougherty County, compiled by the USDA, there are 24 soil mapping  
1313 units occurring on the base, as shown in Figure 5 (MCLB 2013a, USDA 2012). Table 2 lists the  
1314 soil mapping units and provides general characteristics of the soil series or soil complexes.  
1315 Drainage characteristics, textural characteristics, landscape position, and some potential  
1316 limitations associated with the mapping units are provided.

1317  
1318 Mapping units that are designated as hydric or have inclusions that are hydric are also indicated in  
1319 Table 2. Hydric soils are soils that are saturated, flooded, or ponded long enough during the  
1320 growing season to develop anaerobic (oxygen-deficient) conditions in their upper part. Anaerobic  
1321 soil conditions are conducive to the establishment of vegetation that is adapted for growth under  
1322 oxygen-deficient conditions and is typically found in wetlands (hydrophytic vegetation). Areas on  
1323 MCLB Albany where hydric soils have been mapped are typically associated with the general  
1324 location of wetlands on the Installation.

1325  
1326 Figure 5 and Table 2 provide a good general characterization of soil conditions on MCLB Albany  
1327 and are useful tools in determining use and management of the resource. Where proposed activities  
1328 will directly affect soils, or the viability of a proposed use is dependent on soil conditions, on-site  
1329 soil characterization should be conducted.

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 1333

**Table 2. Soils of Marine Corps Logistics Base Albany.**

Soil Series	Map Unit	Texture/Parent Material	Drainage Class	Hydric	Limitations	Landscape Position
Alluvial land, wet	Avp	Surface: SL-LS-S subsoil: SC-SCL	Poorly drained	Yes	Wetness	Narrow strips along small streams
Bladen loam	Bia	Surface: L subsoil: C-SC	Poorly drained	Yes	Wetness; occasional flooding	Nearly level stream terraces
Carnegie sandy loam, 2–5 percent slopes, eroded	CoB2	Surface: L subsoil: C-SC	Well drained	No	Severe erosion hazard	Uplands
Carnegie sandy loam, 5–8 percent slopes, eroded	CoC2	Surface: SL subsoil: SCL-CL	Well drained	No	Severe erosion hazard	Uplands
Dune land	DsL	Surface: S-CS subsoil: CS	Excessively drained	No	Low fertility; very rapid permeability; low water capacity	Gently rolling dunes
Eustis loamy sand, 0–5 percent slopes	EqB	Surface: LS subsoil: LS	Somewhat excessively drained	No	Droughty	Level to gently rolling landscapes along the Flint River and Coolewahee Creek
Flint fine sandy loam, 0–2 percent slopes	FrA	Surface: FSL subsoil: C	Moderately well drained	No	Wetness; occasional flooding	Stream terraces
Grady clay loam	Gcl	Surface: muck-variable textures subsoil: C	Poorly drained-very poorly drained	Yes	Wetness; ponding	Ponded depressions
Grady soils	Grd	Surface: variable texture subsoil: C	Poorly drained-very poorly drained	Yes	Wetness; ponding	Ponded depressions

Soil Series	Map Unit	Texture/Parent Material	Drainage Class	Hydric	Limitations	Landscape Position
Irvington sandy loam, 0–2 percent slopes	IgA	Surface: SL subsoil: SCL	Moderately well drained	No	Wetness; flooding	Uplands
Izagora-Dunbar loamy fine sand	IzA	Izagora surface: LFS-SL subsoil: SCL Dunbar surface: LS-L subsoil: SC-sic	Izagora moderately well drained Dunbar Somewhat poorly drained	Izagora no Dunbar hydric inclusions	Wetness; flooding	Upland flats and nearly level terraces along larger streams
Local alluvial land	LcM	Surface: sil-SL subsoil: SL-SCL	Moderately well drained	No	Frequently flooded in winter	Small depressions with slightly concave sides
Lucy loamy sand, 2-5 percent slopes	LMB	Surface: LS subsoil: SCL	Well drained	No	Slight erosion hazard; slightly droughty	Level to gently sloping landscapes
Lakeland sand, 0-5 percent slopes	LpB	Surface: loose S subsoil: loose S	Excessively drained	No	Slight erosion hazard	Level to gently sloping landscapes
Lynchburg sandy loam, 0–2 percent slopes	LtA	Surface: SL subsoil: SCL	Somewhat poorly drained	Hydric inclusions	Wetness; flooding	Level or nearly level uplands
Norfolk loamy sand, 0–2 percent slopes	NhA	Surface: LS-SL subsoil: SCL	Well drained	No	–	Uplands
Ocilla loamy sand, 0–2 percent slopes	OhA	Surface: LS subsoil: LS-SL-SCL	Somewhat poorly drained	Hydric inclusions	Wetness	Nearly level to slightly depressional areas on uplands
Orangeburg loamy sand, 0–2 percent slopes	OeA	Surface: LS-SL subsoil: SCL	Well drained	No	–	Uplands
Orangeburg loamy sand, 2–5 percent slopes	OeB	Surface: LS-SL subsoil: SCL	Well drained	No	Moderate erosion hazard	Uplands

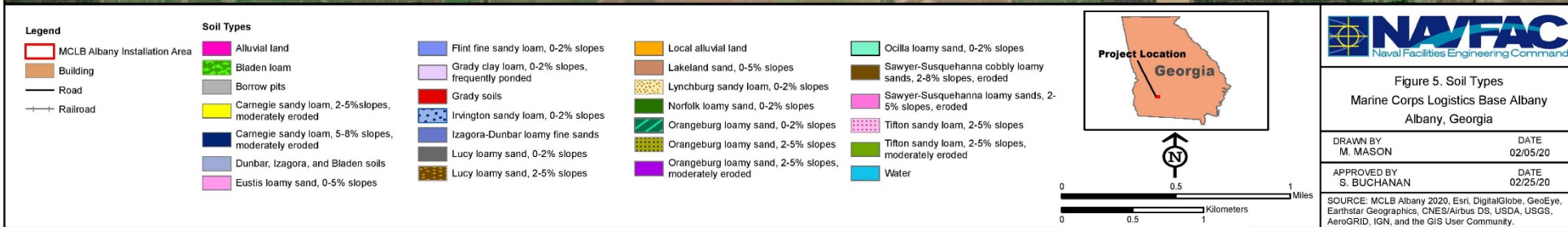
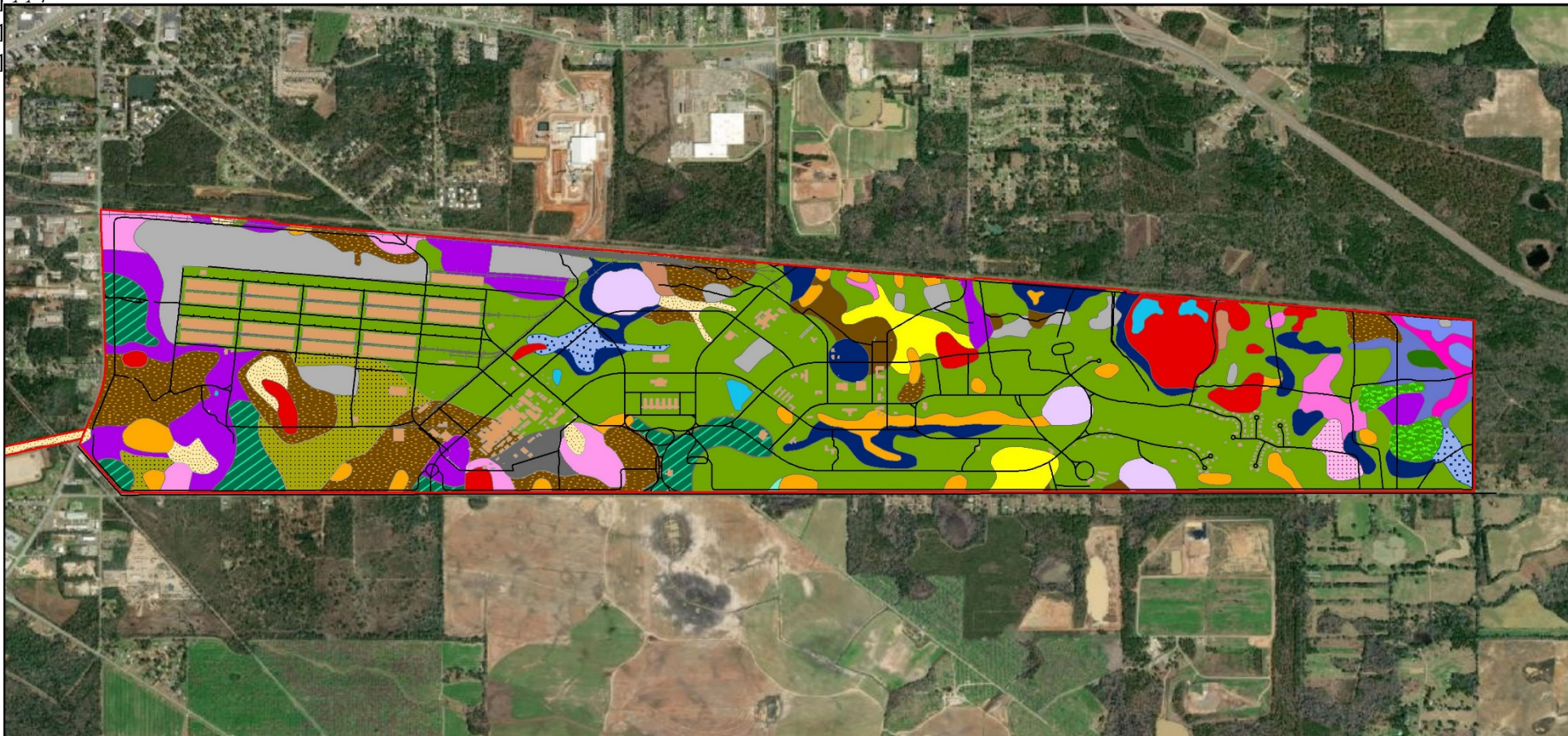
Soil Series	Map Unit	Texture/Parent Material	Drainage Class	Hydric	Limitations	Landscape Position
Orangeburg loamy sand, 2–5 percent slopes, eroded	OeB2	Surface: LS subsoil: SCL	Well drained	No	Moderate erosion hazard	Uplands
Sawyer-Susquehann a cobbly loamy sand, 2–8 percent slopes, eroded	SSC2	Sawyer surface: LS subsurface: SC-plastic C Susquehanna surface: LS subsurface: plastic C	Sawyer moderately well drained Susquehanna somewhat poorly drained	No	Moderate to severe erosion hazard	Broad ridges
Soil Series	Map Unit	Texture/ parent material	Drainage class	Hydric	Limitations	Landscape position
Sawyer-Susquehann a loamy sands, 2–5 percent slopes, eroded	SUB2	Sawyer surface: LS subsurface: SC-plastic C Susquehanna surface: LS subsurface: plastic C	Sawyer moderately well drained Susquehanna somewhat poorly drained	No	Moderate to severe erosion hazard	Broad ridges
Tifton sandy loam, 2–5 percent slopes	TuB	Surface: SL subsoil: SCL-SC	Well drained	No	–	Uplands
Tifton sandy loam, 2–5 percent slopes, eroded	TuB2	Surface: SL subsoil: SCL-SC	Well drained	No	–	Uplands

Notes: L = Loam S = Sand CS = Coarse sand SL = Sandy loam Source: USDA, 1968. LS = Loamy sand FSL = Fine sandy loam LFS = Loamy fine sand SiL = Silt loam SCL = Sandy clay loam CL = Clay loam SC = Sandy clay SiC = Silty clay C = Clay

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1340 **2.3.7 Water Resources**

1341 The major uses of Installation water resources are training, recreation, and aquatic habitat. The  
1342 water resources of MCLB Albany can be divided into three main categories: groundwater, surface  
1343 water, and wetlands. Each has its own physical and chemical components, which in turn regulate  
1344 the aquatic flora and fauna that comprise the biological communities. The following discussion  
1345 describes the existing water resources at MCLB Albany.

1346 **2.3.7.1 Floodplains**

1347 Most of the floodplains at MCLB Albany are relatively minor and are associated with small  
1348 depressional features that fill during storm events. The largest floodplain on the base is associated  
1349 with the large depressional area around Indian Lake (BEA 1998). There are no Federal Emergency  
1350 Management Agency (FEMA) designated Flood Hazard Zones on the Installation (FEMA 2013).  
1351 Although not within a floodplain, flooding has been an issue at several locations in the east section  
1352 of the Installation. The source of the flooding is believed to be due to inlets that are directing flow  
1353 onto the base from offsite areas (MCLB 2012a).

1354 **2.3.7.2 Groundwater**

1355 Aquifers in the Coastal Plain Province of Georgia consist generally of alternating units of clay,  
1356 sandstone, dolomite, and limestone. Confining units between the aquifers are mostly silt and clay.  
1357 The complex interbedded clastic rocks and sediments of the Coastal Plain aquifers range in age  
1358 from Quaternary to Cretaceous. Because of gradational changes in hydrologic properties, aquifer  
1359 and stratigraphic boundaries are not always coincident (USGS 1999). The surficial aquifer system  
1360 in the Coastal Plain is a shallow, mostly unconfined water table aquifer consisting of cross-bedded  
1361 sand, gravel, and clay with undifferentiated alluvium near rivers. Isolated domestic wells withdraw  
1362 water from the surficial aquifer system.

1363  
1364 The Floridan Aquifer System, one of the most productive systems worldwide, underlies about  
1365 100,000 square miles in Florida, Alabama, southern Georgia, and southern South Carolina. The  
1366 Floridan aquifer system is comprised of a thick sequence of carbonate rocks that are of Tertiary  
1367 age and are hydraulically connected in varying degrees. The Ocala Limestone, which underlies  
1368 MCLB Albany, is one of the thickest and most productive formations that crops out in the  
1369 Dougherty Plain and it gives rise to a karst topography riddled with sinkholes. The complex  
1370 hydrology of the Floridan Aquifer System is reflected by highly variable transmissivities (e.g., rate  
1371 which groundwater flows horizontally through an aquifer) that range from 2,000 to 1,300,000 feet  
1372 squared per day. Range in transmissivities in the Ocala Limestone is caused by the variable  
1373 fractured nature, and the dissolution of limestone that creates conduits and solution openings  
1374 (USGS 1999).

1375  
1376 The Installation provides its own water, wells, and irrigation (MCLB 2012a). Water is provided  
1377 from three deep wells and is distributed through mains ranging from 1.5 inches to 16 inches in  
1378 diameter. The wells are located on the western end of the base in Building 1465, on the eastern  
1379 end of the base in Building 10100, and at Building 4500 at the northwest corner of Radford  
1380 Boulevard and Walker Avenue (BEA 1998). Sanitation waste for base housing is processed by a  
1381 private contractor, and some industrial waste is processed on base as part of the Installation's



1382 pretreatment permit with the city of Albany. Numerous water testing wells are also located  
1383 throughout the facility and are slated for removal (MCLB 2012a).

### 1384 **2.3.7.3 Wetland Habitats**

1385 In general terms, wetlands are semi-terrestrial areas where saturation with water is the dominant  
1386 factor determining the nature of soil development and the types of plant and animal communities  
1387 living in the soil or on its surface. Wetlands are areas that are inundated or saturated by surface or  
1388 groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically  
1389 adapted for life in saturated soil conditions and that do so under normal circumstances.

1390  
1391 There are approximately 128 acres of delineated wetlands (CZR 1996) and an additional 188 acres  
1392 classified as wetland by the National Wetland Inventory (MCLB 2013a, USFWS 2012a) (Figure  
1393 6). These include wetlands in and surrounding three human-made ponds (Covella Pond, Horseshoe  
1394 Pond, and Robinson Pond); a large naturally occurring limesink pond complex known as Indian  
1395 Lake; several smaller limesink wetlands; and approximately 2,625 feet of Piney Woods Creek.  
1396 Wetland habitat types determined to occur on MCLB Albany based on the Cowardin (1992)  
1397 classification system include palustrine forested, palustrine scrub shrub, and palustrine emergent  
1398 wetlands.

- 1399  
1400
  - **Palustrine forested** systems are the most common type of wetland habitat on the base. The  
1401 palustrine forested wetlands are typically dominated by bald cypress (*Taxodium*  
1402 *distichum*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*) and a variety  
1403 of oaks (*Quercus* spp.). See Section 3.1.9.2.4 for a description of MCLB Albany's forested  
1404 wetlands.
  - **Palustrine scrub shrub** wetland is found at one location on MCLB Albany. This wetland  
1405 is approximately 60 acres and is part of the approximately 66-acre Indian Lake wetland  
1406 system. Examples of vegetation in the scrub shrub area of the wetland include scattered  
1407 pond cypress (*Taxodium ascendens*), buttonbush (*Cephalanthus occidentalis*), and  
1408 fetterbush (*Lyonia lucida*). Examples of herbaceous vegetation include chain ferns  
1409 (*Woodwardia* spp.), maidencane (*Panicum hemitoma*), and paspalum (*Paspalum*  
1410 *distichum*).
  - **Palustrine emergent** wetlands on MCLB Albany occur primarily in small, disturbed areas  
1411 such as old borrow pits. These wetlands are typically dominated by herbaceous species  
1412 such as maidencane and other *Panicum* species (CZR 1996).

1413  
1414 The largest wetland system on MCLB Albany occurs in the 85-acre Indian Lake Wildlife Refuge  
1415 (MCLB 2007). The refuge, which includes the 66-acre Indian Lake, consists of three deep limesink  
1416 ponds in a broad, shallow basin. The semi-permanently flooded basin contains open water,  
1417 emergent, scrub shrub, and forested wetland habitats. Dominant trees along the edge of Indian  
1418 Lake include laurel oak (*Quercus laurifolia*), water oak (*Q. nigra*), live oak (*Q. virginiana*),  
1419 sugarberry (*Celtis laevigata*), sweetgum, and red maple. Pond cypress, swamp blackgum (*Nyssa*  
1420 *sylvatica*), and red maple are found in the central section of the basin. The open water and emergent  
1421 areas of the lake include a variety of common wetland and aquatic plants including pickerelweed  
1422  
1423  
1424  
1425

1426 (*Pontederia* sp.), buttonbush (*Cephalanthus* sp.), bladderwort (*Utricularia* sp.), maidencane,  
1427 duckweed (*Spirodela* sp.), bulrush (*Scirpus* sp.), pond lily (*Nymphaea* sp.), and water shield  
1428 (*Brasenia* sp.). Another similar wetland occurs on the east side of East Shaw Road, just north of  
1429 Fleming Road. This wetland is dominated in its central area by bald cypress and swamp blackgum.  
1430 Slash pine is common around its edges (BEA 1998). Although they comprise a large and diverse  
1431 wetland system, the wetlands at Indian Lake are drying out and changing species composition,  
1432 presumably due to water loss from extended drought periods and off-site agricultural uses (MCLB  
1433 2012a).

#### 1434 2.3.7.4 *Aquatic Habitats*

1435 The most significant surface water feature in the vicinity of MCLB Albany is the Flint River. The  
1436 Flint River is part of the Apalachicola-Chattahoochee-Flint River Basin, and discharges through  
1437 State forests and the Apalachicola National Estuarine Research Reserve. All but the western part  
1438 of Dougherty County drains to the Flint River, which flows from north to south through the central  
1439 part of the county. In Georgia's State Wildlife Action Plan, the watersheds that compose the Flint  
1440 River are identified as high priority watersheds, with global significance scores of High to Highest  
1441 for containing important populations of high conservation of a high priority aquatic species  
1442 (GDNR 2015). Located approximately two miles from the western edge of MCLB Albany, the  
1443 Flint River has been dammed to create a reservoir for the Georgia Power Company. The reservoir,  
1444 called Lake Worth, is located approximately five miles to the north of MCLB Albany. The major  
1445 tributaries flowing into the Flint River within Dougherty County include Piney Woods Creek, Dry  
1446 Creek, and Muckafoonee Creek.

1447  
1448 Aquatic habitats (i.e., rivers, streams, creeks, brooks, channels, lakes, and ponds) on MCLB  
1449 Albany make up approximately 2 percent of the facility (MCLB 2013a), and all drainage from the  
1450 Installation ultimately discharges to the Flint River. Surface water features of MCLB Albany are  
1451 shown in Figure 6. However, some ditches and canals have not been mapped/included in the  
1452 Installation's GIS data base (MCLB 2013a).

1453  
1454 The eastern third of the base is drained by Piney Woods Creek. Piney Woods Creek is the only  
1455 naturally occurring stream on the Installation and flows through the northeastern most corner of  
1456 MCLB Albany, with approximately 2,625 ft. of stream channel on the base. Piney Woods Creek  
1457 is an intermittent stream that can be dry for significant portions of the year (Barbour et al. 2013)  
1458 and likely supports limited aquatic life.

1459  
1460 The remainder of the base drains west through a system of ditches and canals, conveying all  
1461 stormwater runoff from the central part of the base and discharging to the Marine Corps Canal.  
1462 The Marine Corps Canal or "Marine Ditch Canal" is more than 60 years old and 3-miles long. The  
1463 canal extends off base (MCLB 2012b) and flows to the west from the southwest corner of the base  
1464 (Figure 2 and Figure 3), discharging to the Flint River approximately 5 miles below the dam for  
1465 Lake Worth. The canal is owned by the Installation, but other institutions such as Proctor and  
1466 Gamble, Dougherty County, and the City of Albany also use it for stormwater runoff. MCLB  
1467 Albany has signed Grant of Easement with the Dougherty County Public Works Department,  
1468 which states they are responsible for maintaining the canal from the outfall of the base to the Flint  
1469 River. These ditch/canal features contain water for much of the year and likely support a diversity



1470 of aquatic species (MCLB 2012b); however, no known biological studies have been completed  
1471 within these features.

1472

1473 There are also approximately 74 acres of lakes and ponds on MCLB Albany (MCLB 2013a),  
1474 including the naturally occurring Indian Lake and three manmade ponds as described below:

1475

1476 • **Indian Lake** (66 acres) is a naturally occurring cypress pond within the 85-acre Indian  
1477 Lake Wildlife Refuge located along the northeastern boundary of MCLB Albany. This  
1478 unique wetland pond system is maintained as a wildlife refuge and nature observation area  
1479 and consists of three relatively deep ponds within in a long, shallow basin. The semi-  
1480 permanently flooded basin contains open water, emergent, scrub shrub and forested  
1481 wetland habitats. The southern half of the lake has been overtaken by duckweed, and  
1482 aquatic weeds have become abundant throughout the lake, presumably due to water loss  
1483 from extended drought periods and offsite agricultural uses (MCLB 2012b). Indian Lake  
1484 supports limited fish populations due to adverse water quality conditions including low  
1485 dissolved oxygen levels and lower than ideal pH levels (MCLB 2012b). The large amounts  
1486 of aquatic vegetation and other organic matter that naturally accumulate in cypress domes  
1487 depletes oxygen levels and limits fish species to those that can tolerate such conditions.  
1488 Surveys of the fish species located in Indian Lake have found spotted gar (*Lepisosteus*  
1489 *oculatus*), bullhead catfish (*Ameiurus* sp.), flier (*Centrarchus macropterus*), and bowfin  
1490 (*Amia calva*). These species provide limited angling opportunities (MCLB 2012b).

1491

1492 • **Covella Pond** (5.2 acres) is located in the central section of the base adjacent to the  
1493 intersection of Radford Boulevard and McCawley Avenue and is managed primarily to  
1494 provide fishing opportunities for catfish and hybrid striped bass (*Morone chrysops* x  
1495 *Morone saxatilis*) (MCLB 2012b). The pond was drawn down and renovated in 1998 due  
1496 to an overpopulation of fish (MCLB 2007). Since then, Covella Pond was drawn down  
1497 approximately every third November and restocked with channel catfish (*Ictalurus*  
1498 *punctatus*). However, in December 2012 the pond was renovated following a fish die-off  
1499 associated with the protozoan ectoparasite *Ichthyophthirius multifiliis*. Competitive fish  
1500 species such as bluegill (*Lepomis macrochirus*), shiners, and grass carp  
1501 (*Ctenopharyngodon idella*) were removed. Automatic fish feeders were installed in FY13  
1502 help to ensure a consistent source of food and improve fish growth rates. Healthy channel  
1503 catfish and hybrid striped bass populations remain in the pond and the pond is monitored  
1504 through harvest records. Fish are stocked in Covella Pond every fall/winter as needed. An  
1505 annual fishing event, The Buddy Fishing Tournament, is held at Covella Pond traditionally  
1506 on the first Saturday in June. This event provides a venue for families to enjoy fishing.

1507

1508 • **Horseshoe Pond** (2.1 acres) is located adjacent to Indian Lake. The pond has a long history  
1509 of problems associated with widely fluctuating water levels and associated poor water  
1510 quality. In 1997 the pond was drained, all fish were removed, and the pond was restocked  
1511 in 1998 with 3,000, 5- to 7-inch channel catfish. Few catfish survived and an additional  
1512 1,000 catfish were stocked in late 1998. In 1999, the pond was stocked with four hundred  
1513 3-inch largemouth bass (*Micropterus salmoides*); stocked in 2001 with two thousand 7- to  
1514 9-inch channel catfish; and stocked in 2006 with one thousand 5- to 7-inch channel catfish  
1515 and twenty 8- to -10 inch grass carp. In the past, survivorship of these species was poor

1516 due to the inability of the pond to retain sufficient water levels. Fish species known to  
1517 occupy Horseshoe Pond in 2012 consisted only of a few largemouth bass, bluegill, carp,  
1518 catfish and gar (MCLB 2012b). However, in 2014, MCLB Albany installed a well in the  
1519 pond to control water levels, thereby improving the pond's ability to support fish  
1520 populations.

1521

- 1522 • **Robinson Pond** (0.6 acres) is located within the former MCLB Albany golf course and is  
1523 also maintained to provide recreational fishing opportunities. The pond was initially dug  
1524 and used as an irrigation pond for the golf course. Three wells supplied water to the pond,  
1525 although now only one well is operational (MCLB 2012b). Following closure of the golf  
1526 course, the pond remained idle until tests could confirm that pesticides used on the golf  
1527 course were not present in the fish. Following the recommendations prepared by the pond  
1528 management consultants, Robinson Pond was designated as a youth fishing pond in Fiscal  
1529 Year 2013. The pond provides catch-and-release fishing opportunity for bluegill, hybrid  
1530 striped bass, largemouth bass, and channel catfish. An inaugural stocking of rainbow trout  
1531 occurred in November 2013 and provided catch-and-release opportunity through February  
1532 2014, after which youth anglers were allowed to remove up to seven trout daily until all  
1533 trout were removed. Due to the small size of the pond and steep banks, a fishing pier was  
1534 installed in FY2013 and provides the only fishing access to the pond. The fishing pier is  
1535 large enough to accommodate multiple families.

1536  
1537





<b>Legend</b> MCLB Albany Installation Ai Building Waterbody Road Stream	<b>Wetland Classification</b>			
	Palustrine Emergent Persistent, Seasonally Flooded (PEM1C) Palustrine Forested Broad/Needle-Leaved Deciduous, Semipermanently Flooded (PFO1Zf) Palustrine Forested Broad-Leaved Deciduous, Temporarily Flooded (PFO1A)	Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded (PFO1C) Palustrine Forested Broad-Leaved Deciduous, Seasonally Flooded, Impounded (PFO1Ch) Palustrine Forested Broad-Leaved Deciduous, Semipermanently Flooded (PFO1F)	Palustrine Scrub-Shrub Needle-Leaved Deciduous, Semipermanently Flooded (PSS2F) Palustrine Unconsolidated Bottom, Permanently Flooded, Impounded (PUBHh) Palustrine Unconsolidated Bottom, Permanently Flooded, Excavated (PUBHx)	Palustrine Unconsolidated Bottom, Permanently Flooded, Impounded (PUBHh) Palustrine Unconsolidated Bottom, Permanently Flooded, Excavated (PUBHx)
 Naval Facilities Engineering Command				
Figure 6. Surface Water and Wetlands Marine Corps Logistics Base Albany Albany, Georgia				
DRAWN BY M. MASON		DATE 02/05/20		
APPROVED BY S. BUCHANAN		DATE 02/25/20		
SOURCE: MCLB Albany 2020, Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.				

1542 **2.3.8 Terrestrial Vegetation and Communities**

1543 **2.3.8.1 Riparian Habitat**

1544 A blackwater stream riparian forest occurs along the poorly defined floodplain of Piney Woods  
1545 Creek in the northeastern corner of MCLB Albany (Figure 6 and Figure 7). This riparian habitat  
1546 is listed as a significant natural community on the base and is dominated by willow oak (*Quercus*  
1547 *phellos*), water oak, red maple, Carolina ash (*Fraxinus caroliniana*), laurel oak, and sweetgum.  
1548 Swamp blackgum and pond cypress occur within the banks of the creek. Although limited in  
1549 extent, the blackwater stream riparian forest represents an important component of the biological  
1550 diversity on the base. The riparian forest community is bordered on both sides by pine-hardwood  
1551 forest (GDNR 1995).

1552 **2.3.8.2 Upland Habitat**

1553 Intensive vegetation surveys have not been conducted on the Installation. However, the GDNR  
1554 conducted surveys for rare species and rare natural communities on MCLB Albany between June  
1555 1990 and June 1992, and again in 1995 (GDNR 1995, MCLB 2007) and a subsequent inventory  
1556 for rare species and natural communities was conducted by ANHP in 2013 (Barbour et al. 2013).  
1557 Although the focus of the inventories was generally rare and federal or state listed species,  
1558 numerous non-target flora species were identified in the process. Additionally, many plant species  
1559 have also been documented on the facility incidentally by reputable professionals (Barbour et al.  
1560 2013, MCLB 2012a, 2013e). A list of flora known to occur, or with the potential to occur, on the  
1561 Installation is provided in Section 3.1.12 and Appendix C.

1562  
1563 Terrestrial habitats on the base primarily include natural pine, pine plantations, hardwood, early  
1564 successional systems, and maintained fields and lawns. MCLB Albany has approximately  
1565 1,523 acres of forestlands (including forested wetlands), 32 acres of orchard, and 570 acres of  
1566 undeveloped open land interspersed between industrial, administrative, recreational, and  
1567 residential areas (Lincoln Military Housing); the majority of the base's forested land is planted or  
1568 natural stands of pine, predominantly slash pine with a few smaller areas of remnant longleaf pine  
1569 (MCLB 2013a). Based on 1948 aerial photographs, the land area comprising what was to become  
1570 MCLB Albany were largely made up of agricultural fields (approximately [~] 70%), pecan orchard  
1571 (~15%), and various types of forestlands (~15%). These forested areas included forested wetlands,  
1572 remnant stands of longleaf pine, and other timber types that cannot be differentiated from the aerial  
1573 photographs. The remnant longleaf pine stands can be distinguished from other forest cover types  
1574 based on the presence of old growth trees (greater than [>] 100 years old) and associated ground  
1575 cover such as wiregrass (*Aristida stricta*). The presence of the native ground cover indicates that  
1576 very little soil disturbance occurred in these stands. This pre-construction landscape was drastically  
1577 altered by the Installation of a series of ditches, the development of industrial, administrative and  
1578 residential areas, and the planting of even-aged plantation pines (mostly slash) during the 1960s.

1579  
1580 Overall, the amount of forestland on MCLB Albany increased substantially, almost tripling, since  
1581 construction of the base; however, significant loss of forested wetlands and remnant longleaf  
1582 stands has also occurred during this time frame. In 2015, 130 acres of forest and 20 acres of pecan  
1583 orchard on the northwestern portion of the Installation were clear-cut to construct a solar array.  
1584 Construction of the solar array began in 2016 and finished in 2018. Additionally, on January 22,



1585 2017, an EF-3 tornado struck the western and central portions of the Installation. The tornado  
1586 destroyed or damaged more than 800 acres of forest and most of the pecan orchard. Following the  
1587 tornado, 245 acres of longleaf pine, 32.2 acres of slash pine, and 24.2 acres of hardwood orchards  
1588 were planted. The current undeveloped areas of MCLB can broadly be categorized into the  
1589 following cover types: Upland Pines (923.2 acres), Mixed Pine Hardwood (236.2 acres), Upland  
1590 Hardwood (152.9 acres), Forested Wetland (173.4 acres), Pecan Orchard (7.5 acres), as well as  
1591 open land acres (27.0 acres of utility rights-of-way and 27.5 acres food plots, and 69.8 acres of  
1592 fallow fields or native groundcover).

1593  
1594 Three significant natural communities have been designated on MCLB including Limesink  
1595 Pond/Pond Cypress Pond, Clayhill Longleaf Woodland, and South Atlantic Willow Flatwoods  
1596 Forest (Barbour et al. 2013). These communities cross forest stand boundaries and fall within the  
1597 Upland Pine, Mixed Pine Hardwood, and Forested Wetland forest cover types. These natural  
1598 communities have been identified as rare and ecologically sensitive areas. They are described  
1599 under Section 3.1.11 Sensitive Habitats and Rare Ecosystems.

#### 1600 **2.3.8.2.1 Upland Pine**

1601 The Upland Pine cover type comprises 62.1% of MCLB Albany's forested land area. This cover  
1602 type consists of the total acreage of planted slash (510.0 acres), loblolly (133.6 acres), longleaf  
1603 pine (281.7 acres), and natural pine stands (23.2 acres) with a minimal overstory hardwood  
1604 component (< 30% of the overall stand basal area). Natural pine stands include the remnant  
1605 longleaf stands visible in the 1948 aerial photographs. Understory vegetation in upland pine stands  
1606 varies considerably depending upon stand age, basal area, and the degree of hardwood  
1607 competition. Sweetgum, cherry (*Prunus* spp.), live oak, and water oak constitute the majority of  
1608 the hardwood competition. Other common species include laurel oak, live oak, sumac (*Rhus* sp.),  
1609 grape (*Vitis* sp.), greenbrier (*Smilax* sp.), beggarweed (*Desmodium* sp.), and partridge pea  
1610 (*Chamaecrista fasciculata*). Some fire-tolerant upland hardwoods including southern red oak  
1611 (*Quercus falcata*), are also scattered throughout the upland pine plantations. Incidences of  
1612 cankered, diseased and malformed trees, and insect damage occur at slight to moderate densities  
1613 in upland pine stands.

#### 1614 **2.3.8.2.2 Mixed Pine Hardwood**

1615 This cover type comprises approximately 236.2 acres or 15.9% of MCLB Albany and generally  
1616 occurs in areas bordering upland pines and forested wetland cover types. Other stands classified  
1617 as mixed pine hardwood include stands of loblolly and slash pine plantation or fire-excluded  
1618 natural pine stands with a significant component of hardwood (greater than 30%). This latter stand  
1619 type, found on drier soils and slopes, contains scattered pine species including remnant longleaf  
1620 pine and more fire-tolerant hardwood species such as southern red oak. The absence of fire,  
1621 however, has resulted in extensive intrusion of invasive, fire-intolerant, hardwood species such as  
1622 water oak and sweetgum. Hardwood trees commonly encountered in the Mixed Pine Hardwood  
1623 cover type include southern magnolia (*Magnolia grandiflora*), water oak, laurel oak, and live oak.  
1624 Understory plant species associated with this vegetative cover type include grape, greenbrier,  
1625 poison ivy (*Toxicodendron radicans*), and beautyberry (*Callicarpa* spp.).

1626 **2.3.8.2.3 Upland Hardwood**

1627 The Upland Hardwood forest cover type comprises 152.9 acres or 10.3% of MCLB Albany and  
1628 consists of relatively small stands of hardwood species such as live oak, southern magnolia, laurel  
1629 oak, and water oak. Portions of this cover type appear to have been planted or consist of former  
1630 wetlands drained during the construction or early history of the Installation. Understory plant  
1631 species associated with this vegetative cover type include grape, greenbrier, and Chinese privet  
1632 (*Ligustrum sinense*).

1633 **2.3.8.2.4 Forested Wetland**

1634 This vegetative cover type consists of limesink pond, flatwoods (South Atlantic Willow Flatwoods  
1635 Forest), and riparian hardwoods. Comprising 173.4 acres, this cover type represents 11.7% of the  
1636 total land area of MCLB Albany. Water levels fluctuate considerably depending upon weather  
1637 conditions within the forested wetlands. The largest forested wetland on MCLB Albany is known  
1638 as Indian Lake, a 66-acre limesink pond. Tree species present include pond cypress, blackgum,  
1639 willow, sweetgum, and red maple. Buttonbush dominates the shrub component of this vegetative  
1640 cover type while herbaceous groundcover includes members of the following families: rushes  
1641 (Juncaceae), sedges (Cyperaceae), and the grass family (Gramineae). Flatwoods forests occur  
1642 mainly on the central and eastern portion of the Installation. This vegetative cover type is  
1643 associated with willow oak, water oak, sweetgum, greenbrier, and sedge species. Riparian forest  
1644 is located along Piney Woods Creek. This area is flooded intermittently with aerobic water on sites  
1645 located along stream channels and anaerobic water where no distinct stream channel exists. During  
1646 extreme drought, Piney Woods Creek ceases flowing, and the channel may dry completely.  
1647 Overstory trees associated with this forest cover type include bald cypress, water tupelo (*Nyssa*  
1648 *aquatic*), and oak species.

1649 **2.3.8.2.5 Pecan Orchard**

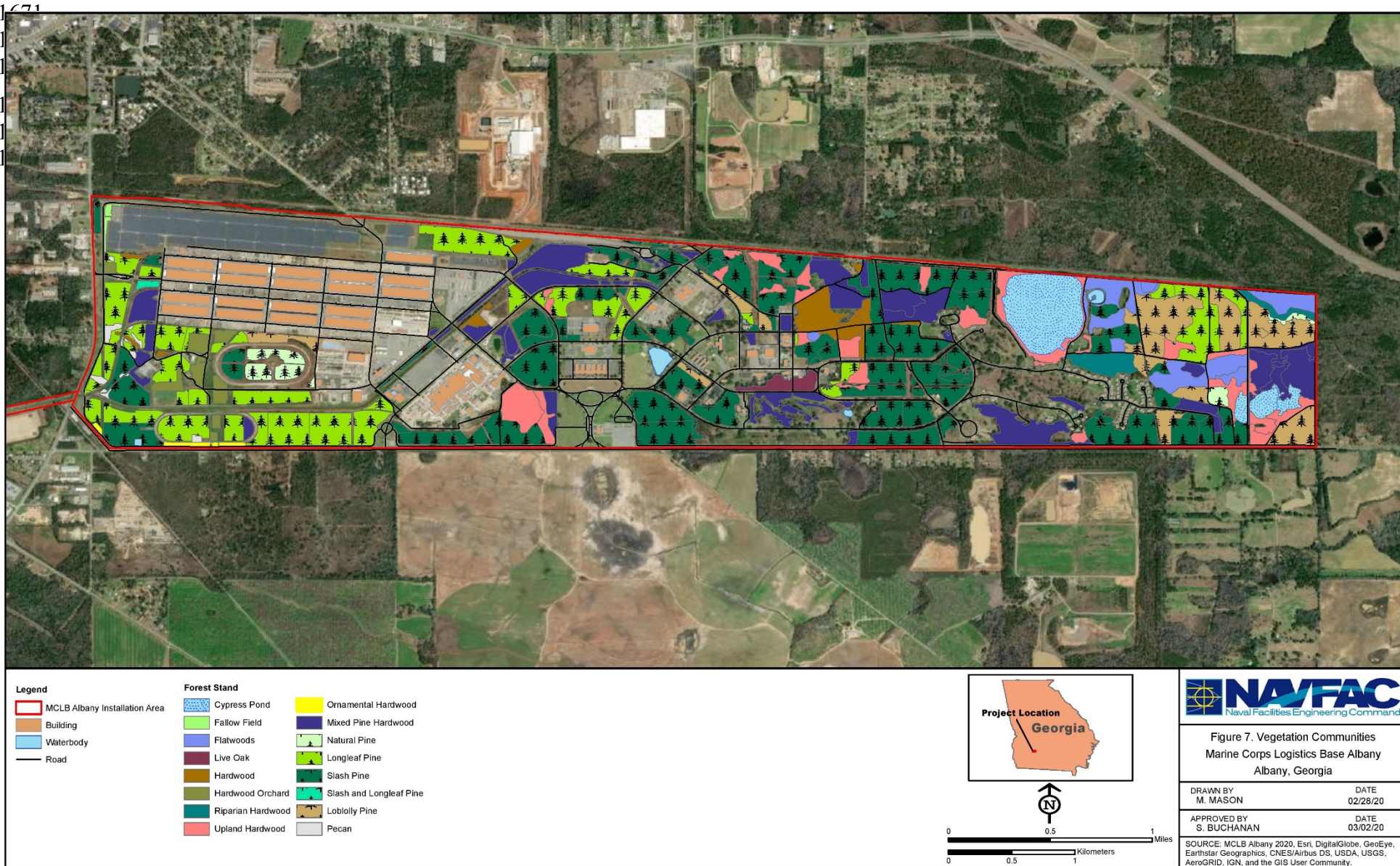
1650 MCLB Albany's pecan orchard predated construction of MCLB Albany and was a key feature of  
1651 its landscape. Originally 600 acres of pecan orchard were present on the Installation but by 2015  
1652 only 185 acres were left. The orchard was managed by an agricultural lease until 2014. The  
1653 commercial viability of the orchard had declined as a result of many factors and plans were in  
1654 place to begin phasing out the orchard and converting the area to other land uses. These plans  
1655 were accelerated when the January 2017 tornado destroyed most of the remaining pecan orchard.  
1656 Currently only 7.5 acres of the pecan orchard remains in several small stands and scattered  
1657 surviving trees. These areas will be maintained for wildlife habitat and to provide for recreational  
1658 nut production. Twenty-four acres of the pecan orchard was converted into hardwood orchards  
1659 with the remaining orchard areas replanted to longleaf pine, slash pine, or native groundcover  
1660 fields. The hardwood orchards contain 14 native species of trees including Nuttall Oak, Shumard  
1661 Oak, Sycamore, Green Ash, and Pecan. The hardwood orchards are planted and maintained to  
1662 mimic the look of a pecan orchard.

1663 **2.3.8.2.6 Open Land**

1664 Open Lands on MCLB Albany consist of utility rights-of-way (27.0 acres), wildlife openings (27.5  
1665 acres), native groundcover areas (69.8 acres), the disused golf course excluding the driving range  
1666 (63.8 acres), former housing footprint (80.7 acres), and maintained grass (482.1 acres). Maintained  
1667 grass areas are dominated by lawn grasses such as Bermuda grass (*Cynodon* spp.), Bahiagrass

1668 (*Paspalum notatum*), and centipedegrass (*Eremochloa ophiuroides*) and in some areas have a  
1669 canopy of live oak trees. Native groundcover areas consist of wildlife openings planted with native  
1670 warm season grasses and forbs attractive to pollinator species.







### 1677 **2.3.9 Nuisance and Invasive Plant Species**

1678 Controlling nuisance and exotic, invasive plants is essential to the protection of the Installation's  
1679 biodiversity. Nuisance and exotic invasive species can displace native plants and animals, change  
1680 the structure of natural communities, and impact the ecological functions of ecosystems.

1681  
1682 Nuisance plants are defined as native species that generally cause relatively limited inconvenience,  
1683 annoyance, or irritation to the general human population or damage to habitats. The negative  
1684 effects of nuisance plants can range from reducing the aesthetic values of an area to humans, to  
1685 physically impacting the natural communities by out-competing other species, changing habitat  
1686 conditions, or reducing the productivity of a site.

1687  
1688 Invasive exotic plants are defined as non-native, introduced species that may spread into, or are  
1689 introduced to an area, and disturb the habitat of a similar native species or a non-similar species  
1690 that is dependent upon the habitat required by the invasive species. Generally, an invasive species  
1691 is likely to cause a much higher level of economic or environmental harm, or harm to human  
1692 health, relative to nuisance plant species (Executive Order [EO] 13112). Invasive exotic species  
1693 have invaded millions of acres throughout the state, threatening natural habitats, rare species,  
1694 agricultural land, and have caused large-scale ecosystem changes, including altered fire and water  
1695 cycles (Barbour et al. 2013).

1696  
1697 The GDNR conducted surveys for rare species and rare natural communities on MCLB Albany  
1698 between June 1990 and June 1992, and again in 1995 (GDNR 1995, MCLB 2007). A subsequent  
1699 inventory for rare species and natural communities was conducted by ANHP in 2013 (Barbour et  
1700 al. 2013). Although the focus of the inventories was generally rare and federal or state listed  
1701 species, numerous non-target exotic flora species were identified in the process. Additionally,  
1702 many exotic plant species have also been documented on the facility incidentally by reputable  
1703 professionals (Barbour et al. 2013, MCLB 2012a). Exotic species known to occur on the  
1704 Installation are identified in Appendix C.

1705  
1706 Thirty invasive non-native plant species have been documented on the Installation and most are  
1707 widespread (Barbour et al. 2013, MCLB 2019a). Of these, 10 species are causing significant  
1708 negative impacts on native plant and animal communities based upon current abundance or have  
1709 the potential to significantly degrade habitat if not treated (MCLB 2019a). These priority species  
1710 include bahiagrass (*Paspalum notatum*), Bermuda grass (*Cynodon* sp.), bicolor lespedeza  
1711 (*Lespedeza bicolor*), Chinese privet, Chinese wisteria (*Wisteria sinensis*.), glossy privet  
1712 (*Ligustrum japonicum*), kudzu (*Pueraria montana*), lantana (*Lantana* sp.), Japanese climbing fern  
1713 (*Lygodium japonicum*), and the aquatic species alligatorweed (*Alternanthera philoxeroides*). The  
1714 largest invasive communities occur along the perimeter of the facility and right-of-way corridors.  
1715 Two native species, buttonbush (*Cephalanthus occidentalis*) and red maple (*Acer rubrum*), are  
1716 considered noxious species in some locations on the Installation due to their impact on the  
1717 desirable communities they are invading. In general, hardwood tree species such as live oak, laurel  
1718 oak, and water oak, sweetgum, and cherry are also problematic in locations where they are  
1719 invading upland pine stands in the absence of fire (MCLB 2019a). Additional invasive or noxious  
1720 plant species are also likely to occur on the Installation but have not been well-documented (MCLB

1721 2012a). Focused surveys are needed to identify and map the extent of these. Plants considered by  
1722 USFWS to be invasive species for the MCLB Albany property are identified in Appendix C.

1723  
1724 The MCLB Albany 2015 Integrated Pest Management Plan addresses nuisance and invasive plants  
1725 (MCLB 2015b). The use of fire for the protection and maintenance of upland habitats (which also  
1726 facilitates the control of invasives) is addressed in the MCLB Albany Wildfire Protection Plan  
1727 (USACE 2010) and MCLB Albany’s Burn Plan (MCLB 2019).

### 1728 **2.3.10 Sensitive Habitats and Rare Ecosystems**

1729 Protection of ecologically sensitive areas is provided by SAIA under the provisions of wildlife and  
1730 fish habitat enhancement in support of managing these populations. The GDNR conducted surveys  
1731 for rare species and rare natural communities on MCLB Albany between June 1990 and June 1992,  
1732 and again in 1995 (GDNR 1995, MCLB 2007). A subsequent inventory for rare species and natural  
1733 communities was conducted by ANHP in 2013 (Barbour et al. 2013). Through this effort, three  
1734 natural communities deemed to be of special concern due to the potential presence of rare,  
1735 threatened, or endangered species that are often associated with the community, and/or that are  
1736 considered globally rare, were identified on the Installation (Barbour et al. 2013, NatureServe  
1737 2013). Each community of special concern is described below:

- 1738 • Clayhill Longleaf Woodland
- 1739 • Limesink Pond/Pond Cypress Pond
- 1740 • South Atlantic Willow Oak Flatwoods Forest

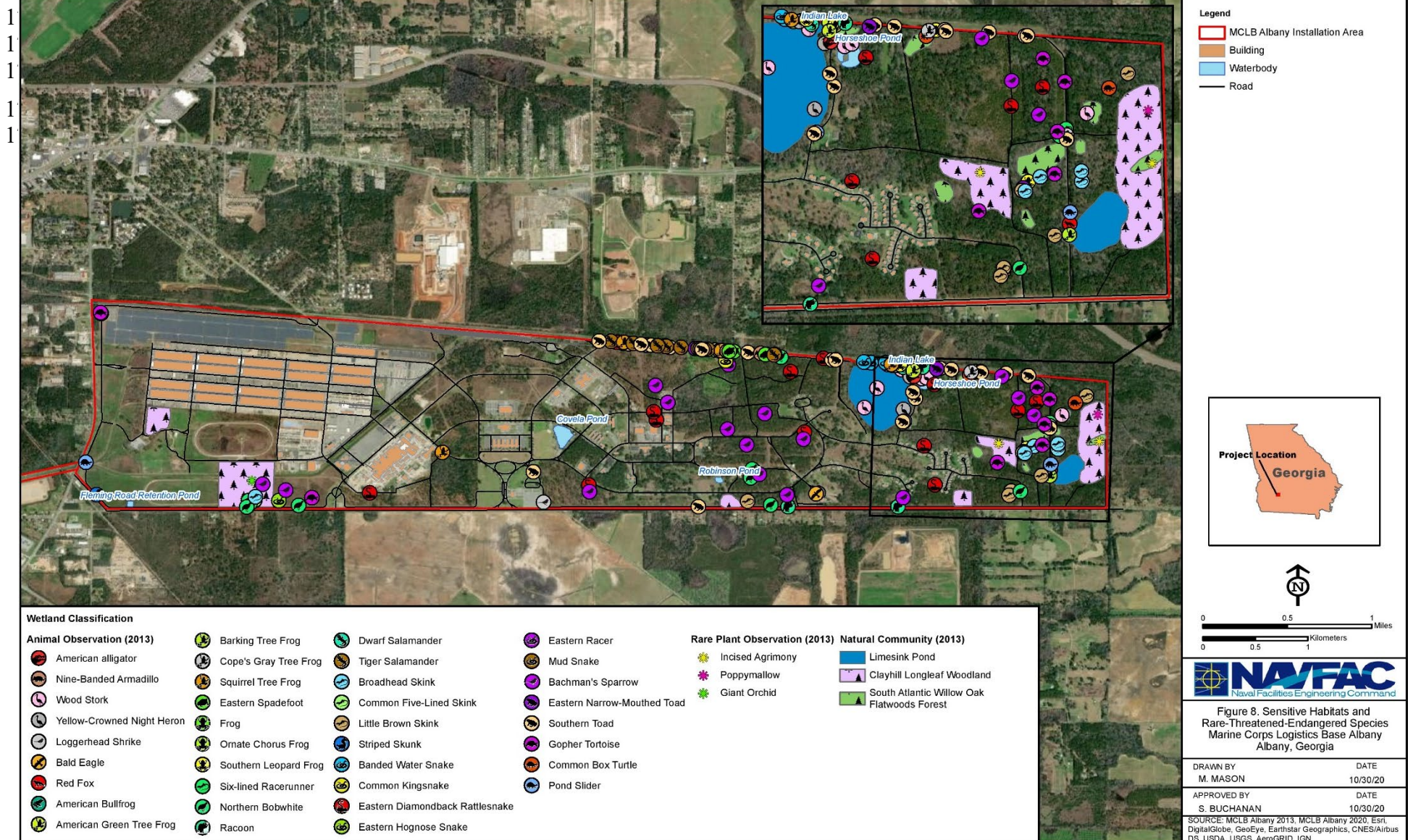
#### 1741 **2.3.10.1 Clayhill Longleaf Woodland**

1742 The Longleaf Pine/Longleaf Pawpaw (*Asimina angustifolia*)/Wiregrass – Little Bluestem  
1743 (*Schizachyrium scoparium*) – Oblong-leaf Twinflower (*Dyschoriste oblongifolia*) Woodland  
1744 community (i.e., Clayhill Longleaf Woodland), historically spanned a vast landscape of gently  
1745 rolling terrain that now encompasses the present day Installation and southwest Georgia, but has  
1746 largely disappeared or been greatly modified as a result of agriculture, timber production, and fire  
1747 suppression (Barbour et al. 2013). This community is now represented as mere remnants scattered  
1748 across the Installation (Figure 8). Historically, in conjunction with a higher incidence of naturally  
1749 caused fires, the canopy was relatively open, characterized by a woodland of widely spaced trees  
1750 with a diverse understory of low growing shrubs, forbs, and grasses in the ground cover. Currently,  
1751 however, as a result of insufficient fire, many examples are closed forests characterized by a dense  
1752 growth of woody vegetation in the understory and a prevalence of hardwood tree species (Barbour  
1753 et al. 2013).

1754  
1755 Common species in the canopy of this community on the Installation include longleaf pine, slash  
1756 pine, live oak, water oak, southern red oak, black cherry (*Prunus serotina*), sweetgum, and  
1757 sassafras (*Sassafras albidum*). The shrub layer is typically well-established and dominated by  
1758 saplings of the canopy trees as well as shrub species such as deerberry (*Vaccinium stamineum*),  
1759 shiny blueberry (*V. myrsinites*), winged sumac (*Rhus copallina*), poison oak (*Toxicodendron*  
1760 *pubescens*), and flowering dogwood (*Cornus florida*). The herbaceous layer is typically patchy  
1761 distribution due to the closed canopy and dense shrub layer, but is exemplified by a rich diversity  
1762 of species, including bracken fern (*Pteridium aquilinum* var. *pseudocaudatum*), wiregrass,



1763



1769 hairawn muhly (*Muhlenbergia capillaris*), slender bluestem (*Schizachyrium tenerum*), Virginia  
1770 broomsedge (*Andropogon virginicus*), goat's-rue (*Tephrosia virginiana*), hairy phlox (*Phlox*  
1771 *amoena*), tread-softly (*Cnidocolus stimulosus*), southern beardtongue (*Penstemon australis*), blue  
1772 sage (*Salvia azurea*) Small's skullcap (*Scutellaria multiglandulosa*), oblong-leaf twinflower,  
1773 narrow-leaved ironweed (*Vernonia angustifolia*), grass-leaf golden-aster (*Pityopsis graminifolia*  
1774 var. *graminifolia*), sweet goldenrod (*Solidago odora*), and scaleleaf aster (*Symphotrichum*  
1775 *adnatum*).

1776 Several federal- or state-listed species, or species identified by the USFWS or GDNR as  
1777 vulnerable, have been documented in this community, including crestless plume-orchid  
1778 (*Pteroglossaspis ecristata*), woodland poppy-mallow (*Callirhoe papaver*), beakrush  
1779 (*Rhynchospora* sp.), eastern diamondback rattlesnake (*Crotalus adamanteus*), gopher tortoise,  
1780 northern bobwhite (*Colinus virginianus*), and Bachman's sparrow (*Peucaea aestivalis*). These  
1781 species are believed to be at some risk of extinction or elimination due to a fairly restricted range,  
1782 relatively few populations or occurrences, recent and widespread declines, threats, or other factors  
1783 (Barbour et al. 2013).

#### 1784 **2.3.10.2 Limesink Pond/Pond Cypress Pond**

1785 The Limesink Pond/Pond Cypress Pond community (which may also be described as Myrtle-  
1786 leaved Holly (*Ilex myrtifolia*) Depression Forest) is generally characterized as irregularly defined  
1787 depressions indicative of karst regions underlain by either limestone or dolomite (Barbour et al.  
1788 2013). Water levels are highly variable and are driven by seasonal precipitation, connectivity to  
1789 subterranean aquatic systems, as well as human activities. Extreme fluctuations of water depth and  
1790 a high variability of successional stages account for broad diversity of plant life.

1791  
1792 Indian Lake, the most notable example of this community on the Installation (Figure 6 and Figure  
1793 8), appears to be inundated for extended periods of time, resulting in a deep accumulation of peat  
1794 (Barbour et al. 2013). However, although fluctuating water levels generally benefit this community  
1795 type, long periods of drought and reduced hydrologic input due to a diversion of water for alternate  
1796 uses appear to be negatively altering this community type at Indian Lake (MCLB 2012a). Common  
1797 species in the patchily distributed canopy include pond cypress, and to a lesser extent red maple  
1798 and black willow (*Salix nigra*). The understory is also patchy and is dominated by saplings of the  
1799 canopy tree species as well as shrubs such as buttonbush, willow oak, sweetgum, and persimmon  
1800 (*Diospyros virginiana*) in shallower areas. Herbaceous species include maidencane, woolgrass  
1801 (*Scirpus cyperinus*), clearweed (*Boehmeria cylindrica*), and false fennel (*Eupatorium*  
1802 *leptophyllum*).

1803  
1804 A smaller, more densely forested example of this community also occurs on the far eastern end of  
1805 the Installation (Figure 8). This community is represented by a more advanced level of vegetation  
1806 succession than Indian Lake. Similar species are present, but, in addition, the community has a  
1807 greater assemblage of trees, shrubs, and herbs, and the forest and shrub layer are denser and more  
1808 uniformly distributed (Barbour et al. 2013). Characteristic herbs in this example community  
1809 include Virginia chain fern (*Woodwardia virginica*), warty panicgrass (*Panicum verrucosum*),  
1810 redtop panicgrass (*Coleataenia rigidula* ssp. *rigidula*), pocosin sedge (*Carex striata*), waxy sedge  
1811 (*C. glaucescens*), beakrushes (*Rhynchospora* spp.), clearweed, and camphorweed (*Pluchea*  
1812 *camphorata*). Poison ivy is a characteristic vine.



1813 Several federal- or state-listed species, or species identified by the USFWS or GDNR as  
1814 vulnerable, have been documented in this community, including eastern tiger salamander  
1815 (*Ambystoma tigrinum tigrinum*), yellow-crowned night heron (*Nyctanassa violacea*), and wood  
1816 stork (*Mycteria americana*) (Barbour et al. 2013).

### 1817 **2.3.10.3 South Atlantic Willow Oak Flatwoods Forest**

1818 The Willow Oak – Cherrybark Oak, Swamp Post Oak (*Quercus pagoda*, *Q. similis*) – Loblolly  
1819 Pine (*Pinus taeda*)/Slender Spikegrass (*Chasmanthium laxum*) Forest (i.e., South Atlantic Willow  
1820 Oak Flatwoods Forest) has a global G3G2 rank (e.g., is at moderate risk of extinction or  
1821 elimination due to a fairly restricted range, relatively few populations or occurrences, recent and  
1822 widespread declines, threats, or other factors (NatureServe 2013). These forests are relatively  
1823 uncommon on the Installation and occur as shallow depressions scattered throughout MCLB  
1824 Albany (Barbour et al. 2013). The best representative location of this association is located along  
1825 either side of East Shaw Road, in the eastern portion of the Installation (Barbour et al. 2013)  
1826 (Figure 8). This community is represented by a closed forest canopy dominated by willow oak,  
1827 and lesser amounts of live oak, water oak, and sweetgum. The shrub and herb layers are relatively  
1828 sparse. Typical species in the understory include saplings and seedlings of the canopy tree species  
1829 as well as Virginia willow (*Itea virginica*), round-leaf greenbrier (*Smilax rotundifolia*), glaucous  
1830 sedge (*Carex glaucescens*), hop sedge (*C. lupulina*), and lizard’s-tail (*Saururus cernuus*).

### 1831 **2.3.11 Rare, Threatened, and Endangered Plant Species**

1832 The GDNR conducted surveys for rare species and natural communities on MCLB Albany  
1833 between June 1990 and June 1992, and again in 1995. These surveys did not locate any federal or  
1834 state listed plants, but did identify three plants of special concern: incised groove-bur, woodland  
1835 poppy-mallow, and sandhills ceanothus (*Ceanothus microphyllus*) (GDNR 1995, MCLB 2007). A  
1836 subsequent survey for rare species and natural communities by ANHP in 2013 also failed to locate  
1837 any federal or state listed plants. This survey located two of the species of concern previously  
1838 identified by GDNR (incised groove-bur and poppy-mallow), and also found crestless plume  
1839 orchid, an additional plant of special concern (Barbour et al. 2013) (Figure 8). The sandhills  
1840 ceanothus was not located in 2013, and in addition, is no longer identified by natural resource  
1841 agencies as a plant of special concern (Barbour et al. 2013).

1842  
1843 The State of Georgia came out with a State Wildlife Action Plan in 2015 that came up with a list  
1844 of high priority species, considering those who were already listed as species of special concern  
1845 (GDNR 2015). Based on the 2013 MCLB Albany survey results and those species listed as high  
1846 priority by the state, two rare plant species are known to occur on the Installation. The crestless  
1847 plume orchid is state-listed as threatened, and a high priority species, and beakrush  
1848 (*Rhynchospora spp.*) species are high priority. Each is identified in Table ES-2, Table ES-3,  
1849 Table 3. Plants believed to occur on the Installation (including those that are federal or state-listed  
1850 rare, threatened and endangered species [GDNR 2015, 2020a; USFWS 2020]), are identified in  
1851 Table ES-2, Table ES-3, Table 3, and Appendix C (Barbour et al. 2013). Fact sheets, which provide  
1852 additional details about each of the rare plants confirmed on the Installation, are located in  
1853 Appendix D. Refer to Section 4.2.2.7 for profiles and management strategies for each of the rare,  
1854 threatened and endangered fauna species confirmed to be found at MCLB Albany.

1855

1856 **Table 3. Occurrences of Rare, Threatened and Endangered Plants Confirmed on**  
 1857 **MCLB Albany.**

Scientific Name	Common Name	Number of Element Occurrences (EOs) on Installation	Number of EOs in Georgia	% of state EOs on Installation	Number of protected EOs in Georgia
<i>Pteroglossaspis ecristata</i>	Crestless plume orchid / wild coco	1	16	6.25	16
<i>Rhynchosopora spp.</i>	Beakrush*	1	11	9	0

1858 Source: Barbour et al. 2013; Chafin 2019, 2020.

1859 \*The Decurrent Beakrush (*Rhynchosopora decurrens*) was used to fill in this table, based on its documented historical  
 1860 occurrence in Albany, Georgia (Georgia Biodiversity Portal 2020).

1861 **2.3.12 Conservation Lands**

1862 Conservation lands include state or federally protected lands, such as state and national parks,  
 1863 wildlife refuges, and wildlife management areas (WMAs). These areas are generally established  
 1864 to conserve habitats and wildlife populations of special importance, provide research and  
 1865 educational opportunities, and to provide public hunting, hiking, bird watching and other outdoor  
 1866 recreational opportunities that are compatible with conservation goals. There are no conservation  
 1867 lands immediately adjacent to MCLB Albany. Nearby conservation lands (< 30 miles from the  
 1868 Installation) include Chickasawhatchee WMA (19,700 acres), Albany Nursery WMA (300 acres),  
 1869 and Elmodel WMA (1,600 acres). Other lands set aside for recreation and conservation include  
 1870 Albany Dougherty Community Greenspace. Located along the Flint River, these properties were  
 1871 set aside by the City of Albany and Dougherty County to provide passive outdoor recreation,  
 1872 protect water quality, wildlife habitat and other values.

1873 **2.4 FISH AND WILDLIFE RESOURCES**

1874 Intensive fish and wildlife surveys have not been conducted on the Installation. However, the  
 1875 GDNR conducted surveys for rare species and natural communities on MCLB Albany between  
 1876 June 1990 and June 1992, and again in 1995 (GDNR 1995, MCLB 2007), and a subsequent  
 1877 inventory for rare species and natural communities was conducted by ANHP in 2013 (Barbour et  
 1878 al. 2013). Although the focus of the inventories was generally rare and federal or state listed  
 1879 species, numerous non-target species were identified in the process. Additionally, many species  
 1880 have also been documented on the facility incidentally by reputable professionals (Barbour et al.  
 1881 2013, MCLB 2012a, 2013e). Discussions of the species observations are included in the sections  
 1882 below. A comprehensive list of species with confirmed or possible occurrence on the Base is  
 1883 located in Appendix C; this table includes their protection status, and for birds, notation of what  
 1884 time of year they were seen on the Installation.

1885 **2.4.1 Invertebrates**

1887 No surveys have been conducted for invertebrates on MCLB Albany, and although many  
 1888 invertebrates reside on the Installation, there is no official record of most of the species (MCLB  
 1889 2012a). The NRM has documented 33 species of butterflies on the Installation including brush-

1890 footed butterflies (Family Nymphalidae), hairstreaks (Family Lycaenidae), swallowtails (Family  
1891 Papilionidae), skippers (Family Hesperidae), and whites and sulphurs (Family Pieridae). The  
1892 monarch butterfly (*Danaus plexippus plexippus*) is a high priority species for conservation in  
1893 Georgia and is under review to be listed federally (USFWS 2014b, GDNR 2015). The monarch  
1894 caterpillars use milkweed plants as a food and habitat source, and adult monarchs feed off nectar-  
1895 producing native plants. The butterflies migrate through Georgia during the fall and spring,  
1896 stopping to feed and breed (UGA 2018). Further, seven species of damselflies and dragonflies  
1897 found at MCLB Albany are described on an educational sign on the Installation's nature trail.  
1898 These pollinators include the familiar bluet (*Enallagma civile*), skimming bluet (*Enallagma*  
1899 *geminatum*), orange bluet (*Enallagma signatum*), widow skimmer (*Libellula luctosa*), carolina  
1900 saddlebags (*Tramea carolina*), common green darner (*Anax junius*), and the eastern pondhawk  
1901 (*Erythemis simlicicollis*). Because they hatch from eggs laid in the water, damselflies and  
1902 dragonflies will be most commonly found in proximity of wetlands and ponds. In addition, there  
1903 are two apiaries on the base that house honeybee hives: one on the northwest side of Indian Lake  
1904 in a pine stand, maintained by the NRM and USDA Wildlife Biologist; the other, in the southwest  
1905 portion of the Installation, maintained by the bee owner.

1906  
1907 Three native and endangered aquatic invertebrates have the potential to occur on the Installation.  
1908 These are the gulf moccasinshell (*Medionidus penicillatus*), oval pigtoe (*Pleurobema pyriforme*),  
1909 and shinyrayed pocketbook (*Lampsilis subangulata*). All three are river mussels (Family  
1910 Unionoida), federal and state-listed as endangered, and native to southeastern United States  
1911 (USFWS, 2020).

1912  
1913 Appendix C provides a full list of these invertebrate species.

#### 1914 **2.4.2 Fish**

1915 Water bodies at MCLB Albany are stocked periodically with gamefish such as channel catfish,  
1916 hybrid striped bass, largemouth bass, bluegill, and/or rainbow trout (*Oncorhynchus mykiss*)  
1917 (MCLB 2007, MCLB 2012b). Other species known to occur in water bodies of the Installation  
1918 include flier, bowfin, brown bullhead (*Ictalurus nebulosus*), weed shiner (*Notropis texanus*), grass  
1919 carp, mosquito fish (*Gambusia* sp.), and spotted gar (MCLB 2013d, 2013e).

#### 1920 **2.4.3 Amphibians and Reptiles**

1921 Based on prior studies and incidental observations documented by environmental staff, 19  
1922 amphibians and 22 reptiles have been documented on the Installation, and an additional 21  
1923 amphibians and 36 reptiles may be present based on their home ranges and habitat preferences  
1924 (MCLB 2013e). Appendix C, Table ES-2, and Table ES-3 provide a list of species documented,  
1925 and with the potential to occur, on the Installation and their conservation status. Some of the more  
1926 common amphibians on MCLB Albany include the southern toads (*Anaxyrus terrestris*), tree frogs  
1927 (*Hyla* spp.), spring peepers (*Pseudacris crucifer*), chorus frogs (*Pseudacris* sp.), and various other  
1928 frogs (*Lithobates* spp.) (GDNR 1995, Barbour et al. 2013). Some of the more common reptiles  
1929 found on MCLB Albany include green anole (*Anolis carolinensis*), ground skink (*Scincella*  
1930 *lateralis*), black racer (*Coluber constrictor*), banded watersnake (*Nerodia fasciata fasciata*),  
1931 eastern garter snake (*Thamnophis sirtalis sirtalis*), Florida cooter (*Pseudemys floridana floridana*),  
1932 common snapping turtle (*Chelydra serpentina serpentina*), eastern box turtle (*Terrapene carolina*  
1933 *carolina*), and yellow-bellied slider (*Trachemys scripta scripta*) (Barbour et al. 2013).



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Out of the 23 species of salamander found in southwest Georgia, four species are found on the Installation, including the two-toed amphiuma (*Amphiuma means*), tiger salamander (*Ambystoma tigrinum*), slimy salamander (*Plethodon glutinosus*), and dwarf salamander (*Eurycea quadridigitata*) (MCLB 2019c). The Eastern tiger salamander is found throughout the U.S. and secure in many states but is a high priority species in Georgia with an S3 – Vulnerable status (Jensen 2020). They are found in grassy ephemeral ponds for breeding, and a variety of habitats during nonbreeding where they inhabit underground burrows (e.g. dry pine savanna) (Jensen 2020; MCLB Albany 2019b). At MCLB Albany, they have been observed along the edge of the base along a portion of North Shaw Road situated northwest of Covella Pond, and west of Indian Lake.

The only state listed amphibian or reptile species documented on the Installation is the gopher tortoise (*Gopherus polyphemus*), a dry-land turtle, which is state listed as threatened and a candidate species for federal listing in Georgia. Gopher tortoises that are a candidate species for federal listing are found throughout southeastern USA, from southern South Carolina, throughout most of Florida, and southern Alabama (east of the Tombigbee and Mobile Rivers). Their range continues to the west of Mobile and Tombigbee Rivers in Alabama, Mississippi and Louisiana where they are federally listed as Threatened (USFWS 2019b). The gopher tortoise exists in very low population numbers on the Installation. They have been observed throughout the Installation including in the northwest along South Shaw Road near the solar array on the back side of the longleaf pine stand, along Oak Lane, and east of Indian Lake (at the edge of a clayhill longleaf woodland community, a south Atlantic willow oak flatwoods forest and near South Shaw Road west of the fence).

Additionally, although not currently a federal or state listed species, the eastern diamondback rattlesnake (*Crotalus adamanteus*), generally inhabiting dry areas, is under consideration for federal listing and has been documented on MCLB Albany (Barbour et al. 2013) in many spots mostly east of Covella Pond (e.g., near Mc Cawley Avenue, next to Horseshoe Pond and Indian Lake, near Putnam Avenue, and more). Within the country, they are found in the Lower Coastal Plain of the southeast from the southern parts of North Carolina, Georgia, to southeastern Louisiana and all of Florida (USFWS 2019a). Lastly, the American alligator (*Alligator mississippiensis*) is federally listed as Similarity of Appearance (Threatened) due to its similarity to the American crocodile. They are found in wetland habitats throughout the southeast from the southern tip of Texas to northeastern North Carolina (GDNR 2016). At MCLB Albany, they have been observed along the northwest part of Indian Lake.

#### 2.4.4 Birds

Based on prior studies, incidental observations documented by environmental staff, and sightings reported on eBird (eBird 2012) and the Avian Knowledge Network (BISON 2013), 143 bird species have been documented on the Installation (Barbour et al. 2013, GDNR 1995), and an estimated 133 additional species are likely to occur on the facility based on their life histories and habitat availability (MCLB 2007, 2012e, 2013e). Of these, 95 are neotropical migrants and are protected under the federal Migratory Bird Treaty Act (MBTA), which established federal responsibilities for protecting birds that migrate across international borders, as well as their eggs and nests (USFWS 2011a).

1979 Birds representative of nearly every order occur on the facility, including but not limited to, herons  
1980 and egrets (Family Ardeidae); ducks and geese (Family Anatidae); vultures (Family Cathartidae);  
1981 harriers, kites, hawks, and eagles (Family Accipitridae); kestrels (Family Falconidae); northern  
1982 bobwhite, cuckoos (Family Cuculidae); killdeer (Family Charadriidae); turkey (Family  
1983 Phasianidae); woodpeckers and flickers (Family Picidae); flycatchers and warblers (Order  
1984 Passiformes); kingbirds (Family Tyrannidae); vireos (Family Vireonidae); crows (Family  
1985 Corvidae); owls (Order Strigiformes); nightjars (Family Caprimulgidae); swifts (Apodidae);  
1986 swallows (Family Hirundinidae); hummingbirds (Family Trochilidae); kingfisher (Order  
1987 Coraciiformes); titmice and chickadees (Family Paridae); nuthatches (Family Sittidae); creepers  
1988 (Family Certhiidae); wrens (Family Troglodytidae); kinglets (Family Regulidae); gnatcatchers  
1989 (Family Polioptilidae); bluebirds (*Sialia* spp.); robins and thrushes (Family Turdidae); catbirds,  
1990 mockingbirds, and thrashers (Family Mimidae); starlings (Family Sturnidae); tanagers (Family  
1991 Thraupidae); waterthrushes (Family Parulidae); redstarts (Family Muscicapidae); waxwings  
1992 (Family Bombycillidae); towhees (Family Emberizidae); and sparrows (Family Passeridae).  
1993 Appendix C, Table ES-2, and Table ES-3 provide a full list of documented species as well as those  
1994 likely to occur on MCLB Albany and includes their migratory status.

1995  
1996 In addition, nine of the bird species documented on the Installation are high priority species, eight  
1997 are rare species, three are state or federally listed species, and bald eagles are protected under other  
1998 federal acts (i.e., the Bald and Golden Eagle Protection Act). Documented protected species  
1999 include the bald eagle, wood stork, and Bachman's sparrow.

#### 2000 **2.4.5 Mammals**

2001 Seventeen mammal species have been documented on the facility, and an additional 33 species are  
2002 thought to occur on the Installation based on their life histories and habitat availability (Barbour  
2003 et al. 2013, GDNR 1995, MCLB 2007, 2013e). Three mammal species (i.e., white-tailed deer  
2004 [*Odocoileus virginianus*], eastern cottontail rabbit [*Sylvilagus floridanus*], and the eastern gray  
2005 squirrel [*Sciurus carolinensis*]) are considered game species and are managed accordingly (MCLB  
2006 2007). Documented species include Virginia opossum (*Didelphis virginiana*), beaver (*Castor*  
2007 *canadensis*), short-tailed shrew (*Blarina carolinensis*), nine-banded armadillo (*Dasypus*  
2008 *novemcinctus*), eastern gray squirrel, eastern fox squirrel (*Sciurus niger*), southern flying squirrel  
2009 (*Glaucomys volans*), house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), bobcat (*Lynx*  
2010 *rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*),  
2011 striped skunk (*Mephitis mephitis*), northern raccoon (*Procyon lotor*), and white-tailed deer. One  
2012 exotic mammal, wild hog (*Sus scrofa*) has also been documented, although there does not appear  
2013 to be an established population within the Installation. Feral cats (*Felis catus*) and dogs (*Canis*  
2014 *lupus familiaris*) occur on the Installation. None of the mammals identified on the Installation are  
2015 state or federally listed species. Appendix C, Table ES-2, and Table ES-3 identify the mammal  
2016 species documented on MCLB Albany, as well as those with potential to occur on the facility and  
2017 their conservation status.

#### 2018 **2.4.6 Rare, Threatened, and Endangered Wildlife Species**

2019 Biological inventories for rare species and natural communities were conducted on MCLB Albany  
2020 by GDNR between June 1990 and June 1992, and again in 1995. These surveys did not locate any  
2021 federally listed wildlife but did confirm the presence of one state listed bird (Bachman's sparrow)  
2022 (GDNR 1995, MCLB 2007). Based on life history, home ranges, habitat preferences and

2023 availability of the Installation, 32 animal species of special conservation concern have high  
2024 potential to occur on MCLB Albany and were subsequently targeted during biological inventories  
2025 on the facility by ANHP in 2013 (Barbour et al. 2013).  
2026

2027 The subsequent study confirmed evidence of the previously documented Bachman’s sparrow, as  
2028 well as twelve additional wildlife high priority species (Barbour et al. 2013, GDNR 1995; GDNR,  
2029 2015). Six species are federally-protected species or are under immediate consideration for federal  
2030 listing (bald eagle, wood stork, gopher tortoise, eastern diamondback rattlesnake, American  
2031 alligator, and monarch butterfly). Four species (gopher tortoise, bald eagle, wood stork, and  
2032 Bachman’s sparrow) are state listed, and the remaining ten species (tiger salamander, little blue  
2033 heron, northern bobwhite, loggerhead shrike [*Lanius ludovicianus*], rusty blackbird, prothonotary  
2034 warbler, grasshopper sparrow, yellow-crowned night heron, winter wren, and least flycatcher) are  
2035 high priority and/or rare species. Table 3 and Table 4 identify the rare, threatened, endangered and  
2036 high priority species documented on MCLB Albany. A complete list of rare, threatened and  
2037 endangered fauna that have the potential to occur at MCLB Albany, including their conservation  
2038 status (GDNR 2015, GDNR 2020a, NatureServe 2019, USFWS 2020, USFWS 2014a), can be  
2039 found in Appendix C. Fact sheets, which provide additional details about each of the high priority  
2040 species found on MCLB Albany, are located in Appendix D. Refer to the sections below for  
2041 profiles and Section 4.2.2.7 for management strategies for each of the rare, threatened and  
2042 endangered fauna species confirmed to be found at MCLB Albany.  
2043  
2044

**Table 4. Rare, Threatened and Endangered Wildlife Confirmed on MCLB Albany.**

Species	Common Name	Federal Status	State Status	High Priority <sup>1</sup>	Rare <sup>2</sup>
<b>Amphibians</b>					
<i>Ambystoma tigrinum</i>	Eastern tiger salamander			Yes	Yes
<b>Reptiles</b>					
<i>Crotalus adamanteus</i>	Eastern diamondback rattlesnake	UR		Yes	Yes
<i>Gopherus polyphemus</i>	Gopher tortoise	C	T	Yes	Yes
<i>Alligator mississippiensis</i>	American alligator	SA		No	
<b>Birds</b>					
<i>Haliaeetus leucocephalus</i>	Bald eagle	GBA	T	Yes	Yes
<i>Mycteria americana</i>	Wood stork	LT	E	Yes	Yes
<i>Colinus virginianus</i>	Northern bobwhite			Yes	
<i>Lanius ludovicianus</i>	Loggerhead shrike			Yes	Yes
<i>Peucaea aestivalis</i>	Bachman’s sparrow		R	Yes	Yes
<i>Egretta caerulea</i>	Little blue heron			Yes	Yes
<i>Euphagus carolinus</i>	Rusty blackbird			Yes	
<i>Protonotaria citrea</i>	Prothonotary warbler			Yes	

Species	Common Name	Federal Status	State Status	High Priority <sup>1</sup>	Rare <sup>2</sup>
<i>Ammodramus savannarum</i>	Grasshopper sparrow			Yes	
<i>Nyctanassa violacea</i>	Yellow-crowned night heron				Yes
<i>Troglodytes hiemalis</i>	Winter wren				Yes
<i>Empidonax minimus</i>	Least flycatcher				Yes
Invertebrates					
<i>Danaus plexippus plexippus</i>	Monarch butterfly	UR		Yes	

2045 <sup>1</sup>High Priority as identified in the Georgia Department of Natural Resources (GDNR), Wildlife Resources Division's  
2046 State Wildlife Action Plan (September 2015).

2047 <sup>2</sup> Identified rare by the GDNR because of its importance for biodiversity conservation. Note this is different than the  
2048 state status of Rare. (GDNR 2020b)

2049 Sources: Barbour et al. 2013, GDNR 2015, GDNR 2020a, NatureServe 2019, USFWS 2020; USFWS 2014a; USFWS  
2050 2014b.

2051 GBA – Protected under the Bald and Golden Eagle Protections Act; C – Federally listed as Candidate ; LT – Federally  
2052 listed as Threatened; E – State listed as endangered; T – State listed as threatened; R – State listed as rare; UR –  
2053 Federally listed as Under Review, species that are petitioned for listing or being reviewed for candidate process; SA  
2054 – Federally listed as Similarity of Appearance (Threatened)

2055  
2056 Birds of Conservation Concern (BCC) are species, subspecies, and populations of migratory and  
2057 non-migratory birds that the USFWS has determined to be the highest priority for conservation  
2058 actions (USFWS 2008). Game birds and invasive species are not included. The purpose of the  
2059 BCC Concern list is to prevent or remove the need for additional ESA bird listings by  
2060 implementing proactive management and conservation actions needed to conserve these species.  
2061 The USFWS maintains a list of BCC whereby species are prioritized and listed according to Bird  
2062 Conservation Regions (BCRs) which maximize the utility of the lists for a variety of partner  
2063 agencies and organizations. The Installation falls within BCR 27: Southeast Coastal Plain (USFWS  
2064 2008).

2065  
2066 Fifty-four priority bird species are identified in BCR 27. Of these, 14 species—including the bald  
2067 eagle, solitary sandpiper (*Tringa solitaria*), common ground dove (*Columbina passerina*), Chuck-  
2068 will's-widow (*Caprimulgus carolinensis*), redheaded woodpecker (*Melanerpes erythrocephalus*),  
2069 loggerhead shrike, brown-headed nuthatch (*Sitta pusilla*), wood thrush (*Hylocichla mustelina*),  
2070 black-throated green warbler (*Dendroica virens*), prairie warbler (*D. discolor*), prothonotary  
2071 warbler (*Protonotaria citrea*), Kentucky warbler (*Oporornis formosus*), Bachman's sparrow, and  
2072 rusty blackbird (*Euphagus carolinus*)—have been confirmed on MCLB Albany (Barbour et al.  
2073 2013, GDNR 1995). Furthermore, the USFWS Information for Planning and Consultation (IPaC)  
2074 site indicated that in addition to the BCC species that have been confirmed on the base, swallow-  
2075 tailed kite (*Elanoides forficatus*), American kestrel (*Falco sparverius sparverius*), cerulean  
2076 warbler (*Setophaga cerulea*), lesser yellowlegs (*Tringa flavipes*), semipalmated sandpiper  
2077 (*Calidris pusilla*), and short-billed dowitcher (*Limnodromus griseus*) species also have the  
2078 potential to occur at MCLB Albany (USFWS 2020). Also, an additional 17 species could

2079 potentially occur on the Installation based on their home ranges and habitat preferences (MCLB  
2080 2013e).

#### 2081 **2.4.6.1 Bald Eagles**

2082 The bald eagle is federally protected under the *Bald and Golden Eagle Protections Act*, an Act  
2083 passed in 1940, and amended in 1962 to include the golden eagle (*Aquila chrysaetos*). The Act  
2084 protects the species and their parts against being taken, possessed, and transported (Eagle Permits,  
2085 50 CFR §22). The bald eagle was previously listed as endangered federally but recovery in  
2086 populations allowed the bird to be removed from the list in 2007. The primary threat to bald eagles  
2087 was loss of reproduction due to DDT (dichloro diphenyl trichloroethane) and other chemicals  
2088 (Ozier et al. 2019), although with habitat protections and the banning of DDT in 1972 (CDC 2017;  
2089 USFWS, 2015) populations were able to recover. Today, the greatest threat posed to the bald eagle  
2090 is the presence of persistent toxic chemicals such as PCBs, mercury, and other pesticides and  
2091 herbicides, which can either poison the bird directly or impair its ability to reproduce (Ozier et al.  
2092 2019). In the State of Georgia, the bald eagle is listed as Threatened (Georgia Comp. R. & Regs.  
2093 R. 391-4-10-.09 (2)(n) 2020).

2094  
2095 Bald eagles are found across the country, and they are known to live near rivers, lakes, wetlands,  
2096 and sometimes coastlines (USFWS, 2015). They usually nest in a large, open-topped pine—or  
2097 occasionally a cypress—near open water, often on high ground if available (Ozier et al. 2019).  
2098 Bald Eagles have been reported by personnel at MCLB Albany, but surveys on the base failed to  
2099 detect the species (Barbour et al. 2013). They do not appear to nest or be permanent residents of  
2100 the Installation (Barbour et al. 2013, GDNR 1995); rather, it is likely that eagle sightings on the  
2101 base pertained to either migrating or foraging eagles. Bald eagle nests are large and usually  
2102 conspicuous, and it is likely that any nesting eagles would have been detected on surveys. It is  
2103 therefore likely that the eagle sightings on the base pertained to either migrating or foraging eagles.  
2104 Bald eagle populations in Georgia are steadily recovering and nesting pairs are known to occur in  
2105 Dougherty County.

#### 2106 **2.4.6.2 Eastern diamondback rattlesnakes**

2107 Eastern diamondback rattlesnakes are found in the Lower Coastal Plain of the southeast from the  
2108 southern parts of North Carolina, Georgia, to southeastern Louisiana and all of Florida (USFWS  
2109 2019a). Eastern diamondback rattlesnakes are of increasing conservation concern because they  
2110 have apparently experienced a significant decline in numbers and distribution over the past several  
2111 decades. In response to a petition to list the eastern diamondback rattlesnake as threatened, the  
2112 USFWS issued a 90-day finding that listing may be warranted and initiated a review of the status  
2113 of the species to determine if listing is warranted (USFWS 2012b).

2114  
2115 Eastern diamondback rattlesnakes have been confirmed present on MCLB Albany (Figure 8). They  
2116 occupy most dry, upland habitats with an open canopy, especially the rare longleaf pine woodland  
2117 community, and usually do not persist in suburban or other developed areas. The eastern  
2118 diamondback rattlesnake is a large, heavy-bodied snake that typically reaches a maximum length  
2119 of 1.65 m (5.5 ft.), but occasionally may reach up to 2.2 m (7.2 ft.) (Means 2004). Eastern  
2120 diamondback rattlesnakes have large, dark, diamond-shaped markings outlined in white or yellow  
2121 on a ground color of brown, gray, or yellowish and a uniformly cream-colored belly. Rattlesnakes



2122 are unique in possessing a terminal rattle, composed of unshed scales, that is used to give an aural  
2123 warning. Their diet consists mainly of mammals, primarily rodents and rabbits, and occasionally  
2124 birds. Diamondback rattlesnakes are ambush predators that may remain stationary in one spot for  
2125 weeks waiting for prey (primarily rodents, rabbits, birds) to pass by. Rattlesnakes are almost  
2126 exclusively diurnal and are rarely found moving after dark. This species becomes inactive during  
2127 cold weather from November through March and seeks underground shelter in stump holes with  
2128 networks of decayed root tunnels and gopher tortoise burrows, often returning to the same  
2129 underground refugia which they used in previous winters (Means 2004). During the warmer  
2130 months, they spend most of their time above ground waiting to ambush prey. However, gravid  
2131 females often go underground in August and September to give birth.

### 2132 **2.4.6.3 Gopher tortoise**

2133 Gopher tortoise populations west of the Mobile River in Alabama, Mississippi, and Louisiana were  
2134 listed as threatened under the U.S. Endangered Species Act (ESA) in July 1987 (Endangered and  
2135 Threatened Wildlife and Plants, 50 CFR §17). Eastern populations in Alabama east of the Mobile  
2136 River, in Florida, Georgia, and South Carolina were elevated to a candidate for protection under  
2137 the ESA on 27 July 2011, with a Listing Priority Number of 8 (meaning that threats are imminent  
2138 and of moderate magnitude) (76 FR 45130, USFWS 2011b). The State of Georgia lists the gopher  
2139 tortoise as a threatened species (Georgia Comp. R. & Regs. R. 391-4-10-.09(3)(h) 2020). Gopher  
2140 tortoises are a species of increasing conservation concern because of population declines  
2141 throughout their range due to habitat loss and fragmentation, habitat degradation, and historic  
2142 effects of overexploitation for meat and gassing of burrows for rattlesnake roundups. In addition  
2143 to habitat destruction or degradation, threats to the gopher tortoise population across its range  
2144 include illegal hunting and collection, motor vehicle accidents, and predation. Additionally, feral  
2145 and domestic dogs, coyotes and raccoons are known to kill adult tortoises. Nests and hatchlings  
2146 are preyed upon by armadillos, raccoons, opossums, foxes, cats, skunks, and snakes (Kobilinsky  
2147 2016; Jensen et al. 2011). MCLB Albany has a high population of these predators, including a  
2148 small population of coyotes, because of suitable conditions for them (e.g., access to dumpsters).  
2149 Gopher tortoise courtship and mating occur from April to early June; nesting peaks in early June  
2150 but may last until mid-July (Jensen et al. 2018).

2151  
2152 Of the four tortoise species that occur in the United States, the gopher tortoise is the only species  
2153 that is indigenous to the southeastern United States (MCLB 2007). The range of the tortoise  
2154 extends throughout the southeastern coastal plain in dry habitats, such as longleaf pine-scrub oak  
2155 sandhills and clayhills, live oak and red oak hammocks, sand pine scrub, wire grass flatwoods, dry  
2156 prairies, and coastal dune ecosystems (Jensen et al. 2018). Gopher tortoises feed on low plant  
2157 growth and dig burrows that can be as large as 40 feet long and 10 feet deep, where they spend  
2158 most of their time (Jensen et al. 2018). The burrows also act as shelter for more than 360 species  
2159 of animals, including skunks, opossums, rabbits, quail, armadillos, burrowing owls, snakes,  
2160 lizards, frogs, toads, and many invertebrates. Gopher tortoise habitat includes sandhills, dry  
2161 hammocks, longleaf pine-turkey oak woodlands, and old fields. Although diverse herbaceous  
2162 ground cover and an open canopy are important components of gopher tortoise habitat, soil type  
2163 is the single most reliable indicator of suitable habitat. Suitable undeveloped soil types for the  
2164 gopher tortoise on MCLB Albany are summarized in ANHP (2013) and Guyer et al. (2011).  
2165



2166 Gopher tortoises previously occupied MCLB Albany and based on recent studies on the facility  
2167 likely still occur in low numbers on the Installation (Barbour et al. 2013, MCLB 2007). Surveys  
2168 of the suitable areas in 2013 confirmed two active burrows on the Installation. The study also  
2169 found the remains of a tortoise (shell fragments and a few bones) on the edge of a pine stand south  
2170 of Desha Loop and located four abandoned burrows (Barbour et al. 2013) (Figure 8). Based on an  
2171 assessment of site conditions and knowledge of gopher tortoise life history, gopher tortoises were  
2172 at that time believed to be close to being extirpated from the Installation (Barbour et al. 2013).  
2173 More recent surveys in October of 2019 confirmed that two gopher tortoise burrows were in active  
2174 use on the Installation: one by the solar array at the edge of the Installation on the fire break, and  
2175 one on the back side of a longleaf pine stand in Area 3, which is a forest stand in the northeast  
2176 quadrant between Quail Call Road and South Shaw Road (see Figure 8; Robbins 2019).

2177  
2178 Gopher tortoises are typically associated with well-drained, deep, sandy soils in which burrows  
2179 can be excavated. They construct extensive underground burrows and are the only turtle in the  
2180 southeast that digs its own burrow (Buhlman et al. 2008). These deep burrows create a unique  
2181 microenvironment that is used by more than 360 other animal species (Aresco and Guyer 2004).  
2182 Therefore, gopher tortoises are thought to be a keystone species for the longleaf pine ecosystem  
2183 (Guyer and Bailey 1993).

2184  
2185 Gopher tortoises are primarily associated with longleaf pine and xeric oak (*Quercus* spp.)  
2186 sandhills, but are also found in other habitats such as pine flatwoods, mixed hardwood-pine  
2187 communities, coastal grasslands and dunes, and a variety of disturbed habitats such as utility  
2188 rights-of-way and field edges (Florida Fish and Wildlife Conservation Commission 2007). Open  
2189 areas are important for thermoregulation, so tortoises avoid areas with thick shrubby vegetation  
2190 and prefer habitat with a relatively open canopy that promotes the growth of sufficient herbs and  
2191 grasses for foraging and allows the sunlight intensity necessary for thermoregulation and nesting  
2192 (Aresco and Guyer 2004, Buhlman et al 2008). Guyer et al. (2011) reported tortoise burrow  
2193 densities on private land in south-central Georgia were highest in open-canopied pine stands that  
2194 were managed with prescribed fire, whereas unburned areas and agricultural sites provided poor  
2195 habitat.

#### 2196 **2.4.6.4 Wood Stork**

2197 Wood storks are found across the southeast from North Carolina, to Mississippi, and all throughout  
2198 Florida with nesting occurring in Florida, Georgia, North Carolina, and South Carolina (USFWS,  
2199 2018). They are federally listed as a threatened species as of July 30, 2014 (Endangered and  
2200 Threatened Wildlife and Plants, 50 CFR §17). They are large, long-legged wading birds,  
2201 approximately 50 inches in height with a wingspan of 60 to 65 inches (Major 2004). The wood  
2202 stork is highly colonial and usually nests in rookeries within the upper branches of large trees  
2203 (often cypress) in proximity to water and wetlands (Major 2004, MCLB 2007). Wood storks  
2204 capture their prey by wading in water, probing around with their bills open, and snapping them  
2205 shut when fish touch them. They feed in freshwater marshes, narrow tidal creeks, or flooded tidal  
2206 pools.

2207  
2208 Georgia populations of the wood stork averaged 1,389 pairs per year from 1992–2005 (GDNR  
2209 2010). The largest nesting population ever recorded in the state occurred in 2008 when 2,292 pairs  
2210 nested. Indications are that the state's population is presently stable or increasing slightly. In June

2211 2014, the USFWS down-listed the wood stork from federally endangered to federally threatened  
2212 (USFWS 2014a). The species remains listed as endangered by the State of Georgia (Georgia  
2213 Comp. R. & Regs. R. 391-4-10-.09(2)(o) 2020). The number of nesting pairs or wood storks in  
2214 Georgia has an overall positive trend but with significant variability year to year (Harris et al.  
2215 2019). Primary factors in population declines for wood stork include habitat damage and drainage  
2216 of wetlands; less significant factors include prolonged drought or flooding, raccoon predation on  
2217 nests, and human disturbance of rookeries (MCLB 2007).  
2218

2219 Studies in 2012 and 2013 found that wood storks did not breed on MCLB Albany but used  
2220 wetlands on the base for foraging (Barbour et al. 2013, MCLB 2012b). They were known to roost  
2221 in the cypress trees at Indian Lake during post-breeding movements. However, more recent  
2222 observations by natural resources personnel have raised the possibility that wood storks might have  
2223 begun nesting in Indian Lake's cypress stand. Drone imagery captured in 2019 in partnership with  
2224 GDNR was not high enough resolution to confirm that wood storks were definitively the species  
2225 of white bird visible nesting, so the NRM will reattempt to make this determination during the  
2226 2020 nesting season (Robbins 2020).

#### 2227 **2.4.7 Nuisance and Invasive Wildlife Species**

2228 Nuisance wildlife are species that cause inconvenience, annoyance, or irritation to the general  
2229 human population, may damage property, or disrupt ecosystem function and natural communities.  
2230 Nuisance wildlife on MCLB Albany includes a range of mammals, reptiles, birds, and insects,  
2231 including species classified as invasive and/or exotic species. Invasive species may include native  
2232 species, such as white-tailed deer, that under certain conditions proliferate and cause nuisance-  
2233 related issues. Exotic species are those which are introduced or colonize an area outside their native  
2234 ranges and may or may not cause nuisance related issues. House mouse (*Mus musculus*), Norway  
2235 rat, black rats (*Rattus rattus*), German cockroach (*Blattella germanica*), and the red imported fire  
2236 ant (*Solenopsis invicta*) are examples of nuisance exotic species found on MCLB Albany. These  
2237 species are also classified as invasive. Feral domestic animals such as feral cats, dogs, and hogs  
2238 are often classified as nuisance wildlife, exotic wildlife, and in the case of feral cats and hogs are  
2239 invasive. All three species occur on the Installation (Barbour et al. 2013). A list of wildlife  
2240 considered by the USFWS to be invasive species for the Installation is provided in Appendix C.  
2241

2242 Imported red fire ants, cockroaches of various species, and other insects that colonize buildings  
2243 are the most common invasive animal species found on MCLB Albany. The tawny crazy ant  
2244 (*Nylanderia fulva*) has been reported in Dougherty County and may become established on MCLB  
2245 Albany. The tawny crazy ant is known to displace other ant species and inflict painful bites and  
2246 stings. Africanized honeybees (*Apis mellifera*) have also been documented in Dougherty County.  
2247

2248 Stray or feral cats and dogs are often the most significant nuisance wildlife issue facing military  
2249 Installations. Feral cats, identified as one of the world's 100 worst invasive species (ISSG 2010),  
2250 commonly occur on the facility and have become a significant issue within the past several years  
2251 (MCLB 2012a). The domestic cat is an exotic species to North America and those that are feral or  
2252 free-ranging are recognized as a widespread and potentially serious threat to the integrity of native  
2253 wildlife populations and natural ecosystems. Both free-ranging cats and dogs can harbor and  
2254 transmit a variety of fatal and non-fatal diseases to domestic and other wildlife and can adversely  
2255 affect human health and welfare. The effects of cats on wildlife are difficult to quantify, however,

2256 a growing body of literature strongly suggests that feral cats are a significant factor in the mortality  
2257 and population shifts of small mammals, birds, reptiles, and amphibians (Dauphine and Cooper  
2258 2009, Loss et. al. 2013, Winter 2006).

2259  
2260 Feral hog (*Sus scrofa*) numbers are generally increasing in southern Georgia. These animals cause  
2261 damage to native habitats and wildlife food plots, compete with native wildlife for food and space,  
2262 and damage agricultural crops on adjoining farms, and can be difficult to eradicate once  
2263 established. Feral hogs occur intermittently on MCLB Albany as they travel along Piney Woods  
2264 Creek. However, it has been more than five years since the most recent observation of two feral  
2265 sows on the Installation (MCLB 2013b, Robbins 2019). Hog tracks were also documented along  
2266 the access road running from the entrance gate in the summer of 2013 and appear to have entered  
2267 the facility through a downed portion of the perimeter fence (Barbour et al. 2013).

2268  
2269 Other wildlife such as stray dogs, bats, snakes, skunks, fox and a wide variety of potentially  
2270 nuisance insects (e.g., cockroaches, bees, ants, spiders) are widely distributed on the Installation.

2271  
2272

2273 **3.0 ENVIRONMENTAL PLANNING AND MISSION SUSTAINABILITY**

2274 **3.1 SUPPORTING SUSTAINABILITY OF THE MILITARY MISSION AND THE NATURAL**  
2275 **ENVIRONMENT**

2276 **3.1.1 Integration of the Military Mission and Land Use**

2277 The Marine Corps has taken a proactive approach towards integrating the military mission with  
2278 concepts of sustainable land use by recognizing that efficient and effective land use planning  
2279 supports military readiness and sustainability, while protecting and enhancing the natural resources  
2280 for multiple use, sustained yield, and biological integrity. Development and human use are  
2281 inherently limited on military lands that are kept in their natural condition to support the military  
2282 mission, often resulting in lands that have extremely high ecological value. These areas may  
2283 include large tracts of undisturbed habitats and diverse flora communities that are often used as  
2284 retreat areas, migration stopover points, or foraging areas for threatened and endangered, and  
2285 special concern fauna species. Recognizing that military mission requirements have the highest  
2286 priority, the Marine Corps understands the role INRMPs play in identifying potential conflicts  
2287 between a facility's mission and natural resources and identifying actions necessary to maintain  
2288 the availability of mission-essential properties and acreage. An INRMP balances the management  
2289 of natural resources unique to the installation with the military mission requirements and other  
2290 land use activities affecting an installation's natural resources. MCLB Albany understands the  
2291 importance of integrating the military mission and land use to meet the mission of military training  
2292 and readiness, while managing the valuable natural resources to ensure long-term environmental  
2293 sustainability.

2294 **3.1.2 Impacts to the Military Mission**

2295 The use and management of lands that support military training and readiness, and the decision-  
2296 making associated with such land use, directly affect the sustainability of the ecosystem. Specific  
2297 components of natural resources management at MCLB Albany include consideration of land, fish  
2298 and wildlife, forestry, and outdoor recreation resources, as well as integrated ecosystems  
2299 management and partnering. To protect and maintain natural resources while ensuring the  
2300 continuation of the military mission, MCLB Albany has implemented an ecosystem management  
2301 approach for environmental stewardship of the Installation's natural resources. The management  
2302 strategy maximizes land use that supports military training while minimizing impacts to natural  
2303 resources.

2304  
2305 The major environmental constraints on the military mission and development at the Installation  
2306 are:

- 2307 • the need for conservation and management of federally protected species known to occur  
2308 on MCLB Albany.
- 2309 • the limitation on new construction in wetlands, floodplains, and riparian buffer areas.
- 2310 • avoidance of historic and pre-historic features.
- 2311

2312 **3.1.3 Relationship of Range Complex Management Plan or Other Operation Area Plan**

2313 MCLB Albany does not fall under a Range Complex Management Plan. This INRMP section is  
2314 not applicable.

2315 **3.2 ACHIEVING NO NET LOSS**

2316 Section 101(b)(1)(I) of the Sikes Act states that each INRMP shall, to the extent appropriate and  
2317 applicable, and consistent with the use of the installation to ensure the preparedness of the Armed  
2318 Forces, provide for “no net loss in the capability of military installation lands to support the  
2319 military mission of the installation.” It is DOD policy that appropriate management objectives to  
2320 protect mission capabilities of installation lands (from which annual projects are developed) be  
2321 clearly articulated and receive high priority in the INRMP planning process (HQMC 2007).

2322  
2323 The effectiveness of this INRMP in preventing “net loss” will be evaluated annually. Mission  
2324 requirements and priorities identified in this INRMP will, where applicable, be integrated into  
2325 other environmental programs and policies. It is not the intent that natural resources are to be  
2326 consumed by mission requirements, but rather are sustained for the use of mission requirements.  
2327 In order to achieve this, the goal of this INRMP is to conserve the environment for the purpose of  
2328 the military mission. There may be instances in which a “net loss” may be unavoidable in order to  
2329 fulfill regulatory requirements other than the Sikes Act, such as complying with a biological  
2330 opinion under the provisions of the ESA, or from the protection of wetlands under the provisions  
2331 of the CWA. However, both the USFWS and USACE are required to adhere to the Sikes Act  
2332 provision of no net loss. Loss of mission capability in these instances will be identified in the  
2333 annual update of the INRMP and will include a discussion of measures being undertaken to  
2334 recapture any net loss in mission capability.

2335 **3.3 NATURAL RESOURCES CONSULTATION REQUIREMENTS**

2336 Section 7 of the ESA requires federal agencies to formally consult with USFWS (regarding fish  
2337 and wildlife) or NOAA NMFS (regarding fish or fisheries) when any proposed activity authorized,  
2338 carried out, or conducted by that agency may significantly affect a listed species or designated  
2339 critical habitat. As a result of consultation, USFWS or NOAA NMFS would issue a biological  
2340 opinion, which includes actions that the federal agency must complete in order to conduct the  
2341 proposed activity. If critical habitat is located on federal property and adequate protection and  
2342 management of the critical habitat has been included in the installation’s INRMP, the ESA allows  
2343 USFWS to preclude this habitat from the biological opinion. However, in order for the critical  
2344 habitat to be excluded, the qualifying INRMP must address the maintenance and improvement of  
2345 the primary constituent elements important to the species and must manage for the long-term  
2346 conservation of the species. For minor or less than significant impacts to ESA-listed species or  
2347 designated critical habitat, informal consultation with USFWS and NOAA NMFS may be  
2348 appropriate.

2349  
2350 Two federally protected species (bald eagle and wood stork), and one species under consideration  
2351 for federal listing (eastern diamondback rattlesnake), have been recorded on the Installation  
2352 (Barbour et al. 2013). Bald eagles and wood stork occasionally utilize habitats of the facility but  
2353 are not known to breed on MCLB Albany. The eastern diamondback rattlesnake is relatively  
2354 widespread on the Installation and is believed to be breed there. In addition, the federally



2355 endangered gopher tortoise has been documented on MCLB Albany and remains were discovered  
2356 during a 2013 survey as well as a few sightings of live individuals by Natural Resources staff.  
2357 Although facility-wide surveys were performed recently, future surveys may identify additional  
2358 ESA-listed species. The USFWS has not designated critical habitat rules for any of the federally  
2359 listed species found on the Installation.

2360 Section 7 consultation (formal or informal) is not expected to be required for any of the natural  
2361 resources' management measures recommended in this document.

### 2362 **3.4 NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE**

2363 Passage of the SAIA brought into effect the requirement that “the Secretary of each military  
2364 department shall prepare and implement an integrated natural resources management plan for each  
2365 military installation in the United States under the jurisdiction of the Secretary” (HQMC 2007).  
2366 The Council on Environmental Quality (CEQ) defines an INRMP as a major Federal action  
2367 requiring NEPA analysis, and as a result the Navy Office of General Counsel (Installations and  
2368 Environment) has established that implementation of an INRMP per SAIA requirements,  
2369 necessitates the preparation of NEPA documentation prior to approval of the initial INRMP for a  
2370 facility. The preparation of an EA is usually sufficient to satisfy the NEPA review requirement for  
2371 most installation INRMPs; however, in cases where implementation of the INRMP would have  
2372 significant impact on the environment, the preparation of an Environmental Impact Statement  
2373 (EIS) is required. Annual INRMP updates and revisions are covered by the original NEPA  
2374 documentation unless a major change in installation mission or programmatic objectives occurs;  
2375 in which case an EA or EIS would be required.

2376  
2377 Decisions that affect future land or resource use that are associated with an INRMP require NEPA  
2378 analysis. The NRM should refer to Chapter 12 of MCO 5090.2 for basic guidance on the  
2379 preparation of NEPA documents. The INRMP and associated NEPA documentation should be  
2380 prepared as individual documents to ensure that the viability, integrity, and intent of each are  
2381 maintained. The intent of the INRMP is to outline projects that would fulfill Marine Corps  
2382 compliance and stewardship obligations, while the intent of the NEPA documentation is to analyze  
2383 the impacts of the programmatic objectives outlined within the INRMP. While each of these are  
2384 prepared as separate documents, they should be prepared simultaneously as it is important for  
2385 installation natural resource managers to coordinate the two documents at the earliest possible  
2386 stage to ensure that decisions reflect current environmental values, and avoid potential conflicts.

2387  
2388 Preparation of the NEPA documentation should be completed early to accommodate Marine Corps  
2389 decision-makers. If a comment period or public notice is required for the NEPA process, public  
2390 notice and comment periods should be coordinated and integrated with the INRMP. A Finding of  
2391 No Significant Impact (FONSI) must be achieved before an INRMP may be approved. If a FONSI  
2392 is not achievable, the NEPA process must proceed to an EIS. One of the first steps in the NEPA  
2393 process is to define the proposed action and explain its purpose and need. The proposed action is  
2394 needed to develop and implement an INRMP that integrates natural resources management with  
2395 the installation's military use in a manner that ensures military readiness and provides for  
2396 sustainable multipurpose uses and conservation of natural resources (HQMC 2007). The purpose  
2397 and need for the INRMP is to meet statutory requirements imposed by the SAIA as well as the  
2398 requirements of various DOD and Marine Corps instructions. The purpose and need section of the



2399 NEPA document can be further clarified with a brief discussion of the required plan elements (as  
2400 outlined in the SAIA) applicable to the installation.

2401  
2402 The majority of the NEPA document should focus on the discussion of relevant environmental  
2403 issues and reasonable alternatives. Alternatives that are not feasible because they are inconsistent  
2404 with the installation's mission, unreasonably expensive, and/or are too technically or logistically  
2405 complex should not be included in the analysis. Additionally, any alternative that are associated  
2406 with significant environmental impacts cannot be analyzed in an EA and would require preparation  
2407 of an EIS. The CEQ defines reasonable alternatives as those that are economically and technically  
2408 feasible and utilize common sense. Feasibility is a measure of whether an alternative makes sense  
2409 and is achievable. The analysis should focus on the alternatives and methodologies proposed for  
2410 implementing the programmatic objectives that have been established for natural resources  
2411 management.

2412  
2413 Although specific projects are not required to be analyzed in the NEPA document, a complete list  
2414 of projects, including description, cost estimate, funding priority designations, and implementation  
2415 schedule must be included to provide the basis of the proposed action. If agency stakeholders and  
2416 the Marine Corps determine that potential projects are controversial, sufficient project details must  
2417 be provided in the INRMP so that a decision can be made regarding significance as part of the  
2418 NEPA analysis. Additionally, controversial projects, or projects outside the scope may require a  
2419 tiered or amended NEPA document for that specific project. All projects must be consistent with  
2420 the methodologies analyzed in the NEPA document, and the installation should ensure that the  
2421 NEPA documentation for the INRMP is prepared such that it would accommodate for unforeseen  
2422 projects, and changes to original projects.

2423  
2424 An EA was prepared for implementation of the original INRMP for MCLB Albany in 2001 and a  
2425 FONSI was issued (MCLB 2007). A subsequent NEPA analysis was presented in the updated 2007  
2426 INRMP that determined that implementation of the updated INRMP would have no significant  
2427 direct, indirect, or cumulative impacts on the quality of the natural or human environment (MCLB  
2428 2007). The 2014 INRMP update was covered by the original NEPA documentation, as there had  
2429 been no major changes in the Installation's mission or programmatic objectives from those  
2430 presented in the 2007 INRMP (MCLB 2012a), and no significant direct, indirect, or cumulative  
2431 impacts on the quality of the natural or human environment were anticipated from its  
2432 implementation. Since the 2014 INRMP update went into effect, there have been substantial  
2433 changes to the Installation's natural resources as a result of extensive destruction caused by two  
2434 natural disasters—an EF3 tornado in 2017 and Hurricane Michael in 2018. There have been major  
2435 transformations to the forest composition, and accordingly, the programmatic objectives have been  
2436 extensively revised. Therefore, this document constitutes a formal *revision*, rather than a simple  
2437 update, to the INRMP. To satisfy NEPA requirements (HQMC 2018), an EA, is under preparation.  
2438 To fulfill public review requirements, the Pre-Final Public Review INRMP revision and Pre-Final  
2439 EA will be made available for public review with appropriate public notifications. Comments will  
2440 be addressed as appropriate in the Final INRMP and Final EA documents.

2441

2442 **3.5 ENCROACHMENT PARTNERING**

2443 The Navy and Marine Corps Encroachment Partnering Program was developed to proactively  
2444 address encroachment at installations, ranges, and operating areas in order to maintain the ability  
2445 to meet mission requirements, as well as effective testing and training capabilities per MCO  
2446 11010.22B (July 2010). Subsequently, MCO 11011.23, *Policies and Procedures of Encroachment*  
2447 *Control Management* (2015), defined encroachment as any internal or external factors that degrade  
2448 or have the potential to degrade the Marine Corps' capability to conduct current and future military  
2449 testing, training, and general mission activities on its installations. Encroachment Partnering (EP)  
2450 is the Marine Corps' term for a shared strategy of working with state and local agencies and private  
2451 conservation organizations to prevent incompatible land use or loss of habitat that could affect  
2452 current or future military operations (HQMC 2007).

2453 Consistent with the finding of the 2009 Encroachment Control Plan (ECP), MCLB Albany's 2016  
2454 ECP Update found that encroachment was not a current or imminent threat to the MCLB Albany  
2455 mission (MCLB 2016); therefore, the emphasis is on preventing encroachment. Due to changing  
2456 conditions on-base and in the surrounding area, many of the former encroachment factors have  
2457 been diminished, so the ECP Update addresses five issues which fall into three categories: 1) Land  
2458 Use; 2) Water Supply and Quality; and 3) Natural Factors and Climate Effects.

2459 Although the urgency for off-Installation compatible land use is low, it was deemed a high priority  
2460 to continue engagement with the City of Albany, Dougherty County, and Southwest Georgia  
2461 Regional Commission for ensuring future compatible zoning and land use (MCLB 2016). In the  
2462 case that an unforeseen encroachment threat emerges, the Marine Corps might be able to abate the  
2463 issue by partnering with the City and County, or if partnering is unsuccessful, by funding a  
2464 restrictive easement. MCLB Albany also should proactively identify stakeholders with an interest  
2465 in protection of lands with open space, such as the American Farmland Trust, Georgia Land  
2466 Conservation Center, Georgia Agricultural Land Trust, or adjoining landowners.

2467 Two off-Installation parcels are presently being converted from open land to industrial uses: across  
2468 the street to the south of the Installation, 3,000 acres of former farm fields are in the process of  
2469 being developed as a solar array; and on the north side of the Installation, Georgia Timber &  
2470 Plywood Company is opening a new plant (Robbins 2019). These new landowners and uses could  
2471 possibly present new encroachment issues due to the parcel no longer being available for  
2472 expansion of the base, unknown impacts of habitat fragmentation, and the possibility of  
2473 incompatible land use (e.g., if there is an issue related to prescribed burning or the resulting  
2474 smoke). MCLB Albany might try opening communication with the landowners or developers to  
2475 attempt to form agreements before any conflicts arise.

2476 In addition to serving as buffers, the lands adjacent to MCLB Albany may also serve as future  
2477 conservation lands for rare and sensitive species, especially if restored as early successional,  
2478 longleaf pine forest or other priority habitats. At this time, however, protected natural resources  
2479 were found not to pose an encroachment threat, as the listing of a new species does not affect  
2480 operations. With a long look to the future, MCLB Albany has identified Natural Factors and  
2481 Climate Effects as a high priority encroachment issue, calling for continued communication within  
2482 DOD and the Marine Corps, as well as with local, state, and federal entities to incorporate guidance

2483 on climate change adaptation into long-term planning and emergency preparedness and response  
2484 planning.

2485

## 2486 **4.0 NATURAL RESOURCES MANAGEMENT**

2487 This section provides detailed information on the regulatory requirements and management  
2488 strategies for the five primary natural resource management areas identified for MCLB Albany.  
2489 Specific INRMP projects and management actions have been developed for each to assist MCLB  
2490 Albany in meeting the established INRMP goals and objectives (defined in Section 1.6).  
2491 Management actions—those activities that will be conducted in-house—are identified under the  
2492 resource sections to which they pertain and support. All projects that require funding for their  
2493 implementation are summarized in Appendix F. In addition to the projects associated with the five  
2494 target natural resource management areas, there are also specific natural resources management  
2495 projects described at the end of this section that cover annual and no less often than every five-  
2496 year reviews of this INRMP, and funding the NRM position. The INRMP Project Table, in  
2497 Appendix F, provides additional details for each project, including project schedule, legal drivers,  
2498 budget criteria, and funding sources. No impacts to the military mission are expected to occur from  
2499 implementation of the objectives and recommendations described in this section.

2500

2501 Management practices and activities are divided into five natural resource management focus areas  
2502 as follows:

- 2503 1) Section 4. 1 - Land Management
- 2504 2) Section 4. 2 - Fish and Wildlife Management
- 2505 3) Section 4. 3 - Forestry Management
- 2506 4) Section 4. 4 - Outdoor Recreation Management
- 2507 5) Section 4. 5 - Integrated Ecosystems Management and Partnering

2508

2509 The natural resources management actions described in this INRMP are for the benefit of land,  
2510 fish and wildlife, and outdoor recreation resources of the Installation. Each activity described in  
2511 the followings sections is associated with goals, issues, objectives, strategies, and projects to help  
2512 maintain a balance between the Installation’s natural resources management and the military  
2513 mission.

2514

### 2515 **4.1 LAND MANAGEMENT**

2516 Responsibility for the overall land management program at MCLB Albany is divided between the  
2517 Public Works Officer (PWO) and the Natural Resource Manager (NRM). The PWO is responsible  
2518 for ensuring that the goals and objectives for areas designated as improved and semi-improved  
2519 grounds are implemented in a cost-effective manner. Typically, these duties include soil erosion  
2520 control, grounds maintenance (i.e., mowing, fertilizing, and liming), weed and brush control, and  
2521 landscaping. The NRM is responsible for managing the areas designated as unimproved grounds.  
2522 Duties and responsibilities that are inherent with the unimproved grounds include the protection  
2523 and management of federally listed threatened and endangered species; management of food plots  
2524 for wildlife; fish and wildlife management; outdoor recreational programs (e.g., hunting and  
2525 fishing), forestry program, and maintaining the ecological integrity of the Indian Lake Wildlife  
2526 Refuge. The NRM has the primary responsibility of implementing the INRMP. Land management

2527 activities on MCLB Albany are addressed by the following sections and subsections, and are  
2528 detailed below:

- 2529 1) Section 4.1.1 Water Resources Management
- 2530       Section 4.1.1.1 Watershed and Floodplains Management
- 2531       Section 4.1.1.2 Wetland and Deepwater Habitats Management
- 2532       Section 4.1.1.3 Riparian Areas Management
- 2533       Section 4.1.1.4 Water Quality Management
- 2534 2) Section 4.1.2 Coastal Zone Management
- 2535 3) Section 4.1.3 Vegetation and Habitat Management
- 2536       Section 4.1.3.1 Invasive Plant and Noxious Weed Management
- 2537       Section 4.1.3.2 Grounds Maintenance and Landscaping Management
- 2538 4) Section 4.1.4 Agricultural Outlease Management
- 2539 5) Section 4.1.5 Rare, Threatened, and Endangered Plant Species Management

#### 2540 **4.1.1 Water Resources Management**

2541 Water resources are an important part of natural ecosystems due to the diverse biological and  
2542 ecological functions they support and hydrologic functions they perform, such as improving water  
2543 quality, groundwater recharge, pollutions treatment, nutrient cycling, provision of wildlife habitat  
2544 and niches for flora and fauna, stormwater storage, and erosion protection (Benton et al. 2008).  
2545 The ecological and human health importance of maintaining healthy water bodies at MCLB  
2546 Albany is reinforced by several federal and state laws and regulations (see table below). In  
2547 addition, MCO 5090.2 and DODINST 4715.03 also promote the importance of maintaining  
2548 healthy water body systems on the Installation. The Marine Corps recognizes the importance of  
2549 the nation’s water resources, and as such is committed to supporting their conservation. Water  
2550 resources management on the Installation addresses watersheds, floodplains, surface waters,  
2551 wetlands, and riparian areas. The following sections provide additional detail on the specific water  
2552 resources management issues, projects, and management strategies covered by this INRMP.

#### 2553 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Water Resources*** 2554 ***Management***

- 2556 • Clean Water Act (CWA) Section 303, Water Impairment Identification, requires States to  
2557 identify waters that do not or are not expected to meet applicable water quality standards  
2558 with technology-based controls alone and to develop programs to achieve the State  
2559 standards.
  - 2560 ○ CWA Section 401, Water Quality Certification, 1986, 33 U.S.C. 1341, Requires  
2561 that states certify compliance with federal permits or licenses and with state water  
2562 quality requirements and other applicable state laws. Under Section 401, states have  
2563 the authority to review any federal permit or license that may result in a discharge  
2564 to wetlands or other waters under the state’s jurisdiction to ensure that the actions  
2565 would be consistent with the state’s water quality requirements.
  - 2566 ○ CWA Section 402, NPDES Program, 2002, 33 U.S.C. 1251, Controls direct  
2567 discharges into navigable waters. NPDES permits, issued by either the EPA or an



- 2568 authorized state/tribe, contain industry-specific, technology-based and water  
2569 quality-based limits and establish pollutant monitoring and reporting requirements.
- 2570 ○ CWA Section 404 Permits for Dredged or Fill Materials, 1986, 33 U.S.C. 1344,  
2571 Establishes a program to regulate the discharge of dredged or fill material into  
2572 waters of the U.S., including wetlands.
- 2573 ● Clean Water Action Plan (27 January 1998), A presidential initiative to restore and protect  
2574 America’s waters by reducing nonpoint pollution, emphasizing collaborative strategies  
2575 around watersheds, increasing wetlands, protecting coastal waters, providing incentives for  
2576 protection of forest and grassland buffers, and promoting community-based planning.
  - 2577 ● EO 12962 (9 June 1995), *Recreational Fisheries*, requires Federal agencies to improve  
2578 the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources  
2579 for increased recreational fishing opportunities.
  - 2580 ● EO 11988 (24 May 1977), *Floodplain Management*, requires federal agencies to evaluate  
2581 effects of action they have taken on floodplains.
  - 2582 ● EO 11990 (24 May 1977), Protection of Wetlands, As amended, requires government  
2583 agencies, in carrying out agency actions and programs affecting land use, to provide  
2584 leadership and take action to minimize the destruction, loss, or degradation of wetlands,  
2585 and to preserve and enhance the natural and beneficial values of wetlands.
  - 2586 ● EO 13112 (3 February 1999), *Invasive Species*, requires executive agencies to restrict the  
2587 introduction of exotic organisms into natural ecosystems.
  - 2588 ● MCO 5090.2, Discusses natural resources management relating to wetland management.  
2589 In addition, discusses natural resources management relating to NPS pollution and  
2590 establishes requirements, guidelines, and standards for the assessment of damages arising  
2591 from the release of oil or hazardous substances.
  - 2592 ● Rivers and Harbors Act, 33 U.S.C. 401 et seq, requires authorization from the USACE for  
2593 the construction of any structure in or over any navigable waters of the U.S. and the  
2594 excavation/dredging or deposition of material in these waters or any obstruction or  
2595 alteration in navigable waters.
  - 2596 ● ESA, 16 U.S.C. 1531 et seq., Provides for affirmative protection for riparian areas if they  
2597 occur on federal lands and provide habitat to any listed species or any species proposed for  
2598 listing, or if they are within designated Critical Habitat for certain fish, mammals, birds,  
2599 and reptiles.
  - 2600 ● Coastal Zone Management Act (CZMA), 16 U.S.C. 1451 et seq., requires riparian area  
2601 protection and restoration as a means of meeting the pollution-abatement goals of the Act.
  - 2602 ● Federal Water Pollution Control Act, as amended by the CWA of 1977, 33 U.S.C. 1251,  
2603 Describes guidelines for the control of NPS pollution.
  - 2604 ● CZMA Section 6217, Coastal Nonpoint Pollution Control Program, 16 U.S.C. 1451 et seq.,  
2605 requires states with Coastal Zone Management Programs to develop Nonpoint Pollution  
2606 Control Programs with approval from NOAA and EPA.
  - 2607 ● Safe Drinking Water Act, 1974, 42 U.S.C. 300f et seq., protects the quality of drinking  
2608 water in the U.S. whether from above ground or underground sources
  - 2609 ● National Invasive Species Act, 16 U.S.C. 4701, prescribes policies to prevent the  
2610 introduction and spread of non-indigenous species into U.S. waters.

- 2611       • Oil Pollution Act, 1990, 33 U.S.C. 2701, requires planning for, rescue of, minimization of  
2612 injury to, and assessment of damages or injury to fish and wildlife resources from the  
2613 discharge of oil.  
2614       • Comprehensive, Environmental Response, Compensation and Liability Act, 42 U.S.C.  
2615 9601 et seq., authorizes Natural Resource Trustees to recover damages for injury to,  
2616 destruction of, or loss of natural resources resulting from the release of a hazardous  
2617 substance.  
2618

2619 **4.1.1.1       Watershed and Floodplains Management**

2620 Floodplains receive protection through EO 11988, *Floodplain Management*, which directs federal  
2621 agencies to reduce the risk of flood loss by not building in floodplains, and to restore and preserve  
2622 the natural and beneficial values served by floodplains. Development within floodplains is  
2623 regulated at the municipal level where local ordinances detail the rules and requirements for  
2624 floodplain development and permits are issued accordingly.  
2625

2626 Floodplains at the Installation are relatively minor and associated with small depressional features  
2627 that fill during storm events. There are no FEMA-designated Flood Hazard Zones on MCLB  
2628 Albany. All drainage from the Installation ultimately discharges to the Flint River located  
2629 approximately three miles from the Installation. One intermittent tributary to the river, Piney  
2630 Creek, flows through the northeastern most corner of the Installation.  
2631

2632 **Management Strategies**

2633 Management strategies related to protection of watersheds and floodplains include:  
2634

- 2635       1) Ensure all water resources, including ditches and canals, are identified and included in the  
2636 Installation’s GIS data base.  
2637       2) Avoid activities, particularly vegetation clearing and ground-disturbing activities that  
2638 would adversely affect flood attenuation.  
2639       3) Clear future stream or drainage blockages, such as beaver dams or obstructed culverts, that  
2640 could result in increased flood levels or prevent flood waters from subsiding. This effort is  
2641 the responsibility of the Public Works Department, with assistance provided by the NRM.  
2642

2643 ***Ecosystem Management***

2644 Maintaining healthy watersheds and floodplains provides and protects wildlife habitat and supports  
2645 important ecosystem services such as water purification and control of stormwater and runoff.  
2646

2647 ***Additional Sources of Information***

- 2648       • EPA Wetlands, Oceans, and Watersheds ([https://www.epa.gov/environmental-](https://www.epa.gov/environmental-topics/water-topics#our-waters)  
2649 [topics/water-topics#our-waters](https://www.epa.gov/environmental-topics/water-topics#our-waters))  
2650       • GDNR, Watershed Protection Division ([https://epd.georgia.gov/about-us/watershed-](https://epd.georgia.gov/about-us/watershed-protection-branch)  
2651 [protection-branch](https://epd.georgia.gov/about-us/watershed-protection-branch) )  
2652       • Georgia Association of Floodplain Management (<http://www.gafm.clubexpress.com/>)

- 2653       • GDNR, Georgia Flood M.A.P. Online Digital Flood Insurance Rate Maps (DFIRMs)  
2654       (<http://map.georgiadfirm.com/>)

2655    **4.1.1.2        Wetland and Deepwater Habitats Management**

2656    Wetlands are transitional zones between the terrestrial and aquatic environment, and are  
2657    characterized by physical, chemical, and biological features that indicate hydrological conditions.  
2658    Deepwater habitats are the permanently flooded lands lying below the deepwater boundary of  
2659    wetlands and include lakes and ponds. Wetlands and deepwater habitats are an important part of  
2660    natural ecosystems due to the diverse biological and hydrologic functions they perform, such as  
2661    improving water quality, groundwater recharge, pollution treatment, nutrient cycling, provision of  
2662    fish and wildlife habitat and niches for unique flora and fauna, stormwater storage, and erosion  
2663    protection (Benton et al. 2008).

2664  
2665    Protection and management of the wetlands and deepwater habitats present at the Installation must  
2666    be addressed according to state and federal regulations. EO 11990, *Protection of Wetlands*, and  
2667    MCO 5090.2 instruct military installations to manage lands with the goal of no net loss of wetlands.  
2668    All federal agencies are required by EO 11990 to use reasonable efforts to preserve and enhance  
2669    the natural and beneficial values of wetlands under their stewardship. The DOD Natural Resources  
2670    Conservation Program also requires military installations to inventory and manage significant or  
2671    sensitive environmental features, including wetlands. The SAIA (as amended) calls for improving  
2672    wetlands for the benefit of plants and animals when it is consistent with the military mission and  
2673    readiness. These potential improvements are set within a broader geographic context. Much of the  
2674    southeast Georgia region is affected by lowered water tables and reduced surface water flows, and  
2675    droughts are occasional. Wetlands are especially sensitive to fluctuations in water availability.

2676  
2677    There are approximately 128 acres of delineated wetlands on the Installation. These include  
2678    wetlands in and surrounding lakes and ponds on the Installation (Covella Pond, Horseshoe Pond,  
2679    and Robinson Pond, Indian Lake). Several of the wetlands on MCLB Albany are limited in habitat  
2680    value by size, land use, or negative adjacent values (roads, etc.). However, preventing or  
2681    minimizing disturbance of habitat between even small individual wetlands will help maintain their  
2682    functions and provide habitat for wildlife species.

2683  
2684    **Management Strategies**

2685    Management strategies related to protection of wetlands at MCLB Albany include the following:

- 2686  
2687       1) Use preferred federal and state standards and protocols to identify, delineate, and map  
2688       wetlands and waterbodies (to include streams and ditches) on the Installation. A complete  
2689       survey of wetlands and waterbodies will assist the NRM in proper management of the  
2690       resources, and to identify management measures that will enhance resource functions  
2691       and/or the military mission. Wetland delineations and jurisdictional determinations are  
2692       usually valid for a period of 5 years, after which time the wetland delineation should be  
2693       repeated to validate the status of Installation wetlands.
- 2694       2) Establish and maintain vegetated buffers (100-foot wide minimum is preferred) around  
2695       wetland and waterbodies, to include canals and ditches. Larger buffers should be  
2696       established around resources determined to be of high quality.

- 2697 3) Limit activities within buffers zones to those which would cause little or no impact on or  
2698 disturbance to the wetland or waterbody. In cases where established activities already occur  
2699 within buffers and cannot be reasonably changed, those wetlands and waterbodies should  
2700 be subject to increased monitoring.
- 2701 4) Avoid wetland and riparian areas during future construction of structures and other  
2702 facilities, including roads, unless essential to the military mission. Locate new roads  
2703 outside riparian areas, whenever possible. Design stream crossings to minimize the area  
2704 disturbed, and unimproved stream crossings are prohibited.
- 2705 5) Implement appropriate wetland mitigation for unavoidable wetland impacts, as authorized  
2706 and required by the federal and state permit process and the CWA.
- 2707 6) Monitor stormwater runoff to ensure wetlands and waterbodies are not negatively impacted  
2708 by stormwater flows, sedimentation, or erosion.
- 2709 7) Provide wetlands and waterbody identification and management training to natural  
2710 resources personnel.
- 2711 8) Restore degraded wetlands, waterbodies and/or associated riparian areas to the extent  
2712 possible.
- 2713 9) Encourage project managers, engineers, planners, and maintenance personnel to coordinate  
2714 early with the Environmental Branch to determine potential adverse impacts on wetlands  
2715 associated with any proposed activities.

2716 Proper management of wetlands and deepwater habitats, understanding their functions and values,  
2717 and meeting regulatory requirements when conducting activities within wetlands requires  
2718 knowledge of their extent and distribution. The USACE regulates and protects wetland resources  
2719 in the United States. Delineating jurisdictional wetlands is accomplished using the *1987 Corps of*  
2720 *Engineers Wetland Delineation Manual* and the *2008 Interim Regional Supplement to the Corps*  
2721 *of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*. Areas that  
2722 meet the regulatory definition of a wetland are regulated by Section 404 of the CWA, and any  
2723 activity that may deposit fill into a wetland requires a permit from the USACE.

2724 Ensuring regulatory compliance and managing wetland resources to enhance their value are the  
2725 primary management issues for MCLB Albany. Wetlands management generally is conducted  
2726 within and around natural and human-made wetlands to protect, restore, and improve degraded  
2727 wetlands. Wetlands management on the Installation includes the following management actions:

- 2728 • Protecting natural wetlands from loss, or degradation by actions not related to the military  
2729 mission.
- 2730 • Meeting regulatory requirements for activities that unavoidably impact wetlands.
- 2731 • Creating, enhancing, and restoring wetlands as mitigation for unavoidable impacts and to  
2732 meet requirements of the SAIA.

2733 Impacts to wetlands can occur directly or indirectly from daily operations, including maintaining  
2734 drainage channels, vegetation management, or from directly altering the areas (fill, drain, or a  
2735 change in hydrology) or altering upland areas surrounding wetlands. Mission needs and  
2736 requirements may necessitate an unavoidable clearing of land and filling of wetlands to build

2737 additional facilities. The need to comply with other environmental regulations, as well as the needs  
2738 of the mission, may result in an unavoidable loss of some wetlands.

2739 The high degree of variability in characteristics (habitat value and function) among wetlands at the  
2740 Installation make management decisions more complex and require thorough consideration  
2741 regarding compliance with current environmental laws and regulations, while supporting the  
2742 military mission.

2743 Section 404 of the CWA (33 U.S.C. 1344) prohibits the discharge of dredged or fill material into  
2744 waters of the U.S., including wetlands, unless authorized by a USACE permit. While the USACE  
2745 has primary responsibility for implementing the CWA, other agencies, including the EPA,  
2746 USFWS, GDNR, and USDA NRCS play important regulatory and advisory roles. If a project will  
2747 impact wetlands or other specially designated aquatic sites, the USACE has the authority to require  
2748 mitigation in the form of avoidance, minimization or compensation, to minimize the adverse  
2749 effects of the project.

2750 Development of roads, installation of new culverts, and grading or fill activities are examples of  
2751 impacts that have the potential to impact wetlands and waters of the U.S., and a permit may be  
2752 required before implementing these activities in accordance with Section 404 of the CWA. Certain  
2753 actions that have minimal adverse impact on wetlands and other water resources may qualify for  
2754 a Nationwide Permit (NWP). The NWP Program was designed to streamline the Section 404  
2755 permitting process, and covers activities conducted in waters of the U.S., including maintenance  
2756 activities such as repairing, rehabilitating, or replacing existing structures, and removing  
2757 accumulated fill or debris from within or around existing structures. Activities associated with  
2758 aquatic habitat restoration, establishment, or enhancement may also qualify for streamlined  
2759 authorization under an NWP.

2760 Impacts to wetlands (including their function) and other surface waters by planned future projects  
2761 at MCLB Albany will be minimized or eliminated in accordance with EO 11990 and current  
2762 Marine Corps regulations. Although a formal wetland delineation has been conducted on portions  
2763 of the Installation, a formal jurisdictional wetland and water resources delineation will be needed  
2764 to verify resource boundaries before undertaking activities that disturb regulated wetlands or  
2765 waterbodies, and a CWA Section 404 permit may be required. If wetland impacts are unavoidable  
2766 and a permit is required to authorize the activity, appropriate impact minimization and mitigation  
2767 will be required and will be determined through consultation with the appropriate federal and state  
2768 agencies (USACE, USFWS, and GDNR). Additionally, Section 404 may require restoration of  
2769 wetlands damaged by project activities, and although in-kind replacement of wetlands is the  
2770 preferred mitigation strategy, other types of mitigation that may be applied including conservation  
2771 easements, mitigation banking, and other mitigation as dictated by the federal and state agencies  
2772 involved in the permitting and consultation process.

2773 MCLB Albany adheres to the requirement of ‘no net loss’ of wetlands on federal lands, as  
2774 mandated by EO 11990. This order protects and restores wetland function by buffering wetlands  
2775 from direct human pressures and maintaining important external natural processes that act upon  
2776 wetlands. Physical vegetated buffers minimize the effects of the abrupt transition between two  
2777 different habitats (edge effects) on the numbers and kinds of organisms, reduce the amount of  
2778 marginal habitat for species, and mitigate water quality impacts. A buffer typically consists of a



2779 suitably wide (minimum 50-foot, 100-foot is preferred) band of vegetation along the perimeter of  
2780 a wetland or water body. An effective buffer must consider wetland functional value (e.g., level of  
2781 degradation and sensitivity to disturbance), intensity of adjacent land use, buffer characteristics  
2782 (i.e., vegetation density, structural complexity, and soil condition), and specific buffer functions  
2783 as described in Castelle et al. (1994).

2784  
2785 Natural wetlands and waterbodies are not to be used for water quality treatment of point or  
2786 nonpoint pollution sources (Fields 1993). Untreated point source discharges to wetlands have been  
2787 eliminated through the National Pollutant Discharge Elimination System (NPDES) program in  
2788 Section 402 of the CWA. Remaining point source discharges are of secondarily treated effluent,  
2789 which is typified by greater biochemical oxygen demand, amounts of suspended solids, and  
2790 nutrient levels as compared to natural inputs. Proper management dictates that wetlands and  
2791 surface waters be protected from such inputs using water quality standards promulgated by each  
2792 state. Although significant nonpoint source loading to wetlands is undesirable, this issue will take  
2793 time to address, and management measures will likely result in reduced, but not eliminated,  
2794 loadings to wetlands.

2795  
2796 It is important to develop and implement strategies for the long-term protection of wetlands and  
2797 waterbodies on the Installation. Incorporating management and protection would involve  
2798 classifying the Installation's wetland and deepwater resources according to their relative function  
2799 and value and identifying specific management tasks based upon those findings. Deepwater habitat  
2800 management on the Installation includes the following management:

- 2801 • Gathering biological baseline data to assess function and value of wetland resources.  
2802 Decisions regarding how to manage natural wetlands, enhance degraded wetlands, and  
2803 analyze potential impacts can be made from this baseline data.
- 2804 • Addressing erosion problems that exist along many of the drainage canals and sparsely  
2805 vegetated areas, and that contribute to habitat loss and degradation of water quality.
- 2806 • Regularly reviewing grounds maintenance, pest management, and construction plans to  
2807 ensure that water quality is not impacted by runoff.
- 2808 • Reducing nonpoint source pollution from erosion, vehicles, dumping, pest management,  
2809 crop management (i.e., pecan grove), grounds maintenance, and weed control. Nonpoint  
2810 source pollution from runoff can degrade wetland quality and function.
- 2811 • Developing recreational opportunities within and adjacent to wetlands, such as nature trails  
2812 and wildlife observation areas, to increase awareness of wetland importance.

### 2813 ***Ecosystem Management***

2814 The management of wetlands and deepwater habitats is an essential component of ecosystem  
2815 management because such a large number of plants and animals utilize these resources.  
2816 Additionally, healthy, protected wetlands and waterbodies store and purify water, provide open  
2817 space and aesthetic value, and provide habitats for migratory birds, fish, and other wildlife.

### 2818 2819 ***Additional Sources of Information***

- 2820 • USACE, Savanna Georgia Regulatory Division, Wetlands and Waters of the U.S.  
2821 (<http://www.sas.usace.army.mil/Missions/Regulatory.aspx> )
- 2822 • EPA, Wetlands, Oceans, and Watersheds (<http://water.epa.gov/type/wetlands/index.cfm>)
- 2823 • EPA, Region 4 (Southeast) (<https://www.epa.gov/aboutepa/about-epa-region-4-southeast>)
- 2824 • USFWS, National Wetlands Inventory (<http://www.fws.gov/wetlands/>)
- 2825 • USDA NRCS – Georgia (<http://www.nrcs.usda.gov/wps/portal/nrcs/site/ga/home/>)
- 2826 • Society of Wetland Scientists (<http://www.sws.org/>)
- 2827 • Society for Ecological Restoration (<http://www.ser.org/>)
- 2828 • GDNR, Environmental Protection Division (<http://www.georgiaepd.org/>)

#### 2829 **4.1.1.3 Riparian Areas Management**

2830 Maintaining well-vegetated riparian buffers along streams and other waterbodies are an important  
2831 part of a healthy environment and provide benefits to humans and wildlife. Riparian buffer  
2832 functions include maintaining habitat for fish and wildlife, nutrient cycling, streambank stability,  
2833 natural stream flow, and water quality (Muhlberg and Moore 1998, Wenger and Fowler 2000).  
2834 Conserving and restoring riparian buffers minimizes erosion and subsequent loss of streambank  
2835 habitat. Riparian habitats on military lands may provide critical habitat for migratory birds and  
2836 provide valuable habitat for a variety of wildlife.

2837  
2838 In accordance with the Memorandum of Understanding (MOU) established between DOD and the  
2839 USFWS to promote the conservation of migratory birds (71 Federal Register 168), DOD will strive  
2840 to prevent the destruction or degradation of wetlands and riparian vegetation, and will also restore  
2841 those habitats, when feasible, where they have been degraded.

2842  
2843 Riparian forest occurs along the poorly defined floodplain of Piney Woods Creek in the  
2844 northeastern corner of MCLB Albany. Although limited in extent, the blackwater stream riparian  
2845 forest represents an important component of the biological diversity on the base. The riparian forest  
2846 community is bordered on both sides by pine-hardwood forest.

#### 2847 **Management Strategies**

2848 Management strategies related to protection of riparian areas at MCLB Albany include the  
2849 following:

- 2850  
2851  
2852 1) Avoid and minimize impacts to vegetated buffer areas along streams and other  
2853 waterbodies.
- 2854 2) Maintain predominantly forested communities surrounding Installation streams, lakes,  
2855 and ponds where possible.
- 2856 3) Encourage diverse species composition in riparian areas, particularly canopy species;  
2857 woody canopy species will more successfully survive stochastic environmental events  
2858 and provide necessary stream bank stabilization.
- 2859 4) Plan recreational development and training exercises to minimize shoreline and stream

- 2860 bank erosion and mitigate unavoidable impacts.
- 2861 5) Control nuisance species in riparian areas to the extent possible.
- 2862 6) Limit the use of pesticides, herbicides and fertilizers in riparian areas.
- 2863 7) Should riparian plantings be necessary, plant only native species.
- 2864 8) Ensure riparian buffers are designated in the Installation GIS and are of appropriate
- 2865 size (minimum 50-feet, 100-feet is preferred).
- 2866 9) Provide training to personnel working near resources on the importance of maintaining
- 2867 riparian buffers, particularly grounds maintenance personnel.
- 2868

2869 Impacts to vegetated buffer areas, including riparian buffers along streams and other waterbodies,

2870 should be avoided or minimized to maintain habitat for fish and wildlife, to protect water quality,

2871 and to provide streambank stability. Restoration and enhancement opportunities for riparian buffer

2872 habitat should be identified, and bioengineering techniques and native plantings should be used to

2873 stabilize compromised streambanks. The application of fertilizers, herbicides, and pesticides

2874 should be avoided, to the extent practicable, to protect water quality. Riparian areas will be avoided

2875 during future construction of structures and other facilities, including roads. New roads will be

2876 located outside riparian areas, whenever possible.

2877

### 2878 *Ecosystem Management*

2879 Maintaining well-vegetated riparian buffers along streams and other waterbodies is an important

2880 part of a healthy environment, and support humans and wildlife by providing habitat and nutrient

2881 cycling and supporting streambank stability, natural stream flow, and water quality.

2882

### 2883 *Additional Sources of Information*

- 2884
- USDA NRCS – Georgia (<http://www.nrcs.usda.gov/wps/portal/nrcs/site/ga/home/>)
  - EPA, Riparian Zone and Stream Restoration (<https://archive.epa.gov/ada/web/html/riparian.html>)
  - USFWS, A System for Mapping Riparian Areas in the Western United States ([www.fws.gov/wetlands/Documents/A-System-for-Mapping-Riparian-Areas-In-The-Western-United-States-2009.pdf](http://www.fws.gov/wetlands/Documents/A-System-for-Mapping-Riparian-Areas-In-The-Western-United-States-2009.pdf)) Society for Ecological Restoration (<http://www.ser.org/>)
  - University of Georgia’s Carl Vinson Institute (<http://www.cviog.uga.edu/>)
  - Georgia Soil and Water Conservation Commission (<http://gaswcc.georgia.gov/>)
- 2885
- 2886
- 2887
- 2888
- 2889
- 2890
- 2891

### 2892 *4.1.1.4 Water Quality Management*

2893 Stormwater is rain and snow melt that runs off surfaces such as rooftops, paved streets, parking

2894 lots and other impervious surfaces. As water runs off these surfaces, the runoff can pick up

2895 pollutants such as oil, fertilizers, pesticides, soil, trash, and animal waste. The runoff might flow

2896 directly into a local canal, stream, or lake, or it may go into a storm drain and continue through

2897 storm pipes until it is released untreated into a local waterway. The quality and quantity of water

2898 runoff generally depends upon the land use types and amount of impervious surfaces in an area.

2899 Minimizing impervious surfaces and retaining vegetative cover help to reduce the amount of

2900 pollutants entering waterways.

2901  
2902 The 1987 amendments to the CWA (33 U.S.C. 1251) created the National Pollutant Discharge  
2903 Elimination System stormwater program. This program regulates stormwater discharges from  
2904 certain industrial activities, including airport operations. EO 12088, *Federal Compliance with*  
2905 *Pollution Control Standards*, requires that the heads of each Executive Agency ensure that all  
2906 necessary actions are taken for the prevention, control, and abatement of environmental pollution  
2907 with respect to federal facilities and activities under the control of the agency. Ground disturbing  
2908 projects should be covered by a site-specific Stormwater Pollution Prevention Plan (SWPPP) or  
2909 an erosion and sediment control plan (ESCP) that identifies measures to reduce pollution of  
2910 receiving water from stormwater runoff from a project site.

2911  
2912 Impervious surfaces are found throughout the Installation. However, most are located on the  
2913 western two-thirds of the facility and include industrial and warehouse structures, impervious lots,  
2914 and administrative buildings. The eastern third of the facility is relatively undeveloped, apart from  
2915 low-density residential housing and associated parking areas, when compared to the rest of MCLB  
2916 Albany. A system of ditches and drainages are located throughout the Installation. The condition  
2917 and maintenance of these drainage systems plays an important role in stormwater management on  
2918 the facility. All drainage from MCLB Albany ultimately discharges to the Flint River, which drains  
2919 into the Gulf of Mexico, so water quality management on the Installation has implications not only  
2920 for the watershed but also the coastal waters.

2921  
2922 MCLB Albany provides its own water, wells, and irrigation (MCLB 2012a). Water is provided  
2923 through three deepwater wells and is distributed through the facility via a network of underground  
2924 pipes. Sanitation waste for base housing is processed by a private contractor and some industrial  
2925 waste is processed on base as part of the MCLB pretreatment permit with the city of Albany.

2926  
2927 **Management Strategies**

2928 Management strategies related to protection of water quality at MCLB Albany include the  
2929 following:

- 2930 1) Ensure guidelines and recommendations relating to stormwater management (MCLB  
2931 2008), and the application of chemicals (MCLB 2015b, MCLB 2013b) are adhered to.
- 2932 2) Base-wide stormwater surveys began in 2014. Evaluate results and incorporate into  
2933 Installation stormwater management strategies as appropriate.
- 2934 3) Minimize impacts of construction activities at the Installation. All ground-disturbing  
2935 activities will incorporate appropriate stormwater and erosion and sediment controls and  
2936 will coordinate the timing of land-disturbing activities and implementation of erosion and  
2937 sedimentation control measures to reduce nonpoint source pollution that could result from  
2938 those activities. To ensure that such controls are applied consistently, an ESCP will be  
2939 developed for all land-disturbing activities, as needed in accordance with state regulations.
- 2940 4) Conduct routine (annual) water quality sampling/monitoring program on all waterbodies  
2941 to prevent potential degradation in water quality from going unnoticed. Frequent water  
2942 quality monitoring provides a mechanism for the early detection of potential water quality  
2943 problems and makes it easier to identify the source/cause of the degradation. The data also  
2944 provides the foundation from which to make future management decisions. Monitoring

2945 should be performed in accordance with specifications outlined in the existing NPDES  
2946 Stormwater Permit.

2947 5) Reduce the input of pollutants and nutrient that enter water resources by establishing and  
2948 maintaining vegetative buffers around all water bodies, including canals and ditches.

2949 6) The most effective method of reducing pollutant levels in water bodies is to limit the use  
2950 of these substances in the surrounding watershed, particularly in areas adjacent to the water  
2951 bodies. Chemicals, pesticides, herbicides, and fertilizers used in landscape maintenance,  
2952 crop management (i.e., pecan orchard), invasive species management, and other vegetation  
2953 management activities will be applied minimally in conformance with appropriate  
2954 standards, and will not be applied in areas immediately adjacent to water bodies and  
2955 riparian areas. Chemicals will be applied in accordance with integrated pest management  
2956 practices when specific problems are identified.

2957 7) Control nuisance species to the extent possible. Algal blooms are generally the result of  
2958 high nutrient concentrations (especially phosphorus) and also of increased temperatures.  
2959 Algal blooms at Covella Pond and overgrowth of duckweed (*Lemna* sp.) on Indian Lake  
2960 have been reported in the past. The best approach for controlling algal populations involves  
2961 prevention, reducing nutrient inputs to water bodies, and controlling water temperatures by  
2962 establishing or maintaining densely vegetated buffer areas around the resource. Once algal  
2963 populations have begun to increase in a water body, algicides, artificial circulation, and  
2964 dilution/flushing are standard control techniques that may be considered. An  
2965 overabundance of aquatic plants typically requires alterations in the habitat, herbicides, or  
2966 manual control measures.

2967 8) Maintain proper function of stormwater control and conveyance structures by frequently  
2968 removing debris. Litter and yard wastes can clog inlets, catch basins and outlets, lead to  
2969 overflows, erosion, and unintended flooding, and make these devices ineffective for  
2970 stormwater pollutant removal.

2971  
2972 EO 12088, *Federal Compliance with Pollution Control Standards*, requires that the heads of each  
2973 Executive Agency ensure that all necessary actions are taken for the prevention, control, and  
2974 abatement of environmental pollution with respect to federal facilities and activities under the  
2975 control of the agency. Soil erosion is a source of water pollution (sediment loadings) and will be  
2976 controlled in compliance with this EO. A continuous cover of vegetation is the most effective way  
2977 to prevent soil erosion and to minimize impacts to the environment.

2978 Ground disturbing projects should be covered by a site-specific SWPPP or an ESCP that identifies  
2979 measures to reduce pollution of receiving water from stormwater runoff from a project site. MCLB  
2980 Albany prepares project-specific SWPPPs and ESCPs on an as-needed, project-specific basis, and  
2981 in accordance with state regulations, which will identify potential sources of erosion and  
2982 sedimentation prevention controls. The use of off-road vehicles is presently allowed for base  
2983 personnel in certain areas of the Installation. These areas should be closely monitored for impact,  
2984 and appropriate restrictions enforced if activities result in significant ground disturbance and  
2985 erosion. Future plans to expand access to off-road vehicles should be carefully evaluated and  
2986 monitored.



2987 To protect water quality at MCLB Albany and within surrounding areas, existing and potential  
2988 erosion problem areas must be identified so that appropriate measures, including sedimentation  
2989 control, cleanout of detention ponds/ditches/drainages, and shoreline stabilization projects, can be  
2990 implemented. MCLB Albany environmental staff must also conduct periodic assessments of the  
2991 Installation for potential issues, review erosion and sedimentation control plans for construction  
2992 sites, and provide oversight to ensure management practices are being applied properly and  
2993 consistently for all ground-disturbing activities.

2994 Additional stormwater retention areas should be considered if runoff is determined to be  
2995 problematic on the Installation and management is needed. Properly constructed stormwater  
2996 retention ponds also may increase wildlife habitat for desirable species.

2997

### 2998 ***Ecosystem Management***

2999 Effective management of water quality is essential to realizing the ecosystem management  
3000 concept. Implementation of sound management strategies in developed, semi-developed, and  
3001 unimproved areas will help protect water quality and habitat for aquatic life.

3002

### 3003 ***Additional Sources of Information***

- 3004 • EPA, Water Quality Standards for Surface Waters  
3005 (<http://water.epa.gov/scitech/swguidance/standards>)
- 3006 • USDA NRCS – Georgia (<http://www.nrcs.usda.gov/wps/portal/nrcs/site/ga/home/>)
- 3007 • University of Georgia’s Carl Vinson Institute (<http://www.cviog.uga.edu/>)
- 3008 • Georgia Soil and Water Conservation Commission (<http://gaswcc.georgia.gov/>)
- 3009 • GDNR, Watershed Protection Branch ([https://epd.georgia.gov/about-us/watershed-](https://epd.georgia.gov/about-us/watershed-protection-branch)  
3010 [protection-branch](https://epd.georgia.gov/about-us/watershed-protection-branch))
- 3011 • Georgia NPDES Stormwater General Permits ([https://epd.georgia.gov/forms-](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm)  
3012 [permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm)  
3013 [storm](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm))
- 3014 • Albany GA/Dougherty County, Stormwater Pollution Control  
3015 ([https://www.albanyga.gov/about-us/city-departments/engineering-](https://www.albanyga.gov/about-us/city-departments/engineering-department/stormwater-pollution-control)  
3016 [department/stormwater-pollution-control](https://www.albanyga.gov/about-us/city-departments/engineering-department/stormwater-pollution-control))
- 3017 • Georgia Stormwater Management Manual  
3018 (<http://www.atlantaregional.com/environment/georgia-stormwater-manual>)

### 3019 **4.1.2 Coastal Zone Management**

3020 MCLB Albany is not located near a coastline and therefore does not fall within a coastal zone,  
3021 which is defined as coastal waters and the adjacent shore lands including islands, transitional and  
3022 intertidal areas, salt marshes, wetlands, and beaches. Therefore, this INRMP section is not  
3023 applicable.

3024 **4.1.3 Vegetation and Habitat Management**

3025 Vegetation management is an important component of natural resources management at MCLB  
3026 Albany. Management of vegetation (e.g., landscaping, forestry, prescribed burns, right-of-way  
3027 management, areas along perimeter fencing, control of invasives) and oversight of Installation  
3028 vegetation maintenance programs provides opportunities to enhance the visual appeal of the  
3029 environment, implement beneficial landscaping concepts, increase timber yield, improve wildlife  
3030 habitat, and reduce the costs of maintenance activities. This may include adopting an integrated  
3031 vegetation management approach by encouraging establishment of certain vegetation  
3032 communities.

3033 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Vegetation and Habitat***  
3034 ***Management***

- 3035 • DODINST 4715.03, *Natural Resources Conservation Program*, requires the control and  
3036 removal of exotic species where appropriate and encourages the use of beneficial  
3037 techniques such as using regionally native plants; using construction practices that  
3038 minimize adverse effects on the natural habitat; preventing pollution by reducing fertilizers  
3039 and pesticides, using Integrated Pest Management (IPM) techniques, recycling green  
3040 waste, and minimizing runoff; using water-efficient practices; and creating outdoor  
3041 demonstrations incorporating native plants, as well as pollution prevention and water  
3042 conservation techniques, to promote awareness of the environmental and economic  
3043 benefits of implementing this directive.
- 3044 • 7 U.S.C. 136, Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), governs the  
3045 use and application of pesticides in natural resources management plans.
- 3046 • 16 U.S.C. 4701, National Invasive Species Act, prescribes policies to prevent the  
3047 introduction and spread of non-indigenous species into U.S. waters.
- 3048 • 33 U.S.C. 1251, Federal Water Pollution Control Act, as amended by CWA of 1977,  
3049 prohibits the discharge of dredged or filled materials into waters of the U.S., including  
3050 wetlands, without first obtaining a permit from the USACE (Section 404 of the CWA).
- 3051 • 1994 President's Executive Memorandum on Environmentally and Economically  
3052 Beneficial Landscape Practices on Federal Landscaped Grounds, 60 Federal Register  
3053 40837, provides guidance developed by the interagency workgroup under the direction of  
3054 the Federal Environmental Executive to assist federal agencies in the implementation of  
3055 environmentally and economically beneficial landscape practices (defined within), and  
3056 requires implementing landscaping practices that are intended to benefit the environment  
3057 and generate long-term cost savings.
- 3058 • EO 13112 (3 February 1999), *Invasive Species*, requires executive agencies to restrict the  
3059 introduction of exotic organisms into natural ecosystems.
- 3060 • EO 13834 (17 May 2018), *Efficient Federal Operations*, mandates that environmental  
3061 management considerations must be a fundamental and integral component of Federal  
3062 Government policies, operations, planning, and management and that sustainable  
3063 management is pursued through the implementation of cost-effective, environmentally

3064 sound landscaping practices and programs to reduce adverse impacts to the natural  
3065 environment.  
3066 • MCO 5090.2, prohibits the introduction of exotic species into a natural ecosystem and  
3067 requires control or eradication of exotic species and noxious weeds on federal lands.  
3068 Discusses natural resources management relating to environmentally and economically  
3069 beneficial landscaping.

3070

#### 3071 **4.1.3.1 Invasive Plant and Noxious Weed Management**

3072 Controlling nuisance and invasive plants is essential to the protection of the Installation's  
3073 biodiversity (Executive Order [EO] 13112). Introduced species can displace native plants and  
3074 animals, change the structure of natural communities, and impact the ecological functions of  
3075 ecosystems. Nuisance plants, which may be either native or non-native species, cause  
3076 inconvenience, annoyance or irritation to the general human population or damage to human  
3077 property. Invasive plants are often introduced or exotic species that may cause harm to the  
3078 environment, economy, or human health. Per DODINST 4715.03, natural resource guidance,  
3079 invasive/exotic species are to be controlled and removed where appropriate.

3080

3081 Thirty-two invasive or nuisance plant species have been documented on the Installation (Barbour  
3082 et al. 2013, MCLB 2013a). Of these, 10 have been identified as priority species as a result of  
3083 significant negative impacts on native plant and animal communities or have the potential to  
3084 significantly degrade habitat if not treated (MCLB 2013b). Although some invasive plant species  
3085 are fairly widespread throughout the Installation, some common locations for invasive species  
3086 include utility line right-of-way corridors, the perimeter fence line and associated maintained  
3087 areas, and the edges of roads and other developed areas (Barbour et al. 2013, MCLB 2012a).

3088

#### 3089 **Management Strategies**

3090 The following management strategies will help to reduce the spread or introduction of invasive  
3091 exotic plants species:

3092 1) Follow the guidelines and recommendations provided in the MCLB Integrated Pest  
3093 Management Plan and follow up recommendations (MCLB 2015b, MCLB 2013b), and in  
3094 accordance with federal and state laws regulating the laws of pesticides.

3095 2) Avoid disturbing the soil in locations where Japanese climbing fern is present, particularly  
3096 during spoor release.

3097 3) Require forestry or other heavy equipment to be cleaned prior to use on MCLB Albany.

3098 4) Wash equipment that has been operated where invasive plants are located prior to moving  
3099 to new locations on MCLB Albany.

3100 5) Evaluate the use of, location, and content of food plots. Avoid introduction of exotic,  
3101 perennial legumes such as bicolor lespedeza in food plots. In addition, if new plots are  
3102 established, quality areas where there is native groundcover will be avoided.

3103 6) Eliminate the use of non-native species (e.g. exotic pasture grasses) as soil stabilizers in  
3104 construction projects.

- 3105 7) Evaluate the efficacy of using nonchemical means to control invasive species. The  
3106 objective is to minimize herbicide use. Nonchemical means may include pruning to prevent  
3107 flowering and seed dispersal, cutting, or mowing.
- 3108 8) Use only approved species for landscaping and eliminate the use of non-native species.
- 3109 9) Eliminate practice of mowing rights-of-way to the woodline. This practice allows exotic  
3110 pasture grasses to colonize the edges of forested stands. Treat woodlines with herbicides  
3111 (i.e., Escort) in accordance with MCLB Albany invasive species management plan to allow  
3112 native vegetation to become established.
- 3113 10) Manage invasive species on the Installation by mowing, chemical control, and removal by  
3114 mechanical or manual means, or a combination of control methods used to control exotic  
3115 and invasive species.
- 3116 11) Control and eradicate non-native species of plants and replace them with regionally native  
3117 plants to restore wildlife habitat and native ground cover.
- 3118

3119 The NRM at MCLB Albany will use an adaptive approach to manage exotic and invasive plants  
3120 and will explore alternative ways to meet management objectives, predict the outcomes of each  
3121 alternative based on the current state of knowledge, implement one or more of these alternatives,  
3122 and use the results to increase knowledge and adjust management actions. Over the long-term,  
3123 consideration must be given to the potential affect climate change may have on the spread of or  
3124 new infestations of undesirable plant species. Monitoring and control of invasive on MCLB will  
3125 be necessary in order to maintain sites currently in desired condition and to rehabilitate or restore  
3126 sites already degraded and will follow guidance provided in the MCLB Integrated Pest  
3127 Management Plan (MCLB 2015b).

3128

3129 The proposed treatment for most of the priority invasive plant species will primarily be achieved  
3130 through application of appropriate herbicides following the recommendations of forestry,  
3131 extension specialists, or other experts (Miller et. al. 2010). Four methods of herbicide application  
3132 will likely be used including basal bark spray, foliar spray, stem injection and cut and treatment of  
3133 stumps. Herbicides including Garlon (triclopyr), glyphosate, Escort (metsulfuron methyl), and  
3134 Arsenal (imazapyr) are commonly used to control invasive plant species in the southeast. In most  
3135 cases, one or more spot treatments will likely be needed to achieve control. Widespread invasive  
3136 plants, including bicolor lespedeza, Chinese privet, sacred bamboo (*Nandina domestica*), and  
3137 Japanese honeysuckle (*Lonicera japonica*), Japanese climbing fern (*Lygodium japonicum*), and  
3138 exotic pasture grasses cannot be completely eradicated on MCLB Albany. However, immediate  
3139 treatment of these species, particularly Japanese climbing fern is required to prevent additional  
3140 impacts to natural communities. Japanese climbing fern is of particular concern due to its  
3141 widespread distribution on MCLB Albany and its ability to rapidly colonize new disturbed and  
3142 undisturbed locations via spores. This rapid colonization is readily evident along firebreaks, rights-  
3143 of-way, roadways, and food plots.

3144

3145 Control of native nuisance plants is also needed in order to maintain or rehabilitate key  
3146 communities such as wetlands and upland pine stands. Red maple and buttonbush have invaded  
3147 the margins and interior of cypress dome wetlands, including Indian Lake, and a variety of  
3148 hardwood species (predominately oak, sweetgum, and cherry) have invaded upland pine stands in

3149 the absence of regular 1- to 3-year fire rotations. These species shade out beneficial herbaceous  
3150 plant species, negatively impact species diversity, and have the potential to alter ecosystems. The  
3151 prolonged drought and absence of fire on MCLB Albany have accelerated growth of these species.  
3152 Chemical control through herbicide will encourage herbaceous plant growth and benefit amphibian  
3153 and other wetland species. Hardwood species (predominately oak, sweetgum, and cherry) have  
3154 invaded upland pine stands in the absence of regular 1- to 3-year fire rotations. An aggressive  
3155 prescribe burning, mechanical drum chopping, and herbicide program has been initiated on MCLB  
3156 Albany to achieve control. Prescribed burning and drum chopping effectively top-kill hardwoods  
3157 but allows resprouting necessitating chemical treatment, as described in the IPM Plan (MCLB  
3158 2015b), pest management recommendations (MCLB 2013b), and recommended prescribed burn  
3159 practices (MCLB 2013c).

#### 3160 ***Ecosystem Management***

3161 Invasive plant and noxious weed management is consistent with an ecosystem approach since it  
3162 relies on the functions and characteristics of native plant species to reduce the demand for  
3163 irrigation, fertilizers, and pesticides on the Installation. Control and reduction of invasive plants  
3164 and noxious weeds will help to restore wildlife habitat and groundcover on the Installation and  
3165 will limit the spread of these species to areas in the region. Additionally, control of invasive plants  
3166 and noxious weeds is expected to directly benefit listed species (Table 3 and Table 4).

#### 3167 ***Additional Sources of Information***

- 3168 • USDA, National Invasive Species Information Center, Georgia State Resources  
3169 (<https://www.invasivespeciesinfo.gov/us/georgia>)
- 3170 • Georgia Invasive Species Task Force (<http://www.gainvasives.org>)
- 3171 • Aquatic Nuisance Species Task Force (<http://www.anstaskforce.gov>)
- 3172 • Center for Invasive Species and Ecosystem Health (<http://www.bugwood.org>)
- 3173 • Invasive and Exotic Species of the Thirteen Southern States  
3174 (<http://www.invasive.org/seweeds.cfm>)
- 3175 • National Invasive Species Council (<https://www.doi.gov/invasivespecies/>)
- 3176 • Society for Ecological Restoration (<http://www.ser.org/>)
- 3177 • University of Georgia, College of Agricultural and Environmental Sciences  
3178 (<https://www.caes.uga.edu/>)
- 3179 • Center for Plant Conservation (<https://saveplants.org/>)
- 3180 • The Nature Conservancy (TNC), Protecting Native Plants and Animals  
3181 ([http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-](http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml)  
3182 [plants-and-animals-taking-on-the-invaders.xml](http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml))

#### 3183 ***4.1.3.2 Grounds Maintenance and Landscaping Management***

3184 Grounds maintenance and landscaping management includes measures to keep a landscape  
3185 healthy, clean, safe and attractive. These landscapes typically are located within a relatively  
3186 urban/developed setting and include gardens, yards, and grounds surrounding buildings and  
3187 infrastructure. Management and maintenance activities include plantings and harvestings, periodic  
3188



3188 weeding and fertilizing, other gardening, lawn care, road, driveway and path maintenance, shrub  
3189 pruning, topiary, lighting, fencing, addressing runoff drainage, and irrigation, and other jobs for  
3190 protecting and improving the topsoil, plants, and garden accessories. Maintenance and  
3191 management may also deal with local animals and means to attract or repel them, as desired or  
3192 necessary.

3193  
3194 Maintained and managed grounds and landscaped areas are found in developed sites throughout  
3195 MCLB Albany, particularly in the administrative area of the middle third of the Installation and  
3196 residential areas of the eastern third of the facility (Figure 4 and Figure 7). It is the primary  
3197 responsibility of the Public Works Officer (PWO) to ensure that the goals and objectives for  
3198 managing and maintaining these areas are implemented and done so in a cost-effective manner.  
3199 Typically, duties include soil erosion control, grounds maintenance (i.e., mowing, fertilizing and  
3200 liming), weed and brush control, and other general landscaping activities. The NRM is responsible  
3201 for managing lands in unimproved grounds. However, coordination between the PWO and NRM  
3202 is critical to ensure the goals and objectives of this INRMP are met.

3203  
3204 The potential exists for disturbances to wildlife habitat and nonpoint source pollution during  
3205 grounds maintenance and landscaping. This potential can be reduced by designing grounds  
3206 maintenance and landscaping management strategies that help to minimize capital costs, maintain  
3207 an ecological balance within the region, minimize engineering, and enhance the living  
3208 environment and the aesthetic qualities of the Installation.

3209  
3210 **Management Strategies**  
3211 Management strategies related to grounds maintenance and landscaping the Installation include  
3212 the following:

- 3213
- 3214 1) Use only approved species in plantings and maintenance activities to minimize  
3215 potential for establishment by invasive species, promote wildlife habitat, and minimize  
3216 erosion and runoff.
  - 3217 2) Use supplemental plantings of native trees and shrubs in maintained open areas, around  
3218 buildings, and in recreational areas where consistent with current and planned land uses  
3219 to help enhance habitat diversity and meet wildlife management objectives.
  - 3220 3) Use construction practices that minimize adverse effects on the natural habitat, reduce  
3221 fertilizers and pesticides, apply IPM techniques, minimize runoff, and use water-  
3222 efficient practices.
  - 3223 4) Ban use of all neonicotinoid pesticides to avoid adverse ecological effects, in particular,  
3224 to honeybees and birds.
  - 3225 5) Create outdoor demonstrations to promote awareness of the benefits of implementing  
3226 sustainable and environmentally beneficial grounds maintenance and landscaping  
3227 management.
  - 3228 6) Avoid application of fertilizers because increased nutrients may result in colonization  
3229 by more aggressive, nutrient demanding species. When nutrients are added to the  
3230 system either by exposing new soil or through fertilization, optimum growing  
3231 conditions for the specialized target flora are compromised.

- 3232 7) Preserve ground cover and natural drainage, using drainage channels and retention  
3233 ponds instead of a closed, expensive system.
- 3234 8) Use plant material instead of manmade controls for controlling erosion.
- 3235 9) Use native groundcover and shrubs instead of turf wherever possible to reduce  
3236 maintenance and irrigation requirements.
- 3237 10) Identify, map, and improve pollinator habitat areas (perennial flower beds, wildflower  
3238 fields, perennial flowering bushes).  
3239

3240 Recently, the Navy and U.S. Marine Corps have recognized the important ecological role played  
3241 by pollinators and have encouraged installations to foster pollinator habitats. As a group,  
3242 pollinators are threatened worldwide by habitat loss and fragmentation, pesticides, disease, and  
3243 parasites (USDA-NRCS n.d.). According to the USDA-NRCS, native pollinators are attracted to  
3244 diverse, colorful floral sources that provide a succession of flowers; however, bees prefer to visit  
3245 multiple flowers of the same type on one trip, so it is important to plant in clusters or with  
3246 individuals of the same species nearby one another. Providing flowers of different shapes will  
3247 attract pollinators with different body sizes and mouthparts. Use of native plants is preferable since  
3248 these are usually adapted to Georgia's growing conditions and native pollinators evolved with  
3249 these plants. Plants will be selected based on their tolerance for the conditions present in a  
3250 particular location.

3251  
3252 In keeping with the management strategies defined above, MCLB Albany has incorporated  
3253 pollinator protection from pesticides into its 2015 IPM Plan (MCLB 2015b). Furthermore, the  
3254 NRP has proactively created several pollinator habitats around the base:

- 3255 • Honeybee apiaries are maintained in two different areas, as described in Section 2.4.1.
- 3256 • A pollinator garden, full of native flowering forbs, is planted outside of the Nature Center.
- 3257 • The geothermal site has been planted with native groundcover, with wildflower seeds  
3258 added.
- 3259 • Some blocks of formerly mowed grass have been converted to unmowed fields of native  
3260 grasses and flowers, and additional blocks of unmowed or mowed open green space will  
3261 be considered for establishing pollinator habitat.  
3262

3263 In addition, grounds/landscaping management on the Installation will also include the following  
3264 new management actions:

- 3265 • Plan to harvest and plant acorns from the Live Oak at the front of the base.
- 3266 • Purchase wildflower seed from Roundstone Seed for pollinator management.
- 3267 • Collect seeds of native forbs in-house; then get the seeds tested and provide a 50 percent  
3268 return.  
3269

### 3270 ***Ecosystem Management***

3271 Proper grounds maintenance and landscaping through construction and design practices is  
3272 consistent with an ecosystem approach since it reduces the need for irrigation, pesticides, and

3273 fertilizers, and relies on the functions and characteristics of native plant species. Reducing the  
3274 demand for irrigation, fertilizers, and pesticides reduces the costs associated with grounds  
3275 maintenance and reduces pollutant loading into runoff and surrounding surface waters and aquatic  
3276 communities.

3277

3278 ***Additional Sources of Information***

- 3279
- Society for Ecological Restoration (<http://www.ser.org/>)
  - University of Georgia, College of Agricultural and Environmental Sciences  
3280 (<https://www.caes.uga.edu/>)
  - Lady Bird Johnson Wildflower Center  
3281 (<http://www.wildflower.org/organizations/search.php?state=GA>)
  - Xerces fact sheets on habitat development for pollinators  
3282  
3283 <http://www.xerces.org/fact-sheets/>
- 3284  
3285

3286 **4.1.4 Agricultural Outlease Management**

3287 Agricultural outlease areas are those areas on which an agricultural lease with an outside entity  
3288 may exist for production of hay, row crops, orchards, groves, or livestock grazing. There is often  
3289 also the potential to use these areas as additional hunting areas, as long as hunting activities do not  
3290 interfere with agricultural practices that occur. Agricultural outlease areas have the potential to  
3291 provide food for many types of wildlife, although, these species can sometimes become  
3292 problematic. In addition, outleases can generate revenue to fund INRMP projects and support the  
3293 agricultural heritage of the region.

3294 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Agricultural Outlease***  
3295 ***Management***

- 3296
- Federal Water Pollution Control Act, as amended by the CWA of 1977, 33 U.S.C. 1251,  
3297 describes guidelines for the control of NPS pollution.
  - FIFRA, 7 U.S.C. 136, governs the use and application of pesticides in natural resources  
3298 management plans.
  - Armed Forces, Leases; non-excess property of military departments and Defense Agencies,  
3300 10 U.S.C. 2667, provides general requirements for leasing certain lands that will promote  
3301 national defense or be in the public interest.
  - EO 12088 (13 October 1978), *Federal Compliance with Pollution Control Standards*, as  
3303 amended, ensures that all necessary actions are taken to prevent, control, and abate  
3304 environmental pollution with respect to federal facilities and activities under control of the  
3305 Agency.
  - DODINST 4715.03, *Natural Resources Conservation Program*, requires that all  
3307 installations assess lands for agricultural outlease suitability; and that all agricultural  
3308 outleases support the military mission and place ecological sustainability objectives above  
3309 revenue optimization goals. Each agricultural outlease requires adherence to a conservation  
3310 plan and the Installation's IPM plan.
- 3311  
3312

3313 MCLB Albany’s agricultural outlease program formerly consisted of a small plot of mature pecan  
3314 trees consolidated in one area within the western third of the facility. The outlease contained  
3315 provisions for soil and vegetative management for erosion control, planting of new trees, removal  
3316 of crowded or dead trees, grounds maintenance for aesthetics, control of weeds and noxious plants,  
3317 insect and disease control and habitat improvements for wildlife. As detailed in Section 2.3.8.2.5,  
3318 the agricultural outlease expired in 2014 and was not renewed; any possibility of outleasing the  
3319 pecan orchard again was eliminated when a tornado destroyed most of it in 2017 (Robbins 2019).

3320

3321 **Management Strategies**

3322 Management strategies are primarily the responsibility of the Lessee. However, if MCLB Albany  
3323 should outlease any property for agricultural use again in the future, the NRM should ensure that  
3324 the following strategies and measures are implemented and adhered to:

3325 1) Maintain ground cover and mow three times annually (i.e., May, July, and October). Do  
3326 not disk or harrow deeper than three (3) inches.

3327 2) Conduct annual soil and leaf analysis tests.

3328 3) Fertilize appropriately between 1 January and 1 March. The County Extension Agent may  
3329 assist with the analysis.

3330 4) Maintain pH between 5.6 and 6.5. Based on need indicated by soil tests domomitic  
3331 limestone shall be applied during the period of October through December, when pH drops  
3332 below 5.6.

3333 5) Apply zinc to trees to control Rosette (zinc deficiency). Frequency, amount, and method  
3334 (on soil and/or leaves) will be based on soil and leaf analysis and recommendations of the  
3335 County Extension Service.

3336 6) Annually during November through February, dead, broken, or diseased limbs shall be  
3337 pruned back flush with the next main branch or trunk. Prune all tree limbs off within 5 feet  
3338 of the ground. Sucker control is required as needed at base of living trees.

3339 7) Follow prescribed insect and disease control and prevention measures. All trees will be  
3340 sprayed for insects and disease in a preventive and timely manner in accordance with the  
3341 specific tree variety present. Air blast or air delivery sprayers are required to assure  
3342 complete tree coverage of pesticides. Spraying will be practiced in late afternoon to protect  
3343 honeybees.

3344 8) Control trees, brush, weeds, and other unwanted vegetation in tree “voids” as well as  
3345 perimeter boundaries.

3346 9) Prompt and proper cleanup of areas used by lessee, employees of the lessee, and agents  
3347 will be required. All refuse and debris generated at work site will be disposed of in a manner  
3348 satisfactory to the government within 48 hours.

3349 10) Modify agricultural outleases to include conservation protection standards,  
3350 pesticide/herbicide use restrictions and requirements.

3351 11) Refurbish irrigation system at orchard (Lessee is responsible for this, but MCLB may be  
3352 able to assist).

3353 In managing future agricultural outleasings, MCLB Albany will continue to prioritize ecological  
3354 sustainability objectives above revenue optimization goals as directed by DODINST 4715.03.

3355 ***Ecosystem Management***

3356 Managing agricultural outleasings to limit the use of pesticides/herbicides and include conservation  
3357 protection standards is consistent with an ecosystem approach since it promotes long-term  
3358 ecological sustainability above revenue optimization.

3359 ***Additional Sources of Information***

- 3360 • USDA, National Conservation Practice Standards  
3361 (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/cp/ncps/>)
- 3362 • Conserving Biodiversity on Military Lands  
3363 ([http://www.dodbiodiversity.org/ch5/index\\_6.html](http://www.dodbiodiversity.org/ch5/index_6.html))
- 3364 • Sustainable Agriculture Network (<http://www.sare.org/>)
- 3365 • University of Georgia, College of Agricultural & Environmental Sciences, Dougherty  
3366 County Cooperative Extension (<http://www.caes.uga.edu/extension/dougherty/>)
- 3367 • USDA, Animal and Plant Health Inspection Service (APHIS) Wildlife Services  
3368 (<http://www.aphis.usda.gov/>)

3369 **4.1.5 Rare, Threatened, and Endangered Plant Species and Natural Communities**  
3370 **Management**

3371 The ESA was enacted to conserve endangered and threatened species and the ecosystems on which  
3372 these species depend. The ESA provides conservation programs for endangered and threatened  
3373 species and the habitats these species are dependent on and defines the appropriate steps to be  
3374 taken to conserve species protected by international treaty. Federal agencies are required to ensure  
3375 that no actions undertaken by the agency will likely jeopardize the continued existence of any  
3376 endangered or threatened species, except as provided within the ESA. Whenever there is a  
3377 possibility that an endangered species may be present in an area affected by an action of a federal  
3378 agency, that agency is required to conduct a biological assessment within the affected area to  
3379 document the presence or absence of endangered or threatened species. If such species are found,  
3380 the federal agency must make reasonable efforts to avoid actions that would have a detrimental  
3381 impact on the endangered or threatened species. This section describes the management  
3382 recommendations and benefits of this INRMP for rare, threatened, and endangered plant species  
3383 and rare natural communities that are known to occur at MCLB Albany. The management of rare,  
3384 threatened, and endangered wildlife species can be found in Section 4.2.7 of this INRMP.

3385 The SAIA directs military installations to provide for sustainable use of natural resources,  
3386 consistent with the military mission of the Installation. The SAIA also requires that, to the extent  
3387 appropriate and applicable, military installations must provide for wetland protection,  
3388 enhancement, and restoration where necessary for support of wildlife or plants.



3389 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Wildlife Management and***  
3390 ***Habitat Enhancement***

- 3391 • Fish and Wildlife Coordination Act, 16 U.S.C. 661-666c, authorizes the Secretaries of  
3392 Agriculture and Commerce to provide assistance to and cooperate with federal and state  
3393 agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals,  
3394 as well as to study the effects of domestic sewage, trade wastes, and other polluting  
3395 substances on wildlife.
- 3396 • National Defense Authorization Act (NDAA), Public Law 107-314, 2003, exempts the  
3397 Armed Forces from the incidental taking of migratory birds during military readiness  
3398 activities.
- 3399 • Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, protects migratory birds against  
3400 “takings” for normal and routine operations such as Installation support functions. EO  
3401 13186 (10 January 2001), *Responsibilities of Federal Agencies to Protect Migratory Birds*,  
3402 imposes substantive obligations on the U.S. for the conservation of migratory birds and  
3403 their habitats.
- 3404 • SAIA, 16 U.S.C. 670a–o, requires that, to the extent appropriate and applicable, military  
3405 installations must provide for fish and wildlife management, fish and wildlife habitat  
3406 enhancements and modifications, and wetland protection, enhancement, and restoration  
3407 where necessary to support fish, wildlife, and plants.
- 3408 • DODINST 4715.03, Natural Resources Conservation Program, implements policy, assigns  
3409 responsibilities, and prescribes procedures for the integrated management of natural and  
3410 cultural resources on property under DOD control.
- 3411 • MCO 5090.2 discusses laws that govern natural resources management relating to the  
3412 protection and management of fish and wildlife resources.

3413  
3414 **Management Strategies**

3415 Management strategies related to rare, threatened, and endangered plant species and natural  
3416 communities at MCLB Albany include the following:

- 3417 1) Plan for additional species-specific inventories for rare plants.
- 3418 2) In support of the SWAP, ensure MCLB Albany natural resource data is provided to GDNR  
3419 and other partner agencies as appropriate.
- 3420 3) Provide habitat enhancement for wildlife, including habitat that supports rare, threatened,  
3421 and endangered plant species.
- 3422 4) Ensure locations of rare plants and natural communities are included in the Installation’s  
3423 GIS database.
- 3424 5) Protect key natural communities and locations of rare plants with protected buffer zones  
3425 and ensure activities in these zones are restricted.
- 3426 6) Control invasives that threaten rare plants and communities.
- 3427 7) Utilize management tools such as prescribed burns, forestry practices, mowing, limited  
3428 herbicide use, and plantings to promote rare plants and communities.

- 3429 8) Establish conservation partnerships.  
3430 9) Provide training and education on the importance of rare plants and natural communities.  
3431 10) Assess potential vernal pool areas. Determine if any special designation or protection is  
3432 warranted for those areas.

3433  
3434 Currently, there is one State-listed plant species and no federal listed species or federally  
3435 designated critical habitats known to occur on the Installation (Barbour et al. 2013, MCLB 2007).  
3436 However, three State-designated high priority rare plants and three natural communities of special  
3437 concern (Clayhill Longleaf Woodland, Limesink Pond/Pond Cypress Pond, South Atlantic Willow  
3438 Oak Flatwoods Forest), have been confirmed on MCLB Albany (Barbour et al. 2013, GDNR 1995,  
3439 MCLB 2007). Updates to the federal ESA listings, such as the listing or removal of a species or  
3440 critical habitat under the ESA or a change in species or critical habitat presence at MCLB Albany,  
3441 may require changes in management practices to address these changes.

3442  
3443 Some plant surveys have been performed within the Installation. However, given the size of the  
3444 facility and diversity of habitats, it is likely that additional species-focused surveys across a  
3445 diversity of seasons would identify dozens of additional plant species on the Installation, some of  
3446 which may be protected species. Surveys should be conducted to update MCLB Albany species  
3447 inventory as necessary, and to minimize, mitigate, and monitor potential impacts. Data should be  
3448 provided to appropriate partnering agencies in support of the SWAP. Where possible, military  
3449 readiness and high-impact recreational activities should be located to avoid and minimize impacts  
3450 on rare plants and rare natural communities.

3451  
3452 The following species sub-sections describe more specific management recommendations and  
3453 benefits of this INRMP for special concern plant species and rare natural communities known to  
3454 occur at the MCLB Albany.

3455  
3456 **Crestless Plume Orchid (*Pteroglossaspis ecristata*)**  
3457 Recognized as one of the rarest orchids in the Southeast and is state-listed as threatened, the  
3458 crestless plume orchid is a fire-maintained species preferring the rare longleaf pine woodland  
3459 community and prairies (Barbour et al. 2013). Its distribution in Georgia is widely scattered,  
3460 primarily confined to the southernmost counties of the state. On MCLB Albany, 33 stems were  
3461 observed under an open canopy of mature longleaf pine, in association with a mosaic of shrub  
3462 thickets and herbaceous openings containing water oak, poison oak, slender bluestem, beakrush  
3463 (*Rhynchospora tomentosa*), sidebeak pencilflower (*Stylosanthes biflora*), goat's-rue, and sweet  
3464 goldenrod (Figure 8).

3465  
3466 The crestless plume orchid is an erect perennial herb that grows to 170 centimeters (cm) in height  
3467 arising from a thickened corm. The stem is largely leafless with two to four basally-oriented,  
3468 linear-lanceolate plicate leaves (resembling saw palmetto), and up to 70 cm long. Flowers are  
3469 arranged in a narrow spike on the uppermost 10–15 cm of the stem. Individual flowers grow to  
3470 10 mm long and are generally bicolored with the lower petal (lip) assuming a light to deep  
3471 purplish-brown, whereas the remaining petals and sepals appearing lemon-yellow to yellow-green.  
3472 The flowering season for the plume orchid in Georgia is late July through early September.

3473  
3474 Maintaining the viability of the plume orchid will require preserving the integrity of the longleaf  
3475 system in which it inhabits, through periodic burning to prevent the encroachment of woody  
3476 vegetation. The crestless plume orchid is a fire-maintained species preferring open longleaf pine  
3477 woodlands and prairies. Table 6 provides an overview of how several common forestry practices  
3478 used on MCLB Albany may affect this species (Barbour et al. 2013). Projects described in this  
3479 INRMP that benefit this species are discussed in Appendix F and include Projects 1, 2, 3, 5, 7, and  
3480 9.

3481  
3482 **Table 5. Potential Effects from Forest Management Practices on Rare Plant Species**  
3483 **Found on MCLB Albany.**

Plant Species	Fire Frequency	Season of Burn	Encroaching Hardwoods	Mechanical Treatment	Hardwood-Specific Chemical Treatment
<b>Crestless plume orchid</b>	Overall positive but short-term unknown	Unknown	Likely decreases growth, survivorship and/or establishment	Chopping or mulching likely harmful; brown tree cutter may be ok if used carefully	Likely ok if used carefully
<b>Woodland poppy-mallow</b>	Overall positive but short-term unknown	Unknown	Likely decreases growth, survivorship and/or establishment	Chopping or mulching likely harmful; brown tree cutter may be ok if used carefully	Likely ok if used carefully

3484  
3485 **Woodland Poppy-Mallow (*Callirhoe papaver*)**  
3486 The woodland poppy-mallow is confined to the southwestern portion of the state where it inhabits  
3487 the rare upland longleaf pine woodland natural community. Considered rare in Georgia, the plant  
3488 is known only from six sites in six counties (Barbour et al. 2013). The poppy is a branched,  
3489 sprawling perennial herb that grows up to 6 decimeters long, arising from a thick rootstock. Leaves  
3490 are alternate, with 3-to-5 deep lobes, or occasionally un-lobed. Flowers are showy, wine-purple,  
3491 cup-shaped with five sepals and five petals; approximately 4.0 cm long. The flowering season for  
3492 this species in Georgia is late May through July.

3493  
3494 On MCLB Albany the taxon is represented by two small populations on the far eastern end of the  
3495 property (Figure 8). Apart from Alachua County, Florida, the occurrences of woodland poppy-  
3496 mallow on the Base and southwest Georgia serve as the easternmost limits of the species, assuming  
3497 a greater abundance in the Midwest.

3498  
3499 The primary management concerns identified for the poppy-mallow on MCLB Albany are the lack  
3500 of effective fire and the low frequency of fire (Barbour et al. 2013). The long-term preservation of  
3501 the woodland poppy-mallow is best accomplished through maintenance of the upland longleaf

3502 pine woodlands which it inhabits. The periodic employment of prescribed burning during the  
3503 growing season is recommended to inhibit the growth of woody vegetation, and to release nutrients  
3504 back in the soil essential for growth and reproduction. Table 6 provides an overview of how several  
3505 common forestry practices used on MCLB Albany may affect this species (Barbour et al. 2013).  
3506 Projects described in this INRMP that benefit and conserve woodland poppy-mallow habitat are  
3507 discussed in Appendix F and include Projects 1, 2, 3, 5, 7, and 9.

3508  
3509 Although a full-scale detailed investigation of the natural communities of the Installation has not  
3510 been conducted, suitable examples of three rare or otherwise globally imperiled plant assemblages  
3511 have been documented (Barbour et al. 2013) on MCLB Albany. Opportunities to apply practices  
3512 that would help to promote or restore these communities are below.

### 3513 **Clayhill Longleaf Woodland**

3514 On MCLB Albany this association is distinguished from other upland pine communities found on  
3515 the MCLB Albany in that it is comprised of both longleaf pine and wiregrass; key indicators of  
3516 fire-maintained habitats. Historically, these communities were subject to relatively frequent and  
3517 high intensity fire which resulted in an open canopy, widely spaced trees with a diverse understory  
3518 of low growing shrubs, forbs, and grasses. This community is represented on MCLB Albany, by  
3519 only a few scattered remnants of the former community (Figure 7 and Figure 8), which originally  
3520 covered much of the sandy soil types throughout the southeastern United States. And, as a result  
3521 of insufficient fire, the communities found on the Installation generally have closed canopies and  
3522 an understory with dense growth of woody vegetation and lack of a substantial herbaceous layer.  
3523

3524  
3525 As detailed in the Longleaf Pine Restoration Plan, there is significant potential to improve this  
3526 community type on MCLB Albany (Barbour et al. 2013). Table 7 provides a condensed summary  
3527 of how the various practices discussed in the plan are expected to affect structural components of  
3528 the longleaf pine community (Barbour et al. 2013). Prior to implementing management activities,  
3529 the NRM should carefully assess the condition and needs of each community to plan the specific  
3530 activities needed to facilitate the desired result. NRM should ensure all activities are conducted in  
3531 a manner that does not significantly negatively affect other species that are dependent on these  
3532 communities.

3533

3534  
 3535

**Table 6. Potential Effects from Forest Management Practices on Longleaf Pine Communities.**

<b>Longleaf Pine Community</b>	<b>Fire Frequency</b>	<b>Season of Burn</b>	<b>Encroaching Hardwoods</b>	<b>Mechanical Treatment</b>	<b>Hardwood-Specific Chemical Treatment</b>
<b>Longleaf Regeneration</b>	No fire year 1, sometimes year 2, depending on growth & then regular fire regime; too little fire results in litter accumulation and brown spot fungus	Growing season burn prior to seedfall good; previous dormant season ok	Likely decreases growth and survivorship; increases probability of brown spot	Chopping or mulching harmful; brown tree cutter ok if used carefully	OK if used carefully
<b>Longleaf Adults</b>	Little influence if no duff present	Avoid burning in fall	Little/no effect	OK if kept away from root zone	OK if used carefully
<b>Wiregrass</b>	Frequent fire; too little fire results in litter accumulation and might lower establishment	Growing season burns necessary for flowering	Likely decreases growth, survivorship and/or establishment	Chopping or mulching harmful; brown tree cutter ok if used carefully and fuel load created not too extreme	OK if used carefully
<b>Other Bunch Grasses</b>	Frequent fire; too little fire results in litter accumulation and might lower establishment	Growing season burns may increase flowering	Likely decreases growth, survivorship and/or establishment	Chopping or mulching harmful; brown tree cutter ok if used carefully & fuel load created not too extreme	OK if used carefully

3536

**3537 Limesink Pond/Pond Cypress Pond**

3538 Limesink ponds provides important habitat for many of the rare, threatened and endangered  
 3539 species found on the MCLB Albany. In addition, preserving this natural community is vital to the  
 3540 continued protection of water quality and the hydrologic integrity of the MCLB's associated  
 3541 watersheds. Activities with the potential to disrupt the ecological function of this area or critical  
 3542 habitats would be avoided. In some stands, management activities may be implemented to improve  
 3543 stand quality. Timber stand improvements may include selective thinning and/or removal of  
 3544 undesirable trees, application of herbicide, and other timber stand improvement practices.

3545  
 3546 In general, Limesink Pond/Pond Cypress Pond habitat will be managed through a combination of  
 3547 any of the following activities:



- 3548 1) Timber Harvest (generally thinning for timber stand improvement purposes only)  
3549 2) Regeneration by planting seedlings and/or natural regeneration  
3550 3) Chemical application (herbicides and pesticides, in the case of insect attack).  
3551 4) Interplanting of desirable plant species.

3552

### 3553 **South Atlantic Willow Oak Flatwoods Forest**

3554 This community type typically occurs as shallow depressions scattered throughout MCLB Albany.

3555 These shallow depressions form seasonal forested wetlands. The best example of this community  
3556 type at MCLB Albany occurs along either side of East Shaw Road in the eastern portion of the  
3557 Base (Figure 7 and Figure 8). It is important to conserve and promote the willow oak flatwoods  
3558 forest because of the vital habitat it provides for seasonal wetlands species such as the Eastern tiger  
3559 salamander (see Section 4.2.2.7.2).

3560

3561 To enhance and maintain this rare natural community type, a forest core or buffer surrounding the  
3562 willow oak flatwoods forest should be maintained to help protect the hydrology of the seasonal  
3563 wetlands. Prescribed fire should be allowed to burn into the wetlands when water levels are  
3564 naturally low. For more detail on the management strategies for Forested Wetlands, refer to  
3565 Section 4.2.3.4.

3566

### 3567 ***Ecosystem Management***

3568 Baseline biological data and the periodic assessment of the data will help develop efficient  
3569 management and research programs for wildlife resources and to ensure those in place are effective  
3570 and meeting Installation goals and objectives. Such programs should include information about  
3571 development and improvement of habitat for optimum conditions, need, and means to restore  
3572 desired species abundances, wildlife control as necessary, and protection of wildlife resources.  
3573 Improvements to wildlife habitat must be conducted in consideration of military readiness needs  
3574 and requirements. General wildlife management projects and practices would benefit many of the  
3575 rare species likely to utilize the Installation including many USFWS BCC species and those  
3576 protected under the MBTA.

3577

3578 In addition, when conducted with specific species habitat requirements and communities in mind,  
3579 management activities can benefit populations of species of special concern including three rare  
3580 plants ( woodland poppy-mallow, beakrush, crestless plume orchid), wildlife species of special  
3581 conservation concern (eastern tiger salamander, yellow-crowned night heron, northern bobwhite,  
3582 loggerhead shrike), the state-listed Bachman's sparrow, and the three significant natural  
3583 communities found on the Installation (Barbour et al. 2013).

### 3584 ***Additional Sources of Information***

- 3585
- USFWS, Georgia Field Offices (<http://www.fws.gov/georgia/>)
  - 3586 • GDNR, Wildlife Division (<http://www.georgiawildlife.org/>)
  - 3587 • University of Georgia, Museum of Natural History (<https://naturalhistory.uga.edu/>)
  - 3588 • Georgia Chapter of The Wildlife Society (<http://wildlife.org/georgia/>)

- 3589 • Georgia Soils and Water Commission, Partners in Fish and Wildlife  
3590 (<http://gaswcc.georgia.gov/partners-fish-and-wildlife>)
- 3591 • Georgia Cooperative Fish and Wildlife Research Unit  
3592 (<http://www.coopunits.org/Georgia/>)
- 3593 • TNC, Georgia ([https://www.nature.org/en-us/about-us/where-we-work/united-](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/)  
3594 [states/georgia/](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/))
- 3595 • University of Georgia, Warnell School of Forestry and Natural Resources  
3596 (<http://www.warnell.uga.edu/>)
- 3597 • The Association of Fish and Wildlife Agencies (<http://www.fishwildlife.org/>)
- 3598 • NatureServe (<http://www.natureserve.org/>)
- 3599 • Georgia Wildlife Federation (<http://www.gwf.org/>)

3600

## 3601 **4.2 FISH AND WILDLIFE MANAGEMENT**

3602 MCO 5090.2 defines fish and wildlife management as those actions designed to preserve, enhance,  
3603 and regulate indigenous wildlife and its habitats, including conservation of protected species and  
3604 non-game species, management and harvest of game species, and animal damage control. This  
3605 section addresses the development and implementation of techniques and programs for managing  
3606 fish and wildlife. The fish and wildlife management activities of this INRMP are addressed by the  
3607 following, and are detailed below:

- 3608 1) Section 4.2.1 – Wildlife Management and Habitat Enhancement
- 3609 2) Section 4.2.2 – Migratory Bird Management
- 3610 3) Section 4.2.3 – Fisheries and Aquatic Species Management
- 3611 4) Section 4.2.4 – BASH Reduction
- 3612 5) Section 4.2.5 – Invasive and Nuisance Wildlife Management
- 3613 6) Section 4.2.6 – Zoonosis Prevention
- 3614 7) Section 4.2.7 – Rare, Threatened, and Endangered Wildlife Species Management
- 3615 8) Section 4.2.7.1 – Federally Listed and Candidate Species
- 3616 9) Section 4.2.7.2 – State Listed Species
- 3617 10) Section 4.2.7.3 – Other Species of Special Concern

### 3618 **4.2.1 Wildlife Management and Habitat Enhancement**

3619 In 2001 and 2002, Congress established the Wildlife Conservation and Restoration Program and  
3620 State Wildlife Grant Program. These programs were developed to provide financial assistance to  
3621 state and tribal fish and wildlife entities for the conservation of a multitude of wildlife species,  
3622 including threatened and endangered species. Prior to these programs, there was little financial  
3623 assistance available to states for conservation efforts targeting non-game wildlife species. In order

3624 to be eligible for federal grants and to adhere to the requirements for participating in the State  
3625 Wildlife Grant program, each state was required to develop and submit for approval a statewide  
3626 wildlife action plan or similar plan by October of 2005. The purpose of these plans was to  
3627 summarize the abundance and distribution of each state’s wildlife resources, identify Species of  
3628 Greatest Conservation Need (SGCN), threats to SGCN, and key habitats. In addition, the plans  
3629 were to include conservation actions designed to address the threats to SGCN.

3630 Georgia’s Comprehensive Wildlife Conservation Strategy report (later termed, *State Wildlife*  
3631 *Action Plan*, or SWAP) was approved by USFWS in October 2005 (GDNR 2005). The SWAP  
3632 was revised in 2015, and the 2015 SWAP was approved in September 2016 (GDNR 2015). The  
3633 intent of the SWAP is to assist GDNR and its conservation partners with the development of  
3634 nongame initiatives and goals that will address the needs of animal species and habitats.

3635  
3636 The SAIA directs military installations to provide for sustainable use of natural resources,  
3637 including wildlife. These uses can be consumptive (hunting, fishing) or non-consumptive (wildlife  
3638 viewing, nature education), as long as such uses do not cause conflict with the military readiness  
3639 of the installation or adversely affect the natural resources under the stewardship of the DOD. The  
3640 SAIA also requires that, to the extent appropriate and applicable, military installations must  
3641 provide for wildlife management; wildlife habitat enhancements or modifications; and wetland  
3642 protection, enhancement, and restoration where necessary for support of wildlife or plants.

3643 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Wildlife Management and***  
3644 ***Habitat Enhancement***

- 3645 • Fish and Wildlife Coordination Act, 16 U.S.C. 661-666c, authorizes the Secretaries of  
3646 Agriculture and Commerce to provide assistance to and cooperate with federal and state  
3647 agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals,  
3648 as well as to study the effects of domestic sewage, trade wastes, and other polluting  
3649 substances on wildlife.
- 3650 • National Defense Authorization Act (NDAA), Public Law 107-314, 2003, exempts the  
3651 Armed Forces from the incidental taking of migratory birds during military readiness  
3652 activities.
- 3653 • Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, protects migratory birds against  
3654 “takings” for normal and routine operations such as installation support functions. EO  
3655 13186 (10 January 2001), *Responsibilities of Federal Agencies to Protect Migratory Birds*,  
3656 imposes substantive obligations on the U.S. for the conservation of migratory birds and  
3657 their habitats.
- 3658 • SAIA, 16 U.S.C. 670a-o, requires that, to the extent appropriate and applicable, military  
3659 installations must provide for fish and wildlife management, fish and wildlife habitat  
3660 enhancements and modifications, and wetland protection, enhancement, and restoration  
3661 where necessary to support fish, wildlife, and plants.
- 3662 • DODINST 4715.03, Natural Resources Conservation Program, implements policy, assigns  
3663 responsibilities, and prescribes procedures for the integrated management of natural and  
3664 cultural resources on property under DOD control.

- 3665           • MCO 5090.2 discusses laws that govern natural resources management relating to the  
3666           protection and management of fish and wildlife resources.

3667  
3668    **Management Strategies**  
3669    Management strategies related to wildlife management and habitat enhancement at MCLB Albany  
3670    include the following:

- 3671           1) Conduct censuses of wildlife populations as necessary to monitor the effectiveness of  
3672           management activities in reaching management goals. These surveys should document the  
3673           relative abundance of selected species that are indicators of healthy, self-sustaining  
3674           ecosystems.
- 3675           2) In support of SWAP, ensure MCLB Albany natural resource data is provided to GDNR  
3676           and other partner agencies as appropriate.
- 3677           3) Provide habitat enhancement for wildlife, including habitat that supports rare, threatened,  
3678           and endangered species as well as migratory birds, while ensuring military training needs  
3679           are met.
- 3680           4) Manage and protect key habitats such as wetlands with protected buffer zones.
- 3681           5) Control invasive species that threaten key wildlife habitats.
- 3682           6) Promote growth and retention of individual trees of high wildlife value (e.g., snags, trees  
3683           with a high mast production), as well as trees in important wildlife habitats, such as riparian  
3684           areas and wintering sites will be maintained.
- 3685           7) Utilize management tools such as prescribed burns, forestry practices, mowing, limited  
3686           herbicide use, and plantings to promote habitat abundance and diversity.
- 3687           8) Minimize potentially intrusive recreational activities within key habitats and sensitive  
3688           resource areas such as wetlands and water bodies.
- 3689           9) Establish conservation partnerships.
- 3690           10) Provide training and education on the importance of key habitat areas.
- 3691           11) Establish pollinator habitat areas.
- 3692           12) Update fish and wildlife species list through focused surveys and inventories
- 3693           13) Conduct annual or biannual surveys for target species of special interest or management  
3694           concern.

3695  
3696    Wildlife has been surveyed on MCLB Albany between 1990-1992, 1995, and 2013 (GDNR 1993,  
3697    MCLB 2007, Barbour et al. 2013). Additionally, many species have been incidentally documented  
3698    on the facility by trained professionals (Barbour et al. 2013, MCLB 2012a, 2013e). Formal and  
3699    comprehensive wildlife surveys should be conducted to update MCLB Albany’s species inventory  
3700    as necessary, and to minimize, mitigate, and monitor the takes of wildlife species, especially  
3701    migratory birds, at the facility. Data should be provided to appropriate partnering agencies in  
3702    support of the SWAP. Natural resources management should look into opportunities to enter into  
3703    additional conservation partnerships with federal, state, and local agencies, and NGOs to improve  
3704    the diversity and health of wildlife habitat at the Installation. Where possible, military readiness

3705 and high-impact recreational activities should be located to avoid and minimize impacts on wildlife  
3706 species and habitat.

3707  
3708 Many of the mammals, birds, and reptiles found on or near MCLB Albany benefit from the  
3709 diversity of woodland, field, wetland and edge habitats found across the Installation and the  
3710 surrounding area. Proper stewardship requires that this diversity be maintained consistent with  
3711 SAIA and the military mission. Natural resource management actions occurring on MCLB Albany  
3712 should take into consideration the initiatives and goals set forth in the SWAP to adequately address  
3713 nongame species and habitats. The INRMP management measures identified in this document will  
3714 provide both direct and indirect benefits to state listed wildlife species. Further, the SAIA, as  
3715 amended, requires that, to the extent appropriate and applicable, military installations must provide  
3716 for wildlife management; wildlife habitat enhancements and modifications; and wetland  
3717 protection, enhancement, and restoration where necessary to support wildlife, and plants. These  
3718 actions are to be planned and conducted in cooperation with federal and state wildlife agencies.

3719 Opportunities exist for sustainable uses and stewardship of both game and non-game wildlife  
3720 populations at MCLB Albany, as provided in the SAIA. Stewardship of wildlife resources has high  
3721 public relations value, and provides educational and partnership opportunities to local civic,  
3722 conservation and youth groups. Consistent with SWAP goals and objectives, MCLB Albany  
3723 intends to manage wildlife habitat to restore and maintain indigenous wildlife species through the  
3724 use of integrated ecosystem management principles, while accommodating military training needs.  
3725 This includes management of species for both non-consumptive (e.g., watchable wildlife,  
3726 photography) and consumptive uses (e.g., fishing, hunting). Furthermore, the wildlife resources  
3727 and habitats will be managed in compliance with federal (Sikes Act, ESA, CWA) and state laws,  
3728 and Marine Corps regulations and guidance. The management of specific habitat types for the  
3729 benefit of wildlife on the Installation (in accordance with the SWAP) is discussed in Section 4.3.6.

3730  
3731 Wildlife management at MCLB is the responsibility of the Conservation Officer/Game Warden.  
3732 The Conservation Officer also collects and disposes of roadkill. In addition to managing wildlife  
3733 by improving and restoring native forest habitat at MCLB Albany, the Installation is undertaking  
3734 the following wildlife management actions:

- 3735 • Rebuild a new game warden compound.
- 3736 • Monitor several bat houses that have been installed on-base for species and abundance.

### 3737 ***Ecosystem Management***

3738 Baseline biological data and the periodic assessment of the data will help develop efficient  
3739 management and research programs for wildlife resources and to ensure those in place are effective  
3740 and meeting Installation goals and objectives. Such programs should include information about  
3741 development and improvement of habitat for optimum conditions, need, and means to restore  
3742 desired species abundances, wildlife control as necessary, and protection of wildlife resources.  
3743 Improvements to wildlife habitat must be conducted in consideration of military readiness needs  
3744 and requirements. General wildlife management projects and practices would benefit many of the  
3745 species likely to utilize the Installation including many USFWS BCC species and those protected  
3746 under the MBTA. In addition, when conducted with specific species habitat requirements and  
3747 communities in mind, management activities can benefit populations of species of special concern



3748 including three rare plants (woodland poppy-mallow, beakrush, crestless plume orchid), wildlife  
3749 species of special conservation concern (eastern tiger salamander, yellow-crowned night heron,  
3750 northern bobwhite, loggerhead shrike), the state listed Bachman’s sparrow, and the three  
3751 significant natural communities found on the Installation (Barbour et al. 2013).

3752 ***Additional Sources of Information***

- 3753 • USFWS, Georgia Field Offices (<http://www.fws.gov/georgia/>)
- 3754 • GDNR, Wildlife Division (<http://www.georgiawildlife.org/>)
- 3755 • University of Georgia, Museum of Natural History (<https://naturalhistory.uga.edu/>)
- 3756 • Georgia Chapter of The Wildlife Society (<http://wildlife.org/georgia/>)
- 3757 • Georgia Soils and Water Commission ([http://gaswcc.georgia.gov/partners-fish-and-](http://gaswcc.georgia.gov/partners-fish-and-wildlife)  
3758 [wildlife](http://gaswcc.georgia.gov/partners-fish-and-wildlife))
- 3759 • Georgia Cooperative Fish and Wildlife Research Unit  
3760 (<http://www.coopunits.org/Georgia/>)
- 3761 • The Nature Conservancy (TNC), Georgia ([https://www.nature.org/en-us/about-us/where-](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/)  
3762 [we-work/united-states/georgia/](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/))
- 3763 • University of Georgia, Warnell School of Forestry and Natural Resources  
3764 (<http://www.warnell.uga.edu/>)
- 3765 • The Association of Fish and Wildlife Agencies (<http://www.fishwildlife.org/>)
- 3766 • NatureServe (<http://www.natureserve.org/>)
- 3767 • Georgia Wildlife Federation (<http://www.gwf.org/>)

3768 **4.2.2 Migratory Bird Management**

3769 Migratory birds face serious challenges that have resulted in species declines, including reductions  
3770 in habitat quality and quantity, direct bird mortality attributable to human activities, invasive  
3771 species, collisions with artificial structures, and environmental contaminants. Because migratory  
3772 birds cross the boundaries of nations, watersheds, and ecosystems, protecting them requires a  
3773 coordinated effort involving multiple jurisdictions and interests.

3774 The 2003 NDAA exempts the Armed Forces from the incidental taking of migratory birds during  
3775 military readiness activities. Military readiness activities include all training and operations of the  
3776 Armed Forces that relate to combat and the adequate testing of military equipment, vehicles,  
3777 weapons and sensors for proper operation and suitability for combat use. The Migratory Bird  
3778 Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712) also requires that the Secretaries of Defense and  
3779 Interior identify ways to minimize, mitigate and monitor the take of migratory birds during military  
3780 readiness activities.

3781 In 2004, Congress mandated the DOD Migratory Bird conservation revision to the MBTA through  
3782 language in the 2004 NDAA. The Secretary of Interior was charged with developing an incidental  
3783 take process for migratory birds on DOD lands involving military mission activities (e.g., training,  
3784 research and development). DOD and the USFWS (on behalf of the Secretary of Interior)

3785 developed cooperative guidance, and the 2006 MOU for Migratory Bird Conservation, before the  
3786 USFWS completed the Final Rule (2007) for Migratory Bird Conservation on Military Lands  
3787 (Final Rule). The Final Rule governs the incidental take on military installations in mission areas  
3788 where training, research and development occur, whereas the MOU governs the cantonment areas  
3789 and non-mission areas (e.g., family housing, post exchanges, laundry facilities). The Final Rule  
3790 requires that military installations evaluate any proposed action in the mission areas that may  
3791 impact any migratory bird population (through NEPA analysis) and consult with the USFWS if  
3792 the military determines that a potential effect may occur.

3793 Protection of ecologically sensitive areas is provided by SAIA under the provisions of wildlife and  
3794 fish habitat enhancement in support of managing these populations. Lands under the management  
3795 of MCLB Albany include a diverse assemblage of plant communities providing excellent habitat  
3796 for a variety of both migratory and resident birds, mammals, reptiles and insects. The sensitivity  
3797 of the areas and their importance to avian populations requires the proper management of this  
3798 complex of communities and is central to the wildlife management program at the Installation. All  
3799 of these areas are sensitive to human activities and must be carefully managed to prevent  
3800 degradation or loss of valuable ecosystems.

3801  
3802 The MBTA of 1918, as amended and EO 13186, *Responsibilities of Federal Agencies to Protect*  
3803 *Migratory Birds*, protects migratory birds. The MBTA makes it illegal to take any migratory bird,  
3804 except as allowed by the implementing regulations; takes for normal and routine operations, such  
3805 as Installation support functions, are prohibited. EO 13186 requires that federal agencies avoid or  
3806 minimize the impacts of their activities on migratory birds and make efforts to protect birds and  
3807 their habitat. DOD guidance also requires each military installation with an INRMP to ensure that  
3808 they incorporate migratory bird conservation into the INRMP and implement such elements as  
3809 necessary and minimize, mitigate, and monitor the take of migratory birds from military readiness  
3810 activities at the Installation.

3811  
3812 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Migratory Bird Management***

- 3813 • ESA, 16 U.S.C. 1531 et seq., as amended, provides for the identification and protection of  
3814 threatened and endangered species of plants and their critical habitats and requires federal  
3815 agencies to ensure that no agency action is likely to jeopardize the continued existence of  
3816 a threatened or endangered species.
- 3817 • MBTA, 16 U.S.C. 703-712, protects migratory birds against “takings” for normal and  
3818 routine operations such as installation support functions.
- 3819 • NDAA, Public Law 107-314, 2003, exempts the Armed Forces from the incidental taking  
3820 of migratory birds during military readiness activities.
- 3821 • 50 CFR Part 22, Bald and Golden Eagle Protection Act, protects eagles from commercial  
3822 exploitation and safeguards their survival in the U.S.
- 3823 • EO 13186 (10 January 2001), *Responsibilities of Federal Agencies to Protect Migratory*  
3824 *Birds*, imposes substantive obligations on the U.S. for the conservation of migratory birds  
3825 and their habitats.

- 3826           • MCO 5090.2 discusses laws that govern natural resources management relating to the  
3827           protection and management of fish and wildlife resources.

3828  
3829 **Management Strategies**

3830 Management strategies related to protection of migratory bird species at MCLB Albany include  
3831 the following:

- 3832           1) Reduce pesticide use on the Installation.
- 3833           2) Implement habitat enhancement and maintain habitat diversity for migratory bird species,  
3834           consistent with military readiness requirements. Recommendations for habitat  
3835           enhancement should be made to attract birds and other wildlife away from operations areas.  
3836           Additionally, modification to habitat should also take into consideration bird nesting and  
3837           breeding seasons so as not to conflict with the MBTA.
- 3838           3) Conduct focused avian surveys as needed to develop and confirm the facility avian species  
3839           list. This may include more intensive surveys, surveys to document use outside of seasons  
3840           already surveyed, and surveys to target specific guilds or secretive, nocturnal or  
3841           crepuscular species that may not have been addressed in prior survey efforts.
- 3842           4) Control invasive bird species that compete with native migratory bird species and their  
3843           habitats.
- 3844           5) Locate military readiness activities to avoid or minimize impacts on migratory birds, where  
3845           possible. If evidence is found of a take as a result of military readiness activities, the NRM  
3846           will document the take, evaluate these activities, and where practicable, reduce or eliminate  
3847           the take of migratory birds.
- 3848           6) Maintain compliance with the MBTA for all non-military readiness activities.
- 3849           7) Request assistance from the DOD PIF Work Group, as needed, to assist and support  
3850           military installations in migratory bird conservation while protecting the military mission.
- 3851           8) Develop partnerships with federal, state, and local agencies, universities, and NGOs such  
3852           as the National Audubon Society to enter into conservation partnerships, allow for bird  
3853           research on the Installation, conduct monitoring surveys, and participate in International  
3854           Migratory Bird Day.
- 3855           9) Enter avian data into DOD's Coordinated Bird Monitoring Plan (CBMP) Avian  
3856           Knowledge Network (AKN) database.

3857  
3858 To ensure compliance with the MBTA, before routine Installation support actions and management  
3859 actions presented in this INRMP are implemented, the NRM should be informed and potential  
3860 impacts to migratory birds should be assessed to determine if any adjustments need to be made.  
3861 Illegal takes under the MBTA could include mortality, pesticide application, nest and egg removal,  
3862 and in some cases tree removal. However, habitat removal as a result of timber sales, or nest  
3863 removal outside of nesting season, would not constitute a take.

3864 MCLB Albany will give consideration to the potential impacts to migratory birds from Installation  
3865 operations, as well as the natural resource management and maintenance activities. Management  
3866 practices will protect, conserve, and promote habitat for migratory species where possible, which

3867 in turn will benefit MCLB Albany ecosystems and may provide recreational opportunities (e.g.,  
3868 bird watching, photography).

3869 Migratory bird management on the Installation includes the following management actions:

- 3870 • Construct an observation blind at Indian Lake for wildlife viewing.
- 3871 • Update wood duck boxes at Indian Lake.
- 3872 • Within duck habitat, control buttonbush by 90 percent.
- 3873 • Replace purple martin houses.
- 3874 • Install and maintain “bluebird boxes” (approximately 174).

3875

### 3876 ***Ecosystem Management***

3877 Bird surveys should be conducted to monitor the bird populations and to minimize, mitigate, and  
3878 monitor the take of migratory birds at MCLB Albany, and to collect data on sensitive species.  
3879 Where possible, military readiness activities will be located to avoid and minimize impacts on  
3880 migratory birds. If clear evidence of bird take is noted, such as the sight of numerous dead or  
3881 injured birds, MCLB Albany would consider modifying its activities, as practicable, to reduce take  
3882 of migratory birds.

3883

3884 The Installation will also seek out opportunities to enter into conservation partnerships with  
3885 federal, state, and local agencies and NGOs to improve habitat and allow for bird research at  
3886 MCLB Albany. Baseline biological data and the periodic assessment of the data will help develop  
3887 efficient management and research programs for wildlife resources and to ensure those in place  
3888 are effective and meeting Installation goals and objectives. The general management projects and  
3889 practices implemented for migratory bird species would also benefit USFWS BCC species and  
3890 bird species of special conservation concern, including northern bobwhite, loggerhead shrike,  
3891 yellow-crowned night heron, and the state-listed Bachman’s sparrow (Barbour et al. 2013).

3892

### 3893 ***Additional Sources of Information***

- 3894 • USDA NRCS Migratory Bird Habitat Initiative  
3895 ([https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/initiatives/?cid=](https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/initiatives/?cid=steldevb1027669)  
3896 [steldevb1027669](https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/initiatives/?cid=steldevb1027669))
- 3897 • USFWS, Southeast Region Migratory Bird Program  
3898 (<https://www.fws.gov/southeast/birds/migratory-birds/>)
- 3899 • USFWS Birds of Conservation Concern  
3900 (<https://digitalmedia.fws.gov/digital/collection/document/id/1249/rec/1>)
- 3901 • DOD PIF (<http://www.dodpif.org/>)
- 3902 • eBird (<https://ebird.org/home>)
- 3903 • NatureServe (<http://www.natureserve.org/>)
- 3904 • Georgia Ornithological Society (<http://www.gos.org/>)
- 3905 • Audubon, Georgia ([http://www.n-georgia.com/audubon\\_society.htm](http://www.n-georgia.com/audubon_society.htm))

- 3906
- TNC Migratory Bird Program (<http://my.nature.org/birds/>)

3907 **4.2.3 Fisheries and Aquatic Species Management**

3908 The Sikes Act provides for cooperation by the DOD with the USFWS and state wildlife agencies  
3909 in planning, development, and maintenance of fish resources on military installations and requires  
3910 the cooperative development and implementation of an INRMP on installations with sufficient  
3911 resources. In addition, EO 12962, *Recreational Fisheries*, encourages the development and  
3912 enhancement of recreational fisheries by federal agencies.

3913 Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fisheries Conservation and  
3914 Management Act as those waters and substrates necessary to fish for spawning, breeding, feeding  
3915 or growth to maturity. Waters are defined as the aquatic area with all associated physical, chemical  
3916 and biological properties. Substrate is defined as sediment, hard bottom, structures underlying the  
3917 waters and associated biological communities. The National Marine Fisheries Service (NMFS) is  
3918 responsible for identifying EFH and assisting federal agencies needing to conduct activities in EFH  
3919 to minimize impacts to the EFH. No EFH or Coral Reef Protection properties exist on MCLB  
3920 Albany.

3921 The SAIA directs military installations to provide for sustainable use of natural resources,  
3922 including fisheries and aquatic species, consistent with the military mission of the Installation.  
3923 These uses can be consumptive (hunting, fishing) or non-consumptive (wildlife viewing, nature  
3924 education), as long as such uses do not cause conflict with the military readiness of the Installation  
3925 or adversely affect the natural resources under the stewardship of the DOD. The SAIA also requires  
3926 that, to the extent appropriate and applicable, military installations must provide for fish and  
3927 aquatic species management; fish and aquatic habitat enhancements or modifications; and wetland  
3928 protection, enhancement, and restoration where necessary for support of fish or aquatic species.

3929 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Fisheries and Aquatic Species***  
3930 ***Management***

- 3931
- Fish and Wildlife Coordination Act, 16 U.S.C. 661–666c, authorizes the Secretaries of  
3932 Agriculture and Commerce to provide assistance to and cooperate with federal and state  
3933 agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals,  
3934 as well as to study the effects of domestic sewage, trade wastes, and other polluting  
3935 substances on wildlife.
  - CWA Section 303, Water Impairment Identification, requires States to identify waters that  
3936 do not or are not expected to meet applicable water quality standards with technology-  
3937 based controls alone and to develop programs to achieve the State standards.
  - Federal Water Pollution Control Act, as amended by the CWA of 1977, 33 U.S.C. 1251,  
3938 describes guidelines for the control of NPS pollution.
  - National Invasive Species Act, 16 U.S.C. 4701, prescribes policies to prevent the  
3939 introduction and spread of non-indigenous species into U.S. waters.
- 3940
- 3941
- 3942



- 3943 • EO 12962 (9 June 1995), *Recreational Fisheries*, requires Federal agencies to improve the  
3944 quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for  
3945 increased recreational fishing opportunities.
- 3946 • SAIA, 16 U.S.C. 670a–o, requires that, to the extent appropriate and applicable, military  
3947 installations must provide for fish and wildlife management, fish and wildlife habitat  
3948 enhancements and modifications, and wetland protection, enhancement, and restoration  
3949 where necessary to support fish, wildlife, and plants.
- 3950 • MCO 5090.2, and the U.S. Marine Corps *Handbook for Preparing, Revising, and*  
3951 *Implementing Integrated Natural Resources Management Plans on Marine Corps*  
3952 *Installations* (2007) discusses laws that govern natural resources management relating to  
3953 the protection and management of fish and wildlife resources, and discusses natural  
3954 resources management relating to NPS pollution and establishes requirements,  
3955 guidelines, and standards for the assessment of damages arising from the release of oil or  
3956 hazardous substances.

3957 **Management Strategies**

3958 Management strategies related to protection of fish and other aquatic species at MCLB Albany  
3959 include the following:

- 3960 1) Monitor water bodies to determine if supplemental water should be used to maintain water  
3961 levels to support fisheries.
- 3962 2) Ensure a minimum 100-foot vegetative buffer is maintained around water bodies to protect  
3963 water quality. Ground disturbance should be minimized allowed within these buffer areas.
- 3964 3) Identify and locate jurisdictional waters of the U.S., including wetlands, that have the  
3965 potential to be impacted by activities associated with the military mission, as directed by  
3966 the CWA.
- 3967 4) Minimize impacts of construction activities. All ground-disturbing activities will  
3968 incorporate appropriate stormwater and erosion and sediment controls and will coordinate  
3969 the timing of land-disturbing activities and implementation of erosion and sedimentation  
3970 control measures to reduce nonpoint source pollution that could result from those activities.  
3971 To ensure that such controls are applied consistently, an ESCP will be developed for all  
3972 land-disturbing activities, as needed in accordance with state regulations.
- 3973 5) Maintain routine monitoring in accordance with specifications outlined in the existing  
3974 NPDES Stormwater Permit.
- 3975 6) Minimize the impacts of fertilizers and pesticides on water quality using management  
3976 practices that balance the desire to have aesthetically pleasing grounds while protecting  
3977 water quality.
- 3978 7) Maintain proper function of stormwater control and conveyance structures by frequently  
3979 removing debris. Litter and yard wastes can clog inlets, catch basins and outlets, lead to  
3980 overflows, erosion, and unintended flooding, and make these devices ineffective for  
3981 stormwater pollutant removal.

- 3982 8) Conduct annual erosion surveys to identify soil erosion problem areas. Surveys should be  
3983 focused in areas prone to erosion, such as areas along roadways, areas of recent ground  
3984 disturbance, areas containing moderate to steep slopes, and areas adjacent to surface waters  
3985 and wetlands.
- 3986 9) Identify any additional non-native/introduced species and encourage native species via  
3987 management, especially when stocking ponds.
- 3988 10) Conduct amphibian survey in aquatic areas.
- 3989 11) Conduct darter survey at ponds.

3990 Opportunities exist for sustainable uses and stewardship of fishery and aquatic resources at MCLB  
3991 Albany, as provided in the SAIA. Stewardship of fish and aquatic resources has high public  
3992 relations value, and provides educational and partnership opportunities to local civic, conservation  
3993 and youth groups. Fishing and aquatic species management at MCLB Albany includes actions that  
3994 provide general benefit to aquatic habitats and the species that utilize them, but also includes the  
3995 management of those resources to provide recreational opportunities. Recreational (i.e., fishing)  
3996 opportunities are discussed in Section 4.4.

3997  
3998 As detailed in Section 2.3.7.4, three human-made ponds (Robinson Pond [0.6 acres], Covella Pond  
3999 [5.2 acres], Horseshoe Pond [2.1 acres]), and one naturally occurring cypress pond (Indian Lake  
4000 [66.0 acres]) provide habitat for fish and other aquatic species and recreational opportunities at  
4001 MCLB (MCLB 2013d). The portion of Piney Woods Creek on the Installation is dry most of the  
4002 year and does not provide substantial habitat for fish or other aquatic species (Barbour et al. 2013).

#### 4003 ***Ecosystem Management***

4004 Baseline biological data will help develop efficient management and research programs for fish  
4005 and aquatic resources at MCLB Albany. Such programs should include information about  
4006 development and improvement of habitat for optimum conditions, need, and means to restore  
4007 desired species abundances, fish control as necessary, and protection of fish and aquatic resources.

#### 4008 ***Additional Sources of Information***

- 4009
  - GDNR, Fishing (<http://www.georgiawildlife.com/fishing/>)
  - 4010 • Georgia Chapter of the American Fisheries Society (<http://gaafs.org/>)
  - 4011 • University of Georgia, College of Agriculture and Environmental Sciences, Pond  
4012 Management ([https://extension.uga.edu/county-offices/jackson/agriculture-and-natural-  
4013 resources/pond-mangement.html](https://extension.uga.edu/county-offices/jackson/agriculture-and-natural-resources/pond-mangement.html))
  - 4014 • Georgia Cooperative Fish and Wildlife Research Unit  
4015 (<http://www.coopunits.org/Georgia/>)

#### 4016 **4.2.4 BASH Reduction**

4017 There are no airfields on MCLB Albany. Therefore, Bird Air Strike Hazard (BASH) reduction is  
4018 not applicable to this INRMP.

#### 4019 **4.2.5 Invasive and Nuisance Wildlife Management**

4020 Invasive and nuisance wildlife species can displace native plants and animals, change the structure  
4021 of natural communities, impact the ecological functions of ecosystems, and spread infectious  
4022 diseases among wildlife species, and in some cases spread zoonosis (i.e., diseases communicable  
4023 from animals to humans under natural conditions). Controlling these species is essential to the  
4024 protection of the Installation's biodiversity. Invasive (i.e., exotic) wildlife species include non-  
4025 native animals that may move into, or are introduced to, an area and disturb the habitat of a similar  
4026 native species or a non-similar species that depends upon the territory or food source claimed by  
4027 the invasive species. Nuisance wildlife, are native species that cause inconvenience, annoyance or  
4028 irritation to the general human population or damage to property. The level of inconvenience or  
4029 annoyance can range from relatively minor, such as reducing the aesthetic qualities of an area, to  
4030 causing actual physical or economic damage to buildings, landscaped areas and other structures.  
4031 Nuisance wildlife also may act as a vector for human disease.

4032  
4033 The CNO Policy Letter of January 2002 on Preventing Feral Cat and Dog Populations on Navy  
4034 Property states installations must adopt proactive pet management procedures that prevent the  
4035 establishment of free-roaming cat and dog populations. Additionally, installations must ensure the  
4036 humane capture and removal of feral cats and dogs, and efforts should be made to find homes for  
4037 adoptable animals (Department of the Navy 2002). The Armed Forces Pest Management Board  
4038 Technical Guide No. 37, Integrated Management of Stray Animals on Military Installations  
4039 (Armed Forces Pest Management Board 2012) provides additional guidance for installations in  
4040 addressing feral cat control issues.

#### 4041 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Invasive Plant and Noxious*** 4042 ***Weed Management***

- 4043 • DODINST 4150.07: DOD Pest Management Program. Implements policy, assigns  
4044 responsibility, and prescribes procedures for the Department of Defense pest  
4045 management program. Outlines the DOD Measures of Merit.  
4046 [http://www.afpmb.org/pubs/dir\\_inst/dod4150.7-i.pdf](http://www.afpmb.org/pubs/dir_inst/dod4150.7-i.pdf)
- 4047 • OPNAVINST 6250.4 (series): Pest Management Programs. Provides Navy and Marine  
4048 Corps policies and procedures for implementing pest management programs.  
4049 <http://doni.daps.dla.mil/OPNAV.aspx>
- 4050 • EO 13112 (3 February 1999), *Invasive Species*, requires executive agencies to restrict the  
4051 introduction of exotic organisms into natural ecosystems.
- 4052 • Georgia Animal Cruelty Criminal Provisions, Official Code of Georgia Annotated  
4053 16-12-4.
- 4054 • Georgia Animal Protection Act Section 5.1 in the Georgia Code requires all animals in  
4055 animal shelters be euthanized in a humane manner with only one method by a licensed  
4056 veterinarian or certified technician: administering sodium pentobarbital.
- 4057 • Armed Forces Pest Management Board Technical Guide No. 37, Integrated Management  
4058 of Stray Animals on Military Installations, provides guidance for installations in  
4059 addressing feral cats (Armed Forces Pest Management Board 2012).

- 4060
- 4061
- 4062
- CNO Policy Letter of January 2002 on Preventing Feral Cat and Dog Populations on Navy Property, provides recommendations for pet management procedures to prevent the establishment of free-roaming cat and dog populations (Department of the Navy 2002).
- 4063
- MCO 5090.2 prohibits the introduction of exotic species into a natural ecosystem and requires control or eradication of exotic species and noxious weeds on federal lands.
- 4064
- 4065

4066 **Management Strategies**

4067 The following management strategies will help to reduce the spread or introduction of invasive  
4068 and nuisance wildlife species:

- 4069
- 1) Maintain a hunting program and monitor to determine if modifications are needed to control excessive number of potentially nuisance species. Feral hogs should be managed by hunting, trapping and shooting by authorized agents.
- 4070
- 2) Educate base personnel on the importance of keeping house cats indoors and to identify a human process for the removal of unwanted/abandoned cats.
- 4071
- 3) Educate base personnel on the guidelines and resources identified in the IPM Plan (MCLB 2015b), which includes the importance of not feeding wildlife, the proper storage and handling garbage and potential food sources, and the resources available to personnel to control pests.
- 4072
- 4) Assess perimeter fencing and address any areas where the fence has been compromised.
- 4073
- 5) Develop an informational pamphlet on the zoonosis diseases of concern for the Installation and highlighting measures to prevent their spread. Identify a system for alerting Installation residents and employees of any public health alerts as they arise
- 4074
- 6) Establish cooperative agreements (Dougherty County, Humane Society, USDA APHIS) to address the removal and processing of nuisance species.
- 4075
- 7) Develop a plan to address feral cat and stray dog (and issues with other nuisance species that may come up) either through the County or possibly through USDA APHIS program. APHIS may be the preferred measure since they would address all nuisance issues.
- 4076
- 8) Conduct biannual monitoring, or more frequently as needed, of invasive animals and nuisance wildlife to determine whether wildlife removal, relocation, other remedial actions are necessary to protect natural resources and/or human health and safety.
- 4077
- 4078
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- 4091

4092 Multiple military services (Army, Navy, and Marine Corps) and entities on MCLB Albany address  
4093 the management of nuisance wildlife. Insect pests or vermin occupying structures, impacting food  
4094 stores, and mosquito surveillance and control on MCLB Albany are handled through MCLB  
4095 Albany's Public Works Branch, the U.S. Army Medical Department, the U.S. Naval Branch Health  
4096 Clinic, or contractors. The Natural Resources Branch responds to all other nuisance wildlife or  
4097 domestic animal complaints. Funded by the USDA Wildlife Services, the Wildlife Biologist in the  
4098 Natural Resource Branch will work on continuously removing nuisance wildlife such as raccoons,  
4099 feral and domestic dogs and others known to be predators of rare and threatened species. In the  
4100 past, animal control efforts only focused on individual nuisance animals but because these animals

4101 quickly rebound when efforts of control are halted, a more comprehensive removal program is  
4102 needed to reduce their populations.

4103  
4104 The most notable pests on MCLB requiring management include stray dogs, cats, snakes and bats.  
4105 Stray domestic animals are taken to local animal shelters and/or held for short periods of time  
4106 while efforts are made to contact owners. The kennel facility for temporarily holding stray animals  
4107 was constructed in FY14. Other species could become problematic (e.g., a wide variety of insects,  
4108 hogs, skunks, etc.) and would be addressed on a case-by-case basis. The MCLB IPM Plan (MCLB  
4109 2015b) provides the management strategy and specific guidelines and recommendation for  
4110 management of problematic wildlife including recommendations that would significantly reduce  
4111 the potential for species to become problematic. Common zoonosis concerns include rabies, Lyme  
4112 borreliosis, Rocky Mountain spotted fever, human ehrlichiosis, murine typhus, plague, mosquito-  
4113 borne encephalitis, brucellosis, salmonellosis, and anthrax. There have been no reported incidents  
4114 of zoonosis for the Installation (MCLB 2012a). However, zoonosis issues should be monitored  
4115 and programs for promoting public awareness regarding the issues of concern associated with  
4116 zoonosis prevention should be considered.

4117  
4118 For medium sized mammals (e.g., feral and domestic dogs, fox, skunks, raccoons, coyotes,  
4119 armadillos, gray and red foxes), access to dumpsters and other sources of food, denning locations,  
4120 and cover have led to large populations of these species being present on the Installation. Of  
4121 particular concern is the impact of these species on rare or threatened species such as the gopher  
4122 tortoise. Thus, active management of some species, is required on a relatively regular basis on the  
4123 Installation (MCLB 2012a).

4124  
4125 Nuisance issues related to honeybees (*Apis* spp.) are handled by a Master Beekeeper in  
4126 coordination with Natural Resources Program personnel. Where possible, the colony is captured  
4127 live and removed to an appropriate location either on or off installation. All honeybees that are  
4128 captured and moved are required to be tested by the Georgia Department of Agriculture to ensure  
4129 that they are not Africanized honeybees.

### 4130 ***Ecosystem Management***

4131 The NRM at MCLB Albany will use an adaptive approach to manage exotic and invasive wildlife  
4132 and will explore alternative ways to meet management objectives, predict the outcomes of each  
4133 alternative based on the current state of knowledge, implement one or more of these alternatives,  
4134 and use the results to increase knowledge and adjust management actions. In cases where resources  
4135 such as time, money, and staff are limited, management planning will ensure that MCLB Albany  
4136 uses resources wisely to manage exotic and invasive wildlife for the long term.

4137  
4138 Consideration must be given to the potential effect climate change may have on the spread, or new  
4139 infestations, of undesirable wildlife species and zoonosis. Monitoring, prevention, and  
4140 implementation of control and remediation measures will be key in order to maintain desired  
4141 conditions and will follow guidance provided in the MCLB IPM Plan (MCLB 2015b). Control and  
4142 reduction of invasive and nuisance wildlife when necessary will help to promote high quality  
4143 habitats, limit the spread of these species to other areas, reduce the threat of zoonosis, limit the  
4144 possibility of human infection, and reduce human wildlife conflicts.



4145 ***Additional Sources of Information***

- 4146       • USDA, National Invasive Species Information Center, Georgia State Resources  
4147       (<https://www.invasivespeciesinfo.gov/us/georgia>)
- 4148       • Georgia Invasive Species Task Force (<http://www.gainvasives.org>)
- 4149       • Aquatic Nuisance Species Task Force (<http://www.anstaskforce.gov>)
- 4150       • National Invasive Species Council (<https://www.doi.gov/invasivespecies/>)
- 4151       • Georgia Department of Agriculture (<http://agr.georgia.gov/>)
- 4152       • Georgia Department of Health (<http://health.state.ga.us/>)
- 4153       • Georgia Cooperative Extension Office (<http://www.caes.uga.edu/extension/>)

4154 **4.2.6 Zoonosis Prevention**

4155 There have been no documented cases of zoonosis on MCLB Albany to warrant a specific  
4156 management strategy for this issue. The projects and management strategies presented in Section  
4157 4.2.2.5, Invasive and Nuisance Wildlife Management, will help to reduce the threat of zoonosis on  
4158 the Installation.

4159 **4.2.7 Rare, Threatened, and Endangered Wildlife Species Management**

4160 This subsection describes the management of rare, threatened and endangered wildlife species  
4161 identified on MCLB Albany. The ESA was enacted to conserve endangered and threatened species  
4162 and the ecosystems on which these species depend. The ESA requires federal agencies to review  
4163 their actions to determine whether they are likely to jeopardize the continued existence of any rare,  
4164 endangered or threatened species; or result in the destruction or adverse modification of federally  
4165 designated critical habitat. If such review reveals the potential for effects, the federal agency must  
4166 consult with the USFWS (terrestrial species), NOAA NMFS (marine species), and/or the  
4167 appropriate state agency, which in this case is GDNR.

4168  
4169 Federal agencies are required to ensure that no actions undertaken by the agency will likely  
4170 jeopardize the continued existence of any endangered or threatened species, except as provided  
4171 within the ESA. Whenever there is a possibility that an endangered species may be present in an  
4172 area affected by an action of a federal agency, that agency is required to conduct a biological  
4173 assessment within the affected area to document the presence or absence of endangered or  
4174 threatened species. If such species are found, the federal agency must make reasonable efforts to  
4175 avoid actions that would have a detrimental impact on the endangered or threatened species.

4176  
4177 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Rare, Threatened, and***  
4178 ***Endangered Wildlife Species Management***

- 4179       • ESA, 16 U.S.C. 1531 et seq., as amended, provides for the identification and protection of  
4180       threatened and endangered species of plants and their critical habitats and requires federal  
4181       agencies to ensure that no agency action is likely to jeopardize the continued existence of  
4182       a threatened or endangered species.
- 4183       • MBTA, 16 U.S.C. 703–712, prohibits the taking or harming of a migratory bird, its eggs,  
4184       nests, or young without the appropriate permit.

- 4185 • Fish and Wildlife Conservation Act, 16 U.S.C. 2901, encourages all Federal departments  
4186 and agencies to utilize their statutory and administrative authority to the maximum extent  
4187 practicable and consistent with each agency’s statutory responsibilities, to conserve and  
4188 promote conservation of nongame fish and wildlife and their habitats.
- 4189 • Fish and Wildlife Coordination Act, 16 U.S.C. 661–666c, authorizes the Secretaries of  
4190 Agriculture and Commerce to provide assistance to and cooperate with federal and state  
4191 agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals,  
4192 as well as to study the effects of domestic sewage, trade wastes, and other polluting  
4193 substances on wildlife.
- 4194 • NDAA, Public Law 107-314, 2003, exempts the Armed Forces from the incidental taking  
4195 of migratory birds during military readiness activities.
- 4196 • 50 CFR 17, Endangered and Threatened Wildlife and Plants, prescribes policies for the  
4197 conservation and restoration of endangered and threatened wildlife and plants.
- 4198 • EO 13112 (3 February 1999), *Invasive Species*, requires executive agencies to restrict the  
4199 introduction of exotic organisms into natural ecosystems.
- 4200 • EO 13186 (10 January 2001), *Responsibilities of Federal Agencies to Protect Migratory*  
4201 *Birds*, imposes substantive obligations on the U.S. for the conservation of migratory birds  
4202 and their habitats.
- 4203 • Georgia Administrative Code, Sections 27-3-130 to 133, contains laws and regulations  
4204 pertaining to endangered or threatened animal species, and prohibits the taking, possession,  
4205 transportation, or sale of any of the animal species designated by state law as endangered  
4206 or threatened without the issuance of a permit.
- 4207 • SAIA, 16 U.S.C 670a–o, requires each military department to manage fish and wildlife  
4208 resources in accordance with a tripartite cooperative plan agreed to by the USFWS and  
4209 state wildlife agency, to provide its personnel with professional training in fish and wildlife  
4210 management.
- 4211 • MCO 5090.2, and the U.S. Marine Corps *Handbook for Preparing, Revising, and*  
4212 *Implementing Integrated Natural Resources Management Plans on Marine Corps*  
4213 *Installations* (HQMC 2007) discusses natural resources management relative to the  
4214 protection and management of fish and wildlife resources.  
4215

### **Management Strategies**

4216 Management strategies related to protection of rare, threatened, and endangered wildlife species  
4217 at MCLB Albany include the following:  
4218

- 4219 1) Continue to evaluate management practices and their effects on ecosystems and wildlife  
4220 habitat, and continue programs to protect rare, threatened, and endangered wildlife species  
4221 and their habitats known to occur at MCLB Albany.
- 4222 2) Review management recommendations identified in wildlife survey reports to determine  
4223 if additional management measures should be implemented for protection of rare,  
4224 threatened, and endangered wildlife species known to occur at MCLB Albany.

- 4225 3) Seek additional management guidance and recommendations from federal, state, and Navy  
4226 wildlife biologists for protection of rare, threatened, and endangered wildlife species and  
4227 their habitats known to occur at MCLB Albany.
- 4228 4) Continue to conduct monitoring programs for wildlife and natural communities at MCLB  
4229 Albany, to keep these inventories up to date.
- 4230 5) Coordinate with the Public Works Engineering Section during the planning process for all  
4231 construction projects at MCLB Albany. Review the location and footprint of the project  
4232 and an analysis of the project against known occurrences of rare, threatened, and  
4233 endangered species.
- 4234 6) Coordinate with the USFWS and/or GDNR as appropriate to determine if Installation  
4235 actions are likely to jeopardize the continued existence of any endangered or threatened  
4236 species or result in the destruction or adverse modification of critical habitat of such  
4237 species.
- 4238 7) Assess potential impacts of management practices and tools such as prescribed burns,  
4239 forestry measures, and invasive species control and adapt as needed to minimize impacts  
4240 to, or to the benefit of, RTE species.
- 4241 8) Update the fish and wildlife species inventory on MCLB Albany as needed.
- 4242 9) Provide materials for the outdoor education program at MCLB Albany that showcases  
4243 natural resources projects implemented by the Marine Corps. The program will also  
4244 identify and encourage participation in natural resources activities such as International  
4245 Migratory Bird Day, National Public Lands Day, and National Arbor Day.
- 4246 10) Data should be provided to appropriate partnering agencies in support of the SWAP. Where  
4247 possible, military readiness and high-impact recreational activities should be located to  
4248 avoid and minimize impacts on rare wildlife.
- 4249 11) Provide training for environmental staff and grounds maintenance staff for identification  
4250 of sensitive species and habitats identified in this INRMP for conservation and protection.
- 4251 12) Conduct annual focused RTE surveys and/or monitoring species as needed to fill data gaps  
4252 (e.g., Bachman's sparrow).

4253  
4254 As described in Section 2.4.6, biological inventories for rare species were conducted on MCLB  
4255 Albany by GDNR between 1990-1992, and again in 1995 (GDNR 1995, MCLB 2007). Subsequent  
4256 inventories were performed by ANHP in 2013 (Barbour et al. 2013). These surveys confirmed use  
4257 of the Installation by thirteen federally or state protected species and species of special concern.  
4258 Updates to the federal ESA listings, such as the listing or removal of a species under the ESA, or  
4259 a change in species presence at MCLB Albany, may require changes in management practices to  
4260 address these changes. Surveys should be conducted to update MCLB Albany species inventory  
4261 as necessary, and to minimize, mitigate, and monitor potential impacts. Data should be provided  
4262 to appropriate partnering agencies in support of the SWAP. Where possible, military readiness and  
4263 high-impact recreational activities should be located to avoid and minimize impacts on rare,  
4264 threatened, and endangered wildlife species.

4265  
4266 ***Ecosystem Management***

4267 Management of the federally listed species known to occur at MCLB Albany is an important  
4268 component of ecosystem management at the Installation. MCLB Albany will actively manage  
4269 areas and natural communities to provide habitat for rare, threatened, and endangered species that  
4270 are known to occur on the properties and will continue to monitor populations of rare species, and  
4271 protected plants.

4272  
4273 The NRM will undertake measures, as appropriate, to ensure activities and actions conducted  
4274 within the Installation are not detrimental to rare, threatened, and endangered species or the  
4275 habitats they depend on. Those species dependent upon wetlands and fire-dependent communities  
4276 are the focus of most management activities at the Installation. However, all-natural communities  
4277 will be managed with a goal of sustaining and enhancing fish and wildlife resources consistent  
4278 with the military mission. Some specific management strategies to accomplish this include:

- 4279           • Preserve portions of stands to provide suitable large snags and trees for den and  
4280           cavity activities.
- 4281           • Provide nest boxes/platforms for birds and bats.
- 4282           • Leave brush material along woodland edges following necessary clearing (e.g.  
4283           military mission).
- 4284           • Plant trees and shrubs or seed open areas for soil stabilization and to provide wildlife  
4285           habitat.
- 4286           • Maintain pine stands with basal areas low enough to prevent crown closure in order to  
4287           stimulate understory growth, which in turn, creates food and cover.
- 4288           • Prescribe burn on rotation through fire-dependent communities to increase food  
4289           production and maintain desired habitat structure.
- 4290           • Avoid habitat fragmentation. Although fragmentation increases edge, arbitrarily  
4291           locating human-made linear and nonlinear features within wildlife areas undermines  
4292           ecological processes through the separation of wildlife populations and may render  
4293           the fragmented parcel unsustainable for wildlife.
- 4294           • Create or enhance connections between habitats to facilitate wildlife movement  
4295           between areas. The necessary characteristics of connections will vary depending on  
4296           the species; for instance, amphibians need water or moist areas to move between  
4297           ponds and wet areas, and most vertebrates require protective cover such as trees,  
4298           shrubs, dense ground cover, downed trees, and existing burrows.
- 4299           • Maintain vegetative buffers around ponds and wetland areas and along stream edges.
- 4300           • Leave snags and downed logs for nesting, roosting, foraging, cover, perching, and/or  
4301           territorial displays.
- 4302           • Maintain hardwood areas for foraging activities.
- 4303           • Seed cleared areas (associated with silvicultural activities, i.e., logging decks) with  
4304           wildlife food plants to prevent erosion and provide forage.
- 4305           • Avoid impacts to wetlands.

4306 The species sub-sections that follow describe more specific management recommendations and  
4307 benefits of this INRMP for rare, threatened, and endangered species and species of special  
4308 concern known to occur at the MCLB Albany.

4309

4310 ***Additional Sources of Information***

- 4311 • USFWS, Endangered Species Program ([http://www.fws.gov/endangered/laws-](http://www.fws.gov/endangered/laws-policies/index.html)  
4312 [policies/index.html](http://www.fws.gov/endangered/laws-policies/index.html))
- 4313 • USFWS Birds of Conservation Concern  
4314 (<https://digitalmedia.fws.gov/digital/collection/document/id/1249/rec/1>)
- 4315 • USFWS, Migratory Bird Center ([https://www.fws.gov/birds/surveys-and-data/migratory-](https://www.fws.gov/birds/surveys-and-data/migratory-bird-data-center.php)  
4316 [bird-data-center.php](https://www.fws.gov/birds/surveys-and-data/migratory-bird-data-center.php)) GDNR, Protected Wildlife Species  
4317 (<https://georgiawildlife.com/species>)
- 4318 • DOD PIF (<http://www.partnersinflight.org/>)
- 4319 • TNC, Migratory Bird Program (<http://my.nature.org/birds/about/>)

4320

4321 **4.2.7.1 Federally Listed and Candidate Species**

4322 **Bald Eagle (*Haliaeetus leucocephalus*)**

4323 Legal Status: Protected under the Bald and Golden Eagle Protection Act (Federal), Threatened  
4324 (State)

4325

4326 Bald eagles forage on fish, so they almost always nest near large rivers or water bodies,  
4327 preferentially in isolated sites. The nest is usually in a large, open-topped pine—or occasionally a  
4328 cypress—near open water, often on high ground if available (Ozier et al. 2019). The greatest threat  
4329 posed to the bald eagle is the presence of persistent toxic chemicals such as PCBs, mercury, and  
4330 other pesticides and herbicides, which can either poison the bird directly or impair its ability to  
4331 reproduce.

4332

4333 Although bald eagles appear to be transient species at MCLB Albany, the ponds on the base could  
4334 provide potential foraging habitat. Therefore, management for this species should include activities  
4335 to maintain the integrity and hydrology of wetlands and open water areas associated with Indian  
4336 Lake and Horseshoe Pond. These areas should be protected by minimizing the amount of artificial  
4337 drainage, avoiding the use of aquatic herbicides or pesticides, and providing substantial forest  
4338 buffers around this area. Exposure to toxic chemicals such as PCBs or mercury is detrimental, and  
4339 consumption of poisoned baits can also be fatal (Ozier et al. 2019), so. Projects described in this  
4340 INRMP that benefit and conserve bald eagles and their habitat are discussed in Appendix F and  
4341 include Projects 1, 3, 4, 7, and 9.

4342

4343 **Eastern Diamondback Rattlesnake (*Crotalus adamanteus*)**

4344 Legal Status: Candidate Species for Listing, Under Review (Federal)

4345

4346 Specific habitats for the eastern diamondback rattlesnake on MCLB Albany include dry uplands  
4347 with open canopy, especially longleaf pine forests; also, open canopy mixed pine hardwood stands;  
4348 bottomland hardwoods only if adjacent to open uplands; and brushy pasture (Barbour et al. 2013).



4349 The primary management concerns for the rattlesnake on MCLB Albany are the lack of effective  
4350 fire and the low frequency of fire (Barbour et al. 2013).

4351  
4352 Suitable habitat for eastern diamondback rattlesnakes can be maintained and enhanced by  
4353 continued forest management practices emphasizing prescribed burning and restoration of longleaf  
4354 pine. Efforts should also be made to retain coarse woody debris, stump holes, and exposed roots  
4355 and cavities formed by blown down trees during any harvest activity. The main problem for this  
4356 species is the deliberate killing of individuals encountered. Therefore, public education programs  
4357 to promote tolerance and reduce the deliberate killing of individual snakes, particularly in the non-  
4358 developed areas on base, appears to be the best way to ensure long-term preservation of this  
4359 species. Table 8 provides an overview of how several common forestry practices used on MCLB  
4360 Albany may affect this species (Barbour et al. 2013). Projects described in this INRMP that benefit  
4361 and conserve rattlesnakes and their habitat are discussed in Appendix F and include Projects 1, 3,  
4362 4, 5, 7, 8, and 9.

4363  
4364 **Gopher Tortoise (*Gopherus polyphemus*)**

4365 Legal Status: Candidate Species for Listing (Federal) and Threatened (State)

4366  
4367 With possibly only two individual gopher tortoises present on the Base, the population density is  
4368 well below the values suggested to indicate loss of reproductive viability (Styrsky et al. 2010).  
4369 Guidelines for estimating space requirements for gopher tortoises developed by Cox et al. (1987)  
4370 suggested a reserve area of 10 to 20 ha (or sufficient area to encompass 80 burrows) was required  
4371 to maintain a viable population. Subsequent research has resulted in substantially larger estimates  
4372 of the minimum area needed to maintain a viable population. Eubanks et al. (2002) estimated a  
4373 minimum area requirement of 25 to 81 ha based on home range analysis and 19 to 41 ha based on  
4374 burrow density. McCoy and Mushinsky (2007) estimated that minimum patch size would need to  
4375 be at least 100 ha. The current gopher tortoise population contained within MCLBA is not viable  
4376 in and of itself, and MCLBA does not have data on the number of individuals or amount of suitable  
4377 habitat area surrounding the Base. Therefore, MCLBA's NRP is focused on conservation of the  
4378 extant population of gopher tortoises and enhancement of their habitat.

4379  
4380 Active management to maintain and enhance the gopher tortoise population is being undertaken  
4381 by a Wildlife Biologist through MCLB Albany's Resource program and funded by the USDA  
4382 Wildlife Services. The Wildlife Biologist will work with MCLB's NRP on enhancing gopher  
4383 tortoise habitat through a prescribed burning program with a two-year fire return interval (Section  
4384 4.3.7), chemical treatment and removal of undesirable vegetation (as described in Section 4.1.3.1),  
4385 thinning of timber stands (Section 4.3.4), and restoration of native ground cover (Section 4.1.3.2).  
4386 In addition, the USDA Wildlife Biologist works with the NRP to control and remove feral and  
4387 nuisance animals that pose a predatory threat to gopher tortoises. Generally, this INRMP protects  
4388 habitat for the gopher tortoise through active management practices such as those identified in  
4389 Table 7. Overall, multiple INRMP projects benefit and conserve gopher tortoises and their habitat.  
4390 They are discussed in Appendix F and include Projects 1, 3, 4, 5, 7, 8, and 9.

4391

4392 **Wood Stork (*Mycteria americana*)**  
 4393 Legal Status: Threatened (Federal); Endangered (State)

4394  
 4395 To ensure long-term survival and recovery of this population, wood storks require a mosaic of  
 4396 wetlands with varying climatological and seasonal conditions around colonies and within the  
 4397 wintering habitat in the coastal plain of the Southeast United States. Although preventing loss of  
 4398 wood stork nesting habitat and foraging wetlands within a colony’s core foraging area is of the  
 4399 highest priority, winter foraging habitat also is important to recovery, as it may determine the  
 4400 carrying capacity of the U.S. breeding population of wood storks.

4401  
 4402 The wetland habitat on the Installation may not be critical foraging habitat for the species, but any  
 4403 wetland that provides a foraging area for wood storks is important since the loss of wetlands  
 4404 continues to be threat for the species. Providing and managing for post-breeding individuals could  
 4405 enhance individual survival and lead to population growth (Coulter et al. 1999). Indian Lake and  
 4406 Horseshoe Pond should be managed to maintain the integrity and hydrology of these wetlands.  
 4407 These areas should be protected by minimizing the amount of artificial drainage, providing  
 4408 substantial forest buffers around the area, and the careful and selective use of aquatic herbicides  
 4409 when their use is required to meet management objectives. When the application of herbicides is  
 4410 desirable or necessary (e.g., to remove invasive plants), follow the label instructions carefully, use  
 4411 the minimal amount necessary, and give preference to individual stem treatment or spot application  
 4412 to reduce the amount used and area treated. Projects described in this INRMP that benefit and  
 4413 conserve wood storks and their habitat are discussed in Appendix F and include Projects 1, 3, 4,  
 4414 7, and 9.

4415 **Table 7. Overview of Potential Forest Management Techniques for Federal and**  
 4416 **State-listed Wildlife Species of MCLB Albany.**  
 4417

4418

Species	Fire Frequency	Season of Burn	Encroaching Hardwoods	Mechanical Treatment	Hardwood-Specific Chemical Treatment
Eastern tiger salamander	Overall positive but short-term unknown	Fire may be negative during breeding season (Dec–Feb)	Likely negative effect	Unknown; do not use during breeding season (Dec–Feb)	OK if used carefully & away from breeding areas
Eastern diamondback rattlesnake	Overall positive but short-term unknown	Do not burn on warm winter or spring days when snakes may be out of den but sluggish	Likely negative effect	Avoid mechanical treatment during May–September	OK if used carefully

Species	Fire Frequency	Season of Burn	Encroaching Hardwoods	Mechanical Treatment	Hardwood-Specific Chemical Treatment
Northern bobwhite	Known to benefit from very frequent fires (every 1–2 years)	Burns during the growing season increase insect (food) abundance; species re-nests after burns	Likely negative effect	Unknown; do not use during nesting (May–Aug)	OK if used carefully
Loggerhead shrike	Benefits from frequent burns (every 2 years) but short-term effect unknown	Growing season fire helps create more foraging habitat	Likely negative effect for foraging but shrikes will nest in hardwood shrubs	Benefits from low grass conditions; avoid mechanical treatment during May–September	OK if used carefully
Bachman’s sparrow	Benefits from frequent fires. Habitat becomes less suitable 1–3 years after a burn	Growing season burns improved nest site conditions	Negative effect	Do not use during breeding season (May–Aug)	OK if used carefully
Gopher tortoise	Benefits from frequent fires (every 2 to 3 years)	Growing season burns improve foraging habitat	Negative effect	Avoid mechanical treatment during May to September	OK if used carefully
Wood stork	N/A	N/A	Neutral or positive	N/A	OK if used carefully

4419  
4420

4421 **4.2.7.2 State Listed Species**

4422 **Bachman's Sparrow (*Peucaea aestivalis*)**

4423 Legal Status: Rare (State)

4424  
4425 Bachman's sparrow is an inhabitant of mature pine woods and open habitats with a dense ground  
4426 layer of grasses and forbs, and an open understory with few dense shrubs (Dunning and Watts  
4427 1990, Dunning 1993). Historically, it was most common in mature, open pine forests where  
4428 wiregrass (*Aristia* sp.) or broomsedge (*Andropogon* sp.) dominates the ground cover. Intensive  
4429 forestry practices and other land use conversions have greatly reduced this habitat type throughout  
4430 the species range, so it is now primarily found in open grassy habitats such as clear-cuts or utility  
4431 rights-of-way where the grassy conditions it prefers still exist. Specific potential habitats identified  
4432 for this species on MCLB Albany include open grasslands or open-canopy pine savannas (Barbour  
4433 et al. 2013). Surveillance studies of Bachman's sparrow nests have found that predators include a  
4434 wide variety of snakes and large mammals (Malone et al. 2019).

4435  
4436 The Georgia Department of Natural Resources (1995) reported Bachman's sparrow on MCLB  
4437 Albany from a single individual in an open stand of pines south of the tank testing track on the  
4438 west end of the base (Figure 8). ANHP also detected a single individual during the 2013 surveys,  
4439 but in an open pine stand in the north portion of Area 3 (Figure 8).

4440  
4441 The primary management concerns for Bachman's sparrow on MCLB Albany are the lack of  
4442 effective fire and the low frequency of fire (Barbour et al. 2013). This species can benefit greatly  
4443 from forest management practices on the Installation. As detailed in the MCLB Albany 2013 rare,  
4444 threatened and endangered species summary report, several areas have high potential for this  
4445 species if managed properly (Barbour et al. 2013). Regularly occurring fires and in some cases  
4446 chemical or mechanical techniques are needed to remove hardwood species in the understory and  
4447 keep hardwood vegetation suppressed. This INRMP promotes habitat for Bachman's sparrow  
4448 through the use of active management practices such as those presented in Table 7. Projects  
4449 described in this INRMP that benefit and conserve Bachman's sparrow habitat are discussed in  
4450 Appendix F and include Projects 1, 2, 3, 4, 5, and 8.

4451 **4.2.7.3 Other Species of Special Concern (not state or federally protected)**

4452 Species of special concern are not officially protected under federal or state endangered species  
4453 laws. However, their rarity warrants management consideration and further evaluation to  
4454 determine their protection status. Species include those identified by GDNR or NatureServe  
4455 (NatureServe 2013) as species of concern (Barbour et al. 2013), as well as a host of bird species  
4456 identified by the USFWS as Birds of Conservation Concern (BCC) (USFWS 2008).

4457  
4458 **Eastern Tiger Salamander (*Ambystoma tigrinum*)**

4459 Legal Status: None

4460  
4461 Eastern tiger salamanders have been observed migrating across the northern perimeter road at  
4462 MCLB Albany. The primary threat to this species is habitat loss of both its upland habitat and  
4463 breeding ponds to urban sprawl and other land use changes. Roads between breeding sites and  
4464 upland habitats can cause extremely high mortality (Wentz 2001). The key habitats available for

4465 tiger salamander on MCLB Albany include pine woods in proximity to temporary, fish-free, pools  
4466 with grassy edges (Barbour et al. 2013). The primary management concerns identified for the tiger  
4467 salamander on MCLB Albany are the disruption of landscape connecting upland pine habitat and  
4468 breeding pools, and the lack of effective fire (Barbour et al. 2013).

4469  
4470 Management opportunities exist to promote habitat for this species on the Installation. The  
4471 vegetation in which many reptiles and amphibians forage, nest, and shelter is often fire-dependent  
4472 or fire-adapted so continued use of prescribed fire in the upland areas on the base is highly  
4473 recommended and prescribed fire should be allowed to burn into the wetlands when water levels  
4474 are naturally low. A forest core or buffer surrounding the seasonal wetlands (limesink ponds and  
4475 willow oak flatwoods) should be maintained to help protect the hydrology of the wetlands. Table 7  
4476 provides an overview of how several common forestry practices used on MCLB Albany may be  
4477 used to benefit this species (Barbour et al. 2013). Projects described in this INRMP that benefit  
4478 and conserve tiger salamanders and their habitat are discussed in Appendix F and include Projects  
4479 1, 3, 4, and 5.

4480  
4481 **Loggerhead Shrike (*Lanius ludovicianus*)**  
4482 Legal Status: None

4483  
4484 Loggerhead shrikes inhabit open habitats such as grasslands, pastures with fence rows, mowed  
4485 roadsides, and open woodlands and nests in shrubs or small trees (Yosef 1996). Loggerhead  
4486 shrikes prefer open habitats characterized by low grasses and forbs interspersed with bare ground  
4487 and scattered shrubs or low trees, particularly thorny species. In addition to open areas they require  
4488 suitable perches for hunting (Yosef and Grubb 1994). Shrikes feed primarily on large invertebrates,  
4489 but also take small vertebrates such as small birds, lizards, frogs, and rodents. The key habitats  
4490 available for loggerhead shrike on MCLB Albany include most open habitats (i.e., clearings,  
4491 mowed road edges, the golf course, etc.), as well as orchards, riparian areas, and open woodlands  
4492 (Barbour et al. 2013). A single loggerhead shrike was frequently observed during the 2013 surveys  
4493 on the edge of the forested area just east of the main gate (Figure 8).

4494  
4495 Loggerhead shrike populations have declined throughout their continent-wide distribution (Yosef  
4496 1996). The major factors contributing to this decline appear to be changes in human land use  
4497 practices, the spraying of biocides, and competition with species that are more tolerant of human-  
4498 induced changes. The primary management concerns identified for shrike on MCLB Albany are  
4499 the lack of effective fire and low frequency of fire (Barbour et al. 2013).

4500  
4501 As detailed in the MCLB Albany rare, threatened and endangered species summary report, several  
4502 areas have high potential for this species if managed properly (Barbour et al. 2013). Management  
4503 for this species should include maintaining medium-height grass in favorable areas such as the un-  
4504 mowed area south of the golf course, continued use of prescribed fire in pine woods, maintaining  
4505 brush and scattered trees in the open grass areas, and the judicious use of biocides (i.e. use the  
4506 minimum amount necessary, give preference to individual stem treatment or spot application over  
4507 broadcasting, etc.) when they are necessary to achieve management objectives. Table 7 provides  
4508 an overview of how several common forestry practices used on MCLB Albany may be used to  
4509 benefit affect this species (Barbour et al. 2013). Projects described in this INRMP that benefit and



4510 conserve loggerhead shrikes and their habitat are discussed in Appendix F and include Projects 1,  
4511 2, 3, 4, and 5.

4512

4513 **Northern Bobwhite (*Colinus virginianus*)**

4514 Legal Status: None

4515

4516 Northern bobwhites require early successional habitats that can be found across a wide variety of  
4517 vegetation types including pine forests, fields, shrubby areas, and grasslands (Roseberry and  
4518 Kimstra 1984). At MCLB Albany, they were detected in most of the recently burned pine forests.  
4519 Northern bobwhite populations have declined significantly since the 1960's with every broad-scale  
4520 population index of bobwhite indicating a significant downward trend (Brennan 1991, Williams  
4521 et al. 2004). This decline is largely a result of habitat loss due to land use changes that reduced the  
4522 amount of high quality early successional habitats. The key habitats available for northern  
4523 bobwhite on MCLB Albany include open pine woods with grass-forb dominated ground layer  
4524 (Barbour et al. 2013). The primary management concerns identified for the quail on MCLB Albany  
4525 are the lack of effective fire and low frequency of fire (Barbour et al. 2013).

4526

4527 This species can benefit greatly from forest management practices on the Installation. As detailed  
4528 in the MCLB Albany 2013 rare, threatened and endangered species summary report, several areas  
4529 have high potential for this species if managed properly (Barbour et al. 2013). Prescribed burning  
4530 is one of the most cost-effective and efficient tools available for managing quail habitat. Bobwhite  
4531 respond well to areas managed with prescribed fire, which helps to maintain an open, grassy  
4532 ground layer. Table 7 provides an overview of how several common forestry practices used on  
4533 MCLB Albany may affect this species (Barbour et al. 2013). Projects described in this INRMP  
4534 that benefit and conserve Bachman's sparrows and their habitat are discussed in Appendix F and  
4535 include Projects 1, 3, 4, and 5.

4536

4537 **Yellow-crowned Night-Heron (*Nyctanassa violacea*)**

4538 Legal Status: None

4539

4540 Yellow-crowned night-herons were confirmed present only along the shoreline of Indian Lake at  
4541 MCLB Albany. The yellow-crowned night-heron primarily inhabits forested wetlands, swamps,  
4542 and bayous (Watts 1995). Its foraging areas are nearly always associated with high concentrations  
4543 of crustaceans, and in inland areas such as those found on the Installation, where it forages along  
4544 shallow creeks, rivers, ponds, lakes, and swamps. Habitat loss (wetland loss) and degradation are  
4545 the primary threat for this species.

4546

4547 Management for this species should include actions to maintain the integrity and hydrology of the  
4548 wetlands and habitat structure of Indian Lake. This area should be protected by minimizing the  
4549 amount of artificial drainage, avoiding the use of aquatic herbicides or pesticides, and providing  
4550 substantial forest buffers around this area. An evaluation of factors contributing to the water loss  
4551 at Indian Lake is recommended. Projects described in this INRMP that benefit and conserve  
4552 yellow-crowned night heron and their habitat are discussed in Appendix F and include Projects 1,  
4553 3, 4, and 5.

4554

4555 ***Ecosystem Management***

4556 Ecosystem management is a holistic, adaptive management concept that transcends human-made  
4557 boundaries, both internal and external to MCLB Albany. Management of rare, threatened, and  
4558 endangered species known to occur at MCLB Albany will promote sustainable ecosystems, and  
4559 includes monitoring, maintaining habitat requirements for these species, and educational outreach.  
4560 Furthering knowledge of federally listed wildlife species occurring at MCLB Albany through  
4561 research projects will promote conservation of these species beyond the boundaries of the  
4562 Installation and ensures Marine Corps stewardship requirements and compliance with the ESA.

4563  
4564 Participation in proper management actions for protection of rare, threatened, and endangered  
4565 wildlife species of MCLB Albany is the responsibility of all individuals potentially affecting these  
4566 species. Ecosystem management for protection of listed wildlife species requires periodic  
4567 adjustments in management principles and practices to respond to new knowledge and dynamic  
4568 conditions. Management strategies and INRMP projects identified in this INRMP will ensure  
4569 ecosystem management principles are applied to management of rare, threatened, and endangered  
4570 wildlife species that occur at MCLB Albany.

4571

4572 **4.3 FORESTRY MANAGEMENT**

4573 Forest management at MCLB Albany includes activities conducted to manage stands for  
4574 commercial product as well to the benefit of flora and fauna species. Measures used to manage  
4575 Installation forestlands include general forestry management practices (i.e., silvicultural) as well  
4576 as the use and/or suppression of fires. The forestlands are managed for multiple uses, such as  
4577 wildlife habitat, aesthetics, soil erosion control, threatened and endangered species, outdoor  
4578 recreation, and timber production. The use of fire for the protection and maintenance of upland  
4579 habitats is addressed in the MCLB Albany Wildfire Protection Plan (USACE 2010). Forest  
4580 management activities on MCLB Albany are addressed by the following, and are detailed below:

- 4581 1) Section 4.3.1 Forest Inventory  
4582 2) Section 4.3.2 Forest Stands Compartments  
4583 3) Section 4.3.3 GIS Database development and Maintenance  
4584 4) Section 4.3.4 Management by Forest Cover Type  
4585 5) Section 4.3.5 Forest Protection and Health  
4586 6) Section 4.3.6 Incorporation of the Statewide Wildlife Action Plan  
4587 7) Section 4.3.7 Fire Management

4588  
4589 MCO 5090.2 defines forest management as, “a coordinated program of actions for ensuring that,  
4590 the health, vigor, and diversity of forest ecosystems are maintained while providing a diverse,  
4591 quality military training environment and sustaining the production of forest products.” Forestry  
4592 management generally involves actions for the commercial production and sale of forest products,  
4593 including practices such as timber management, timber sales, reforestation, timber stand  
4594 improvement, and other directly related functions. Forest management applies scientific principles  
4595 to accomplish the objectives described below which have been chosen to support the training  
4596 mission while conserving native biological diversity and ecosystem integrity as outlined in  
4597 DODINST 4715.03.

4598 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Forestry Management***

- 4599     • Resources Planning Act, Public Law 93-378, 1974, requires a complete national  
4600         assessment or inventory of all forest, rangeland resources, and public needs every ten years,  
4601         along with a plan to meet those needs.
- 4602     • MCO 5090.2 requires installations with forests or lands with potential forest production to  
4603         provide for optimum sustainable yield of forest products and improvements of forest  
4604         resources consistent with the military mission and the Installation's INRMP.  
4605

4606 A healthy, well-managed, sustainable forest is a primary objective of forest management at MCLB  
4607 Albany. Forest management practices when implemented appropriately can complement the goals  
4608 and objectives of natural resources management at MCLB Albany. The overall goal of forest  
4609 management on MCLB Albany is to incorporate a multiple-use strategy that provides for  
4610 sustainable timber operations and supports the Marine Corps mission. This multiple use strategy  
4611 seeks balance amongst the following objectives:

- 4612     • Practicing sound management to provide for the sustainable harvest of quality timber  
4613         products
- 4614     • Conserving and restoring ecological significant communities and habitat for rare,  
4615         threatened or endangered species and other wildlife
- 4616     • Enhancing outdoor recreational opportunities including hunting and wildlife watching
- 4617     • Protecting culturally or historically significant resources
- 4618     • Protecting and promoting air quality and soil conservation practices
- 4619     • Protection of wetland habitats, riparian zones, and water quality
- 4620     • Control of invasive plant and animal species
- 4621     • Continued support of MCLB Albany's military mission  
4622

4623 Ecologically sound stewardship of forestland involves managing for various components,  
4624 including forest products (i.e., timber), wildlife habitat, aesthetics, and recreation. Components of  
4625 the annual work plan generally include firebreak management, prescribed burning, timber sales,  
4626 timber inventory, site preparation, reforestation, forest roadwork, and equipment operation and  
4627 maintenance.

4628 Forest management emphasis will be placed on the sustainable production of quality timber  
4629 products through timber harvests, timber stand improvements, prescribed burning, protection from  
4630 wildfire, insects and disease, and regeneration of appropriate tree species. Specific objectives  
4631 include:

- 4632     • Increasing the distribution of stand ages through timber harvest and regeneration
- 4633     • Timely thinning of timber stands to promote timber growth and support multiple uses
- 4634     • Continuing prescribed burning on a 1–3 year rotation to enhance stand access, aesthetics,  
4635         timber health, and enhance wildlife habitat

- 4636 • Planting or enhancing existing stands of longleaf pine and associated ground cover such as
- 4637 wiregrass and promoting habitat for rare, threatened or endangered species.
- 4638 • Continued protection of riparian zones and wetlands
- 4639 • Continued implementation of best management forestry practices that promote soil
- 4640 conservation and reduce the spread of invasive species
- 4641 • Compliance with Federal Laws
- 4642

4643 Mechanical treatments that disrupt the soil (e.g., chopping) are commonly used in efforts to control  
 4644 encroaching small hardwood stems. Although these treatments may be effective in improving  
 4645 habitat structure in the short-term, they likely are not appropriate treatments when native ground  
 4646 cover species are present. Mechanical treatment that disturbs soil (especially the roots of wiregrass  
 4647 and other bunchgrasses) should be limited to sites that do not currently support native ground  
 4648 cover. Many herbaceous plants in native ground cover do not readily recover from soil  
 4649 disturbances except when the area of a disturbance is smaller than a few square feet and re-  
 4650 colonization by seed is possible. Most native grasses have shallow roots and many types of  
 4651 mechanical treatment disturb soil and/or roots of these species. Bunchgrasses and many other  
 4652 native grasses are slow to expand clonally (vegetatively), unlike pasture and many lawn grasses.  
 4653 Disking and even roller chopping at any time of the year can have a significant negative effect on  
 4654 the integrity of native ground cover. Bunchgrasses provide a critical component of fine fuel that  
 4655 is, in turn, required for effective application of prescribed fire, especially any burning that is done  
 4656 in the growing season. When mechanical treatment is mandated a mulcher, Brown Tree Cutter, or  
 4657 similar equipment is preferable, especially when followed by herbicide then fire.

### 4658 4.3.1 Forest Inventory

4659 A complete forest inventory was conducted on MCLB Albany in 2006. An updated inventory was  
 4660 completed in 2014 (MCLB 2015c). Forest inventories obtain estimates of timber volumes, stand  
 4661 conditions, timber types, size or product classes, and other general information needed for planning  
 4662 purposes for commercial timberlands. Table 8 provides the most current available estimates of  
 4663 timber (pine species) acreage by age class. In general, MCLB Albany’s commercial timberlands  
 4664 contain a variety of wood products including poles, sawtimber (> 14 inch diameter breast height  
 4665 [dbh]), chip-n-saw (10–13 inch dbh) and pulpwood (6–9 inch dbh with a minimum 3 inch top).  
 4666 Approximately 306.4 acres are considered pre-commercial (i.e., less than 15 years in age).  
 4667

4668 **Table 8. Stand Ages and Acreage by Pine Species on MCLB Albany.**

Stand Age	Acres Loblolly	Acres Slash	Acres Longleaf	Acres Mixed Loblolly / Longleaf	Acres Mixed Pine/ Hardwood	Total Acres
1920–1929			5.0			5.0
1930–1939						
1940–1949	31.6		7.1			38.7
1950–1959	124.1	71.8				195.9
1960–1969	72.8	262.5		9.7	56.3	401.3
1970–1979	53.6	114.1			16.8	184.5
1980–1989	14.2					14.2

Stand Age	Acres Loblolly	Acres Slash	Acres Longleaf	Acres Mixed Loblolly / Longleaf	Acres Mixed Pine/ Hardwood	Total Acres
1990–1999						
2000–2009		7.2	38.9			46.1
2010-current		32.1	224.3		3.9	260.3
Unknown	6.4					6.4
<b>TOTAL</b>	<b>302.7</b>	<b>487.7</b>	<b>275.3</b>	<b>9.7</b>	<b>77.0</b>	<b>1152.4</b>

4669

4670 **4.3.2 Forest Stands Compartments**

4671 Vegetative cover types are further divided into 161 individual stands. Stands include a group of  
 4672 trees occupying a given area and sufficiently uniform in species composition, age, structure, site  
 4673 quality, and condition so-as to be distinguishable from the forest on adjoining areas. The stand  
 4674 numbering system is not continuous (1–161) as a result of stands being converted to non-forestry  
 4675 uses. For management purposes, MCLB Albany is divided into 31 forest compartments. The  
 4676 compartment boundaries are based on hydrologic features, roads, and other natural or artificial  
 4677 divisions. While the stand remains the basic unit of forest management on MCLB Albany, forest  
 4678 compartments are convenient for organizing information, expediting the planning process, and  
 4679 facilitate the preparation of reports and other documents such as prescribed burn plans and  
 4680 operational management plans.

4681 **4.3.3 GIS Database Development and Maintenance**

4682 The Marine Corps has been making an effort to standardize data layers and attributes. Since 2014,  
 4683 MCLB Albany has worked to update and complete the appropriate forestry data layers and  
 4684 attributes. These GIS data which have been incorporated into this INRMP revision.

4685  
 4686 The MCLB Albany Data Dictionary is the primary adaptation to the GEOFidelis Data Model  
 4687 3.0.0.2 Regional Data Dictionary for Marine Corps Installations Command (MCIEAST), referred  
 4688 to as the MCIEAST Data Dictionary for MCLB Albany Installation Geospatial Information and  
 4689 Services (IGI&S) geospatial data. The data dictionary provides data standard consistency that  
 4690 incorporates enough breadth for mission execution and the ability to record data in a consistent  
 4691 manner aboard MCLB Albany. Based on the MCIEAST Data Dictionary 3.0.0.2, this Data  
 4692 Dictionary maintains an MCLB Albany IGI&S data standard that provides the Installation with a  
 4693 common structure for data layers and attributes. MCLB Albany will implement this Data  
 4694 Dictionary to enhance interoperability and enterprise integration.

4695  
 4696 The MCLB Albany adaptation of the MCIEAST Data Dictionary is consistent with U.S. Marine  
 4697 Corps and DOD policy for IGI&S:

- 4698 • Meets the policy and goals set forth in Marine Corps Order (MCO) 11000.25, Installation  
 4699 Geospatial Information and Services.
- 4700 • Meets the policy set forth by IGI&S and DODI 8130.01.



- 4701       • Compliance with the goals and DoD enterprise objectives set forth in the Office of the  
4702       Under Secretary of Defense (OUSD) memorandum dated April 14, 2009 – Installation  
4703       Geospatial Information and Services Guidance.
- 4704       • Follows DoD interoperability strategy set forth in the OUSD guidance dated May 11, 2011  
4705       – Guidance for the Adaptation of SDSFIE 3.0 Albany adaptation of the GEOFidelis Data  
4706       Dictionary is consistent with U.S. Marine Corps and DOD policy for IGI&S.

#### 4707   **4.3.4 Management by Forest Cover Type**

##### 4708   ***Upland Pine***

4709   Currently, MCLB Albany possesses approximately 48 acres of pine plantations that would be  
4710   considered pre-commercial (15 years old or younger). The remainder of the acreage in planted  
4711   pine is considered commercial, producing a variety of timber products including pulpwood, chip-  
4712   n-saw, sawtimber, and some poles. Acreages by age category and species are listed in Table 8. The  
4713   longleaf plantations in the 0–10 year age class consist of stands with good to excellent survival,  
4714   slight hardwood competition, and are dominated by a grass-forb-shrub understory. Typical  
4715   understory vegetation found in these stands consists of blackberry (*Rubus* spp.), broomsedge  
4716   (*Andropogon* spp.). These stands were treated with herbicide at planting and maintained by  
4717   periodic mowing and prescribed fire (FY 2013).

4718  
4719   Approximately 86% of the planted pine plantations on MCLB Albany were planted between 1960  
4720   and 1979 with an average stand age of approximately 48 years old. The majority of these have  
4721   been thinned twice. Past thinnings consisted of either selective thinning or row thinning operations.  
4722   Basal areas of the stands that were thinned vary widely as do understory characteristics. Most  
4723   stands thinned at least once contain a mix of pulpwood, chip-n-saw and some sawtimber size  
4724   classes. Older age loblolly and slash pine stands (stands 30 or more years old) contain mostly chip-  
4725   n-saw, sawtimber, and few pulpwood or pole-sized trees.

4726  
4727   In general, Upland Pines will be managed through a combination of any of the following activities:

- 4728       1) Timber Harvest (thinning, salvage harvest, clear cutting, etc.)  
4729       2) Regeneration by planting seedlings and/or natural regeneration  
4730       3) Prescribed burning (1–3 year rotation generally, including growing season and or  
4731       dormant season burns)  
4732       4) Chopping, mowing, and/or rotational disking to control understory vegetation  
4733       5) Chemical application (herbicides and pesticides)  
4734       6) Interplanting of desirable fire-tolerant upland tree species such as post oak

##### 4735 4736   **Longleaf**

4737   The longleaf pine and its associated understory was once a defining feature of southwest Georgia.  
4738   Due to conversion of forestlands to agriculture, a reduction in the frequency of natural and  
4739   prescribed fires, and other factors, this ecosystem now occupies less than 3% of its former range.  
4740   As a result, the longleaf pine forest is home to a variety of rare, threatened, and endangered plants  
4741   and animals. Historic maps and remnant longleaf indicate that this forest type formerly composed

4742 a significant portion of the forestlands. Restoration of this ecosystem and its associated flora and  
4743 fauna is therefore an important management objective. Restoring longleaf will enhance  
4744 biodiversity and provide additional small-game hunting opportunities, particularly for northern  
4745 bobwhite. Longleaf pine forests, with their open-park like appearance and fire-tolerance, provide  
4746 an ideal venue for quail hunting, as well as other recreational pursuits such as bird watching and  
4747 hiking.

4748  
4749 Restoration of some portion of the forestlands to longleaf pine forest is a major priority. The  
4750 determination of which slash and loblolly stands to convert will be made on the basis of soil  
4751 characteristics instituting the recommendations of the subject matter experts.

4752  
4753 A variety of methods will be employed to convert slash and loblolly stands including clearcutting  
4754 and replanting either bareroot or containerized longleaf seedlings, clearing linear corridors within  
4755 slash and loblolly stands and replanting with longleaf, creating small patches of longleaf  
4756 generation, and interplanting longleaf in thinned slash and loblolly stands. With the two later  
4757 approaches, additional longleaf would be planted each time the slash and loblolly stands were  
4758 thinned and/or at the time of the loblolly or slash trees were completely harvested.

4759  
4760 An approach similar to the Stoddard-Neel System would be used to manage the majority of the  
4761 longleaf stands on MCLB Albany. Under this system, longleaf stands are managed using an  
4762 uneven-aged timber rotation. Selective thinnings generally occur every 7–10 years once the  
4763 longleaf reach merchantable size. The volume of trees removed during a thinning represents some  
4764 determined portion of the stand growth that occurs in the intervening periods between thinnings.  
4765 Removal focuses on diseased, forked, damaged or otherwise suppressed trees. Ideally, this system  
4766 would result in uneven aged stands of longleaf with basal areas in the range of 30 to 90 ft.<sup>2</sup>/acre  
4767 and an open park-like understory. A small portion of the longleaf pine stands may be managed  
4768 under an even-aged timber rotation for demonstration purposes. Such stands would be created by  
4769 clearcutting existing slash and loblolly pine stands and replanting to longleaf. These stands would  
4770 be managed similarly to the even-aged slash and loblolly pine plantations on the WMA.

4771  
4772 The establishment of fire-tolerant upland hardwoods such as post oak and southern red oak would  
4773 also be encouraged in longleaf pine stands. Techniques to establish upland hardwoods within  
4774 longleaf and/or pine plantations may include underplanting seedlings, establishing linear corridors  
4775 of seedlings within stands during or after timber operations, releasing trees from competition  
4776 through selective harvests, mechanical means, and/or herbicides and other techniques as  
4777 appropriate. Many of these upland hardwoods have been replaced within upland sites by less  
4778 desirable hardwood species such as sweetgum and water oak as a result of past silvicultural and  
4779 management practices. Upland hardwoods are more desirable as these trees are more fire-tolerant  
4780 and produce mast, forage, and cover for a variety of wildlife. Additionally, components of the  
4781 native ground cover that once occupied similar sites may be restored in conjunction with the  
4782 longleaf. This native ground cover may or may not include wiregrass (*Aristida* spp.), bluestem  
4783 grasses (*Andropogon* spp.), native legumes, and others based on the expert opinion of  
4784 representatives from the GDNR Nongame and Natural Heritage Section, Auburn University, the  
4785 Joseph Jones Ecological Research Center and others. One of the main objectives of these  
4786 restoration efforts is to create a diverse fire-maintained upland plant community that provides ideal  
4787 wildlife habitat for a myriad of species. Seed sources for native plants are few but emphasis will

4788 be placed on obtaining seed from nearby donor sites such as Fort Benning or stands on MCLB  
4789 Albany. Some seed may be available commercially although preference will be given to  
4790 purchasing seed from Georgia, Florida and/or Alabama. Restoration of native ground cover may  
4791 involve chemical or mechanical control of the existing vegetation, site preparation using bulldozers  
4792 and tractors, hand- or machine planting, and follow-up control of competing vegetation.  
4793

#### 4794 **Slash and Loblolly**

4795 In order to maintain a diversity of pine stand ages, as well as a potential source of annual income,  
4796 part of MCLB Albany's forestlands will be maintained in even-aged slash and loblolly pine  
4797 production. The juxtaposition of different stand ages and associated differences in understory,  
4798 midstory, and overstory characteristics is favorable to the management of game and non-game  
4799 species. The specific amount of acreage in either slash or loblolly pine will be determined on the  
4800 basis of the site index for each stand as well as other factors. Ideally, a mixture of age classes of  
4801 pine plantations would be established. Offsite slash or loblolly will be converted to the appropriate  
4802 tree species. Loblolly and slash stands will be managed on an average 50-year old rotation,  
4803 although the actual rotation will vary due to any number of potential factors. In order to promote  
4804 biological diversity within these stands and improve mast production, fire-tolerant upland  
4805 hardwoods such as post oak, red oak, hickory, and dogwood will be encouraged by removing  
4806 undesirable hardwood competitors and or interplanting these species among slash and loblolly  
4807 where appropriate.

#### 4808 ***Mixed Pine Hardwood***

4809 This forest cover type consists of stands containing one or more species of pine (loblolly pine,  
4810 longleaf pine, slash pine) interspersed with hardwood species such as water oak, laurel oak,  
4811 southern red oak, cherry and sweetgum. This cover type was likely found in association with the  
4812 ecotone between upland pine sites and forested wetlands historically but also occurs on drier sites  
4813 on MCLB Albany where previous management practices such as fire exclusion and nonchemical  
4814 site preparation allowed the intrusion of hardwoods. The management of this forest cover type will  
4815 depend upon the desired future forest conditions of the individual stands. Mixed Pine Hardwood  
4816 stands dominated by undesirable hardwoods such as sweetgum and water oak will be converted to  
4817 Upland Pine. Sites containing longleaf pine, remnant native ground cover, and upland hardwoods  
4818 such as southern red oak will remain mixed pine hardwood stands with the goal of removing  
4819 undesirable species to create open, savannah habitat conditions. Removal of undesirable  
4820 hardwoods would likely occur through application of appropriate herbicides and/or mechanical  
4821 removal. These stands would be managed through prescribed burning on a slightly longer rotation  
4822 than for upland pine sites. The exact fire return interval would be determined on the basis of the  
4823 understory response.  
4824

4825 In general, Mixed Pine Hardwoods will be managed through a combination of any of the following  
4826 activities:

- 4827 1) Timber Harvest (thinning, salvage harvest, clear cutting, etc.) or selective removal of  
4828 individual or small groups of trees
- 4829 2) Regeneration by planting seedlings and/or natural regeneration
- 4830 3) Prescribed burning (2–5 year rotation generally, including growing season and or  
4831 dormant season burns)

- 4832 4) Chopping and/or rotational disking to control understory vegetation  
4833 5) Chemical application (herbicides control of undesirable species and pesticides, in the  
4834 case of insect attack).  
4835 6) Interplanting of desirable fire-tolerant upland hardwoods such as post oak

4836 ***Upland Hardwood***

4837 Upland hardwood stands will be restored through timber stand improvement harvests, planting, or  
4838 mechanical and chemical means and may be managed through any of the techniques outlined  
4839 below:

- 4840 1) Timber harvest (thinning, salvage harvest, clear cutting, etc.)  
4841 2) Regeneration by planting seedlings and/or natural regeneration  
4842 3) Chopping and/or rotational disking to control understory vegetation  
4843 4) Chemical application (herbicides and pesticides, in the case of insect attack)  
4844 5) Interplanting of desirable upland hardwoods such as white oak, beech, and magnolia

4845 ***Forested Wetland***

4846 Forested wetlands (a.k.a. bottomland hardwoods) provide ideal habitat for many of the game and  
4847 nongame species and are critical to protecting the water quality and hydrologic integrity of the  
4848 area. Effort would be made to limit activities with the potential to impact bottomland hardwood  
4849 habitats, including the construction of new roads, firebreaks, and/or wildlife openings. The  
4850 transition zones between bottomland hardwood and upland pine and/or mixed pine hardwood  
4851 stands have been traditional locations for firebreaks. Where possible, firebreaks would be  
4852 eliminated to allow fire access to these transition zones. Periodic prescribed burning of these sites  
4853 would promote several fire-dependent rare, threatened, and/or endangered plants found on the  
4854 management area.

4855  
4856 In regenerating hardwood stands and other bottomland hardwood stands, some management to  
4857 improve stand quality may occur. Timber stand improvements may include selective thinning  
4858 and/or removal of undesirable trees, application of herbicide, and other timber stand improvement  
4859 practices. Through timber stand improvement activities, desirable hardwood species, particularly  
4860 mast-producing trees, would be promoted and succession accelerated.

4861  
4862 In general, forested wetlands will be managed through a combination of any of the following  
4863 activities:

- 4864 1) Timber harvest (generally thinning for timber stand improvement purposes only)  
4865 2) Regeneration by planting seedlings and/or natural regeneration  
4866 3) Prescribed burning of transition areas between upland and bottomland stands (2–3 year  
4867 rotation generally, including growing season and or dormant season burns)  
4868 4) Chopping and/or rotational disking to control understory vegetation where necessary  
4869 5) Chemical application (herbicides and pesticides, in the case of insect attack)

4870 6) Interplanting of desirable hardwoods or other plant species

4871 7) Maintain bottomland hardwoods by using a combination of approaches outlined in #1–6.

#### 4872 ***Pecan Orchard***

4873 A pecan specialist conducted an initial evaluation of the pecan grove in 2013. The  
4874 recommendations provided by the specialist included short-term and long-term improvements  
4875 including installation of an irrigation system, thinning tree crowns, removal of overcrowded,  
4876 diseased, or otherwise unhealthy trees, implementation of a systematic fertilization, insect and  
4877 disease management program, planting cover crops to improve soil fertility, planting skips and  
4878 replacing trees with pecan varieties with proven disease resistance, yields, size and quality. The  
4879 orchard is not currently irrigated, although an unused well and electrical hook-up are available for  
4880 future development.

4881  
4882 MCLB Albany manages the 7.5 acres of pecan orchard that remain after the tornado of 2017. The  
4883 small, fragmented stands of remaining pecan orchard will be maintained for wildlife habitat and  
4884 to provide for recreational nut production. Further planting of pecan trees has been discontinued.

#### 4885 ***Open Land***

4886 Open lands on the base are maintained by periodic mowing, herbicide application to control weeds,  
4887 and other practices by Public Works Division or contractors. Other open land areas are maintained  
4888 by a combination of practices such as herbicide, mechanical means, and prescribed burning. These  
4889 areas are maintained by either Natural Resources or Public Works Division. Wildlife openings are  
4890 managed with a combination of cool or warm season plantings of small grains, clover, and other  
4891 preferred forages in addition to native vegetation.

#### 4892 **4.3.5 Forest Protection and Health**

4893 Maintaining a healthy forest includes actively monitoring stands for insect, disease, or wildlife-  
4894 related damage, controlling exotic or invasive species, managing understory vegetation through  
4895 prescribed fire, mechanical or chemical means to reduce fuel loads and diminish conditions that  
4896 promote forest pests, conducting periodic timber harvests and regenerating tree species appropriate  
4897 to site conditions, and employing forestry Best Management Practices. General practices which  
4898 protect or promote forest health employed on MCLB Albany include:

- 4899 • Periodic surveillance of forested areas for signs of insect, disease or wildlife-related  
4900 damage and mortality with particular attention to pine beetles (e.g., southern pine, ips, and  
4901 black turpentine beetles) and fusiform rust (*Cronartium fusiforme*).
- 4902 • Use of silvicultural treatments to promote stand and individual tree vigor.
- 4903 • Removal of infected individual, groups, or stands of trees depending upon the severity of  
4904 the infestation and damage.
- 4905 • Contacting appropriate resources or reviewing literature for recommendations on  
4906 implementing monitoring and control strategies.
- 4907 • An integrated pest management approach will be employed when managing forest pests.  
4908 Such an approach focuses on early detection, priority setting based on predicted losses, and



4909 assessing the impacts of actions. This system recognizes the changing relationship between  
4910 forest pests and trees from seedling to maturity.

4911  
4912 A significant concern on MCLB Albany is the spread of and/or introduction of exotic plant species  
4913 as a result of soil disturbance created by forestry equipment during activities such as timber  
4914 harvesting, maintenance of firebreaks, or mechanical understory control. Controlling the spread of  
4915 invasive plants includes measures to prevent introduction from outside sources (contractors, timber  
4916 harvesting equipment) and from Base-side activities and is more cost effective than treatment.  
4917 These measures will include:

- 4918 • Identification of the location and size of invasive species of particular concern and regular  
4919 monitoring of them.
- 4920 • Development of a GIS database to track infestations of invasive plant species.
- 4921 • Treatment of affected areas with emphasis on locations of future expected disturbances  
4922 (timber harvest locations, firebreaks, rights-of-way, and wildlife openings).
- 4923 • Periodic monitoring for new infestations following disturbances.
- 4924 • Requiring vehicles and equipment to be free of soil, vegetation or other debris prior to work  
4925 within forestlands and/or before moving equipment from infested areas to additional work  
4926 locations.
- 4927 • Requiring vehicles and equipment to be washed in a designated location.
- 4928 • Requiring the use of weed free soil, fill, and mulch in construction projects adjacent to and  
4929 within forestlands and follow-up monitoring of sites where potentially infested materials  
4930 were used.
- 4931 • Maintaining desirable species along roadsides and disturbed areas to prevent or slow the  
4932 establishment of invasive plants.

#### 4933 **4.3.6 Incorporation of the Statewide Wildlife Action Plan**

4934 As discussed in Section 4.2.1, the Georgia SWAP (GDNR 2015) details a comprehensive strategy  
4935 for addressing Georgia's conservation needs. This strategy included a review of the abundance,  
4936 distribution, and status of wildlife species in Georgia and their associated habitats. Of particular  
4937 focus were species identified as high priority species, including those known to be rare and/or  
4938 declining. The SWAP also identified existing and potential threats to these species and habitats,  
4939 addressed research and survey, habitat restoration, and monitoring needs, and evaluated existing  
4940 policies and programs for wildlife conservation. Through this planning and evaluation process, a  
4941 list of conservation goals, strategies, and partnerships were developed. Statewide wildlife  
4942 conservation themes and strategies identified in the plan focus on 1) Climate Change; 2) Other  
4943 Emerging Issues; 3) Regional Conservation Partnerships; 4) Wildlife Conservation on Public  
4944 Lands; 5) Assessment of High Priority Habitats and Species; 6) Conservation of High Priority  
4945 Habitats and Species; 7) Education, Outreach, and Communications; 8) Increasing Capacity for  
4946 Wildlife Conservation; 9) Reducing Impacts from Development and Other Activities; 10) Wildlife  
4947 Laws and Regulations; and 11) Monitoring and Adaptive Management. These themes and  
4948 strategies are further detailed by ecoregion.

**The Georgia State Wildlife Action Plan of 2015 is available at  
<https://georgiawildlife.com/WildlifeActionPlan>**

4949  
4950 MCLB Albany is located in the Southeastern Plain Ecoregion. In addition, two high priority  
4951 habitats including Forested Depressional Wetlands and Longleaf Pine-Wiregrass Savanna are  
4952 present on MCLB Albany. High priority plant and animal species, including Bachman's sparrow  
4953 and gopher tortoise, are also present on MCLB Albany. Management objectives outlined in the  
4954 INRMP are consistent with many of the themes, strategies, and actions outlined in the Georgia  
4955 State Wildlife Action Plan, including statewide conservation priorities and those specific to the  
4956 Southeastern Plains Ecoregion. Examples of priority strategies and actions which will occur on the  
4957 Base include the maintenance of prescribed burning programs, restoration of longleaf pine and  
4958 associated native understory vegetation, control of exotic species, and continued protection of the  
4959 forested wetlands present on the Base.

4960  
4961 The Installation provides habitat for numerous and varied species of mammals, birds, amphibians,  
4962 reptiles, and fish. The elements of the SWAP, as well as the INRMP management measures to be  
4963 taken specifically for the benefit of wildlife on the Base, are described in Section 4.2.1. In addition,  
4964 the Base will consider the initiatives and goals set forth in the SWAP for the Southeastern Plain  
4965 Ecoregion in the planning of its natural resources management actions to ensure that high-priority  
4966 habitats that occur or could occur on the Base will be adequately promoted and conserved. The  
4967 INRMP management measures identified in this document will provide both direct and indirect  
4968 benefits (e.g., habitat enhancement) to state- and federally listed wildlife species that have been  
4969 identified at the Base.

4970  
4971 **Management Strategies**

4972 Management strategies related to forestry at the Installation include the following:

- 4973  
4974 1) Periodic assessments to determine the desired forest condition. Perform updates to forest  
4975 management/habitat improvement plans.
- 4976 2) Insure the conservation, restoration, and/or maintenance of native ecosystem integrity and  
4977 native biological diversity, to the maximum extent practicable, with consideration of the  
4978 military mission.
- 4979 3) Conduct regular inventories of forest stands for species composition and volume.
- 4980 4) Ensure GIS databases and other forest management planning tools are updated regularly  
4981 with forest stand data.
- 4982 5) Develop a standardized timber assessment form (include insect damages on form).
- 4983 6) Develop and implement a longleaf pine restoration plan (see Barbour et al. 2013).
- 4984 7) Prepare and implement a prescribed burn plan. Conduct annual prescribed burn reviews  
4985 and update burn plans accordingly.

4986 MCLB Albany’s NRP should consider opportunities to enter into conservation partnerships with  
4987 federal, state, and local agencies, and NGOs, to improve wildlife habitat at the Base. Where  
4988 possible, military readiness activities should be located, to the extent practical, to avoid and  
4989 minimize impacts on wildlife species and habitat.

4990 ***Ecosystem Management***

4991 Proper forest stand management improves stand conditions while improving wildlife habitat and  
4992 outdoor recreation opportunities. INRMPs are required by Marine Corps Order to use ecosystem  
4993 management principles to protect and enhance natural resources. Therefore, forests on MCLB  
4994 Albany cannot be managed solely for, or to the exclusion of, forest products.

4995

4996 ***Additional Sources of Information***

4997 • Georgia Department of Natural Resources, State Wildlife Action Plan  
4998 (<https://georgiawildlife.com/WildlifeActionPlan>)

4999 • U.S. Forest Service (<http://www.fs.fed.us>)

5000 • Georgia Forestry Commission (<http://www.gfc.state.ga.us/forest-management/>)

5001 • University of Georgia, College of Agricultural & Environmental Science, Forest  
5002 Stewardship Program ([https://extension.uga.edu/topic-areas/environment-natural-  
5003 resources/forestry.html](https://extension.uga.edu/topic-areas/environment-natural-resources/forestry.html))

5004 **4.3.7 Fire Management**

5005 Fire is a natural element of many ecosystems and is beneficial for natural vegetation and wildlife.  
5006 Fire management at MCLB Albany consists of wildfire prevention and control as well as  
5007 prescribed fire management. Fires, whether prescribed or natural, provides opportunities to control  
5008 vegetative growth, manage wildlife habitat, reduce hazardous fuel accumulations, prepare sites for  
5009 reforestation by creating planting space, and reduce competitive vegetation. Burns of the  
5010 appropriate intensity, duration and frequency can potentially benefit populations of three rare  
5011 plants and five rare wildlife species on the Installation (Barbour et al. 2013). The control of a  
5012 prescribed fire is very similar to the suppression of a natural wildfire and can also provide a  
5013 valuable training opportunity for firefighters. Prescribed burning can serve all of these purposes at  
5014 MCLB Albany and be a valuable element of the forest and wildlife management programs.  
5015 Prescribed burning and wildfire management are addressed in the MCLB Wildfire Protection Plan  
5016 (USACE 2010) and the Burn Plan (MCLB 2019b).

5017 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Wildland Fire Management***

5018 • The Forest Service Directive System consists of the Forest Service Manual and Handbooks,  
5019 which codify the agency’s policy, practice, and procedure. The system serves as the  
5020 primary basis for the internal management and control of all programs and the primary  
5021 source of administrative direction to Forest Service employees.

5022 • The Guidance for Implementation of Federal Wildland Fire Management Policy (USDA  
5023 and U.S. Department of the Interior 2009) provides for consistent implementation of the  
5024 1995/2001 Federal Fire Policy, as directed by the Wildland Fire Leadership Council. This  
5025 guidance also calls for increased dialogue and collaboration between federal agencies and

5026 tribal, local, and state agencies as plans are updated and implemented to manage wildfires  
5027 in order to accomplish resource and protection objectives.

5028 • DODINST 6055.6, DOD Fire and Emergency Services Program establishes a  
5029 comprehensive Fire and Emergency Services Program and prescribes policies to prevent  
5030 and minimize loss of DOD lives and damage to property and the environment.

5031 • DOD has recently adopted the National Wildfire Coordination Group's (NWCG) Federal  
5032 Wildland Fire Policy to govern all wildland fire activities carried out by DOD personnel.  
5033 DOD is presently exploring the possibility of seeking membership in the NWCG. The  
5034 NWCG is made up of all Federal agencies (except DOD) with wildland fire responsibilities  
5035 and the National Association of State Foresters. The Federal Wildland Fire Policy requires  
5036 that all personnel involved in prescribed fire and/or wildfire activities meet certain training  
5037 and physical qualifications. DOD is presently reviewing how it will implement this  
5038 requirement. Some military installations have already implemented this requirement with  
5039 most of them making it mandatory for new hires and positions and voluntary for current  
5040 employees.

5041  
5042 Prescribed fire is an integral part of the management of southern pine forests and the associated  
5043 early successional vegetation. Appropriate application of fire can control hardwood intrusion and  
5044 growth in upland pine stands and perpetuate early successional habitat. Prescribed burning is  
5045 beneficial in many other ways including reducing fuel levels, improving access into stands,  
5046 reducing population of pest species such as ticks or pine beetles, improving pine health and vigor,  
5047 and for aesthetic reasons. Without prescribed fire stand fuel levels can build to the point where  
5048 accidental, intentional, or natural fires may produce catastrophic results causing property or timber  
5049 damage and loss of wildlife habitat. Alternative methods to prescribed burning for managing early  
5050 successional habitat such as mowing, chopping, or herbicide treatment are time consuming and  
5051 costly.

5052  
5053 Prior to European settlement southern pines forests burned frequently as a result of Native  
5054 American activities and due to lightning strikes. Plant communities such as the longleaf pine-  
5055 wiregrass forest that dominated southwest Georgia and the associated animal communities were  
5056 well-adapted to the fire regime. Adaptations included protective covering on bark or sensitive  
5057 buds, use of burrows or cavities for refuges, and reproductive strategies that gave species the ability  
5058 to rapidly recolonize or recover following a burn. After European settlement, much of the longleaf  
5059 pine-wiregrass forest was converted to agricultural, intensive forestry, industrial, or other uses and  
5060 today less than 2% of this forest plant community remains. Some of the residual longleaf pine-  
5061 wiregrass was perpetuated in southwest Georgia in turpentine plantations for the naval stores  
5062 industry, cattle ranches, and later on quail plantations. These residual stands of longleaf pine are  
5063 generally associated with a diversity of plant species rivaling that of tropical rainforests. Small  
5064 remnant pockets of longleaf pine-wiregrass forest exist on MCLB Albany with the largest stand  
5065 occurring along Fleming Road adjacent to the temporary test track. The vast majority of upland  
5066 pine forests in southwest Georgia are now dominated by planted loblolly and slash pine  
5067 plantations. These species are less fire-adapted and significantly shorter-lived than longleaf but are  
5068 generally faster growing on sites with higher soil indices (productivity). The majority of upland  
5069 pine sites on MCLB Albany consist of planted slash pine or loblolly pine established between 1960  
5070 and 1970.

5071 Upland pine sites (including longleaf, slash, and loblolly) will readily convert to mixed pine  
5072 hardwood and eventually hardwood if fire is precluded through the process of vegetative  
5073 succession. As succession occurs, the herbaceous understory vegetation, including grasses such as  
5074 wiregrass, broomsedge, bluestem and legumes such as partridge pea and beggarweed, become  
5075 overshadowed by hardwood competitors (e.g., oak, sweetgum, maple, cherry, etc.) and disappear.  
5076 Due to the relatively long growing season in southwest Georgia succession proceeds rapidly.  
5077 Herbaceous plants provide habitat for game species such as northern bobwhite, white-tailed deer,  
5078 and turkeys and nongame species such as gopher tortoises, indigo snakes, and Bachman's  
5079 sparrows. Collectively animals that utilize this herbaceous plant community are known as early  
5080 successional species. As this habitat type has declined, so have numbers of northern bobwhite,  
5081 rabbits, and other early successional obligate species.

5082

### 5083 **Management Strategies**

5084 Management strategies related to wildland fire at MCLB Albany include the following:

5085 1) Conduct fire management activities per the guidelines and recommendations presented in  
5086 the MCLB Albany Wildfire Protection Plan (USACE 2010).

5087 2) Update the Wildfire Protection Plan as site conditions warrant.

5088 3) Control wildland fires with fire breaks and understory vegetation management. Soil  
5089 conditions should be investigated prior to establishment of firebreaks so as not to increase  
5090 soil erosion problems. Firebreaks should be located where they will not encourage  
5091 colonization or spread of exotic or nuisance vegetation. Use roads as natural firebreaks  
5092 where suitable.

5093 4) Implement prescribed burns where consistent with the mission, sound ecological practices,  
5094 and safety considerations.

5095 5) Implement prescribed burns in consideration of locations of upland pine communities.

5096 6) Wildfire conditions must be monitored regularly so that when wildfires do occur,  
5097 Installation personnel are aware of fire danger conditions and can make informed  
5098 decisions regarding the threat posed to developed areas on and off the Installation and the  
5099 degree of control that each merits.

5100

5101 Generally, southern pine forests are prescribed burned on a 1–3 year rotation. Longer rotations  
5102 allow hardwood competitors to become well-established and degrade the quality of early  
5103 successional habitat. Ideally larger timber stands should be broken into multiple blocks of  
5104 < 25 acres in size and burned on an alternating basis so that ½ to ⅓ of the timber is burned each  
5105 year. Burning in smaller blocks creates a juxtaposition of different burn ages in stands and is  
5106 favorable to wildlife.

5107

5108 Prescribed fires conducted to reduce fuel loads are generally conducted during the dormant season  
5109 (winter) when temperatures are lower and the weather is more predictable. They also minimize  
5110 damage to desirable vegetation. The dormant season is typically defined as the period between the  
5111 first frost and spring green-up which is November to March in Georgia. Most land managers  
5112 usually begin burning after deer season ends on January 16<sup>th</sup>. Growing season (summer) prescribed  
5113 fires are conducted to reduce mid-story hardwood trees and encourage the reproduction and growth



5114 of herbaceous vegetation. Over the past decade, growing season fire (April–August in Georgia)  
5115 has been increasingly recognized for its benefits in promoting the seeding and reproduction of  
5116 species such as wiregrass and greater effectiveness in controlling hardwood competition.  
5117 Additionally, burning during the summer season more closely mimics natural fire regimes.  
5118 Prescribed burning does not eliminate all hardwoods within an upland pine stand, however,  
5119 desirable hardwoods (large live oaks) within upland pine stands, can be damaged by repeated  
5120 prescribed burning activities. Such desirable hardwoods can be protected by installing firebreaks  
5121 or by removing vegetation around the base of the tree to reduce fire intensity.  
5122

5123 The disadvantage of relying entirely on dormant season fire is that while it does a good job top-  
5124 killing hardwood, it does not kill the root system, and the hardwoods simply re-sprout from  
5125 rootstock the following spring. Over a period of years, the hardwoods outcompete the herbaceous  
5126 understory plants and become the predominant understory and mid-story vegetation. As this  
5127 occurs, the burn fuel composition changes and hardwood leaves become more predominant. Many  
5128 hardwood leaves do not carry fire well. This is an advantage to the hardwoods as fire intensity is  
5129 lessened and more hardwoods survive subsequent fires. More intense fires can burn through pine  
5130 stands with heavy hardwood under- and midstories. However, as fire intensity increases so does  
5131 the opportunity for damage to the desirable trees to occur or for other issues (embers spotting fire  
5132 into adjoining stands, etc.) to arise. Due to the condition of the understory and midstory in the  
5133 majority of pine stands, fires of moderate intensity are anticipated. Occasional hot spots will be  
5134 unavoidable—especially where debris has been piled along rights-of-way. Tree mortality will  
5135 likely be observed in these hot spots.  
5136

5137 At MCLB Albany, the NRP goal is to burn stands on a 2-year rotation and a combination of  
5138 dormant and growing season fire is implemented. Typically, burn season on the Installation begins  
5139 in January and finishes up in June. The program has been focused more on burns in late March to  
5140 June because the best hardwood control can be achieved at this time and it encourages flowering  
5141 and seed production of beneficial understory plants. However, personnel constraints, equipment  
5142 issues, and weather factors have constrained the amount of prescribed burning conducted over the  
5143 past 5 years (Table 9). The limited application of fire is readily apparent by the presence of  
5144 midstory hardwoods (3'–20' heights) or loblolly and slash pine regeneration in upland pine stands.  
5145 The vast majority, if not all, of previous burning focused on dormant season fire. As part of a  
5146 solution to this, the new Wildlife Biologist position in the Natural Resources branch will work on  
5147 a prescribed burning program with a two-year fire return interval, chemical treatment and removal  
5148 of undesirable vegetation, thinning of timber stands, and restoration of native ground cover. The  
5149 goal for these burns will be to increase early successional and pine savannah habitats which will  
5150 benefit the gopher tortoise population and other species like the Bachman's sparrow and northern  
5151 bobwhite quail.  
5152

5153 **Table 9. Prescribed Burn Data for Marine Corps Logistics Base Albany.**

Year	Acreage
2015	314.4 acres
2016	613.7 acres
2017	812.0 acres
2018	119.5 acres

Year	Acreage
2019	382.0 acres

5154  
5155 Prescribed fires are managed by the Environmental Branch, Natural Resources Section, at MCLB  
5156 Albany, and for each burn they follow a Job Hazard Analysis and a Wildfire Protection Plan (WPP)  
5157 (USACE 2010). Burn permits are obtained from the Georgia Forestry Commission and are  
5158 scheduled according to environmental, weather and fuel load conditions as detailed in the  
5159 Installation’s WPP. The responsibility of a prescribed fire generally lies with the Burn Boss who  
5160 will coordinate all aspects of the fire but should closely coordinate with the NRM.

5161  
5162 Approximately 32 acres of orchards and 1,523 acres of forestland are found on MCLB Albany.  
5163 Much of this habitat surrounds key military infrastructure, administrative areas, and residential  
5164 housing of the Installation (Figure 4 and Figure 7). Fire management of the Installation is based  
5165 on burn units, which are comprised of one to several different stands of timber consolidated based  
5166 upon: (1) presence of existing firebreaks and/or roads on at least one side of the unit (2) access to  
5167 the unit, (3) size, and (4) the cohesiveness of the unit (e.g., limit the number of roads/firebreaks  
5168 within the unit) (Figure 4 and Figure 7). An assessment of each upland pine stand on MCLB  
5169 Albany is conducted during October through January to determine suitability for prescribed  
5170 burning. During this assessment the condition of the understory, midstory and overstory vegetation  
5171 and fuel levels are documented.

5172  
5173 There are some stands or portions of stands on MCLB Albany where fire exclusion has occurred  
5174 to the point that a fire will not likely carry through the stand unless mechanical (mowing or  
5175 chopping) or chemical (herbicide) treatment occurs. Such stands have been identified during the  
5176 evaluation process and treatment initiated in FY13. Many of these stands are located adjacent to  
5177 administrative buildings. Timber sales, focusing on thinning, will help reduce fuel levels and may  
5178 improve access into many of these stands so that additional management measures can be utilized  
5179 to improve aesthetics and manage habitat.

5180  
5181 Generally, not all proposed areas in a given year will be prescribed burned due to limiting factors  
5182 such as appropriate weather conditions and personnel shortages. Stands will be selected for  
5183 prescribed burning on appropriate burn days based upon weather parameters such as wind  
5184 direction, fuel loads, etc. On the day of a prescribed burn, the designated Burn Boss checks weather  
5185 conditions and contacts the Georgia Forestry Commission to obtain a Burn Permit. Once the permit  
5186 is attained, a safety briefing is conducted with the burn crew. Also, a Base Wild Card is sent  
5187 informing those aboard the Base the location of the burn and the Base Fire Department and MCPD  
5188 are notified as to the location of the burn(s). The crew is provided information relative to weather  
5189 conditions, stand conditions, safety hazards, communications, and escape routes. At the site of the  
5190 controlled burn, a small test fire is often lit to determine fire behavior. A back fire is lit soon after  
5191 so that the flames burn into the prevailing wind direction. Flame lengths and fire intensity are fairly  
5192 low during backfires. The back fire is allowed to burn approximately 30 yards into the stand to  
5193 create a solid blackline. Once the blackline is well-established a variety of techniques could be  
5194 employed to burn the remaining stand including head fires, strip fires, spot fires, and flank fires.  
5195 Rarely would a ring fire be employed—with the exception of burning brush piles. Fire lines and  
5196 fire behavior are continuously monitored during the prescribed burn. Fire lines are maintained by  
5197 50-gallon skid units on UTVs and the 1,000-gallon water trailer. If needed, smoke signs will be

5198 put up. Natural Resources utilizes features such as maintained grass, canals, and roadways as  
5199 firebreaks. Just a small amount of water sprayed onto the ground in maintained grass areas can  
5200 create an effective fire line. In FY13 the existing firebreak system on MCLB Albany was renovated  
5201 by contracting the Georgia Forestry Commission. This break system includes 18.2 miles of plowed  
5202 firebreaks.  
5203

#### 5204 ***Ecosystem Management***

5205 Prescribed fires, implemented through annual updates to the MCLB burn plan, are an ecosystem-  
5206 based management tool that can prevent wildfires, improve wildlife habitat, and restore natural  
5207 ground cover. Additionally, prescribed burns of the appropriate intensity, duration and frequency  
5208 can potentially benefit populations of three rare plants—crestless plume orchid, beak rush, and  
5209 woodland poppy-mallow—and six rare wildlife species—eastern tiger salamander, eastern  
5210 diamondback rattlesnake, eastern indigo snake (*Drymarchon couperi*), northern bobwhite,  
5211 loggerhead shrike, and Bachman’s sparrow—and would significantly benefit longleaf pine  
5212 woodlands, a significant natural community (Table 3, Table 4, Table 6, and Table 7) (Barbour et  
5213 al. 2013).

#### 5214 ***Additional Sources of Information***

- 5215 • U.S. Forest Service, Fire and Aviation Management  
5216 (<http://www.fs.fed.us/fire/safety/index.html>)
- 5217 • U.S. Forest Service, Fire Effects Information System (<https://www.feis-crs.org/feis/>)
- 5218 • National Interagency Fire Center (<http://www.nifc.gov/>)
- 5219 • Georgia Forestry Commission, Prescribed Fire ([http://www.gfc.state.ga.us/forest-](http://www.gfc.state.ga.us/forest-management/prescribed-fire/)  
5220 [management/prescribed-fire/](http://www.gfc.state.ga.us/forest-management/prescribed-fire/))
- 5221 • Georgia Prescribed Fire Council, (<http://www.garxfire.com/>)

5222

### 5223 **4.4 OUTDOOR RECREATION MANAGEMENT**

5224 One of the goals and purpose of this INRMP is to provide for effective stewardship and  
5225 management of MCLB Albany’s natural resources, which includes promoting outdoor recreation  
5226 and education under the requirements of SAIA, while meeting military mission requirements.

5227 This section addresses the development and implementation of techniques and programs for  
5228 managing outdoor recreation resources at MCLB Albany and providing educational outreach and  
5229 includes the following management focus areas:  
5230

- 5231 1) Section 4.4.1 – Fishing and Hunting Management
- 5232 2) Section 4.4.2 – Public Access
- 5233 3) Section 4.4.3 – Educational Outreach

#### 5234 **4.4.1 Fishing and Hunting Management**

5235 Hunting and fishing programs at MCLB Albany are managed by the NRM. Hunting is a natural  
5236 resource program, and as stated in the SAIA, DODD 4700.4, and MCO 5090.2 management of  
5237 natural resources shall be carried out by professionally trained natural resource personnel. The  
5238 Sikes Act requires public access to a military installation for the necessary, appropriate, and  
5239 sustainable use of natural resources by the public to the extent that the use is consistent with the  
5240 needs of the fish and wildlife resources, or with safety and military security requirements.

#### 5241 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Fishing and Hunting*** 5242 ***Management***

- 5243 • EO 11644 (8 February 1972), Off-Road Vehicles on Public Lands, which establishes  
5244 policies and provides for procedures that will ensure that the use of off-road vehicles on  
5245 public lands will be controlled and directed so as to protect the resources of those lands, to  
5246 promote the safety of all users of those lands, and to minimize conflicts among the various  
5247 uses of those lands.
- 5248 • EO 11989, Section 9 (24 May 1977), Off-Road Vehicles on Public Lands, which allows  
5249 agencies to restrict the use of off-road vehicles (including all vehicles used in hunting and  
5250 other outdoor activities when off paved surfaces) on lands under their management, when  
5251 it is determined that the use of off-road vehicles will cause, or is causing, considerable  
5252 adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic  
5253 resources of particular areas or trails of the public lands.
- 5254 • EO 12962 (9 June 1995), *Recreational Fisheries*, requires Federal agencies to improve the  
5255 quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for  
5256 increased recreational fishing opportunities.
- 5257 • EO 13443 (18 January 2007), *Facilitation of Hunting Heritage and Wildlife Conservation*,  
5258 directs Federal agencies to facilitate the expansion and enhancement of hunting  
5259 opportunities and the management of game species and their habitat.
- 5260 • Georgia Parks and Wildlife Code, prescribes general provisions for hunting and fishing in  
5261 Georgia.
- 5262 • Armed Forces, Military Reservations and Facilities: Hunting, Fishing, and Trapping, 10  
5263 U.S.C. 2671, provides general requirements for hunting, fishing, and trapping on military  
5264 reservations and facilities.
- 5265 • SAIA of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military installation  
5266 for the necessary, appropriate, and sustainable use of natural resources by the public to the  
5267 extent that the use is not inconsistent with the needs of the fish and wildlife resources or  
5268 with safety and military security.
- 5269 • SAIA of 1997, 16 U.S.C. 670c defines a program for developing facilities for outdoor  
5270 recreation in cooperation with federal and state agencies.
- 5271 • DODD 4700.4, Natural Resources Management Program, prescribes policies and  
5272 procedures for an integrated program for multiple-use management of natural resources on  
5273 DOD property.

- 5274           • MCO 5090.2 discusses natural resources management relative to the protection and  
5275           management of outdoor recreational resources.

5276  
5277   Hunting and fishing is authorized for all persons on the Installation who are active duty military  
5278   personnel stationed at MCLB Albany, their dependents and guests; retired military personnel and  
5279   their dependents; and, civilian personnel that are employed at the Installation. Three human-made  
5280   ponds—Robinson Pond (0.58 acres), Covella Pond (5.18 acres), and Horseshoe Pond (2.1 acres)—  
5281   and one naturally occurring cypress pond, Indian Lake (66.0 acres), provide angling and other  
5282   recreational opportunities at MCLB Albany (Figure 6 and Figure 9). All hunting and fishing on  
5283   the Base must be in compliance with the provisions listed in Base Order 1720.17R, *Hunting,*  
5284   *Fishing, and Boating Regulations*, as well as with the applicable portions of the Georgia State  
5285   Hunting and Fishing Regulations.

5286  
5287   Hunting for white-tailed deer (*Odocoileus virginianus*), mourning dove, northern bobwhite,  
5288   eastern cottontail rabbit, and eastern gray squirrel is permitted on the undeveloped portions of the  
5289   Installation that are under the forestry program (Figure 9). Deer hunting is limited to archery only  
5290   using bows with a minimum pull of 40 pounds, and shotguns of 12 gauge or smaller are permitted  
5291   for small game.

5292  
5293   All hunters and anglers must purchase MCLB Albany hunting and fishing permits. Retired military  
5294   who are over age 65 and their dependents, and 100-percent disabled veterans who possess a State  
5295   of Georgia Honorary Hunting and/or Fishing License will be issued an honorary MCLB Albany  
5296   Hunting and/or Fishing Permit free of charge. Hunting and fishing activities at MCLB Albany  
5297   require continual management. Harvest limits should be reviewed annually, and regulations should  
5298   be updated as needed to remain consistent with land use decisions, as well as to provide for  
5299   sustainable fish and wildlife management.

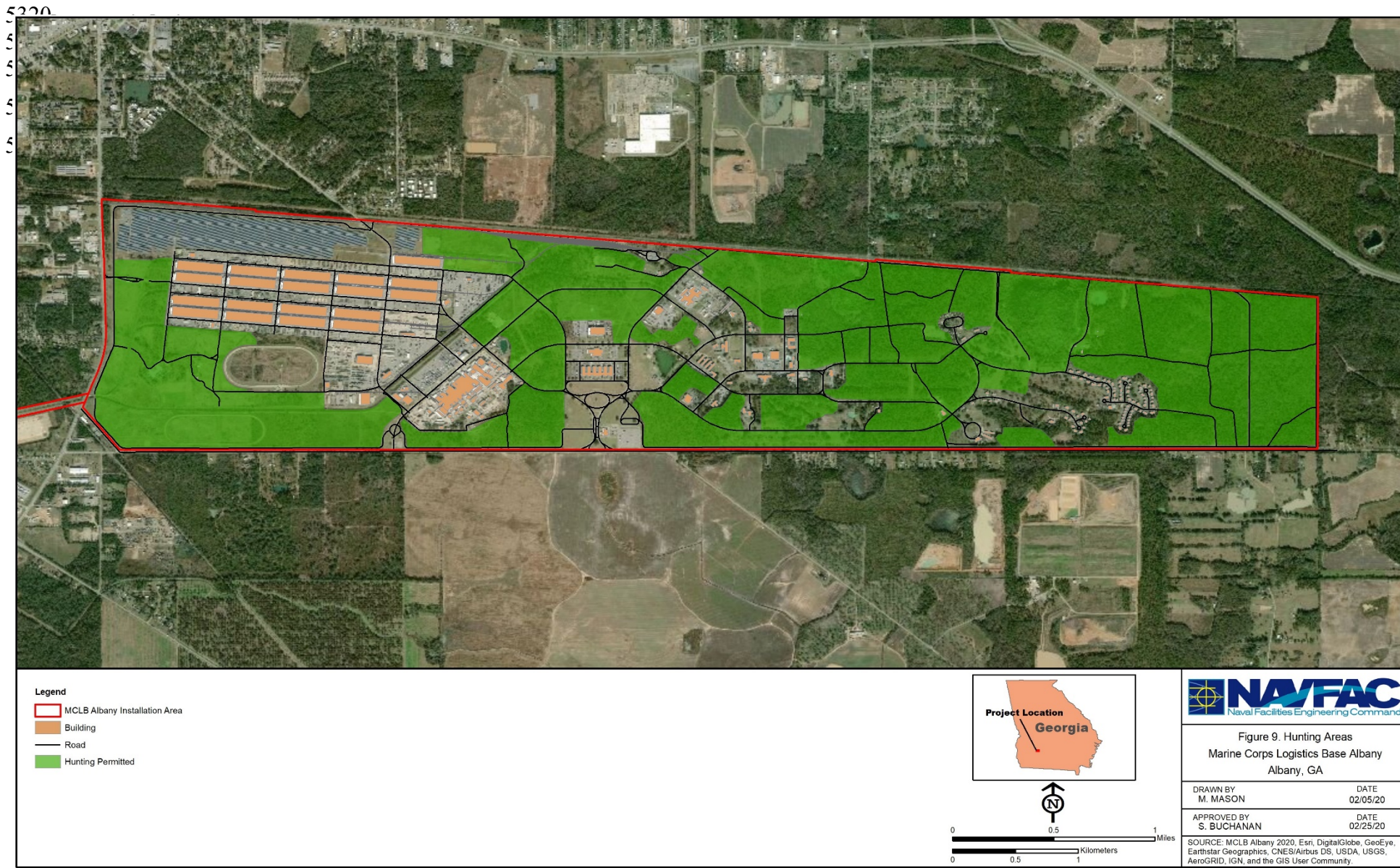
5300  
5301   **Management Strategies**

5302   Management strategies related to fishing and hunting at MCLB Albany include the following.

- 5303           1) Maintain current fishing and hunting logs for the Installation.
- 5304           2) Evaluate hunting and fishing data annually to identify opportunities to expand fishing and  
5305           hunting activities.
- 5306           3) Monitor invasive and nuisance wildlife to determine whether wildlife removal, relocation,  
5307           other remedial actions are necessary to protect natural resources and/or human health and  
5308           safety. Assess if hunting may be expanded to target invasive and nuisance wildlife to  
5309           facilitate control of the species.
- 5310           4) Ensure all hunters pass the National Bowhunters Education Foundation course before  
5311           granted a permit to hunt on the Installation.
- 5312           5) Identify opportunities to partner with outside entities (e.g., GDNR, Abraham Baldwin  
5313           Agricultural College) to facilitate collection of data on hunting and fisheries resources.
- 5314           6) Conduct annual surveys as needed to facilitate species management and implement  
5315           management activities



- 5316        7) Conduct annual fall deer census. Use annual harvest data, spotlight surveys, game cameras  
5317        to study deer populations, update management plans annually, and implement needed  
5318        management actions.  
5319



5325 **Hunting**

5326 To ensure that deer hunters are proficient, they must qualify on an annual basis. The Base Game  
5327 Warden instructs hunters in safe hunting techniques that will help to ensure a safe and successful  
5328 hunting season. Since all deer hunting must be done from an elevated stand, hunters must qualify  
5329 by shooting from a deer stand. Targets are placed at 30 yards from the platform and the hunter  
5330 must be able to place two out of three arrows in the kill zone of each target in order to qualify.  
5331 Hunters who fail to qualify are given another opportunity, approximately one week later. The  
5332 hunting seasons on base comply with hunting seasons established by the GDNR. All hunters are  
5333 required to possess a Georgia hunting license, a MCLB Albany Hunting Permit, and a MCLB  
5334 Albany Area Pass. The MCLB Albany Area Pass can be obtained from the Game Warden prior to  
5335 hunting and allows the hunter to hunt in a specific area. No more than 10 hunters are permitted to  
5336 hunt in any one area. All hunters must check in and out daily with the duty Game Warden.

5337  
5338 A fall census of the deer population determines the harvest that will be allowed during the hunting  
5339 season. Does and bucks are permitted to be taken, but bucks must have antlers with a 14” inside  
5340 spread or 17” main beam length (Table 10). Seasons and bag limits for all species will be set each  
5341 year and published in a MCLB Albany Hunting Base Bulletin in August of each year.

5342  
5343 **Table 10. Hunter Harvest Data.<sup>1</sup>**

Season	Bucks	Antlerless	Total
2000/2001	7	14	21
2001/2002	7	16	23
2002/2003	3	10	13
2003/2004	5	17	22
2004/2005	10	12	22
2005/2006	11	27	38
2006/2007	12	30	42
2007/2008	13	19	32
2008/2009	8	40	48
2009/2010	11	27	38
2010/2011	18	26	44
2011/2012	11	41	52
2012/2013	8	34	42
2013/2014	12	34	46
2014/2015	7	20	27
2015/2016	14	16	30
2016/2017	16	24	40
2017/2018	12	20	32
2018/2019	16	12	28

<sup>1</sup> Data from the 2000/2001 to 2006/2007 seasons has been corrected from the harvests reported in the 2007 INRMP to omit deer deaths that were not due to hunting.

5344



5345 **Fishing**

5346 The four water bodies on MCLB Albany are managed per recommendations of the MCLB Albany  
5347 Pond Management Plan (MCLB Albany 2012b) to ensure water quality, fish populations, stocking,  
5348 harvest strategies, feeding rates, and pond renovation activities to support high quality aquatic  
5349 habitat and associated recreational fisheries (Table 11). The ponds are generally open year-round,  
5350 although, some are closed in late fall for restocking and occasionally longer-term for pond  
5351 renovation. Fishing from the banks is permitted for all of the ponds and boats with electric trolling  
5352 motors can be used on Indian Lake. John boats are available for rent from MCCA.

5353  
5354

**Table 11. Creel Limits**

Species	Size Limit (inches)	Daily Limit
Largemouth bass	12	10
Bream	None	50
Catfish	None	No limit
Crappie	None	30

5355 Source: eRegulations. 2020.

5356

5357 Covella Pond

5358 Covella Pond provides fishing opportunity for channel catfish and hybrid striped bass. The pond  
5359 was renovated in December 2012 following a fish-kill associated with the protozoan ectoparasite,  
5360 *Ichthyophthirius multifiliis*, and to remove competitive fish species including bluegill, shiners, and  
5361 grass carp. Channel catfish and hybrid striped bass populations are monitored through harvest  
5362 records and fish will be re-stocked annually as needed during the fall/winter. Automatic fish  
5363 feeders were installed in FY13 help to ensure a consistent source of food and improve fish growth  
5364 rates. Facilities improvements for Covella Pond include new information boards and sign-in kiosks  
5365 installed in October 2013. Handicap fishing access areas are being planned to be installed in order  
5366 to accommodate wheelchair bound anglers.

5367

5368 In addition to open fishing opportunities, each June the Buddy Fishing Tournament is held at  
5369 Covella Pond. The event is sponsored by MCLB Albany for military dependents and community  
5370 children under the age of sixteen, to promote natural resources awareness and enable the local  
5371 community to interact with the Marines. The overall planning and management of the tournament  
5372 is handled by the Natural Resource section and the Environmental Branch.

5373

5374 Robinson Pond

5375 Robinson Pond was initially dug and used as an irrigation pond for the golf course aboard MCLB.  
5376 Three wells supplied water to the pond, although now only one well is operational. Following  
5377 closure of the golf course, the pond remained idle until tests could confirm that pesticides used on  
5378 the golf course were not present in the fish. Following the recommendations prepared by the pond  
5379 management consultants Robinson Pond was designated as a youth fishing pond in FY13. The  
5380 pond provides catch and release fishing opportunity for bluegill, hybrid striped bass, largemouth  
5381 bass, and channel catfish. An inaugural stocking of rainbow trout occurred in November 2013 and  
5382 provided catch-and-release opportunity through February, after which time youth anglers were  
5383 allowed to remove up to seven trout daily until all trout were removed.

5384

5385 Due to the small size of the pond and steep banks, a fishing pier was installed in FY13 and provides  
5386 the only fishing access to the pond. The fishing pier is large enough to accommodate multiple  
5387 families. A fence was installed in FY14 to prevent access to the pond banks and improve safety.  
5388 A pavilion, picnic tables, benches, new message center, and sign-in kiosk were installed in FY13.  
5389 These amenities will provide a more family-friendly venue and encourage youth participation in  
5390 outdoor activities on MCLB.

5391  
5392 Robinson Pond experienced a significant fish-kill due to aquatic weed (slender naiad and  
5393 filamentous algae) die-off in June of 2013. Grass carp, channel catfish, bluegill and bass > 5 inches  
5394 in length died off as a result of oxygen depletion following a rapid build-up and die-off of the  
5395 aquatic weeds. Following the fish kill, an aerator was permanently moved to the pond to  
5396 supplement oxygen levels and two treatments of aquatic herbicides (Cutrine Plus and Reward)  
5397 were applied to remove residual aquatic weed growth. Grass carp were restocked in September  
5398 2013 to provide additional control of aquatic weeds. Channel catfish and hybrid striped bass will  
5399 be restocked in FY14. Periodic monitoring will be necessary to ensure that a proper balance of  
5400 bluegill and bass is achieved, and aquatic weeds are controlled. The automatic fish feeders installed  
5401 along the shore ensure adequate growth of fish to support the fishery.

5402  
5403 Horseshoe Pond

5404 Following management plan recommendations, a well was installed in Horseshoe Pond in FY14  
5405 in an effort to control water levels. Future renovation efforts at the pond will include removing the  
5406 existing fish population and restocking with channel catfish, hybrid striped bass, and grass carp.  
5407 During the winter months, rainbow trout will be stocked to provide additional angling opportunity.  
5408 Automatic fish feeders will be installed to ensure a consistent source of food and improve fish  
5409 growth rates. Facility improvements include new picnic tables (including an Americans with  
5410 Disabilities Act table), benches, and kiosks.

5411  
5412 Indian Lake

5413 Indian Lake supports limited fish populations due to adverse water quality conditions including  
5414 low dissolved oxygen levels and lower than ideal pH levels. The large amounts of aquatic  
5415 vegetation and other organic matter that naturally accumulate in cypress domes depletes oxygen  
5416 levels and limits fish species to those that can tolerate such conditions. Surveys of the fish species  
5417 located in Indian Lake have found spotted gar, bullhead catfish, flier, and bowfin. These species  
5418 provide limited angling opportunities. Reducing the amount of organic matter by prescribed  
5419 burning or excavating may temporarily improve fishing in Indian Lake; however, neither technique  
5420 is recommended or provides long-term benefits. The focus of recreational activities associated  
5421 with Indian Lake will be wildlife watching.

5422  
5423 Periodic herbicide application will be used to maintain open water areas and reduce the amount of  
5424 water lilies and other aquatic vegetation. These open water areas will provide the majority of the  
5425 fishing opportunity as well as providing wildlife viewing locations.

5426  
5427 ***Ecosystem Management***

5428 Ecosystem management practices are enhanced by environmental stewardship and by providing  
5429 authorized personnel with outdoor recreational opportunities. By providing natural recreational  
5430 opportunities on the Installation, MCLB Albany would help promote public awareness of vital



5431 environmental resource issues, including management measures in federally listed wildlife  
5432 species, and improve the quality of life for DOD personnel.

5433 ***Additional Sources of Information***

- 5434 • International Hunter Education Association ([http://ihea-usa.org/hunting-and-](http://ihea-usa.org/hunting-and-shooting/requirements/hunter-education-requirements)  
5435 [shooting/requirements/hunter-education-requirements](http://ihea-usa.org/hunting-and-shooting/requirements/hunter-education-requirements))
- 5436 • GDNR, Hunting Regulations (<http://www.eregulations.com/georgia/hunting/>)
- 5437 • GDNR, Fishing Regulations (<http://www.georgiawildlife.com/fishing/regulations>)
- 5438 • GDNR, Hunter Education (<https://georgiawildlife.com/hunting/huntereducation>)

5439 **4.4.2 Public Access**

5440 The military mission of MCLB Albany limits public access to most areas of the Installation;  
5441 however, controlled public access is allowed for participation in some outdoor recreation and  
5442 education activities (e.g. specific events like the Buddy Fishing Tournament).

5443  
5444 Marine Corps policy is to permit access to outdoor recreation resources to the greatest degree  
5445 possible, consistent with the installation's safety and security requirements and its available  
5446 manpower and natural resources to support such activities without degradation or impairment of  
5447 environmental qualities. The degree of public access for recreational purposes will be dependent  
5448 on the area of the Installation being considered. Any limitation or regulation required will be based  
5449 on mission, security, and safety requirements.

5450  
5451 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Public Access***

- 5452 • SAIA of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military installation  
5453 for the necessary, appropriate, and sustainable use of natural resources by the public to the  
5454 extent that the use is not inconsistent with the needs of the fish and wildlife resources or  
5455 with safety and military security.
- 5456 • SAIA of 1997, 16 U.S.C. 670c, defines a program for developing facilities for outdoor  
5457 recreation in cooperation with federal and state agencies.
- 5458 • MCO 5090.2 discusses natural resources management relating to the protection and  
5459 management of outdoor recreational resources.

5460  
5461 **Management Strategies**

5462 Management strategies related to public access at MCLB Albany include the following:

- 5463 1) Assess the feasibility of developing an outdoor education programs available to the public  
5464 that showcases natural resources projects implemented by the U.S. Marine Corps. The  
5465 program will identify and encourage participation in natural resources activities such as  
5466 International Migratory Bird Day, National Public Lands Day, Christmas Bird Counts, and  
5467 National Arbor Day.
- 5468 2) Work with Public Affairs to provide for public access for use of natural resources  
5469 consistent with SAIA requirements, subject to safety and military security considerations.

- 5470 3) Review issues that currently affect public access to outdoor recreational resources and  
5471 modify access to provide for greater recreational opportunities to the extent possible based  
5472 on security and mission requirements.  
5473

5474 In accordance with the SAIA, an INRMP shall, to the extent appropriate and applicable, provide  
5475 for public access to an installation for the use of natural resources, including outdoor recreation,  
5476 subject to safety, military security considerations, and the military mission. Additionally, public  
5477 access for the use of the natural resources for outdoor recreation should not result in degradation  
5478 of the installation's natural resources. In addition to traditional outdoor recreation activities such  
5479 as hiking, wildlife watching, fishing, and hunting, outdoor recreation activities can include  
5480 educational programs that foster a sense of responsible stewardship for military personnel and the  
5481 general public who are authorized access to an installation for these recreational purposes.  
5482

5483 The military mission of the Installation restricts public access, and, therefore, long-term  
5484 management of public access issues is concentrated on providing public access in relation to  
5485 education and stewardship purposes.  
5486

#### 5487 ***Ecosystem Management***

5488 Ecosystem management practices are enhanced by environmental stewardship and by educating  
5489 the general public about environmental conservation issues, problems, and solutions. Natural  
5490 recreational and educational opportunities on the Installation would help promote public awareness  
5491 of vital environmental resource issues, including federally protected resources, thus providing a  
5492 regionally limited educational resource. In addition, the Installation will provide opportunities for  
5493 educating the public on the values and characteristics of a healthy environment, identify some of  
5494 the problems and solutions associated with human use of the environment, and showcase the  
5495 measures the Navy has adopted for protection of natural resources under their jurisdiction,  
5496 including federally listed plant and animals species known to occur at the MCLB Albany.  
5497

#### 5498 ***Additional Sources of Information***

- 5499 • Albany Georgia, Recreation and Parks Department ([https://www.albanyga.gov/about-](https://www.albanyga.gov/about-us/city-departments/recreation-parks-department)  
5500 [us/city-departments/recreation-parks-department](https://www.albanyga.gov/about-us/city-departments/recreation-parks-department))

#### 5501 **4.4.3 Educational Outreach**

5502 Educational programs foster a sense of responsible stewardship in military personnel and the  
5503 general public who use the wildlife recreational opportunities of an installation. Educational  
5504 outreach may include coordination with local, regional, state, national, or international  
5505 organizations or public groups.

#### 5506 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Educational Outreach***

- 5507 • SAIA of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military installation  
5508 for the necessary, appropriate, and sustainable use of natural resources by the public to the  
5509 extent that the use is not inconsistent with the needs of the fish and wildlife resources or  
5510 with safety and military security.
- 5511 • SAIA of 1997, 16 U.S.C. 670c defines a program for developing facilities for outdoor  
5512 recreation in cooperation with federal and state agencies.

- 5513       • MCO 5090.2 discusses natural resources management relating to the protection and  
5514       management of outdoor recreational resources.  
5515

5516 **Management Strategies**

5517 Management strategies related to educational outreach at the Installation include the following:

- 5518       1) Continue to coordinate the development and implementation of the outdoor recreation and  
5519       educational program covered by this INRMP with the MCCA.
- 5520       2) Develop an outdoor education program to showcase the Marine Corps' stewardship of  
5521       natural resources, and to emphasize that this stewardship is important to the military  
5522       mission and habitat conservation.
- 5523       3) Seek out partnerships with USFWS, GDNR, USDA NRCS, Audubon Society, Nature  
5524       Conservancy, DOD PIF, and other local agencies and organizations, to provide educational  
5525       opportunities at MCLB Albany.
- 5526       4) Create a Natural and Cultural Resource Center: house displays, taxidermy, artifacts, long  
5527       leaf pine fire history, and artwork.
- 5528       5) Create an interpretive trail with signage.
- 5529       6) Develop informational handouts containing species lists, photos, and descriptions of RTE  
5530       species.  
5531

5532 The MCLB Albany MCCA and Natural Resources Program are responsible for developing and  
5533 coordinating the outdoor recreation and educational programs as part of implementation of this  
5534 INRMP. An active outdoor education program is important in fostering in the general public an  
5535 appreciation and a sense of stewardship for the plants, animals, and ecosystems of a region.

5536 The Installation provides unique opportunities for scientific study. Cooperative agreements with  
5537 local or regional fish and wildlife agencies, conservation organizations, and education  
5538 organizations have been initiated in the past and will continue to be supported.

5539 ***Ecosystem Management***

5540 Ecosystem management practices are enhanced by environmental stewardship and by educating  
5541 the general public and Installation personnel about environmental conservation issues, problems,  
5542 and solutions. By providing natural recreational and educational opportunities on the facility,  
5543 MCLB Albany would help promote public awareness of vital environmental resource issues,  
5544 including protection and conservation measures in place for rare, threatened and endangered  
5545 species and actions conducted to promote/restore significant natural communities. In addition,  
5546 MCLB Albany will promote activities that teach the values and characteristics of a healthy  
5547 environment and responsible use of the environment.  
5548

5549 ***Additional Sources of Information***

- 5550       • The Parks at Chehaw (<http://chehaw.org/>)
- 5551       • GDNR, Education (<http://www.gadnr.org/education>)
- 5552       • Georgia Natural Resources Foundation (<http://georgianrf.org/>)

- 5553
- Atlanta Audubon Society (<https://www.atlantaudubon.org/>)
- 5554
- TNC, Georgia, Growing the Next Generation of Conservation Leaders
- 5555
- ([https://www.nature.org/en-us/about-us/where-we-work/united-](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/explore/growing-the-next-generation-of-conservation-leaders.xml)
- 5556
- [states/georgia/explore/growing-the-next-generation-of-conservation-leaders.xml](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/explore/growing-the-next-generation-of-conservation-leaders.xml))

5557

#### 5558 **4.5 INTEGRATED ECOSYSTEMS MANAGEMENT AND PARTNERING**

5559 This section addresses the development and implementation of integrated ecosystems management  
5560 and partnering. The integrated ecosystems management and partnering activities of this INRMP  
5561 include:

- 5562 1) Section 4.5.1 - Training of Natural Resources Personnel
- 5563 2) Section 4.5.2 - Natural Resources Law Enforcement
- 5564 3) Section 4.5.3 - GIS, Data Integration, Access, and Reporting
- 5565 4) Section 4.5.4 - Partnering with Federal and State Agencies, Universities, and NGOs

##### 5566 **4.5.1 Training of Natural Resources Personnel**

5567 Marine Corps regulations require that every person in a natural resources program receive  
5568 comprehensive natural resources training specific to their job assignment and maintain continued  
5569 professional training needed for the work (MCO 5090.2). Furthermore, the SAIA, as amended,  
5570 requires that a sufficient number of professionally trained natural resources managers are available  
5571 to implement this INRMP for MCLB Albany.

##### 5572 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Training of Natural*** 5573 ***Resources Personnel***

- 5574
- SAIA, 16 U.S.C. 670a–o, requires each military department to manage fish and wildlife  
5575 resources in accordance with a tripartite cooperative plan agreed to by the USFWS and  
5576 state wildlife agency and to provide its personnel with professional training in fish and  
5577 wildlife management.
  - DODD 4700.4, Natural Resources Management Program, prescribes policies and  
5578 procedures for an integrated program for multiple-use management of natural resources on  
5579 DOD property.
  - MCO 5090.2 requires that every person in a natural resources program receive  
5582 comprehensive natural resources training specific to their job assignment and maintain  
5583 continued professional training needed for the work.

5584

5585 Natural resources personnel on the Installation should receive training in all areas of environmental  
5586 management. Management of water resources, soil, vegetation, landscaping, forests, wildlife,  
5587 outdoor recreation, and GIS are all interrelated. Specific training needs for natural resources  
5588 personnel at MCLB Albany include:

- 5589
- Erosion and sediment control, water quality protection, and use of effective management  
5590 practices.

- 5591 • Identification of wetlands and other sensitive habitats and species.
- 5592 • Pesticide applicator certification training.
- 5593 • Field techniques for invasive plant management.
- 5594 • Techniques for grounds maintenance, landscape, and agricultural outlease management.
- 5595 • Prescribed burning for wildland fire management.
- 5596 • Conservation biology.
- 5597 • GPS and GIS training.

5598  
5599 Receipt of adequate natural resources training that covers the broad range of natural resources  
5600 issues associated with the Installation will improve coordination and ensure natural resources  
5601 conflicts can be resolved within the confines of regulatory requirements and the military mission.  
5602 MCLB Albany currently funds the NRM position to provide for oversight of natural resources  
5603 management at the Installation.

#### 5604 **Management Strategies**

5605 Management strategies related to training of natural resources personnel include:

- 5606 1) Monitor and assess staffing and equipment needs. Provide adequate staffing, equipment,  
5607 technology, and training for the NRM and environmental staff to ensure successful  
5608 implementation of projects and management strategies identified in this INRMP.
- 5609 2) As a cost savings measure, evaluate opportunities to procure equipment or work in  
5610 partnership with other agencies to accomplish natural resource management needs.
- 5611 3) Assess training needs for Installation personnel who may be conducting actions that  
5612 directly affect the natural resources addressed in this INRMP (i.e., grounds maintenance,  
5613 public works).
- 5614 4) Encourage staff training via courses offered through collaborating agencies, including  
5615 Field Techniques for Invasive Plant Management, Conservation Biology (offered by the  
5616 USFWS National Conservation Training Center), and Pest Applicator Certification  
5617 Training (offered by the Armed Forces Pest Management Board).

5618  
5619 The NRM and other natural resources personnel are encouraged to attend local classes, workshops,  
5620 and seminars as appropriate, especially as new regulations and management techniques are  
5621 developed for natural resources management.

#### 5622 ***Ecosystem Management***

5623 Ecosystem management is a holistic, adaptive-management concept that transcends human-made  
5624 boundaries. Management for a sustainable ecosystem requires awareness, education, training, and  
5625 responsible participation of individuals potentially affecting the ecosystem, as well as adjustments  
5626 in management principles and practices to respond to new knowledge and dynamic conditions.

5627 Plans and programs for maintaining and managing natural resources at the Installation need to  
5628 fully consider the interrelationships among resources on the Installation and assure no net loss of



5629 the military mission. The input and cooperation of regulatory agencies and other experts will best  
5630 facilitate the success of these plans and programs.

5631

5632 ***Additional Sources of Information***

- 5633 • USFWS National Conservation Training Center (<http://nctc.fws.gov/> )
- 5634 • Air Force Certification Programs  
5635 ([https://www.acq.osd.mil/eie/afpmb/training\\_courses.html](https://www.acq.osd.mil/eie/afpmb/training_courses.html))
- 5636 • Navy Public Health Training Center (<http://www.med.navy.mil/sites/nmcphc/nepmu-6/Pages/education-and-training.aspx>)
- 5637 • EPA, Education (<http://www.epa.gov/osw/education/train.htm>)
- 5638

5639 **4.5.2 Natural Resources Law Enforcement**

5640 Section 107 of the Sikes Act (16 U.S.C. 670e-2) requires sufficient numbers of professionally  
5641 trained natural resources management personnel and natural resources law enforcement personnel  
5642 to be available and assigned responsibility to perform tasks necessary to carry out Title I of the  
5643 Sikes Act, including the preparation and implementation of INRMPs. The control of the use of  
5644 available natural resources within MCLB Albany should be stringent enough to monitor and  
5645 regulate their safe and judicious use, but not restrictive to the point of deviating from the designated  
5646 use of the facilities.

5647 MCLB Albany has an established natural resources conservation law enforcement officer's  
5648 position, within the Conservation Law Enforcement Program as outlined in MCO 5090.4A (2007),  
5649 which outlines the Marine Corps Conservation Law Program and roles and responsibilities of law  
5650 enforcement officers. Per this MCO, MCLB Albany's conservation officer is responsible for, but  
5651 not limited, to the following activities relating to violations under nine federal conservation laws  
5652 identified in MOA 2003: enforcement of all hunting and fishing regulations; investigating fish and  
5653 wildlife crimes; patrolling, surveillance, and searches; interviewing witnesses and interrogating  
5654 suspects; seizure of contraband, vehicles and equipment; serving warrants; making arrests; and  
5655 testifying in courts. Hunting and fishing regulations for MCLB Albany are outlined in Section

5656 In addition, all federal and state game wardens are allowed to enter any appropriate portion of the  
5657 Installation for inspection of compliance with appropriate hunting and fishing requirements.

5658 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Natural Resources Law***  
5659 ***Enforcement***

- 5660 • SAIA of 1997, 16 U.S.C. 670a(b)(1)(G), requires public access to a military installation  
5661 for the necessary, appropriate, and sustainable use of natural resources by the public to the  
5662 extent that the use is not inconsistent with the needs of the fish and wildlife resources or  
5663 with safety and military security. SAIA of 1997, 16 U.S.C. 670c defines a program for  
5664 developing facilities for outdoor recreation in cooperation with federal and state agencies.
- 5665 • SAIA of 1997, 16 U.S.C. 670e.1 provides authority to the Secretary of Defense to enforce  
5666 all Federal laws governing management of natural resources on military installations and  
5667 the secretary of each military department to ensure a sufficient staffing of professionally  
5668 trained natural resource law enforcement personnel.

- 5669 • CFR, Part 32, Section 190.4(j) states enforcement of laws primarily aimed at protecting  
5670 natural resources is an integral part of a natural resource program and is an inherently  
5671 governmental function.
- 5672 • CFR, Part 32, Section 190.7.B.3.(g) states that whenever hunting, fishing, or trapping is  
5673 allowed on DOD installations, enforcement of wildlife laws shall be addressed in fish and  
5674 wildlife management plans and executed by trained conservation officers.
- 5675 • DODINST 4715.03, Enclosure 3, Section l.j
- 5676 • MCO 5090.4A (2007), discusses the Marine Corps Conservation Law Enforcement  
5677 Program, defines the roles and responsibilities of law enforcement officers, and provides  
5678 procedural guidance to establish and implement such a program.
- 5679 • MOU (2003) - USFWS and the Marine Corps, identifies nine federal conservation statutes  
5680 that fall under Marine Corps Conservation Law Program jurisdiction.
- 5681 • MCO P5530.14A provides authority to physical security specialists (CLEOs) to have  
5682 access to restricted areas with critical assets.
- 5683 • MCO 5090.2 discusses natural resources management relative to the protection and  
5684 management of outdoor recreational resources.
- 5685 • SECNAVINST 5090.8, Paragraph 1
- 5686 • SECNAVINST 5822.1A
- 5687 • SECNAVINST 5090.8 Paragraph 1
- 5688 • SECNAVINST 5090.2A, Chapter 11, Section 2
- 5689

### **Management Strategies**

5691 Management strategies related to natural resources law enforcement at MCLB Albany include the  
5692 following:

- 5693 1) Monitor the wildlife law enforcement program to ensure goals and objective are being met  
5694 and ensure that personnel are qualified and trained to carry out all assigned duties and  
5695 responsibilities.
- 5696 2) Enforce federal, state, and Installation laws and regulations pertaining to natural and  
5697 cultural resources.
- 5698 3) Build interagency relationships with National Military Fish and Wildlife Association and  
5699 USFWS to support the natural resources conservation law enforcement program.
- 5700 4) Identify staffing needs to manage hunting, fishing, GIS and natural resources management  
5701 programs.  
5702

5703 Effective enforcement of laws and regulations applicable to natural resources enhances the overall  
5704 natural resources program, protects the natural and cultural resources, and provides public safety  
5705 by enforcing off-limit areas and protecting against criminal destruction of natural resources (i.e.,  
5706 activities such as trespassing, poaching, and illegal dumping).  
5707

5708 Although the Installation operates under exclusive federal jurisdiction, the penal laws of Georgia  
5709 relative to fish and game concerning bag limits, seasons, and other conservation measures are  
5710 operative under the Assimilative Crimes Act of 1948 (18 US 13), and thus are enforceable by  
5711 federal officials. Violations of these game laws on MCLB Albany could result in prosecution in  
5712 the United State Federal District Court or by court martial. All Georgia State laws and base  
5713 regulations are enforced by the MCLB Albany Game Warden/Conservation Officer who patrols  
5714 the wildlife areas periodically. Violators are issued ticket and are required to appear before the  
5715 Conservation Board for a hearing and possible disciplinary action.

5716

### 5717 *Ecosystem Management*

5718 Enforcement of fish and wildlife laws and regulations is a necessary ecosystem management  
5719 practice that enhances environmental stewardship and educates the general public about  
5720 environmental conservation issues, problems, and solutions. By enforcing fish and wildlife laws  
5721 and regulations on the facility, MCLB Albany would help promote public awareness of vital  
5722 environmental resource issues.

5723

### 5724 *Additional Sources of Information*

- 5725 • National Military Fish and Wildlife Association (<https://www.nmfwa.org/>) GDNR,  
5726 Fishing (<http://www.georgiawildlife.com/fishing/>)
- 5727 • GDNR, Hunter Education (<https://georgiawildlife.com/hunting/huntereducation>)
- 5728 • USFWS, Law Enforcement (<http://www.fws.gov/southwest/lawenforcement/index.htm>)

### 5729 **4.5.3 GIS, Data Integration, Access, and Reporting**

5730 GIS is an integral part of natural resources and environmental protection and planning. This  
5731 powerful management tool provides natural resources managers with a comprehensive database  
5732 that includes a spatial component. Information such as aerial photographs, survey and monitoring  
5733 data, and various other natural resources data are all tied to a geographical coordinate system.  
5734 Availability of this information enhances an installation's ability to effectively coordinate and  
5735 ensure that current and planned mission activities do not adversely impact watersheds, wetlands,  
5736 floodplains, natural landscapes, soils, forests, vegetation and wildlife, prime and unique farmland,  
5737 and other natural resources that must be protected, conserved, and managed using an ecosystem  
5738 approach. Additionally, efficient and effective land use planning supports readiness and  
5739 sustainability, while protecting and enhancing the natural resources for multiple use, sustained  
5740 yield, and biological integrity. Examples of baseline environmental data layers include:

- 5741 • Property boundaries
- 5742 • Topography
- 5743 • Soils
- 5744 • Vegetation cover
- 5745 • Forest stands
- 5746 • Wetlands
- 5747 • Floodplains

5748       • Stormwater detention ponds

5749       • Sensitive natural resources

5750       • Hunting compartments

5751       • Hiking trails

5752

5753       ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to GIS, Data Integration, Access,***  
5754       ***and Reporting***

5755       • MCO 5090.2 encourages natural resources managers to use GIS as the basis of INRMP  
5756       implementation.

5757

5758       The figures presented in this INRMP were developed using existing digital data files provided by  
5759       the Marine Corps and from other GIS databases available to the public. An ESRI map service was  
5760       used, which includes i-cubed Nationwide Prime high-resolution (approximately 3 feet or greater)  
5761       imagery for the contiguous United States. The i-cubed Nationwide Prime service is a seamless,  
5762       color mosaic of various commercial and government imagery sources, including Aerials Express  
5763       0.3–0.6 meter resolution imagery for metropolitan areas and the best available USDA National  
5764       Agriculture Imagery Program imagery and enhanced versions of USGS Digital Ortho Quarter  
5765       Quad imagery for other areas. The imagery is projected to Universal Transverse Mercator, Zone  
5766       14 North, North American Datum of 1983. All GIS data created or modified for use in this INRMP  
5767       will be submitted to NAVFAC Southeast and MCLB Albany upon completion of this project.

5768

5769       The Commander, NAVFAC Southeast GeoReadiness Center, is the single, authoritative source  
5770       and distribution point for all geospatial information within the area of responsibility of NAVFAC  
5771       Southeast. The GeoReadiness Center houses the most current geospatial information (including  
5772       aerial photography) for the entire NAVFAC Southeast region and provides access to the  
5773       comprehensive dataset and analysis tools to regional and DOD decision-makers/managers,  
5774       sponsored contractors, and other sponsored individuals via a secure government Internet site. All  
5775       GIS layers should conform to the GEOFidelis Data Model 3.0 Regional Data Dictionary for  
5776       Marine Corps Installations Command (MCIEAST), referred to as the MCIEAST Data Dictionary  
5777       for MCLB Albany Installation Geospatial Information and Services (IGI&S) geospatial data. The  
5778       data dictionary provides data standard consistency that incorporates enough breadth for mission  
5779       execution and the ability to record data in a consistent manner aboard MCLB Albany. Based on  
5780       the MCIEAST Data Dictionary 3.0, this Data Dictionary maintains a MCLB Albany IGI&S data  
5781       standard that provides the Installation with a common structure for data layers and attributes.

5782       The MCLB Albany adaptation of the MCIEAST Data Dictionary is consistent with U.S. Marine  
5783       Corps and DOD policy for IGI&S; specifically, it:

5784       • Meets the policy and goals set forth in Marine Corps Order (MCO) 11000.25,  
5785       Installation Geospatial Information and Services.

5786       • Compliance with goals and DOD enterprise objectives set forth in the Office of the  
5787       Under Secretary of Defense (OUSD) memorandum dated April 14, 2009 “Installation  
5788       Geospatial Information and Services Guidance.”

5789           • Follows DOD interoperability strategy set forth in the OUSD guidance dated May 11,  
5790           2011 “Guidance for the Adaptation of SDSFIE 3.0.”

5791           • Conforms to the SDSFIE Adaptation Rules and Guidelines outlined in the  
5792           GEOFidelis Implementations Roles and Responsibilities Guide Version 1.2 dated  
5793           July 25, 2011.

5794  
5795 GIS databases and mapping capabilities will be used for daily decisions as well as long-term  
5796 planning of natural resources management and its integration with the military mission. This work  
5797 is driven by laws such as the NEPA, ESA, and CWA. For NEPA compliance, all impacts on federal  
5798 land from a proposed project must be considered before the project can be implemented. These  
5799 impacts may affect natural resources such as endangered species, water, and timber, so detailed  
5800 maps are required to assess the potential impacts on resources.

### 5801 ***Ecosystem Management***

5802 Ecosystem management requires the use of GIS, data integration, access, and reporting to ensure  
5803 that appropriate decisions and strategies are adopted in the implementation of this INRMP. GIS  
5804 data can also be used to evaluate regulatory compliance issues, such as a project’s impact to  
5805 wetlands, federally listed species and their habitats, and other natural resources.

5806

### 5807 ***Additional Sources of Information***

- 5808           • EPA Environmental Dataset Gateway  
5809           (<https://edg.epa.gov/metadata/catalog/main/home.page>)
- 5810           • USFWS National GIS Datasets (<http://www.fws.gov/gis/data/national/index.html>)
- 5811           • USDA NRCS Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov/>)
- 5812           • USGS, Geospatial and Map Resources for the South Atlantic Region  
5813           (<http://ga.water.usgs.gov/infodata/gisdata.html>)
- 5814           • GDNR Outdoor Maps (<https://georgiaoutdoormap.com/>)
- 5815           • NAVFAC GeoReadiness Center ([http://proceedings.esri.com/library/userconf/eucom-](http://proceedings.esri.com/library/userconf/eucom-africom10/papers/georeadiness-program.pdf)  
5816           [africom10/papers/georeadiness-program.pdf](http://proceedings.esri.com/library/userconf/eucom-africom10/papers/georeadiness-program.pdf))

### 5817 **4.5.4 Partnering with Federal and State Agencies, Universities, and NGOs**

5818 A cooperative agreement is used to acquire goods or services or stimulate an activity that will be  
5819 implemented for the public good. Section 103a of the Sikes Act (16 U.S.C. 670c-1) provides the  
5820 authority to enter into cooperative agreements with state and local governments, NGOs, and  
5821 individuals to provide for the maintenance and improvement of natural resources on, or to benefit  
5822 natural and historic research on, DOD installations. In addition to a standard cooperative  
5823 agreement, examples of other agreements include MOUs, and Cooperative Assistance Agreement.  
5824 Funds appropriated for multiyear agreements during a fiscal year may be obligated to cover the  
5825 cost of goods and services provided under a cooperative agreement entered into or through an  
5826 agency agreement during any 18-month period beginning in that fiscal year, without regard to  
5827 whether the agreement crosses fiscal years (31 U.S.C. §1535). Cooperative agreements entered  
5828 into are subject to the availability of funds.

5829



5830 ***Laws, EOs, Regulations, Directives, and Memoranda Relevant to Partnering with Federal and***  
5831 ***State Agencies, Universities, and NGOs***

- 5832 • EO 13352 (26 August 2004), *Facilitation of Cooperative Conservation*, directs that the  
5833 Secretaries of the Interior, Agriculture, Commerce, and Defense; and the Administrator of  
5834 the EPA shall, to the extent permitted by law and subject to the availability of  
5835 appropriations and in coordination with each other as appropriate:
- 5836 – carry out the programs, projects, and activities of the agency that they respectively  
5837 head that implement laws relating to the environment and natural resources in a  
5838 manner that facilitates cooperative conservation;
  - 5839 – take appropriate account of and respects the interests of persons with ownership or  
5840 other legally recognized interests in land and other natural resources;
  - 5841 – properly accommodate local participation in federal decision making; and
  - 5842 – provides that the programs, projects, and activities are consistent with protecting  
5843 public health and safety.
- 5844 • 32 CFR 190 establishes DOD policies for the development of integrated natural resources  
5845 management plans.

5846 Cooperating federal and state agencies, universities, and NGOs can provide a beneficial exchange  
5847 of technical information, services, and field assistance to accomplish natural resources objectives  
5848 at MCLB Albany. Technical assistance may be provided by USDA NRCS, USFWS, USGS,  
5849 GDNr, University of Georgia, and others. For example, a past collaboration with Auburn  
5850 University saw the completion of a rare species survey on the Installation (Barbour et al. 2013)  
5851 and the data on species occurrence proved valuable for the 2014 INRMP. Future collaboration  
5852 would occur with NGOs such as TNC, Audubon, other non-profit entities, and universities, to  
5853 further protect and conserve natural resources, maintain environmental compliance, and enhance  
5854 the Marine Corps' ability to meet its mission-critical objectives. Additionally, ecosystems cross  
5855 political boundaries, making the need for cooperation, coordination, and partnerships essential for  
5856 managing ecosystems.  
5857

5858 The Marine Corps solicits input during the development and update of this INRMP from  
5859 cooperating federal and state agencies, the USFWS and GDNr (Table 1 and Appendix G). In  
5860 addition, cooperative agreements with local or regional fish and wildlife agencies, conservation  
5861 organizations, and education organizations have been initiated in the past and will continue to be  
5862 supported by the Installation. These partnerships and agreements include, but are not limited to  
5863 DOD, PIF, USDA/APHIS, USDA/NRCS, USDA/Forest Service, Georgia Forestry Commission,  
5864 Dougherty County, GDNr, the Humane Society and Shawnee Tribe. MCLB Albany and the  
5865 Shawnee Tribe approved a MOU in 2012 to establish formal procedures for consultation and  
5866 communication, protection of information and stewardship of the cultural resources.  
5867

5868 MCLB Albany is also working to establish partnerships with several additional entities to promote  
5869 research/outdoor education/public outreach on base, including the Joseph Jones Ecological  
5870 Resource Institute, Albany Audubon Society, Boy Scouts of America, Girl Scouts of America,  
5871 Albany State University, Chehaw Conservation Lands and Wild Animal Park, Abraham Baldwin  
5872 Agricultural College, and state-recognized Native American Indian tribes.

5873 **Management Strategies**

5874 Management strategies related to partnering with federal and state agencies, universities, and  
5875 NGOs at MCLB Albany include the following:

- 5876 1) Develop partnerships with federal, state, and local agencies, NGOs, and universities to  
5877 implement wildlife monitoring and protection programs.
- 5878 2) Continue to promote the ongoing collaborative efforts with local entities such as Albany  
5879 Audubon Society and Abraham Baldwin Agricultural College to assist in natural resource  
5880 monitoring and data collection efforts. Collaborative efforts with GDNR for surveys on  
5881 base.
- 5882 3) Develop a volunteer network of personnel approved for access onto the Installation,  
5883 identify opportunities to use volunteer pool on specific projects and management strategies.
- 5884 4) Coordinate with GA forestry commission to assist in firebreak installation and  
5885 maintenance, prescribed burning, and forest management activities.
- 5886 5) Team with Audubon Society, DOD Partners in Flight, and local birders to assist in base  
5887 birding events and the development of a bird species list for the base.
- 5888 6) Coordination with local, state and federal agencies regarding management of natural  
5889 resources on base.
- 5890 7) Conduct annual INRMP updates in accordance with Sikes Act requirements.
- 5891 8) Conduct a no less often than every five-year review and update of the INRMP in  
5892 accordance with Sikes Act requirements.

5893 MCLB Albany will continue to seek out cooperative agreements, memoranda, and other  
5894 agreements between the Installation and federal and state agencies that oversee and regulate natural  
5895 resources protection. The NRM is responsible for ensuring that the Installation has up-to-date  
5896 agreements in place. The NRM will also consult federal, state, university, NGO, and Marine Corps  
5897 experts as needed to ensure regulatory compliance and adequate management measures are in  
5898 place for rare, threatened, and endangered flora and fauna associated with MCLB Albany. In the  
5899 following section, partnering with federal and state agencies and NGOs is further discussed with  
5900 respect to climate change vulnerability assessments and adaptation.

5901 ***Ecosystem Management***

5902 Plans and programs for maintaining and managing natural resources on the Installation need to  
5903 fully consider the interrelationships among resources on the Installation and assure no net loss of  
5904 the military mission. The input and cooperation of regulatory agencies and other experts will best  
5905 facilitate the success of these plans and program, including protection of federally listed species  
5906 known to occur at MCLB Albany.

5907  
5908 ***Additional Sources of Information***

- 5909 • DOD, Natural Resource Programs and INRMP Implementation: Partnering Tools  
5910 ([http://www.dodworkshops.org/files/Training/SikesModules/Mod8\\_PartnerTools\\_FINAL](http://www.dodworkshops.org/files/Training/SikesModules/Mod8_PartnerTools_FINAL_july09.pdf)  
5911 [\\_july09.pdf](http://www.dodworkshops.org/files/Training/SikesModules/Mod8_PartnerTools_FINAL_july09.pdf))

- 5912       • Natural Resources Funding Manual (September 2009),  
5913       ([http://www.dodnaturalresources.net/files/AEC\\_EcoFunding\\_Manual\\_082010\\_FINAL](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf)  
5914       [VERSION.pdf](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf))  
5915

#### 5916 **4.5.5 Climate Change Management Strategies**

5917       The ecosystem effects of climate change will be incremental and challenging to distinguish and  
5918       assess, so DOD’s analysis to assess potential impacts should be predictive in nature, relying on  
5919       models to plan for probable complex and indirect changes that are likely to happen in the future.  
5920       DOD components will require an adaptive process of validating and improving forecast models to  
5921       develop new and improve existing natural resources management strategies to address global  
5922       climate change impacts.

5923  
5924       Projected climate changes and effects, as described in Section 2.3.1.1, could result in significant  
5925       impacts to protected or sensitive species and their habitats. The effects of climate change on  
5926       wildlife are highly variable, including geographic range shifts, changes in relative species  
5927       abundance, phenology, and other ecological aspects of their biotic communities. There is already  
5928       evidence of disruptions in community dynamics, such as predator-prey and plant-insect  
5929       interactions, alterations in biogeochemical cycles, and increased disease, pest, and non-native  
5930       species invasions. The rapid pace of recent environmental change has increased the threat of  
5931       extinction, as species are not able to adapt to changing environments quickly enough. Specific  
5932       climate change stressors that can impact threatened and endangered species include habitat loss;  
5933       increases in surface and water temperatures; increases in carbon dioxide concentrations; changes  
5934       in precipitation; increases in diseases, pests, and non-native species; and increases in the frequency  
5935       and severity of storm events (Society for Ecological Restoration International 2009).

5936  
5937       Biodiversity conservation supports ecosystem stability and enables sustained human use of the  
5938       environments required for mission activities. Species that are lacking adequate suitable habitat are  
5939       often the most vulnerable. To study and better anticipate the impacts of climate change on  
5940       vulnerable species, MCLB Albany might be able to partner with GDNR, a nearby academic  
5941       research institution (e.g., University of Georgia, Auburn University), and DOD Partners in  
5942       Amphibian and Reptile Conservation (PARC), to carry out a vulnerability assessment of the  
5943       amphibian and reptilian species of concern with known occurrence on the Installation. This could  
5944       be one component of Project 4 (Appendix F), and its completion would fulfill one of the  
5945       recommendations in the SWAP. A similar study could also be undertaken to assess the  
5946       vulnerability of migratory bird species at MCLB Albany, in coordination with regional partners.

5947  
5948       Although sea level rise is a concern particular to low-relief coastal zones, and unlikely to impact  
5949       wildlife at MCLB Albany in the foreseeable future, sea level rise has indirect implications for the  
5950       Installation’s sustainability. MCLB Albany serves as a Co-op Evacuation Area for coastal Marine  
5951       Corps installations including Marine Corps Recruit Depot Parris Island; Marine Corps Support  
5952       Facility Blount Island; Camp Blanding, Florida; and Marine Aviation Training Support Group 21,  
5953       Pensacola. If any of these installations are overtaken by flooding or threatened by a hurricane,  
5954       troops are evacuated to safe shelter at MCLB Albany where they are temporarily housed in a  
5955       warehouse. If necessary, a tent city would be set up on the golf course (Robbins 2020). The Marine  
5956       Corps should evaluate the potential impact on MCLB Albany’s operations that would result if the

5957 need for activation as a Co-op Evacuation Area continues to increase, with consideration of the  
5958 Installation's sustained ability to carry out its military mission.

5959

5960 Other climate change impacts that could affect MCLB Albany include:

5961

- flooding;

5962

- drying up of seasonal ponds due to changes in precipitation patterns;

5963

- increase in the frequency and intensity of wildfires; and

5964

- increase in susceptibility to pests and invasive species of plants and wildlife.

5965 These possible ecological changes have implications for the management of water resources,  
5966 outdoor recreation, amphibians and reptiles, forestry, protected and rare species, invasive plants  
5967 and noxious weeds, and invasive and nuisance wildlife species. The management strategies  
5968 specific to those resources are discussed under each of the corresponding sections of this chapter.

5969

### 5970 **Management Strategies**

5971 Management strategies related to climate change at MCLB Albany include the following:

5972

- 1) Conduct a vulnerability assessment of species of interest (e.g., reptiles and amphibians,  
5973 migratory birds) and how those vulnerabilities may impact Installation mission.

5974

- 2) Collaborate with other federal agencies and regional installations in developing common  
5975 regional goals.

5976

- 3) Utilize the guide, *Climate Adaptation for DOD Natural Resource Managers* (Stein et al.  
5977 2019), the resources of the U.S. Forest Service (USFS) Climate Change Resource Center,  
5978 and the other tools and resources developed by DOD and USFWS.

5979

- 4) Include climate change among the threats considered to the natural resources described in  
5980 this INRMP, as pertinent.

5981

- 5) Consider scheduling a comprehensive a climate change vulnerability assessment and  
5982 adaptation plan, in partnership with the South Atlantic Landscape Conservation  
5983 Cooperative (LCC), Southeast Climate Adaptation Science Centers (CASC), and other  
5984 DOD installations or agencies in the region.

5985

5986 In order to be eligible for funding beyond the Installation's NRP operating budget, the vulnerability  
5987 assessments and climate adaptation plan suggested above would need to be included in the INRMP  
5988 Projects Table (Appendix F) and scheduled for implementation.

5989

5990

5991

## 5992 **5.0 INRMP IMPLEMENTATION**

5993 Implementation of this INRMP will follow an annual strategy that addresses legal requirements,  
5994 DOD and Marine Corps directive or policy requirements, funding, implementation  
5995 responsibilities, technical assistance, labor resources, and technological enhancements. In order  
5996 for this INRMP to be considered implemented, the following actions will need to be completed:

- 5997 1) Funding is secured for completion of all projects.
- 5998 2) Installation is staffed with a sufficient number of professionally trained environmental  
5999 personnel needed to perform the tasks required by the INRMP.
- 6000 3) Annual coordination with all cooperating offices is performed.
- 6001 4) Specific INRMP action accomplishments that are undertaken are documented each  
6002 year.
- 6003

6004 The following sections provide an overview of the role that implementation of this INRMP would  
6005 play in: supporting the sustainability of the military mission and the natural environment; meeting  
6006 natural resources consultation requirements; achieving no net loss; attaining NEPA compliance;  
6007 understanding project development and classification; identifying funding sources; establishing  
6008 commitment; and endorsing the use of cooperative agreements. The INRMP projects identified in  
6009 Section 4.0 are summarized in Appendix F to include information for the implementation schedule,  
6010 prime legal driver and initiative, class, Navy assessment level, cost estimate, and funding source  
6011 for each of the projects proposed in this INRMP.

### 6012 **5.1 PROJECT DEVELOPMENT AND CLASSIFICATION**

6013 This INRMP is a public document that requires the mutual agreement of MCLB Albany, USFWS,  
6014 and GDNR. It is crucial, therefore, that these entities reach a common understanding as to which  
6015 projects are most likely to be funded through the sources identified in Section 6.2. An annual  
6016 strategy must be adopted for INRMP funding that addresses MCLB Albany's legal requirements.

6017  
6018 The Marine Corps programming hierarchy is based on the following DOD funding level  
6019 classifications:

- 6020  
6021 • **Class 0: Recurring natural and cultural resources conservation management**  
6022 **requirements.** Includes activities needed to cover the recurring administrative, personnel,  
6023 and other costs associated with managing DOD's conservation program that are necessary  
6024 to meet applicable compliance requirements (federal and state laws, regulations,  
6025 presidential EOs, and DOD policies), or which are in direct support of the military mission.  
6026
- 6027 • **Class I: Current compliance.** Includes projects and activities needed because an  
6028 installation is currently out of compliance (has received an enforcement action from a duly  
6029 authorized federal or state agency, or local authority); has a signed compliance agreement  
6030 or has received a consent order; or has not met requirements based on applicable federal or  
6031 state laws, regulations, standards, presidential EOs, or DOD policies, and/or are immediate  
6032 and essential to maintain operational integrity or sustain readiness of the military mission.  
6033 "Class I" also includes projects and activities needed that are not currently out of



6034 compliance (deadlines or requirements have been established by applicable laws,  
6035 regulations, standards, DOD policies, or presidential EOs, but deadlines have not passed  
6036 or requirements are not in force) but shall be if projects or activities are not implemented  
6037 in the current program year.

6038  
6039 • **Class II: Maintenance requirements.** Includes those projects and activities that are not  
6040 currently out of compliance (deadlines or requirements have been established by applicable  
6041 laws, regulations, standards, presidential EOs, or DOD policies, but deadlines have not  
6042 passed or requirements are not in force), but shall be out of compliance if projects or  
6043 activities are not implemented in time to meet an established deadline beyond the current  
6044 program year.

6045  
6046 • **Class III: Enhancement or actions beyond compliance.** Includes those projects and  
6047 activities that enhance conservation resources or the integrity of the installation's mission,  
6048 or are needed to address overall environmental goals and objectives but are not specifically  
6049 required under regulation or EO and are not of an immediate nature.

6050  
6051 The list of projects described in this INRMP consists of both “must fund” compliance-type  
6052 projects, and stewardship-type projects. “Must fund” compliance project requirements are for  
6053 those projects and activities that are required to meet recurring natural and cultural resources  
6054 conservation management requirements or current legal compliance needs, including EOs.  
6055 Examples of “must fund” and stewardship-type projects are provided below; however, the lists are  
6056 not all inclusive and are meant only to provide examples of the types of projects that could qualify  
6057 under each.

6058  
6059 **“Must fund” projects could include:**

- 6060 • Developing, updating, and revising INRMPs.
- 6061 • Salaries and annual training of professional personnel, in accordance with Individual  
6062 Development Plans, involved in the development and implementation of INRMPs.
- 6063 • Terms and conditions of Biological Opinions issued by USFWS or NMFS.
- 6064 • Baseline surveys to keep INRMPs current.
- 6065 • Biological surveys to determine population status of endangered, threatened, and sensitive  
6066 species.
- 6067 • Survey and monitoring programs to support the MBTA and related permits.
- 6068 • Wetland surveys for planning, monitoring and/or permit applications.
- 6069 • Erosion control measures required in order to remain in compliance with natural resources  
6070 protection regulations and to maintain land condition for realistic training operations.
- 6071 • Support of leadership roles or executive agent responsibilities for regional conservation  
6072 organizations.
- 6073 • Memorandums of Agreement/Understanding commitments.
- 6074

6075 **Examples of stewardship projects could include:**

- 6076 • Community outreach activities, such as Earth Day and Migratory Bird Day activities.
- 6077 • Education and public awareness projects such as interpretive displays, oral histories,
- 6078 Watchable Wildlife Areas, nature trails, wildlife checklists, and conservation teaching
- 6079 materials.
- 6080 • Biological surveys or habitat protection for non-listed species.
- 6081 • Management and execution of volunteer and partnership programs.
- 6082 • Demonstration plantings of native plant materials.
- 6083 • Experimental conservation techniques.
- 6084 • Agriculture outlease improvements.
- 6085 • Forest stand improvements and other management efforts.
- 6086 • Wildlife management efforts.
- 6087

6088 All INRMP projects will be entered into the Marine Corps Environmental Compliance and  
6089 Operational Reporting (ENCORE) web based project and budget tracking system. ENCORE  
6090 allows Marine Corps staff users (both at the Installation and Headquarters level) to validate project  
6091 data, receive approval up the chain of command, and add/manage users.

6092 **5.2 FUNDING SOURCES**

6093 Once INRMP projects have been validated and entered into ENCORE, they are evaluated and  
6094 programmed in for funding based on their priority and availability of funds. Some projects may be  
6095 funded through the ENCORE web-based system, whereas others may require alternate sources of  
6096 funding. Some of the primary sources for funding Marine Corps natural resources projects are:

- 6097 • Operations and Maintenance, Marine Corps (O&M, MC) Funds
- 6098 • Legacy Resource Management Program (Legacy Program) Funds
- 6099 • Navy and Marine Corps Encroachment Partnering Program
- 6100 • Forestry Revenues
- 6101 • Agricultural Outleasing
- 6102 • Fish and Wildlife Fees
- 6103 • Recycling Funds
- 6104 • Strategic Environmental Research and Development Program (SERDP) Funds
- 6105 • Other Non-DOD Grant and Partnership Funds

6106 **5.2.1 O&M, MC Funds**

6107 A majority of natural resource projects are funded with O&M, MC funds, and are primarily  
6108 restricted to support “must-fund” environmental compliance projects. Other limitations for the use  
6109 of O&M, MC funds include the following.

6110 • Only the initial procurement, construction, and modification of a facility or project are  
6111 considered valid environmental funding requirements. The subsequent operation,  
6112 modification due to mission requirements, maintenance, repair, and eventual replacement  
6113 is considered a Real Property Maintenance funding requirement.

6114 • When natural resource requirements are tied to a specific construction project or other  
6115 action, funds for the natural resource requirements should be included in the overall project  
6116 costs.  
6117

6118 O&M, MC Funds are expected to be the primary source of funding for MCLB Albany INRMP  
6119 Environmental Compliance projects.

### 6120 **5.2.2 The Legacy Resource Management Program**

6121 The Legacy Program was part of a special Congressional mandated initiative for funding military  
6122 conservation projects. Although the Legacy Program was originally funded from 1991 to 1996  
6123 only, funds for new projects have continued to be available through this program. Legacy Program  
6124 funds can be used for a variety of conservation projects, such as regional ecosystem management  
6125 initiatives, habitat preservation efforts, archaeological investigations, invasive species control,  
6126 monitoring and predicting migratory patterns of birds and animals, and national partnerships and  
6127 initiatives, such as National Public Lands Day. More information on requirements for Legacy  
6128 Program applications can be found at: <http://www.dodlegacy.org/>.  
6129 Requests for Legacy funds should consider the following:

- 6130 • The availability of Legacy Program funds is generally uncertain early in the year.
- 6131 • Pre-proposals for Legacy Program projects are due in March and submitted using the  
6132 Legacy Program Tracker Website: <http://www.dodlegacy.org/>.
- 6133 • Project proposals are reviewed by the Marine Corps and Navy chain of command before  
6134 being submitted to the DOD Legacy Resources Management Office for final project  
6135 selection.
- 6136 • The Legacy Program website provides further guidance on the proposal process and types  
6137 of projects requested.  
6138

6139 Legacy Program funds should be considered as a potential funding source for MCLB Albany  
6140 INRMP projects.

### 6141 **5.2.3 Natural Resources Conservation Compliance Program**

6142 The Department of Defense's (DOD) Natural Resources Conservation Compliance Program (NR  
6143 Program) supports the military's testing and training mission by protecting its biological resources.  
6144 The NR Program provides policy, guidance, and oversight for management of natural resources  
6145 on military land, air, and water resources owned or operated by DOD. The NR Program's goal is  
6146 to support the military's combat readiness mission by ensuring continued access to realistic habitat  
6147 conditions, while simultaneously working to ensure the long-term sustainability of the nation's  
6148 natural heritage. Information and resources are available at:  
6149 <http://www.dodnaturalresources.net/Candidate-Resources.html>  
6150

6151 The program does not provide direct funding support but provides resources for managers at  
6152 MCLB Albany to address issues relating to candidate species, endangered species, invasives, and  
6153 environmental training and education on the Installation.

#### 6154 **5.2.4 Forestry Revenues**

6155 Forestry Revenues originate from the sale of forest products on Marine Corps lands and can be  
6156 used to fund forestry and potentially other natural resources management programs. Forestry  
6157 revenues are given preference for funding the Annual Marine Corps Forestry Funds and the DOD  
6158 Forestry Reserve Account per Marine Corps Financial Execution Procedures MCO 7300.21B.  
6159 Annual Marine Corps Forestry Funds are used to support commercial forestry operations at  
6160 installations. Forestry Revenues are first used to reimburse commercial forestry expenses, then, as  
6161 directed by DOD Financial Management Regulation 7000.14-R Volume 11A, 40 percent of net  
6162 proceeds for the fiscal year for the installation are distributed to the state in which the installation  
6163 resides. The state usually uses these funds to support road systems and schools. Once the  
6164 commercial forestry expenses are reimbursed, and proceeds are distributed among the state  
6165 counties, any remaining amount is transferred to a holding account known as the DOD Forestry  
6166 Reserve Account.

6167  
6168 Forestry Revenues also can be used to fund the improvement of forested lands; fund unanticipated  
6169 contingencies associated with administration of forested lands and production of forest products,  
6170 for which other sources of funds are not available; and natural resources management for  
6171 implementation of approved plans and agreements. In order for a natural resources project to be  
6172 eligible for funding from Forestry Revenues, it must:

- 6173 1) Be specifically included in an approved management plan, such as an INRMP.
- 6174 2) Provide for at least one of the following:
- 6175 a. Fish and wildlife habitat improvements or modifications;
  - 6176 b. Range rehabilitation where necessary for support of wildlife;
  - 6177 c. Control of off-road vehicle traffic;
  - 6178 d. Specific habitat improvement projects and related activities; and
  - 6179 e. Adequate protection for species of fish, wildlife, and plants considered  
6180 threatened or endangered.
- 6181

6182 The amount of funds available through Forestry Revenues varies from year to year. It is important  
6183 to note that the amount of funds remaining for natural resources management is relatively small,  
6184 and although installations are not required to have a timber harvesting plan to be eligible for funds  
6185 from the DOD Forestry Reserve Account, Reserve Account funds cannot be used for “must fund”  
6186 environmental compliance projects.

6187  
6188 DOD Forestry Reserve Account funds are a potential source of funding for MCLB Albany INRMP  
6189 projects that are not classified as environmental compliance projects.

#### 6190 **5.2.5 Agricultural Outleasing**

6191 Agricultural Outleasing funds are collected through the leasing of Marine Corps-owned property  
6192 for agricultural use. This money is directed back into Marine Corps Natural Resources Program  
6193 by Marine Corps Headquarters. Agricultural Outleasing funds are primarily allocated for

6194 agricultural outlease improvements but may also potentially be used for natural resources  
6195 management and stewardship projects once the primary objective is met. In addition to projects  
6196 related to agricultural outleasing, these funds can be used for implementation of INRMP  
6197 stewardship projects. Although funds available through Agricultural Outleasing varies from year  
6198 to year, this funding source is one of the more consistent sources for implementing INRMP projects  
6199 that do not have must fund requirements.

6200  
6201 Agricultural Outleasing funds should be considered as a potential funding source for MCLB  
6202 Albany INRMP projects that are not classified as environmental compliance projects.

### 6203 **5.2.6 Fish and Wildlife Fees**

6204 Fish and Wildlife Fees are primarily collected as part of installation hunting, or fishing programs.  
6205 These fees are deposited and used in accordance with the Sikes Act and DOD financial  
6206 management regulations. The Sikes Act specifies that user fees collected for hunting or fishing  
6207 shall be used only on the installation where they are collected and be used exclusively for fish and  
6208 wildlife conservation and management at the installation where collected. Fish and Wildlife Fees  
6209 collected as part of MCLB Albany's hunting and fishing programs are used in providing support  
6210 of natural resource management projects.

### 6211 **5.2.7 Recycling Funds**

6212 Installations that have a Qualified Recycling Program (QRP) may use their proceeds for some  
6213 types of natural resource projects. Any proceeds collected as part of the installation QRP must first  
6214 be used to cover QRP costs, and then up to 50 percent of the net proceeds can be for pollution  
6215 abatement, pollution prevention, composting, alternative fueled vehicle infrastructure support,  
6216 vehicle conversion, energy conversion, or occupational safety and health projects, with first  
6217 consideration given to projects included in the installation's pollution-prevention plans.  
6218 Remaining funds may be transferred to the non-appropriated MCCA account for approved  
6219 programs or retained to cover anticipated future program costs.

6220  
6221 MCLB Albany has a QRP but it only generates enough funds to be self-sufficient, so Recycling  
6222 Funds are not expected to play a significant role in support of the natural resource project  
6223 recommended in this INRMP.

### 6224 **5.2.8 Strategic Environmental Research and Development Program (SERDP) Funds**

6225 SERDP is DOD's corporate environmental research and development program, planned and  
6226 executing in full partnership with the United States Department of Energy and EPA, with  
6227 participation by numerous other federal and non-federal organizations (SERDP 2014). SERDP  
6228 funds are allocated for environmental and conservation projects through a competitive selection  
6229 process. SERDP program areas include Energy and Water, Environmental Restoration, Munitions  
6230 Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms.  
6231 More information about the annual solicitation and proposal process is available at  
6232 <https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations>.

6233



6234 **5.2.9 Non-DOD Funds**

6235 Non-DOD Funds, such as those received from federal, state, and non-governmental grant and  
6236 partnership programs, are available to fund Installation natural resources management projects,  
6237 and are detailed in the DOD Natural Resources Funding Manual (Hamilton 2009). The information  
6238 in the manual was compiled by the U.S. Army Environmental Command to assist all DOD  
6239 installations in identifying potential resources for conserving natural resources in the vicinity of  
6240 their borders. However, the availability of funds and eligibility requirements vary year to year and  
6241 each target source would need to be assessed prior to application submittal. Some of the federally  
6242 funded programs available and most applicable to MCLB Albany include:

- 6243 • National Wetlands Program Development Grant
- 6244 • Habitat Conservation Planning Assistance Grants
- 6245 • Neotropical Migratory Bird Conservation Act Grants Program
- 6246 • The North American Wetlands Conservation Act Grant Program

6247  
6248 Grant programs typically require non-federal matching funds. However, installations can partner  
6249 with other groups for preparing proposals for eligible projects. MCLB Albany should consider  
6250 grant funding and partnerships outlined in the manual as additional potential funding sources for  
6251 INRMP natural resources projects.

6252 **5.3 COMMITMENT**

6253 This INRMP will require formal adoption by the MCLB Albany Commanding Officer to ensure  
6254 commitment for pursuing funding, and to execute all “must fund” projects, subject to the  
6255 availability of funding. Funding of “must-fund” projects should be pursued within the specific  
6256 timeframes identified in the INRMP Projects Table provided in Appendix F.

6257 **6.0 REFERENCES**

- 6258 Albany Convention & Visitors Bureau. 2013. History of Albany. Available online at:  
6259 <https://visitalbanyga.com/about-albany/history-of-albany> (Accessed 10 August 2020).  
6260
- 6261 Aresco, M. J. and C. Guyer. 2004. Gopher tortoise, *Gopherus polyphemus*. Pages 82–83 in  
6262 Mirarchi, R. A., M. A. Bailey, T. M. Haggerty, and T. L. Best, editors. Alabama Wildlife.  
6263 Volume 3. Imperiled amphibians, reptiles, birds, and mammals. Tuscaloosa, Alabama: The  
6264 University of Alabama Press. 225 pages.  
6265
- 6266 Armed Forces Pest Management Board. 2012. Technical Guide No. 37, Integrated Management  
6267 of Stray Animals on Military Installations. Information Services Division, Walter Reed  
6268 Army Medical Center, Washington, District of Columbia; 25 May. 23 pages.  
6269
- 6270 Barbour, M. S., A. R. Schotz, S. M. Hermann, and J. S. Kush. 2013. Marine Corps Logistics  
6271 Base Albany, Georgia - Biological Survey Final Report. September. Auburn, Alabama:  
6272 Alabama Natural Heritage Program / Auburn University. 141 pages.  
6273
- 6274 Benton, N., J. D. Ripley, and F. Powledge, eds. 2008. Conserving Biodiversity on Military  
6275 Lands: A Guide for Natural Resources Managers. Arlington, Virginia: NatureServe.  
6276 Available online at: <http://www.dodbiodiversity.org> (Accessed 06 April 2020).
- 6277 Bhate Environmental Associates, Inc. (BEA). 1998. Draft Final Environmental Assessment for  
6278 the Transportation, Unpacking, Inspection, Repair, Repacking, and Storage of Containers  
6279 Associated with the United States Army Prepositioning Effort, Marine Corps Logistics  
6280 Base, Albany, Georgia. Prepared for the Department of the Navy. Bhate Environmental  
6281 Associates, Inc., Brentwood, Tennessee.  
6282
- 6283 Biodiversity Information Serving our Nation (BISON). 2013. Avian Knowledge Network (AKN)  
6284 data from Great Backyard Bird Counts, records for MCLB Albany. United States  
6285 Geological Service. Available online at: <https://bison.usgs.gov/> (Accessed 10 August  
6286 2020).  
6287
- 6288 Brennan, L. A. 1991. How Can we Reverse the Northern Bobwhite Population Decline? *Wildlife*  
6289 *Society Bulletin* 19:544–555.  
6290
- 6291 Buhlman, K., T. Tuberville, and W. Gibbons. 2008. Turtles of the Southeast. The University of  
6292 Georgia Press, Athens, Georgia. 252 pages.  
6293
- 6294 Butterfly and Moth Information Network. 2019. Butterflies and Moths of North America  
6295 (BAMONA). Available online at: <https://www.butterfliesandmoths.org/about> (Accessed 4  
6296 May 2020).  
6297
- 6298 Castelle, A. J., A. W. Johnson, C. Conolly. 1994. Wetland and Stream Buffer Size Requirements  
6299 – A Review. *J. Environ Qual.* Vol. 23(5):878–893.

- 6300 Centers for Disease Control and Prevention (CDC). 2017. Dichlorodiphenyltrichloroethane  
6301 (DDT) Factsheet. Available online at:  
6302 [https://www.cdc.gov/biomonitoring/DDT\\_FactSheet.html](https://www.cdc.gov/biomonitoring/DDT_FactSheet.html) (Accessed 06 April 2020).
- 6303 Chafin, L. 2019. *Rhynchospora decurrens*. Chapman. Decurrent Beakrush. [Species Profile.]  
6304 November. Available on Georgia Biodiversity Portal:  
6305 [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=21032](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=21032) (Accessed 06 April  
6306 2020).
- 6307 Chafin, L. 2020. *Pteroglossaspis ecristata* (Fern.) Rolfe. Wild Coco. [Species Profile.] March.  
6308 Available on Georgia Biodiversity Portal:  
6309 [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=18632](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=18632) (Accessed 06 April  
6310 2020).
- 6311 Cowardin, L. M., V. Carter, F. C. Golet, and E. LaRoe. 1992. Classification of Wetlands and  
6312 Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife  
6313 Service, Washington, District of Columbia.
- 6314 Coulter, M. C., J. A. Rodgers, J. C. Ogden and F. C. Depkin. 1999. Wood Stork (*Mycteria*  
6315 *americana*). In *The Birds of North America*, No. 409 (A. Poole and F. Gill, eds.). The  
6316 Birds of North America, Inc., Philadelphia, Pennsylvania. 28 pages.
- 6317 Cox, J., Inkley, D., and R. Kautz. 1987. Ecology and Habitat Protection Needs of Gopher Tortoise  
6318 (*Gopherus polyphemus*) Populations Found on Lands Slated for Large-scale Development  
6319 in Florida. Florida Game and Fresh Water Fish Commission Nongame Wildlife Program  
6320 Technical Report #4.
- 6321 CZR Incorporated. 1996. Jurisdictional Wetlands of Marine Corps Logistics Base Albany,  
6322 Georgia Narrative Report. Unpublished report submitted to SOUTHNAVFACENGCOM,  
6323 Charleston, South Carolina. CZR Incorporated, Jacksonville, Florida. 5 pages +  
6324 appendices.  
6325
- 6326 Dauphine, N. and R. Cooper. 2009. Impacts of Free-ranging Domestic Cats (*Felis catus*) on  
6327 Birds in the United States: A Review of Recent Research with Conservation and  
6328 Management Recommendations. Proceedings of the 4<sup>th</sup> International Partners in Flight  
6329 Conference: Tundra to Tropics, pp. 205–219, 15 pages.  
6330
- 6331 Department of Defense [DOD]. 2013. DOD Manual: Natural Resources Conservation Program.  
6332 DODM 4715.03. Incorporating Change 2 August 31, 2018. Department of Defense.  
6333 Washington, District of Colombia. 41 pages. March 18.  
6334
- 6335 Department of Defense [DOD]. 2011. DOD Instruction: Natural Resources Conservation  
6336 Program. DODINST 4715.03. Change 2 (31 August 2018). Department of Defense.  
6337 Washington, District of Colombia. 41 pages. March 18.  
6338

- 6339 Department of the Navy. 2002. Policy Letter from William Mattheis, Environmental Deputy  
6340 Director, Preventing Feral Cat and Dog Populations on Navy Property (5090Ser  
6341 N456M/1U595820), 10 January. 4 pages.  
6342
- 6343 Dunning, J. B. and D. D. Watts. 1990. Regional Differences in Habitat Occupancy by  
6344 Bachman's Sparrow. *Auk* 107:463-472.  
6345
- 6346 Dunning, J. B. 1993. Bachman's Sparrow (*Aimophila aestivalis*). In *The Birds of North America*,  
6347 No. 161 (A. Poole and F. Gill, editors). The Academy of Natural Sciences, Philadelphia,  
6348 Pennsylvania, and The American Ornithologists' Union, Washington, District of  
6349 Columbia. 16 pages.  
6350
- 6351 eBird. 2012. eBird: An online database of bird distribution and abundance [Web application].  
6352 eBird, Ithaca, New York. Available online at: <http://www.ebird.org> (Accessed 06 April  
6353 2020).  
6354
- 6355 Eagle Permits, 50 CFR §22. 2020.  
6356
- 6357 Endangered and Threatened Wildlife and Plants, 50 CFR §17. 2020. Subpart B §17.11 Endangered  
6358 and threatened wildlife.  
6359
- 6360 eRegulations. 2020. Georgia Sport Fishing. General Regulations. [Web site]. J.F. Griffin  
6361 Publishing. Available online at: [http://www.eregulations.com/georgia/fishing/general-](http://www.eregulations.com/georgia/fishing/general-regulations/)  
6362 [regulations/](http://www.eregulations.com/georgia/fishing/general-regulations/) (Accessed 06 April 2020).  
6363
- 6364 Eubanks, J. O., J. W. Hollister, C. Guyer, and W. K. Michener. 2002. Reserve Area Requirements  
6365 for Gopher Tortoises (*Gopherus polyphemus*). *Chelonian Conservation and Biology* 4:464-  
6366 471.  
6367
- 6368 Explore Southern History. 2013. Albany Georgia, Historic City on the Flint River. Available  
6369 online at: <http://www.exploresouthernhistory.com/albany.html> (Accessed 06 April 2020).  
6370
- 6371 Federal Emergency Management Agency (FEMA). 2013. Flood Insurance Rate Map (FIRM)  
6372 database, Dougherty County, Georgia. Available online at:  
6373 [http://www.floodsmart.gov/floodsmart/pages/flooding\\_flood\\_risks/understanding\\_flood](http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/understanding_flood_maps.jsp)  
6374 [maps.jsp](http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/understanding_flood_maps.jsp) (Accessed 06 April 2020).  
6375
- 6376 Fields, S. 1993. Regulations and Policies Relating to the Use of Wetlands for Nonpoint Source  
6377 Pollution Control. Pages 151–158. In: R.K. Olson (ed.), *Created and Natural Wetlands*  
6378 *for Controlling Nonpoint Source Pollution*. C.K. Smoley, CRC Press, Boca Raton, FL.
- 6379 Florida Fish and Wildlife Conservation Commission. 2007. Draft Gopher Tortoise Management  
6380 Plan, *Gopherus polyphemus*. Tallahassee, Florida. 107 pages.  
6381

- 6382 Georgia Complete Rules and Regulations, Rule 391-4-10-.09. 2020. Protected Species of Plants  
6383 and Animals. (3)(h) Gopher tortoise. Georgia Administrative Code, Department 391,  
6384 Chapter 4, Subject 10, Protection of Endangered, Threatened, Rare or Unusual Species.  
6385 February 6. Available online at: <http://rules.sos.ga.gov/GAC/391-4-10-.09> (Accessed 25  
6386 February 2020).  
6387
- 6388 Georgia Department of Natural Resources (GDNR). 1995. A Survey of Rare Species and Natural  
6389 Communities at the Marine Corps Logistics Base Albany, Georgia. Georgia Department  
6390 of Natural Resources, Wildlife Resources Division, Georgia Natural Heritage Program,  
6391 Social Circle, Georgia.  
6392
- 6393 Georgia Department of Natural Resources (GDNR). 2005. A Comprehensive Wildlife  
6394 Conservation Strategy for Georgia. Georgia Department of Natural Resources, Wildlife  
6395 Resources Division. Social Circle, Georgia.  
6396
- 6397 Georgia Department of Natural Resources (GDNR). 2010. Rare Bird Species Profile: Wood  
6398 Stork (*Mycteria Americana*). Georgia Department of Natural Resources, Wildlife  
6399 Resources Division.  
6400
- 6401 Georgia Department of Natural Resources (GDNR). 2015. *Georgia State Wildlife Action*  
6402 *Plan*. Social Circle, Georgia: Georgia Department of Natural Resources. Available online  
6403 at: <https://georgiawildlife.com/WildlifeActionPlan> (Accessed 07 July 2020).  
6404
- 6405 Georgia Department of Natural Resources (GDNR). 2016. Alligator Fact Sheet. Available online  
6406 at: [https://georgiawildlife.com/sites/default/files/wrd/pdf/fact-sheets/2016\\_alligator.pdf](https://georgiawildlife.com/sites/default/files/wrd/pdf/fact-sheets/2016_alligator.pdf)  
6407 (Accessed 25 February 2020).  
6408
- 6409 Georgia Department of Natural Resources. 2020a. All Tracked Natural Elements With or  
6410 Without Protection Status. [Web-based Database.] Georgia Biodiversity Portal. Wildlife  
6411 Resources Division, Wildlife Conservation Section, Social Circle, Georgia. Available  
6412 online at:  
6413 [https://georgiabiodiversity.a2hosted.com/natels/element\\_lists?group=all\\_groups](https://georgiabiodiversity.a2hosted.com/natels/element_lists?group=all_groups)  
6414 (Accessed 8 May 2020).  
6415
- 6416 Georgia Department of Natural Resources. 2020b. About Georgia Biodiversity Conservation  
6417 Data. Georgia Biodiversity Portal. Wildlife Resources Division, Wildlife Conservation  
6418 Section, Social Circle, Georgia. Available online at:  
6419 <https://georgiabiodiversity.a2hosted.com/natels/about-this-data> (Accessed 8 May 2020).  
6420
- 6421 Guyer, C. and M. A. Bailey. 1993. Amphibians and Reptiles of Longleaf Pine Communities. Pages  
6422 139-158 *in*: Hermann, S.M., editor. The longleaf pine ecosystem: ecology, restoration and  
6423 management. Proceedings of the 18<sup>th</sup> Tall Timbers Fire Ecology Conference. Tall Timbers  
6424 Research, Inc., Tallahassee, Florida.  
6425



- 6426 Guyer, C., S. Glenos, S. Hermann, and J. Stober. 2011. The Status of Gopher Tortoises (*Gopherus*  
6427 *polyphemus*) in Alabama, with Special Reference to Three Important Public Properties.  
6428 Report submitted to Alabama Department of Natural Resources, Division of Wildlife and  
6429 Freshwater Fisheries. Auburn, Alabama: Auburn University. 28 pages.
- 6430  
6431 Hamilton, B. 2009. Department of Defense Natural Resources Funding Manual. Army  
6432 Environmental Command, DOD Legacy Resource Management Program Project 08-399.  
6433 Available online at: [http://www.dodnaturalresources.net/files/AEC\\_EcoFunding\\_Manual](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf)  
6434 [082010\\_FINAL\\_VERSION.pdf](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf)  
6435
- 6436 Harris, M., B. Winn, J. C. Ozier, T. M. Schneider, and A. Day. 2019. *Mycteria americana*  
6437 (Linnaeus, 1758) Wood Stork. [Species Profile.] Georgia Biodiversity Portal, Wildlife  
6438 Resources Division, Wildlife Conservation Section, Social Circle, Georgia. Available  
6439 online at [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=21244](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=21244) (Accessed  
6440 08 August 2020).
- 6441  
6442 Headquarters, United States Marine Corps (HQMC). 2007. Handbook for Preparing, Revising,  
6443 and Implementing Integrated Natural Resources Management Plans on Marine Corps  
6444 Installations. U.S. Marine Corps Headquarters, Land Use & Military Construction  
6445 Branch, Natural Resources Section. 456 pages. October.
- 6446  
6447 Headquarters, U.S. Marine Corps (HQMC). 2013. Environmental Compliance and Protection  
6448 Manual. MCO P5090.2A. Change 3. Department of the Navy. Washington, District of  
6449 Columbia. 791 pages. 26 August.
- 6450  
6451 Headquarters, U.S. Marine Corps (HQMC). 2018. Environmental Compliance and Protection  
6452 Manual. MCO 5090.2. Department of the Navy. Washington, District of Columbia. 1182  
6453 pages. 11 June.
- 6454  
6455 Invasive Species Specialist Group (ISSG). 2010. *Felis catus*. International Union for  
6456 Conservation of Nature, Global Invasive Species Database. Available online at:  
6457 <http://www.issg.org/database/species/ecology.asp?si=24&fr=1&sts=sss>  
6458
- 6459 Jensen, J., G. Krakow, and K. Owers. 2018. *Gopherus polyphemus* (Daudin, 1802) Gopher  
6460 Tortoise. [Species Profile.] Georgia Biodiversity Portal, Wildlife Resources Division,  
6461 Wildlife Conservation Section, Social Circle, Georgia. Available online at  
6462 [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=20476](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=20476) (Accessed 08  
6463 August 2020).
- 6464  
6465 Jensen, J. 2020. *Ambystoma tigrinum* (Green, 1825) Eastern Tiger Salamander. [Species Profile.]  
6466 Georgia Biodiversity Portal, Wildlife Resources Division, Wildlife Conservation Section,  
6467 Social Circle, Georgia. Available online at  
6468 [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=33438](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=33438) (Accessed 08  
6469 August 2020).
- 6470

- 6471 Kobilinsky, D. 2016. JWM study: Fire, nest locations affect gopher tortoise predation. The  
6472 Wildlife Society. [Web page.] Available online at: [https://wildlife.org/jwm-study-fire-](https://wildlife.org/jwm-study-fire-nest-locations-affect-gopher-tortoise-predation/)  
6473 [nest-locations-affect-gopher-tortoise-predation/](https://wildlife.org/jwm-study-fire-nest-locations-affect-gopher-tortoise-predation/). (Accessed 03 April 2020).  
6474
- 6475 Loss, S., T. Will and P. Marra. 2013. The Impact of Free-ranging Domestic Cats on Wildlife of  
6476 the United States. Joint manuscript, Migratory Bird Center, Smithsonian Conservation  
6477 Biology Institute, and the U.S. Fish and Wildlife Service, Division of Migratory Birds,  
6478 Midwest Regional Office.  
6479
- 6480 Major, C. M. 2004. Wood stork, *Mycteria americana* (Linnaeus). Pages 124–125 in Mirarchi, R.  
6481 A., M. A. Bailey, T. M. Haggerty, and T. L. Best, editors. *Alabama Wildlife*. Volume 3:  
6482 Imperiled amphibians, reptiles, birds, and mammals. Tuscaloosa, Alabama: The  
6483 University of Alabama Press. 225 pages.  
6484
- 6485 Malone, K. M., H. H. Jones, A. M. Betancourt, T. M. Terhune II, and K. E. Sieving. 2019. Video  
6486 documentation of predators and nest defense at Bachman’s Sparrow nests. *Avian*  
6487 *Conservation and Ecology* 14(2):6. Available online at [https://doi.org/10.5751/ACE-](https://doi.org/10.5751/ACE-01409-140206)  
6488 [01409-140206](https://doi.org/10.5751/ACE-01409-140206) (Accessed 08 April 2020).  
6489
- 6490 Marine Corps Logistics Base (MCLB) Albany. 2007. Final Integrated Natural Resources  
6491 Management Plan 2007–2011, Marine Corps Logistics Base, Albany, Georgia. Prepared  
6492 by Aerostar Environmental Services, Inc. Mobile, Alabama. May.  
6493
- 6494 Marine Corps Logistics Base (MCLB) Albany. 2008. Final Stormwater Management Plan.  
6495 Marine Corps Logistics Base, Albany, Georgia.  
6496
- 6497 Marine Corps Logistics Base (MCLB) Albany. 2012a. Integrated Natural Resource Management  
6498 Plan Kick Off Meeting and Site Visit. Held at Office of Natural Resources,  
6499 Environmental Division, Marine Corps Logistics Base, Albany, Georgia, on 6 and 7  
6500 November 2012.  
6501
- 6502 Marine Corps Logistics Base (MCLB) Albany. 2012b. MCLB Pond Management Observations  
6503 and Recommendations, Prepared by Custom Outdoor Services, LLC, Leesburg, Georgia.  
6504
- 6505 Marine Corps Logistics Base (MCLB) Albany. 2013a. Geographic Information Systems (GIS)  
6506 Data for MCLB Albany. Marine Corps Logistics Base, Albany, Georgia.  
6507
- 6508 Marine Corps Logistics Base (MCLB) Albany. 2013b. Environmental Resources Division Staff  
6509 Circular: Invasive Pest Management Recommendations. Environmental Division, Marine  
6510 Corps Logistics Base, Albany, Georgia.  
6511
- 6512 Marine Corps Logistics Base (MCLB) Albany. 2013c. Environmental Resources Division Staff  
6513 Circular: Prescribed Burn Measures. Environmental Division, Marine Corps Logistics  
6514 Base, Albany, Georgia.  
6515

- 6516 Marine Corps Logistics Base (MCLB) Albany. 2013d. Environmental Resources Division Staff  
6517 Circular: Lake and Pond Management. Environmental Division, Marine Corps Logistics  
6518 Base, Albany, Georgia.  
6519
- 6520 Marine Corps Logistics Base (MCLB) Albany. 2013e. Environmental Resources Division Staff  
6521 Circular: List of Flora and Fauna Likely to Occur on MCLB Albany. Environmental  
6522 Division, Marine Corps Logistics Base, Albany, Georgia.  
6523
- 6524 Marine Corps Logistics Base (MCLB) Albany. 2014. Final Integrated Natural Resources  
6525 Management Plan for Marine Corps Logistics Base, Albany. October 2014. Prepared for  
6526 NAVFAC Southeast by Tetra Tech, Inc. Arlington, Virginia. 383 pages.  
6527
- 6528 Marine Corps Logistics Base (MCLB) Albany. 2015a. Final Encroachment Factor Assessment  
6529 for Marine Corps Logistics Base Albany, Georgia. 28 pages.  
6530
- 6531 Marine Corps Logistics Base (MCLB) Albany. 2015b. Integrated Pest Management Plan. Marine  
6532 Corps Logistics Base, Albany, Georgia.  
6533
- 6534 Marine Corps Logistics Base (MCLB) Albany. 2015c. Forest Management Plan. Marine Corps  
6535 Logistics Base, Albany, Georgia.  
6536
- 6537 Marine Corps Logistics Base (MCLB) Albany. 2015d. Integrated Cultural Resources  
6538 Management Plan, Fiscal Years 2015-2020. Marine Corps Logistics Base, Albany,  
6539 Georgia.  
6540
- 6541 Marine Corps Logistics Base (MCLB) Albany. 2016. Final Encroachment Control Plan Update  
6542 for Marine Corps Logistics Base Albany, Georgia. Prepared for Government and  
6543 External Affairs, G-7, Marine Corps Logistics Base Albany. Contract # N62470-14-D-  
6544 9003-FZ08. 84 pages.  
6545
- 6546 Marine Corps Logistics Base (MCLB) Albany. 2019a. Environmental Resources Division Staff  
6547 Circular: Invasive Plants Occurring and Management on MCLB Albany. Environmental  
6548 Division, Marine Corps Logistics Base, Albany, Georgia.  
6549
- 6550 Marine Corps Logistics Base (MCLB) Albany. 2019b. MCLB Albany Burn Plan. Environmental  
6551 Division, Marine Corps Logistics Base, Albany, Georgia.  
6552
- 6553 Marine Corps Logistics Base (MCLB) Albany. 2019c. MCLB Albany Salamanders – Sign.  
6554 Environmental Division, Marine Corps Logistics Base, Albany, Georgia.  
6555
- 6556 McCoy, E. D. and H. R. Mushinsky. 2007. Estimates of Minimum Patch Size Depend on the  
6557 Method of Estimation and the Condition of the Habitat. *Ecology* 88:1401–1407.  
6558
- 6559 Means, D. B. 2004. Eastern Diamondback Rattlesnake *Crotalus adamanteus Beauvois*. Pages 73-  
6560 74 in Mirarchi, R. A., M. A. Bailey, T. M. Haggerty, and T. L. Best, editors. Alabama

- 6561 Wildlife. Volume 3. Imperiled Amphibians, Reptiles, Birds, and Mammals. The  
6562 University of Alabama Press, Tuscaloosa, Alabama. 225 pages.  
6563
- 6564 Miller, J. H., S. Manning, T. Steven, and S. Enloe. 2010. A Management Guide for Invasive  
6565 Plants in Southern Forests. Gen. Tech. Rep. SRS-131. Asheville, North Carolina: U.S.  
6566 Department of Agriculture Forest Service, Southern Research Station.  
6567
- 6568 Muhlberg, G. A., and N. J. Moore. 1998. Streambank Revegetation and Protection; a Guide for  
6569 Alaska. Technical Report No. 98-3.
- 6570 NatureServe. 2019. NatureServe Web Service. Arlington, Virginia. Available online at:  
6571 <https://www.natureserve.org/> (Accessed 18 February 2019).  
6572
- 6573 National Oceanic & Atmospheric Administration (NOAA). 2013. Annual Climatological  
6574 Survey: Albany, 3 SE, GA. US National Climatic Data Center, Asheville, NC. Available  
6575 at: <http://www.ncdc.noaa.gov/cdo-web/datatools/normals> (Accessed October 2014).  
6576
- 6577 National Oceanic & Atmospheric Administration (NOAA). 2020. Annual Average Number of  
6578 Tornadoes per State (1985-2014). NOAA's National Weather Service, Storm Prediction  
6579 Center, Norman, OK. Available at: <http://www.spc.noaa.gov/wcm/#torclim> (Accessed  
6580 07 April 2020).  
6581
- 6582 National Oceanic and Atmospheric Administration (NOAA) National Climate Data Center  
6583 (NCDC). 2020a. Climate at a Glance. Regional Time Series. [Web site]. Available at:  
6584 [https://www.ncdc.noaa.gov/cag/regional/time-series/115/tavg/ann/3/1895-  
6585 2020?base\\_prd=true&begbaseyear=1901&endbaseyear=2000](https://www.ncdc.noaa.gov/cag/regional/time-series/115/tavg/ann/3/1895-2020?base_prd=true&begbaseyear=1901&endbaseyear=2000) (Accessed 7 April 2020).  
6586
- 6587 National Oceanic and Atmospheric Administration (NOAA) National Climate Data Center  
6588 (NCDC). 2020b. Temp, Precip, and Drought National Trends. [Web site]. Available at:  
6589 <https://www.ncdc.noaa.gov/temp-and-precip/us-trends/> (Accessed 7 April 2020).  
6590
- 6591 Office of the Under Secretary of Defense. 2006. Memorandum: Integrated Natural Resource  
6592 Management Plan (INRMP) Template. 14 August. 6 pages. Available at:  
6593 [https://www.denix.osd.mil/nr/focus-areas/integrated-natural-resource-management-plans-  
6594 inrmpls/guidance/dod-inrmp-template/10\\_INRMP-TEMPLATE.PDF](https://www.denix.osd.mil/nr/focus-areas/integrated-natural-resource-management-plans-inrmpls/guidance/dod-inrmp-template/10_INRMP-TEMPLATE.PDF). (Accessed  
6595 10 August 2020).  
6596
- 6597 Ozier, J. C., T. M. Schneider, and K. Owers. 2019. Species profile for *Haliaeetus leucocephalus*.  
6598 Bald Eagle. Georgia Biodiversity Portal, Wildlife Resources Division, Wildlife  
6599 Conservation Section, Social Circle, Georgia. Available online at  
6600 [https://georgiabiodiversity.a2hosted.com/natels/profile?es\\_id=19713](https://georgiabiodiversity.a2hosted.com/natels/profile?es_id=19713) (Accessed 8 April  
6601 2020).  
6602
- 6603 Robbins, J. 2019. Personal communication [during INRMP Kick-off Site Visit at MCLB  
6604 Albany]. 2 October.  
6605
- 6606 Robbins, J. 2020. Personal communication by telephone. 27 February.

- 6607 Roseberry, J. L. and W. D. Kimstra. 1984. Population ecology of the bobwhite. Southern Illinois  
6608 University Press, Carbondale, Illinois. 304 pages.  
6609
- 6610 Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). 2006.  
6611 Master Plan for Marine Corps Logistics Base Albany, Georgia.  
6612 SOUTHNAVFACENGCOM, North Charleston, South Carolina.  
6613
- 6614 Stein, B. A., D. M. Lawson, P. Glick, C. M. Wolf, and C. Enquist. 2019. *Climate Adaptation for*  
6615 *DoD Natural Resource Managers: A Guide to Incorporating Climate Considerations into*  
6616 *Integrated Natural Resource Management Plans*. Washington, D.C.: National Wildlife  
6617 Federation. 128 pages.  
6618
- 6619 Strategic Environmental Research and Development Program (SERDP) and Environmental  
6620 Security Technology Certification Program (ESTCP). 2014. SERDP Solicitations. [Web  
6621 site.] Available online at [https://www.serdp-estcp.org/Funding-Opportunities/SERDP-](https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations)  
6622 [Solicitations](https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations) (Accessed 10 August 2020).  
6623
- 6624 Styrsky, J. N., C. Guyer, H. Balbach, and A. Turkmen. 2010. The Relationship Between Burrow  
6625 Abundance and Area as a Predictor of Gopher Tortoise Population Size. *Herpetologica*  
6626 66:403–410.  
6627
- 6628 United States Army Corps of Engineers (USACE). 2010. Wildfire Protection Plan for the Marine  
6629 Corps Logistics Base, Albany, Dougherty County, Georgia. Prepared by Aerostar,  
6630 Contract W91278-08-D-0023 Task Order 0008.  
6631
- 6632 United States Department of Agriculture (USDA) and United States Department of Interior.  
6633 2009. Guidance for Implementation of Federal Wildland Fire Management Policy.  
6634 Available online at: [http://www.nifc.gov/policies/policies\\_documents/GIFWFMP.pdf](http://www.nifc.gov/policies/policies_documents/GIFWFMP.pdf)  
6635 (Accessed 10 August 2020).  
6636
- 6637 USDA-NRCS (U.S. Department of Agriculture – Natural Resources Conservation Service). n.d.  
6638 Insects & Pollinators. [Web site].  
6639 <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>  
6640 (Accessed 07 April 2020).  
6641
- 6642 United States Department of Agriculture (USDA). 2012. Soil Survey Geographic (SSURGO)  
6643 Database and Online Soil Mapper for (Dougherty County, Georgia). USDA, Natural  
6644 Resources Conservation Service (NRCS). Available online at  
6645 <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm> (Accessed 10 August 2020).  
6646
- 6647 United States Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008.  
6648 United States Department of Interior, Fish and Wildlife Service, Division of Migratory  
6649 Bird Management, Arlington, Virginia. 85 pp. Available online at  
6650 [https://www.fws.gov/birds/management/managed-species/birds-of-conservation-](https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php/)  
6651 [concern.php/](https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php/) (Accessed 19 February 2020).  
6652



- 6653 United States Fish and Wildlife Service (USFWS). 2011a. Migratory Birds: Birds Protected by  
6654 the Migratory Bird Treaty Act. In The Migratory Bird Program. Last Updated 11 April  
6655 2011. Available online at  
6656 <http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html> (Accessed  
6657 10 October 2013).  
6658
- 6659 United States Fish and Wildlife Service (USFWS). 2011b. Endangered and Threatened Wildlife  
6660 and Plants; 12-Month Finding on a Petition to List the Gopher Tortoise as Threatened in  
6661 the Eastern Portion of Its Range. *Federal Register* 76: 45130. Available online at:  
6662 <https://www.govinfo.gov/content/pkg/FR-2011-07-27/pdf/2011-18856.pdf#page=1>  
6663 (Accessed 25 February 2020).
- 6664 United States Fish and Wildlife Service (USFWS). 2012a. National Wetland Inventory (NWI)  
6665 database and online wetland mapper. Available online at:  
6666 <http://www.fws.gov/wetlands/Data/Mapper.html> (Accessed 24 September 2013).  
6667
- 6668 United States Fish and Wildlife Service (USFWS). 2012b. Endangered and Threatened Wildlife  
6669 and Plants; 90-day Finding on a Petition to List the Eastern Diamondback Rattlesnake as  
6670 Threatened. *Federal Register* 77(91): 27403–27411.  
6671
- 6672 United States Fish and Wildlife Service (USFWS). 2014a. Endangered and Threatened Wildlife  
6673 and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork from  
6674 Endangered to Threatened. Final Rule. *Federal Register* 79(125): 37077–37103.  
6675
- 6676 United States Fish and Wildlife Service (USFWS). 2014b. Endangered and Threatened Wildlife  
6677 and Plants; 90-Day Findings on Two Petitions; Review of Petition to List the Monarch  
6678 Butterfly as a Threatened Species Under the Act. *Federal Register* 79(250): 78775-  
6679 78778.  
6680
- 6681 United States Fish and Wildlife Services (USFWS). 2015. Bald & Golden Eagle Information.  
6682 Available online at: [https://www.fws.gov/birds/management/managed-species/bald-and-](https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php)  
6683 [golden-eagle-information.php](https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php) (Accessed 25 February 2020).  
6684
- 6685 United States Fish and Wildlife Service (USFWS). 2018. FAQs – USFWS Upgrades the U.S.  
6686 Breeding Population of the Wood Stork Status from Endangered to Threatened. Available  
6687 online at:  
6688 [https://www.fws.gov/northflorida/WoodStorks/2014\\_Status\\_Upgrade/20140626\\_faq\\_Wo](https://www.fws.gov/northflorida/WoodStorks/2014_Status_Upgrade/20140626_faq_Wood_Stork_Status_Upgrade_FAQs.htm)  
6689 [od\\_Stork\\_Status\\_Upgrade\\_FAQs.htm](https://www.fws.gov/northflorida/WoodStorks/2014_Status_Upgrade/20140626_faq_Wood_Stork_Status_Upgrade_FAQs.htm) (Accessed 26 February 2020).  
6690
- 6691 United States Fish and Wildlife Service (USFWS). 2019a. Conserving South Carolina’s At-Risk  
6692 Species: Species facing threats to their survival, Eastern Diamondback Rattlesnake.  
6693 Available online at: [https://www.fws.gov/southeast/pdf/fact-sheet/eastern-diamondback-](https://www.fws.gov/southeast/pdf/fact-sheet/eastern-diamondback-rattlesnake.pdf)  
6694 [rattlesnake.pdf](https://www.fws.gov/southeast/pdf/fact-sheet/eastern-diamondback-rattlesnake.pdf)  
6695
- 6696 United States Fish and Wildlife Service (USFWS). 2019b. Gopher Tortoise (*Gopherus*  
6697 *Polyphemus*) Fact Sheet. Available online at:  
6698 [https://www.fws.gov/northflorida/GopherTortoise/Gopher\\_Tortoise\\_Fact\\_Sheet\\_web.pdf](https://www.fws.gov/northflorida/GopherTortoise/Gopher_Tortoise_Fact_Sheet_web.pdf)

- 6699 United States Fish and Wildlife Service (USFWS). 2020. Endangered and Threatened Species  
6700 Listings and Occurrences for Georgia. Available online at:  
6701 <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report-input> (Accessed 18 February  
6702 2020).  
6703
- 6704 United States Geological Survey (USGS). 1999. Apalachicola-Chattahoochee-Flint River Basin  
6705 NAWQA Study - Description of the ACF River Basin Study Area.  
6706
- 6707 University of Georgia (UGA). 2018. Monarch Butterflies & Georgia's Gardeners. State  
6708 Botanical Garden of Georgia, University of Georgia. Available online at:  
6709 <https://botgarden.uga.edu/wp-content/uploads/2018/03/milkweedinformation.pdf>  
6710 (Accessed 8 May 2020).  
6711
- 6712 Watts, B. D. 1995. Yellow-crowned Night-heron (*Nyctanassa violacea*). In *The Birds of North*  
6713 *America*, No. 161 (A. Poole and F. Gill, editors). The Academy of Natural Sciences,  
6714 Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington,  
6715 District of Columbia. 24 pages.  
6716
- 6717 Wenger, S. J. and L. Fowler. 2000. Protecting Stream and River Corridors: Creating Effective  
6718 Local Riparian Buffer Ordinances. Carl Vinson Institute of Government, University of  
6719 Georgia. ISBN 0-89854-198-0. Available online at:  
6720 [http://www.rivercenter.uga.edu/publications/pdf/riparian\\_buffer\\_guidebook.pdf](http://www.rivercenter.uga.edu/publications/pdf/riparian_buffer_guidebook.pdf)  
6721 (Accessed 8 October 2013).  
6722
- 6723 Wentz, A. 2001. "*Ambystoma tigrinum*" (On-line), Animal Diversity Web. Available online at  
6724 [http://animaldiversity.ummz.umich.edu/accounts/Ambystoma\\_tigrinum/](http://animaldiversity.ummz.umich.edu/accounts/Ambystoma_tigrinum/) (Accessed 27  
6725 August 2013).  
6726
- 6727 Western Regional Climate Center. 2017. Albany 3 SE, Georgia (090140). Period of Record  
6728 Monthly Climate Summary. [Web site]. Available at: [https://wrcc.dri.edu/cgi-](https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ga0140)  
6729 [bin/cliMAIN.pl?ga0140](https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ga0140) (Accessed 7 April 2020).  
6730
- 6731 Williams, C. K., F. S. Guthery, R. D. Applegate, and M. J. Peterson. 2004. The Northern  
6732 Bobwhite Decline: Scaling our Management for the Twenty-first Century. *Wildlife*  
6733 *Society Bulletin* 32:961–969.  
6734
- 6735 Winter, L. 2006. Impacts of Feral and Free-ranging Cats on Bird Species of Conservation  
6736 Concern: A Five State Review of NY, NJ, FL, CA and HI. American Bird Conservancy,  
6737 via funding from the National Fish and Wildlife Foundation. May. 28 pages.  
6738
- 6739 Yosef, R. 1996. Loggerhead Shrike (*Lanius ludovicianus*). In *The Birds of North America*, No.  
6740 161 (A. Poole and F. Gill, editors). The Academy of Natural Sciences, Philadelphia,  
6741 Pennsylvania, and The American Ornithologists' Union, Washington, District of  
6742 Columbia. 28 pages.  
6743

6744 Yosef, R., and T. C. Grubb, Jr. 1994. Resource Dependence and Territory Size in Loggerhead  
6745 Shrikes (*Lanius ludovicianus*). *Auk* 111:465–469.  
6746

## APPENDICES

6747

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6749	APPENDIX A	ACRONYMS AND ABBREVIATIONS	A-1
6750	APPENDIX B	APPLICABLE REGULATIONS AND PUBLIC LAWS	B-1
6751	APPENDIX C	FLORA AND FAUNA SPECIES LISTS	C-1
6752	APPENDIX D	PROTECTED SPECIES FACT SHEETS	D-1
6753	APPENDIX E	INTERNET RESOURCES	E-1
6754	APPENDIX F	INRMP PROJECT DATA	F-1
6755	APPENDIX G	EXTERNAL STAKEHOLDER CORRESPONDENCE	G-1

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## **APPENDIX A**

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# **Acronyms and Abbreviations**

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6810	~	approximately
6811	>	greater than
6812	<	less than
6813	%	percent
6814	°F	degrees Fahrenheit
6815	AKN	Avian Knowledge Network
6816	ANHP	Alabama Natural Heritage Program
6817	APHIS	Animal and Plant Health Inspection Service
6818	AQCR 59	Southeast Georgia Control Region
6819	BASH	bird/wildlife aircraft strike hazard
6820	BCC	birds of conservation concern
6821	BMP	best management practice
6822	CARDF	Critical Asset Rapid Distribution Facility
6823	CBD	Central Business District
6824	CBMP	Coordinated Bird Monitoring Plan
6825	CEQ	Council on Environmental Quality
6826	CFR	Code of Federal Regulations
6827	Ch	Change(s)
6828	cm	centimeter(s)
6829	CNIC	Commander, Navy Installations Command
6830	CNO	Chief of Naval Operations
6831	CWA	Clean Water Act
6832	dbh	diameter breast height
6833	DDAG	Defense Distribution Depot Albany, Georgia
6834	DDT	dichloro diphenyl trichloroethane
6835	DOD	Department of Defense
6836	DODINST	Department of Defense Instruction
6837	DRMO/DRMS	Defense Reutilization and Marketing Service
6838	EA	Environmental Assessment
6839	EAP	Environmental Action Plan
6840	EFH	essential fish habitat
6841	EIS	Environmental Impact Statement
6842	ENCORE	Marine Corps Environmental Compliance and Operational Reporting
6843	EO	Executive Order

6844	EP	Encroachment Partnering
6845	EPA	U.S. Environmental Protection Agency
6846	ESA	Endangered Species Act
6847	ESCP	erosion and sediment control plan
6848	FAA	Federal Aviation Administration
6849	FEMA	Federal Emergency Management Agency
6850	FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
6851	FONSI	Finding of No Significant Impact
6852	ft.	feet or foot
6853	FY	fiscal year
6854	GDNR	Georgia Department of Natural Resources
6855	GIS	Geographic Information System
6856	GPS	global positioning system
6857	ha	hectare(s)
6858	HAP-EP	Humanitarian Assistance-Excess Property Program
6859	HQMC	Headquarters, United States Marine Corps
6860	I&E	Installation and Environment [Division]
6861	IGI&S	Installation Geospatial Information and Services
6862	INRMP	Integrated Natural Resources Management Plan
6863	Installation	Marine Corps Logistics Base Albany
6864	IPM	integrated pest management
6865	JEAP	Joint Equipment Assessment Program
6866	m	meter(s)
6867	MBTA	Migratory Bird Treaty Act
6868	MCIEAST	Marine Corps Installations Command
6869	MCLB	Marine Corps Logistics Base
6870	MDMC	Marine Depot Maintenance Command
6871	mm	millimeter(s)
6872	MOU	Memorandum of Understanding
6873	MCCS	Marine Corps Community Services
6874	NAVFAC	Naval Facilities Engineering Command
6875	Navy	U.S. Department of the Navy
6876	NCIS	Naval Criminal Investigative Service
6877	NDAA	National Defense Authorization Act

6878	NEPA	National Environmental Policy Act
6879	NGO	non-governmental organization
6880	NGVD	National Geodetic Vertical Datum
6881	NMFS	National Marine Fisheries Service
6882	No.	Number
6883	NOAA	National Oceanic and Atmospheric Administration
6884	NPDES	National Pollutant Discharge Elimination System
6885	NPS	non-point source
6886	NRCS	Natural Resources Conservation Service
6887	NRM	natural resources manager
6888	NRP	Natural Resources Program
6889	NWCG	National Wildfire Coordination Group
6890	OICC/ROICC	Naval Facilities Contracts Office
6891	O&M, MC	Operations and Maintenance, Marine Corps
6892	OPNAVINST	Chief of Naval Operations Instructions
6893	OSD	Office of the Secretary of Defense
6894	PARC	Partners in Amphibian and Reptile Conservation
6895	PIF	Partners in Flight
6896	PWO	Public Works Office
6897	QRP	Qualified Recycling Program
6898	RTE	Rare, Threatened and Endangered
6899	SAIA	Sikes Act Improvement Act
6900	SERDP	Strategic Environmental Research and Development Program
6901	SGCN	Species of Greatest Conservation Need
6902	Sikes Act	Sikes Act Improvement Act
6903	SWAP	State Wildlife Action Plan
6904	SWPPP	Storm Water Pollution Prevention Plan
6905	SYSCOM	Marine Corps Systems Command
6906	TNC	The Nature Conservancy
6907	U.S.	United States
6908	USACE	U.S. Army Corps of Engineers
6909	U.S.C.	U.S. Code
6910	USDA	U.S. Department of Agriculture
6911	USEPA	U.S. Environmental Protection Agency



6912	USFS	U.S. Forest Service
6913	USFWS	U.S. Fish and Wildlife Service
6914	USGS	U.S. Geological Survey
6915	WMA	Wildlife Management Area
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# **APPENDIX B**

## Applicable Regulations and Public Laws

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Number	Title	Description	Applicable Resource
<b>Federal</b>			
7 United States Code (U.S.C.) §136	Federal Insecticide, Fungicide and Rodenticide Act	Governs the use and application of pesticides in natural resources management plans.	Rare, Threatened, and Endangered (RTE) species; Nuisance and Invasive Plants; Water Resources; Agricultural Outleases; Terrestrial Vegetation and Communities
10 U.S.C. §2667	Armed Forces, Leases; non-excess property of military departments and Defense Agencies	Provides general requirements for leasing certain lands that will promote national defense or be in the public interest.	Agricultural Outleases
10 U.S.C. §2671	Armed Forces, Military Reservations and Facilities: Hunting, Fishing, and Trapping	Provides general requirements for hunting, fishing, and trapping on military reservations and facilities.	Fish and Wildlife
16 U.S.C. §670c	Program for public outdoor recreation	Defines a program for developing facilities for outdoor recreation in accordance with INRMPs and in cooperation with federal and state agencies	Fish and Wildlife; Land Resources
16 U.S.C. 661-666c	Fish and Wildlife Coordination Act	Authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife.	Fish and Wildlife; Water Resources
16 U.S.C. §670a-o	Sikes Act	Requires that military installations provide for conservation and rehabilitation of natural resources; and that each Military Department prepare and implement an Integrated Natural Resources Management Plan (INRMP) for installations that contain significant natural resources.	All

Number	Title	Description	Applicable Resource
16 U.S.C. §703-712	Migratory Bird Treaty Act	Prohibits taking or harming a migratory bird, its eggs, nest, young, or feathers without the appropriate permit. It implements Conventions between the U.S. and Canada, Mexico, Japan and Russia.	Fish and Wildlife – Birds; RTE Species
16 U.S.C. 1361-1407	Marine Mammal Protection Act	Prohibits the taking or harming of marine mammals without the appropriate permit.	N/A
16 U.S.C. §1451 et seq.	Coastal Zone Management Act of 1972	Provides for management of the nation’s coastal resources, including the Great Lakes, and balances economic development with environmental consideration. Outlines two national programs, the National Coastal Zone Management Program and the National Estuarine Research Reserve System.	Coastal Zone, Water Resources
16 U.S.C. §1531 - 1544	Endangered Species Act	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants and their critical habitats. It requires federal agencies to ensure that no agency action is likely to jeopardize the continued existence of a threatened or endangered species.	Fish and Wildlife
16 U.S.C. §1801 et seq.	Magnuson–Stevens Fisheries Conservation and Management Act	Establishes policies for the sustainable management of fishery resources and the protection of essential fish habitats. It is the primary law governing marine fisheries.	Fish and Aquatic Species
16 U.S.C. §4701-4751	National Invasive Species Act	Prescribes policies to prevent the introduction and spread of non-indigenous species into U.S. waters.	Aquatic Nuisance Species
31 U.S.C. §1535	Money and Finance – The Budget Process – Agency Agreements	Provides policy on how an agency or major organizational unit within an agency may place an order with a major organization within the same agency or another agency for goods or services	All – Management of Natural Resources



Number	Title	Description	Applicable Resource
33 U.S.C. §401 et seq.	Rivers and Harbors Act	Requires authorization from the U.S. Army Corps of Engineers for the construction of any structure in or over any navigable waters of the U.S. and the excavation/dredging or deposition of material in these waters or any obstruction or alteration in a navigable water.	Aquatic Habitat, Wetland Habitat
33 U.S.C. §1251-1388	Clean Water Act	Aims to restore and maintain waters; and to control direct discharges of pollutants into navigable waters and placement of fill materials into waters of the U.S., including wetlands, by requiring permits.	Groundwater, Wetland Habitats, Aquatic Habitats
33 U.S.C. §2701-2719	Oil Pollution Act	Requires planning for, rescue of, minimization of injury to, and assessment of damages or injury to fish and wildlife resources from the discharge of oil.	All.
33 U.S.C. §1341	Water Quality Certification	Requires that states certify compliance with federal permits or licenses and with state water quality requirements and other applicable state laws.	Water Resources
33 U.S.C. §1344	Permits for Dredged or Fill Material	Establishes a program to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands.	Water Resources
42 U.S.C. §300f-j	Safe Drinking Water Act	Protects the quality of drinking water in the U.S. whether from above ground or underground sources.	Groundwater; Aquatic Habitats
42 U.S.C. §9601-9675	Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA or Superfund)	Authorizes Natural Resource Trustees to recover damages for injury to, destruction of, or loss of natural resources resulting from the release of a hazardous substance which occurred by uncontrolled or accidental means	All

Number	Title	Description	Applicable Resource
Public Law 93-378 in 16 U.S.C. §1600	Forest and Rangeland Renewable Resources Planning Act, as amended	Requires a complete national assessment or inventory of all forest, rangeland resources, and public needs every ten years, along with a plan to meet those needs.	Forestry
Public Law 105-85 in 16 U.S.C. §670a-o	Sikes Act Improvement Act (SAIA) of 1997 (passed as an amendment to the Sikes Act of 1960)	Requires the development of integrated natural resources management plans (INRMPs) on relevant installations in collaboration with U.S. Fish and Wildlife and state fish and wildlife agencies. The INRMPs are to provide for the sustainable use of natural resources, to the extent that the use is not inconsistent with the needs of fish and wildlife resources. The Secretary of the Interior, in consultation with state fish and wildlife agencies, must submit a report annually on the amounts expended by Interior and state fish and wildlife agencies on activities conducted pursuant to INRMPs to respective Congressional committees with oversight responsibilities.	All
Public Law 107-314 in 16 U.S.C. §703	Bob Stump National Defense Authorization Act for Fiscal Year 2003	Exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities.	Birds
32 Code of Federal Regulations (CFR) Part 190, currently Reserved (as of February 24, 2020)	Natural Resources Management Program	Provides Department of Defense (DOD) policy on natural resources management.	All – Management of Natural Resources
40 CFR Part 70.1-70.14	EPA State Operating Permit Programs	Establishes comprehensive air quality permitting systems for the states to be consistent with title V of the Clean Air Act.	Air

<b>Number</b>	<b>Title</b>	<b>Description</b>	<b>Applicable Resource</b>
50 CFR Part 17	Endangered and Threatened Wildlife and Plants	Prescribes policies for the conservation and restoration of endangered and threatened wildlife and plants.	RTE Species
50 CFR 22; 16 U.S.C. 668(a)	Bald and Golden Eagle Protection Act	Prohibits taking, possessing, and transporting bald eagles and golden eagles and importing and exporting their parts, nests, or eggs.	Birds
Executive Order (EO) 11644	Off-Road Vehicles on Public Lands	Allows agencies to restrict the use of off-road vehicles on lands under their management when it is determined that the use of off-road vehicles will cause, or is causing considerable adverse effects on the soil vegetation, wildlife, wildlife habitat, or cultural or historic resources of particular areas or trails of the public lands.	Soils, Agricultural Outleasements, Terrestrial Vegetation and Communities, Sensitive Habitats and Rare Ecosystems, RTE Species, Conservation Lands, Fish and Wildlife
EO 11988	Floodplain Management	Requires federal agencies to evaluate effects of action they have taken on floodplains.	Floodplains
EOs 11989, amending EO 11644	Off-Road Vehicles on Public Lands	Gives authority to respective agencies to restrict the use of off-road vehicles (including all vehicles used in hunting and other outdoor activities) .	Soils, Agricultural Outleasements, Terrestrial Vegetation and Communities, Sensitive Habitats and Rare Ecosystems, RTE Species, Conservation Lands, Fish and Wildlife
EO 11990	Protection of Wetlands	Requires government agencies, in carrying out agency actions and programs affecting land use, to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands	Wetland Habitats
EO 12088	Federal Compliance with Pollution Control Standards	Ensures that Executive agency heads take necessary actions to prevent, control, and abate environmental pollution with respect to federal facilities and activities under control of the Agency.	All

Number	Title	Description	Applicable Resource
EO 12962, amended by EO 13474	Recreational Fisheries	Requires Federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities.	Fisheries; Wetland Habitats; Aquatic Habitats
EO 13112, amended by EO 13751	Invasive Species	Requires executive agencies to restrict the introduction of exotic organisms into natural ecosystems	Nuisance and Invasive Species
EO 13834	Efficient Federal Operations	Mandates that agencies meet statutory requirements to increase efficiency, and eliminate use of unnecessary resources to protect the environment including reducing building energy use, using renewable energy, reducing water consumption, following sustainable design principles for buildings, and waste prevention. Metrics will be implemented to follow progress in achieving goals.	Water Resources; Energy; Land Use
EO 13186	Responsibilities of Federal Agencies to Protect Migratory Birds	Imposes substantive obligations on the U.S. for the conservation of migratory birds and their habitats.	Birds
EO 13352	Facilitation of Cooperative Conservation	Requires that the Secretaries of the Interior, Agriculture, Commerce, and Defense and the Administrator of the EPA shall carry out the programs, projects, and activities of the agency in a manner that facilitates cooperative conservation.	All - Management of Natural Resources
EO 13443	Facilitation of Hunting Heritage and Wildlife Conservation	Directs Federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.	Fish and Wildlife

Number	Title	Description	Applicable Resource
60 FR 40837	President's Executive Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds	Provides guidance developed by the interagency workgroup under the direction of the Federal Environmental Executive to assist federal agencies in the implementation of environmentally and economically beneficial landscape practices, and requires implementing landscaping practices that are intended to benefit the environment and generate long-term cost savings. Directs agencies to use Integrated Pest Management.	Land Use; Terrestrial Vegetation and Communities; Water Resources; Soils; Invasive and Nuisance Species
71 FR 168	Memorandum of Understanding Between DOD and USFWS to Promote the Conservation of Migratory Birds	Outlines a collaborative approach to promote the conservation of migratory bird populations, identifies specific activities where cooperation between the parties will contribute substantially to the conservation of migratory birds and their habitats.	Birds
<b>State of Georgia</b>			
Georgia Code (GAC) Title 16, Chapter 12, Article 1 (§16-12-4)	Criminal Animal Cruelty	Contains laws and regulations relating to criminal animal cruelty	Terrestrial Wildlife
GAC Title 27, Chapter 3, Article 5 (§27-3-130 to 133)	Protection of Endangered Wildlife	Contains laws and regulations pertaining to endangered or threatened animal species, and prohibits the taking, possession, transportation, or sale of any of the animal species designated by state law as endangered or threatened without the issuance of a permit.	RTE Species
GAC Title 4, Ch. 11, Article 1 (§4-11-5.1)	Georgia Animal Protection Act Section 5.1	Requires all animals in animal shelters be euthanized in a humane manner with only one method by a licensed veterinarian or certified technician: administering sodium pentobarbital..	Wildlife



Number	Title	Description	Applicable Resource
<b>U.S. Marine Corps</b>			
Marine Corps Order (MCO) 5090.2	Marine Corps Environmental Compliance and Protection Program	Directs the Marine Corps to be accountable to environmental laws and sets programs for the preservation of their training areas, operational readiness, public health, and to preserve environmental quality of their installations and surrounding communities. Volume 11 identifies Marine Corps policies on natural resources management, Volume 14 is Integrated Pest Management. The program summarizes all relevant federal environmental statutes, regulations, executive orders (EOs), and military mandates for environmental compliance.	All
MCO 7300.21B	Marine Corps Financial Management Standard Operating Procedure Manual	Provides comptrollers and fund managers with standard operating procedures related to preparation, recording, reconciling, reporting and maintenance of financial records through all stages of funds management.	All – Financial Management of Natural Resources
MCO 11011.23	Marine Corps Encroachment Management Program	Provides guidance to identify and limit factors that degrade or have the potential to degrade the capability of an installation, operational range, training area, etc., where the Marine Corps conducts current and plans future military testing, training, and general mission activities.	All

Number	Title	Description	Applicable Resource
<b>U.S. Department of the Navy</b>			
CNO Policy Letter	Chief of Naval Operations (CNO) Policy Letter Preventing Feral Cat and Dog Populations on Navy Property	States that installations must adopt proactive pet management procedures that prevent the establishment of free-roaming cat and dog populations. Additionally, installations must ensure the humane capture and removal of feral cats and dogs, and efforts should be made to find homes for adoptable animals.	Wildlife; Invasive and Nuisance Species
NAVFAC P-73	Real Estate Operations and Natural Resources Management Procedural Manual - Volumes 1 and II	Addresses all CNO natural resources program requirements, guidelines, and standards.	Land Use
OPNAVINST 6250.4C	Pest Management Program	Provides Nave and Marine Corps policies and procedures for implementing pest management programs.	Nuisance and Invasive Species
SECNAVINST 5090.8B	Environmental Planning for Department of the Navy Actions	Provides comprehensive program of environmental planning and stewardship in support of the readiness of the US naval forces.	All
OPNAVINST 5090.1E	Environmental Readiness Program Manual	To ensure that the U.S. Navy forces train, test, and operate in an environmentally responsible manner to ensure access to land, air and sea.	All
<b>Department of Defense (DOD)</b>			
DOD Directive 4715.21	Climate Change Adaptation and Resilience	Facilitates efforts across the country to improve climate preparedness and resilience by implementing the 2014 DOD <i>Climate Change Adaptation Roadmap</i> and provide for continuation of DOD operations.	Climate

<b>Number</b>	<b>Title</b>	<b>Description</b>	<b>Applicable Resource</b>
DOD Memorandum for Assistant Secretary of the Army, Assistant Secretary of the Navy, Assistant Secretary of the Air Force (dated June 3, 2019)	Climate Adaptation for Department of Department Natural Resources Managers	Releases guide, Climate Adaptation for Department of Defense (DoD) Natural Resources Managers, which overviews how changing climate may affect military resources and offers a six-step process for incorporating adaptation strategies into INRMPs.	Climate
DOD Financial Management Regulation 7000.14-R	Reimbursable Operations, Policy, and Procedures (Volume 11A)	Provides general reimbursement procedures for when DOD Components perform work or sell property within the DOD, to other US government agencies and to private parties.	All – Financial Management of Natural Resources
DOD Instruction (DODINST) 4150.07	DOD Pest Management Program	Implements policy, assigns responsibility, and prescribes procedures for the DOD Pest Management Program by using integrated pest management and EPA registered pesticides to prevent pests and disease vectors.	Nuisance and Invasive Species
DOD-I,-Manual (M) 4715.03	Natural Resources Conservation Program, Instruction and Manual	Implements policy, assigns responsibilities, and prescribes procedures for the integrated management of natural and cultural resources on property under DOD control.	All – Guidance on INRMPs
DODINST 6055.06	DOD Fire and Emergency Services Program	Establishes a comprehensive Fire and Emergency Services Program and prescribes policies to prevent and minimize loss of DOD lives and damage to property and the environment.	Land Resources; Fish and Wildlife Resources
DOD Technical Guide No. 37	Armed Forces Pest Management Board, Integrated Management of Stray Animals on Military Installations	Provides additional guidance for installations in addressing feral cat control issues.	Nuisance and Invasive Species

Number	Title	Description	Applicable Resource
<b>Other</b>			
National Wildlife Coordinating Group	Guidance for Implementation of Federal Wildland Fire Management Policy	Provides for consistent implementation of the 1995/2001 Federal Fire Policy, as directed by the Wildland Fire Leadership Council. This guidance also calls for increased dialogue and collaboration between federal agencies and tribal, local, and state agencies as plans are updated and implemented to manage wildfires in order to accomplish resource and protection objectives.	Land Resources; Fire Management
Forest Service	Forest Service Directive System, Forest Service Manual and Handbooks	Codifies the agency's policy, practice, and procedures. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest Service employees.	Land Resources; Fire Management
Memorandum of Agreement (MOA)	MOA (2003) USFWS and the Marine Corps	Identifies nine federal conservation statutes that fall under Marine Corps Conservation Law Program jurisdiction.	All

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# **APPENDIX C**

## Flora and Fauna Species Lists

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## Plants

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1, 2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>	Invasive Species <sup>5</sup>
Aceraceae	Maple Family	<i>Acer rubrum</i>	Red maple	Yes				
		<i>Acer barbatum</i>	Florida Maple	Unknown				
Anacardiaceae	Cashew Family	<i>Rhus copallina</i>	Winged Sumac	Yes				
		<i>Toxicodendron vernix</i>	Poison Sumac	Unknown				
Aquifoliaceae	Holly Family	<i>Ilex ambigua</i>	Carolina Holly	Unknown				
		<i>Ilex coriacea</i>	Large Gallberry	Unknown				
		<i>Ilex decidua</i>	Possumhaw	Unknown				
		<i>Ilex myrtifolia</i>	Myrtle-leaved Holly	Unknown				
		<i>Ilex opaca</i>	American Holly	Unknown				
		<i>Ilex vomitoria</i>	Yaupon	Unknown				
Araliaceae	Ginseng Family	<i>Aralia spinosa</i>	Devil's-walkingstick	Unknown				
Betulaceae	Birch Family	<i>Alnus serrulata</i>	Hazel Alder	Unknown				
		<i>Betula nigra</i>	River Birch	Unknown				
		<i>Carpinus caroliniana</i>	Ironwood	Unknown				
		<i>Ostrya virginiana</i>	Hophornbeam	Unknown				
Caprifoliaceae	Honeysuckle Family	<i>Sambucus canadensis</i>	Elderberry	Unknown				
		<i>Viburnum nudum</i>	Possumhaw Viburnum	Unknown				
		<i>Viburnum obovatum</i>	Small-leaf Viburnum	Unknown				
		<i>Viburnum rufidulum</i>	Rusty Blackhaw	Unknown				
Castanea	Chestnut Family	<i>Castanea pumila</i>	Allegheny Chinquapin	Unknown				
		<i>Fagus grandifolia</i>	American Beech	Unknown				
Cornaceae	Dogwood Family	<i>Cornus florida</i>	Flowering Dogwood	Yes				
		<i>Cornus stricta</i>	Swamp Dogwood	Unknown				
Cupressaceae	Cypress Family	<i>Juniperus virginiana</i>	Eastern Red-cedar	Yes				
Cyrillaceae	Cyrilla Family	<i>Cliftonia monophylla</i>	Titi	Unknown				
		<i>Cliftonia racemiflora</i>	Red Titi	Unknown				
Ebenaceae	Ebony Family	<i>Diospyros virginia</i>	Persimmon	Yes				
Ericaceae	Heath Family	<i>Vaccinium arboreum</i>	Sparkleberry	Unknown				
Fabaceae	Legume Family	<i>Cercis canadensis</i>	Redbud	Unknown				
Fagaceae	Oak Family	<i>Quercus alba</i>	White Oak	Yes				
		<i>Quercus arkansana</i>	Arkansas Oak	Unknown			Yes	
		<i>Quercus austrina</i>	Bluff Oak	Unknown			Yes	
		<i>Quercus falcata</i>	Southern Red Oak	Yes				
		<i>Quercus geminata</i>	Sand Live Oak	Unknown				
		<i>Quercus hemisphaerica</i>	Laurel Oak	Yes				
		<i>Quercus incana</i>	Bluejack Oak	Unknown				
		<i>Quercus laevis</i>	Turkey Oak	Unknown				
		<i>Quercus laurifolia</i>	Swamp Laurel Oak	Unknown				
		<i>Quercus lyrata</i>	Overcup Oak	Unknown				
<i>Quercus margaretta</i>	Sand Post Oak	Unknown						

## Plants

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1, 2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>	Invasive Species <sup>5</sup>
Fagaceae	Oak Family	<i>Quercus marilandica</i>	Blackjack Oak	Unknown				
		<i>Quercus michauxii</i>	Swamp Chesnut Oak	Unknown				
		<i>Quercus muehlenbergii</i>	Chinquapin Oak	Unknown				
		<i>Quercus nigra</i>	Water Oak	Yes				
		<i>Quercus pagoda</i>	Cherrybark Oak	Unknown				
		<i>Quercus phellos</i>	Willow Oak	Unknown				
		<i>Quercus shumardii</i>	Shumard Oak	Unknown				
		<i>Quercus stellata</i>	Post Oak	Unknown				
		<i>Quercus velutina</i>	Black Oak	Unknown				
		<i>Quercus virginiana</i>	Live Oak	Yes				
Hamamelidaceae	Witch-Hazel Family	<i>Hamamelis virginiana</i>	Witch-Hazel	Unknown				
		<i>Liquidambar styraciflua</i>	Sweetgum	Yes				
Hippocastanaceae	Buckeye Family	<i>Aesculus pavia</i>	Red Buckeye	Yes				
Juglandaceae	Walnut Family	<i>Carya aquatica</i>	Water Hickory	Unknown				
		<i>Carya cordiformis</i>	Bitternut Hickory	Unknown				
		<i>Carya glabra</i>	Pignut Hickory	Unknown				
		<i>Carya tomentosa</i>	Mockernut Hickory	Unknown				
		<i>Juglans nigra</i>	Black Walnut	Unknown				
Lauraceae	Laurel Family	<i>Persea borbonia</i>	Red Bay	Unknown				
		<i>Sassafras albidum</i>	Sassafras	Yes				
Magnoliaceae	Magnolia Family	<i>Liriodendron tulipifera</i>	Tulip-poplar	Yes				
		<i>Magnolia grandiflora</i>	Southern Magnolia	Yes				
		<i>Magnolia virginiana</i>	Sweetbay	Unknown				
Moraceae	Mulberry Family	<i>Morus rubra</i>	Red Mulberry	Unknown				
Myricaceae	Wax Myrtle Family	<i>Myrica cerifera</i>	Waxmyrtle	Yes				
		<i>Myrica heterophylla</i>	Evergreen Bayberry	Unknown				
Nyssaceae	Tupelo Family	<i>Nyssa aquatica</i>	Water Tulpelo	Unknown				
		<i>Nyssa sylvatica</i>	Blackgum	Yes				
		<i>Nyssa sylvatica var. biflora</i>	Swamp Blackgum	Unknown				
Oleaceae	Olive Family	<i>Chionanthus virginicus</i>	Fringe Tree	Unknown				
		<i>Fraxinus americana</i>	White Ash	Unknown				
		<i>Fraxinus caroliniana</i>	Carolina Ash	Unknown				
		<i>Fraxinus pennsylvanica</i>	Green Ash	Unknown				
		<i>Osmanthus americanus</i>	Devilwood	Unknown				
Pinaceae	Pine Family	<i>Pinus echinata</i>	Shortleaf Pine	Unknown				
		<i>Pinus elliotii</i>	Slash Pine	Yes				
		<i>Pinus glabra</i>	Spruce Pine	Unknown				
		<i>Pinus palustris</i>	Longleaf Pine	Yes				
		<i>Pinus serotina</i>	Pond Pine	Unknown				
		<i>Pinus taeda</i>	Loblolly Pine	Yes				

## Plants

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Platanaceae	Sycamore Family	<i>Plantus occidentalis</i>	Sycamore	Unknown				
Rosaceae	Rose Family	<i>Amelanchier arborea</i>	Downy Serviceberry	Unknown				
		<i>Crateagus sp.</i>	Hawthorns	Yes				
		<i>Malus angustifolia</i>	Southern Crab Apple	Unknown				
		<i>Prunus americana</i>	American Plum	Unknown				
		<i>Prunus angustifolia</i>	Chickasaw Plum	Unknown				
		<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Yes				
		<i>Prunus serotina</i>	Black Cherry	Yes				
		<i>Prunus umbellata</i>	Flatwoods Plum	Unknown				
Rubiaceae	Madder Family	<i>Cephalanthus occidentalis</i>	Buttonbush	Yes				
		<i>Pinckneya bracteata</i>	Pinckneya	Unknown				
Rutaceae	Rue Family	<i>Ptelea trifoliata</i>	Common Hoptree	Unknown				
		<i>Zanthoxylum clava-herculis</i>	Hercules'-club	Unknown				
Salicaceae	Willow Family	<i>Populus deltoides</i>	Eastern Cottonwood	Unknown				
		<i>Salix caroliniana</i>	Coastal Plain Willow	Unknown				
		<i>Salix nigra</i>	Black Willow	Yes				
Sapotaceae	Sapodilla Family	<i>Bumelia lanuginosa</i>	Gum Bumelia	Unknown				
Styracaceae	Storax Family	<i>Halesia carolina</i>	Carolina Silverbell	Unknown				
		<i>Halesia diptera</i>	Two-wing Silverbell	Unknown				
		<i>Styrax americanus</i>	American Silverbell	Unknown				
		<i>Styrax grandifolius</i>	Bigleaf Silverbell	Unknown				
Symplocaceae	Symplocos Family	<i>Symplocos tinctoria</i>	Horse-sugar	Unknown				
Taxodiaceae	Taxodium Family	<i>Taxodium distichum</i>	Bald Cypress	Unknown				
		<i>Taxodium ascendens</i>	Pond Cypress	Unknown				
Tiliaceae	Basswood Family	<i>Tilia americana</i>	Basswood	Unknown				
Theaceae	Tea Family	<i>Gordonia lasianthus</i>	Loblolly-bay	Unknown				
		<i>Stewartia malacodendron</i>	Virginia Stewartia	Unknown	r	Yes	Yes	
Ulmaceae	Elm Family	<i>Celtis laevigata</i>	Sugarberry	Unknown				
		<i>Planera aquatica</i>	Water-elm	Unknown				
		<i>Ulmus americana</i>	American Elm	Yes				
Forbs		<i>Agalinis georgiana</i>	Georgia Purple Foxglove	Unknown		Yes	Yes	
		<i>Agrimonia incisa</i>	Incised Groove-Bur	Yes				
		<i>Ailanthus altissima</i>	Tree-of-Heaven	Yes				Yes
		<i>Albizia julibrissin</i>	Mimosa	Yes				Yes
		<i>Alternanthera philoxeroides</i>	Alligatorweed	Yes				Yes
		<i>Andropogon virginicus</i>	Virginia broomsedge	Yes				
		<i>Angelica dentata</i>	Sandhill Angelica	Unknown				Yes
		<i>Aristida stricta</i>	Wiregrass	Yes				
		<i>Asplenium heteroresiliens</i>	Wagner Spleenwort	Unknown	t	Yes	Yes	
<i>Balduina atropurpurea</i>	Purple Honeycomb Head	Unknown	r	Yes	Yes			

## Plants

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Forbs		<i>Boehmeria cylindrica</i>	Clearweed	Yes				
		<i>Callirhoe papaver</i>	Woodland Poppy-mallow	Yes			Yes	
		<i>Carex dasycarpa</i>	Velvet Sedge	Unknown	r	Yes	Yes	
		<i>Carex glaucescens</i>	Waxy Sedge	Yes				
		<i>Carex godfreyi</i>	Godfrey's Sedge	Unknown		Yes	Yes	
		<i>Carex lupulina</i>	Hop Sedge	Yes				
		<i>Carex striata</i>	Pocosin sedge	Yes				
		<i>Chamaecrista deeringiana</i>	Florida Senna	Unknown		Yes	Yes	
		<i>Cnidocolus stimulosus</i>	Tread-softly	Yes				
		<i>Coleataenia rigidula ssp. rigidula</i>	Redtop panicgrass	Yes				
		<i>Commelina communis</i>	Asiatic dayflower	Yes				Yes
		<i>Croton elliotii</i>	Elliott Croton	Unknown		Yes	Yes	
		<i>Cynodon sp.</i>	Bermuda grass	Yes				Yes
		<i>Desmodium ochroleucum</i>	Cream-Flowered Tick-trefoil	Unknown	t	Yes	Yes	
		<i>Dichantherium hirstii</i>	Hirst's Panic Grass	Unknown	e	Yes	Yes	
		<i>Drosera tracyi</i>	Tracy's Dew-threads	Unknown			Yes	
		<i>Dyschoriste oblongifolia</i>	Oblong-leaf Twinflower	Yes				
		<i>Elaeagnus umbellata</i>	Autumn Olive	Yes				Yes
		<i>Elyonurus tripsacoides</i>	Pan-American Balsamscale	Unknown		Yes	Yes	
		<i>Epidendrum magnoliae</i>	Green-Fly Orchid	Unknown	u		Yes	
		<i>Eupatorium leptophyllum</i>	False Fennel	Yes				
		<i>Eustachys floridana</i>	Florida Finger Grass	Unknown		Yes	Yes	
		<i>Fimbristylis perpusilla</i>	Harper Fimbr	Unknown	UR,e	Yes	Yes	
		<i>Fothergilla gardenii</i>	Dwarf Witch-Alder	Unknown	t	Yes	Yes	
		<i>Habenaria quinqueseta var. quinqueseta</i>	Michaux Orchid	Unknown	t	Yes	Yes	
		<i>Itea virginica</i>	Virginia willow	Yes				
		<i>Justicia angusta</i>	Narrowleaf Water-willow	Unknown		Yes	Yes	
		<i>Lachnocaulon beyrichianum</i>	Southern Bog-button	Unknown		Yes	Yes	
		<i>Lagerstroemia indica</i>	Crapemyrtle	Yes				Yes
		<i>Lantana sp.</i>	Lantana	Yes				Yes
		<i>Lespedeza bicolor</i>	Bicolor Lespedeza	Yes				Yes
		<i>Ligustrum japonicum</i>	Glossy Privet	Yes				Yes
		<i>Ligustrum sinense</i>	Chinese Privet	Yes				Yes
		<i>Lindera melissifolia</i>	Pond Spicebush or Pondberry	Unknown	E,e	Yes	Yes	
	<i>Listera australis</i>	Southern Twayblade	Unknown			Yes		
	<i>Litsea aestivalis</i>	Pond Spice	Unknown	r	Yes	Yes		
	<i>Lobelia boykinii</i>	Boykin Lobelia	Unknown	UR	Yes	Yes		
	<i>Lonicera japonica</i>	Japanese Honeysuckle	Yes				Yes	



## Plants

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Forbs		<i>Lygodium japonicum</i>	Japanese Climbing Fern	Yes				Yes
		<i>Macranthera flammea</i>	Hummingbird Flower	Unknown	t	Yes	Yes	
		<i>Mahonia bealei</i>	Leatherleaf mahonia	Yes				Yes
		<i>Matelea pubiflora</i>	Trailing Milkvine	Unknown	r		Yes	
		<i>Melia azadarach</i>	Chinaberry	Yes				Yes
		<i>Muhlenbergia capillaris</i>	Hairawn muhly	Yes				
		<i>Nandina domestica</i>	Nandina/Sacred Bamboo	Yes				Yes
		<i>Oxypolis canbyi</i>	Canby Dropwort	Unknown	E,e	Yes	Yes	
		<i>Oxypolis ternata</i>	Savanna Cowbane	Unknown		Yes	Yes	
		<i>Panicum hemitomum</i>	Maidencane	Yes				
		<i>Panicum verrucosum</i>	Warty Panicgrass	Yes				
		<i>Paspalum notatum</i>	Bahiagrass	Yes				Yes
		<i>Paspalum urvillei</i>	Vaseygrass	Yes				Yes
		<i>Penstemon australis</i>	Southern beardtongue	Yes				
		<i>Phaseolus polystachios var. sinuatus</i>	Trailing Bean-Vine	Unknown				Yes
		<i>Phlox amoena</i>	Hairy phlox	Yes				
		<i>Phyllanthus urinaria</i>	Chamberbitter	Yes				Yes
		<i>Phyllostachys aurea</i>	Golden Bamboo	Yes				Yes
		<i>Pityopsis graminifolia var. graminifolia</i>	Grass-leaf golden-aster	Yes				
		<i>Platanthera blephariglottis var. conspicua</i>	Southern White Fringed-orchid	Unknown		Yes		
		<i>Platanthera chapmanii</i>	Chapman's Fringed-orchid	Unknown		Yes	Yes	
		<i>Platanthera integra</i>	Yellow Fringeless Orchid	Unknown		Yes	Yes	
		<i>Platanthera nivea</i>	Snowy Orchid	Unknown			Yes	
		<i>Pluchea camphorata</i>	Camphorweed	Yes				
		<i>Polygala baldunii</i>	White Milkwort	Unknown			Yes	
		<i>Polygala leptostachys</i>	Georgia Milkwort	Unknown			Yes	
		<i>Pteridium aquilinum var. pseudocaudatum</i>	Bracken fern	Yes				
		<i>Pteroglossaspis ecristata</i>	Crestless Plume Orchid	Yes	t	Yes	Yes	
		<i>Pueraria montana</i>	Kudzu	Yes				Yes
		<i>Rhexia aristosa</i>	Awned Meadowbeauty	Unknown		Yes	Yes	
		<i>Rhynchospora punctata</i>	Spotted Beakrush	Unknown		Yes	Yes	
		<i>Rhynchospora solitaria</i>	Solitary Beakrush	Unknown	e	Yes	Yes	
		<i>Rhynchospora spp.</i>	Beakrush	Yes		Yes		
		<i>Salvia azurea</i>	Blue sage	Yes				
	<i>Sarracenia flava</i>	Yellow Flytrap	Unknown	u		Yes		
	<i>Sarracenia leucophylla</i>	Whitetop Pitcherplant	Unknown	e	Yes	Yes		
	<i>Sarracenia minor var. minor</i>	Hooded Pitcherplant	Unknown	u		Yes		
	<i>Sarracenia psittacina</i>	Parrot Pitcherplant	Unknown	t	Yes	Yes		

## Plants

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1, 2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>	Invasive Species <sup>5</sup>
Forbs		<i>Saururus cernuus</i>	Lizard's-tail	Yes				
		<i>Schizachyrium tenerum</i>	Slender bluestem	Yes				
		<i>Schwalbea americana</i>	Chaffseed	Unknown	E,e	Yes	Yes	
		<i>Scirpus cyperinus</i>	Woolgrass	Yes				
		<i>Scirpus hallii</i>	Hall Bulrush	Unknown			Yes	
		<i>Scutellaria multiglandulosa</i>	Small's Skullcap	Yes				
		<i>Sesbania</i>	Unknown	Yes				Yes
		<i>Sesbania punicea</i>	Rattlebox, Spanish Gold	Yes				Yes
		<i>Sideroxylon sp. 1</i>	Dwarf Buckthorn	Unknown				
		<i>Sideroxylon thornei</i>	Swamp Buckthorn	Unknown	UR,r	Yes	Yes	
		<i>Smilax rotundifolia</i>	Round-leaf greenbrier	Yes				
		<i>Solidago odora</i>	Sweet Goldenrod	Yes				
		<i>Sorghum halepense</i>	Johnsongrass	Yes				Yes
		<i>Sporobolus teretifolius</i>	Wire-Leaf Dropseed	Unknown	UR	Yes	Yes	
		<i>Stokesia laevis</i>	Stokes Aster	Unknown		Yes	Yes	
		<i>Symphotrichum adnatum</i>	Scaleleaf Aster	Yes				
		<i>Tephrosia virginiana</i>	Goat's-rue	Yes				
		<i>Thalictrum cooleyi</i>	Cooley Meadowrue	Unknown	E,e	Yes	Yes	
		<i>Toxicodendron pubescens</i>	Poison Oak	Yes				
		<i>Toxicodendron radicans</i>	Poison Ivy	Yes				
		<i>Triadica sebifera</i>	Chinese tallow tree	Yes				Yes
		<i>Trillium reliquum</i>	Relict Trillium	Unknown	E,e	Yes	Yes	
		<i>Vaccinium myrsinites</i>	Shiny Blueberry	Yes				
		<i>Vaccinium stamineum</i>	Deerberry	Yes				
		<i>Verbascum blattaria L.</i>	Moth mullein	Yes				Yes
		<i>Verbena brasiliensis</i>	Brazilian Vervain	Yes				Yes
		<i>Verbena tenuisecta</i>	Moss Verbena	Yes				Yes
		<i>Vernicia fordii</i>	Tung Oil Tree	Yes				Yes
		<i>Vernonia angustifolia</i>	Narrow-leaved Ironweed	Yes				
		<i>Wisteria sinsensis</i>	Chinese Wisteria	Yes				Yes
	<i>Woodwardia virginica</i>	Virginia chain fern	Yes					
	<i>Xyris drummondii</i>	Drummond's Yellow-eyed Grass	Unknown			Yes	Yes	
	<i>Xyris scabrifolia</i>	Harper Yellow-eyed Grass	Unknown			Yes	Yes	

<sup>1</sup> Protection Status by U.S.A or Georgia

E = Federally Endangered Species; e = State Endangered Species

T = Federally Threatened Species; t = State Threatened Species

r = State Rare Species; u = State Unusual Species (subject to commercial exploitation and deserving of special consideration)

C = Candidate for Federal Listing; UR = Under Review for Federal Listing

<sup>2</sup> Source: GDNR 2020a; USFWS 2020; <sup>3</sup> Source: GDNR 2015

<sup>4</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

<sup>5</sup> Source: MCLB 2019

Invertebrates

Order	Family	Common Family Name <sup>1</sup>	Species	Common Name	Confirmed on MCLB	Legal Status <sup>2,3</sup>	High Priority Species <sup>4</sup>	Rare <sup>5</sup>
Hymenoptera / Insects (sawflies, wasps, bees, ants)	Apidae	Honey bees & bumblebees & others	<i>Apis sp.</i>	Honey Bees	Yes			
Lepidoptera / Butterflies	Nymphalidae	Brush-footed Butterflies (Admirals & Longwings & True Brushfoots & Milkweed & Snouts)	<i>Limenitis arthemis</i>	Red-spotted Purple	Yes			
			<i>Heliconius charithonia</i>	Zebra Longwing	Yes			
			<i>Nymphalis antiopa</i>	Mourning Cloak	Yes			
			<i>Junonia coenia</i>	Common Buckeye	Yes			
			<i>Vanessa cardui</i>	Painted Lady	Yes			
			<i>Vanessa atalanta</i>	Red Admiral	Yes			
			<i>Polygonia interrogationis</i>	Question Mark	Yes			
			<i>Danaus plexippus plexippus</i>	Monarch	Yes	UR	Yes	
			<i>Limenitis arhippus</i>	Viceroy	Yes			
			<i>Agraulis vanillae</i>	Gulf Fritillary	Yes			
			<i>Euptoieta claudia</i>	Variegated Fritillary	Yes			
			<i>Libytheana carinenta</i>	American Snout	Yes			
			<i>Phycoides tharos</i>	Pearl Crescent	Yes			
			Lycaenidae	Gossamer-wing Butterflies (including Hairstreaks)	<i>Strymon melinus</i>	Gray Hairstreak	Yes	
	<i>Parrhasius m-album</i>	White M Hairstreak			Yes			
	<i>Calycopis cecrops</i>	Red-banded Hairstreak			Yes			
	Papilionidae	Swallowtails	<i>Papilio glaucus</i>	Eastern Tiger Swallowtail	Yes			
			<i>Papilio polyxenes</i>	Black Swallowtail	Yes			
			<i>Battus philenor</i>	Pipevine Swallowtail	Yes			
	Hesperiidae	Skippers	<i>Erynnis horatius</i>	Horace's Duskywing	Yes			
			<i>Thorybes bathyllus</i>	Southern Cloudywing	Yes			
			<i>Urbanus proteus</i>	Long-tailed Skipper	Yes			
			<i>Epargyreus clarus</i>	Silver-spotted Skipper	Yes			
			<i>Poanes viator</i>	Broad-winged Skipper	Yes			
			<i>Atalopedes campestris</i>	Sachem	Yes			
			<i>Lerema accius</i>	Clouded Skipper	Yes			
			<i>Hylephila phyleus</i>	Fiery Skipper	Yes			
			<i>Copaeodes minima</i>	Southern Skipperling	Yes			
			<i>Pyrgus communis</i>	Common White Checkered Skipper	Yes			
	Pieridae	Whites and Sulphurs	<i>Pontia protodice</i>	Checkered White	Yes			
<i>Zerene cesonia</i>			Southern Dogface	Yes				
<i>Phoebis sennae</i>			Cloudless Sulfur	Yes				
<i>Abaeis nicippe</i>			Sleepy Orange	Yes				
Odonata / Flying Insects (dragonflies and damselflies)	Zygoptera / Damselflies							
	Coenagrionidae	Narrow-winged/pond damselfly	<i>Enallagma civile</i>	Familiar Bluet	Yes			
			<i>Enallagma geminatum</i>	Skimming Bluet	Yes			
			<i>Enallagma signatum</i>	Orange Bluet	Yes			

Invertebrates

Order	Family	Common Family Name <sup>1</sup>	Species	Common Name	Confirmed on MCLB	Legal Status <sup>2,3</sup>	High Priority Species <sup>4</sup>	Rare <sup>5</sup>
Odonata / Flying Insects (dragonflies and damselfies)	Epirocta / Dragonflies							
	Aeshnidae	Darners	<i>Anax junius</i>	Common Green Darner	Yes			
	Libellulidae	Skimmers	<i>Libellula luctuosa</i>	Widow Skimmer	Yes			
			<i>Tramea carolina</i>	Carolina Saddlebags	Yes			
			<i>Erythemis simplicicollis</i>	Eastern Pondhawk	Yes			
Unionida / Bivalve Molluscs	Unionoidae	Freshwater Mussels	<i>Medionidus penicillatus</i>	Gulf Moccasinshell	Unknown	E, e	Yes	Yes
			<i>Pleurobema pyriforme</i>	Oval Pigtoe	Unknown	E, e	Yes	Yes
			<i>Lampsilis subangulata</i>	Shinyrayed Pocketbook	Unknown	E, e	Yes	Yes

<sup>1</sup> Butterfly family names from Butterfly and Moth Information Network (2019)

<sup>2</sup> Protection Status by U.S.A or Georgia

E = Federally Endangered Species; e = State Endangered Species

UR = Under Review for Federal Listing

<sup>3</sup> Source: GDNR 2020a; USFWS 2020.

<sup>4</sup> Source: GDNR 2015

<sup>5</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

Fish

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>	Stocked Species
Amiiformes	Amiidae	Ray-finned fishes	<i>Amia calva</i>	Bowfin	Yes				
Perciformes / "Perch-like" fish	Centrarchidae	Sunfish	<i>Centrarchus macropterus</i>	Flier	Yes				
			<i>Lepomis macrochirus</i>	Bluegill	Yes				
			<i>Morone chrysops x Morone saxatilis</i>	Hybrid Striped Bass	Yes				Yes
			<i>Micropterus salmoides</i>	Largemouth Bass	Yes				
Cypriniformes / Ray-finned fish (carps, minnows, & more)	Cyprinidae	Cyprinids	<i>Ctenopharyngodon idella</i>	Grass Carp	Yes				Yes
			<i>Notropis texanus</i>	Weed Shiner	Yes				
Siluriformes / Catfish	Ictaluridae	Common catfish	<i>Ameiurus nebulosus</i>	Brown Bullhead	Yes				
Lepisosteiformes / Gars	Lepisosteidae	Gars	<i>Ictalurus punctatus</i>	Channel Catfish	Yes				Yes
			<i>Lepisosteus oculatus</i>	Spotted Gar	Yes				
Salmoniformes	Salmonidae	Salmonids (salmon & trout & chars & others)	<i>Oncorhynchus mykiss</i>	Rainbow Trout	Yes				Yes

<sup>1</sup> Protection Status by U.S.A or Georgia

E = Federally Endangered Species; e = State Endangered Species

T = Federally Threatened Species; t = State Threatened Species

r = State Rare Species

C = Candidate for Federal Listing

<sup>2</sup> Source: GDNR 2020a; USFWS 2020.

<sup>3</sup> Source: GDNR 2015

<sup>4</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

Amphibians

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>
Urodela / Salamanders	Ambystomatidae	Mole Salamanders	<i>Ambystoma opacum</i>	Marbled Salamander	Unknown			
			<i>Ambystoma bishopi</i>	Reticulated Flatwoods Salamander	No	E,e	Yes	Yes
			<i>Ambystoma cingulatum</i>	Frosted Flatwoods Salamander	Unknown	T	Yes	Yes
			<i>Ambystoma talpoideum</i>	Mole Salamander	Unknown			
			<i>Ambystoma tigrinum</i>	Tiger Salamander	Yes		Yes	Yes
	Amphiumidae	Amphiumas	<i>Amphiuma means</i>	Two-toed Amphiuma	Yes			
	Plethodontidae	Lungless Salamanders	<i>Desmognathus auriculatus</i>	Southern Dusky Salamander	Unknown		Yes	Yes
			<i>Eurycea bislineata complex</i>	Two-lined Salamander	Unknown			
			<i>Eurycea guttolineata</i>	Three-lined Salamander	Unknown			
			<i>Eurycea quadridigitata complex</i>	Dwarf Salamander	Yes			
			<i>Hemidactylum scutatum</i>	Four-toed Salamander	Unknown			Yes
			<i>Plethodon glutinosus complex</i>	Slimy Salamander	Yes			
			<i>Pseudotriton montanus</i>	Mud Salamander	Unknown			
	Salamandridae	Newts	<i>Notophthalmus perstriatus</i>	Striped Newt	Unknown	t	Yes	Yes
			<i>Notophthalmus viridescens</i>	Eastern Newt	Unknown			
	Sirenidae	Sirens	<i>Pseudobranchius striatus</i>	Northern Dwarf Siren	Unknown			Yes
			<i>Siren intermedia</i>	Lesser Siren	Unknown			
			<i>Siren lacertina</i>	Greater Siren	Unknown			
	Bufonidae	True Toads	<i>Bufo fowleri</i>	Fowler's Toad	Unknown			
			<i>Bufo quercicus</i>	Oak Toad	Unknown			
<i>Bufo terrestris</i>			Southern Toad	Yes				
<i>Acris crepitans</i>			Northern Cricket Frog	Yes				
Anura / Frogs	Hylidae	Treefrogs	<i>Acris gryllus</i>	Southern Cricket Frog	Unknown			
			<i>Hyla avivoca</i>	Bird-voiced Treefrog	Unknown			
			<i>Hyla chrysoscelis</i>	Cope's Gray Treefrog	Yes			
			<i>Hyla cinerea</i>	Green Treefrog	Yes			
			<i>Hyla femoralis</i>	Pine Woods Treefrog	Unknown			
			<i>Hyla gratiosa</i>	Barking Treefrog	Yes			
			<i>Hyla squirella</i>	Squirrel Treefrog	Yes			
			<i>Pseudacris crucifer</i>	Spring Peeper	Yes			
			<i>Pseudacris feriarum</i>	Upland Chorus Frog	Yes			
			<i>Pseudacris nigrita</i>	Southern Chorus Frog	Unknown			
			<i>Pseudacris ocularis</i>	Little Grass Frog	Unknown			
			<i>Pseudacris ornata</i>	Omate Chorus Frog	Yes			
			Microhylidae	Narrow-mouthed Toads	<i>Gastrophryne carolinensis</i>	Eastern Narrow-mouthed Toad	Yes	
	Pelobatidae	Spadefoots	<i>Scaphiopus holbrookii</i>	Eastern Spadefoot	Yes			
	Ranidae	True Frogs	<i>Lithobates capito</i>	Gopher Frog	Unknown	UR,r	Yes	Yes
			<i>Rana catesbeiana</i>	Bullfrog	Yes			
			<i>Rana calmitans</i>	Green Frog	Yes			
			<i>Rana grylio</i>	Pig Frog	Yes			
			<i>Rana heckscheri</i>	River Frog	Unknown			
	<i>Rana sphenoccephala</i>	Southern Leopard Frog	Yes					

<sup>1</sup> Protection Status by U.S.A or Georgia

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C = Candidate for Federal Listing

UR = Under Review for Federal Listing

<sup>2</sup> Source: GDNR 2020a; USFWS 2020.

<sup>3</sup> Source: GDNR 2015

<sup>4</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020



Reptiles

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1</sup> <sub>2</sub>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>		
Crocodilia	Alligatoridae	Alligators	<i>Alligator mississippiensis</i>	American alligator	Yes	SA				
			<i>Ophisaurus attenuatus</i>	Slender Glass Lizard	Unknown			Yes		
	Anguidae	Glass & Alligator Lizards	<i>Ophisaurus mimicus</i>	Mimic Glass Lizard	Unknown	r	Yes	Yes		
			<i>Ophisaurus ventralis</i>	Eastern Glass Lizard	Unknown					
	Gekkonidae	Geckos	<i>Hemidactylus turcicus</i>	Mediterranean Gecko	Yes					
	Phrynosomatidae	Fence & Horned Lizards	<i>Sceloporus undulatus</i>	Eastern Fence Lizard	Unknown					
	Polychrotidae	Anoles	<i>Anolis carolinensis</i>	Green Anole	Yes					
			<i>Eumeces egregius</i>	Mole Skink	Unknown					
	Scincidae	Skinks	<i>Eumeces fasciatus</i>	Five-lined Skink	Unknown					
			<i>Eumeces inexpectatus</i>	Southeastern Five-lined Skink	Unknown					
			<i>Eumeces laticeps</i>	Broadhead Skink	Yes					
			<i>Scincella lateralis</i>	Ground Skink	Yes					
			<i>Cnemidophorus sexlineatus</i>	Six-lined Racerunner	Yes					
	Teiidae	Racerunners & Whiptails								
	Serpentes / Snakes									
	Squamata / Lizards, Snakes, Worm Lizards	Colubridae	Colubrid Snakes	<i>Cemophora coccinea</i>	Scarlet Snake	Unknown				
				<i>Coluber constrictor</i>	Black Racer	Yes				
				<i>Diadophis punctatus</i>	Ringneck Snake	Unknown				
				<i>Drymarchon couperi</i>	Eastern Indigo Snake	No	T	Yes	Yes	
				<i>Elaphe guttata</i>	Corn Snake	Unknown				
				<i>Elaphe obsoleta</i>	Rat Snake	Yes				
				<i>Farancia abacura</i>	Mud Snake	Yes				
				<i>Farancia erytrogramma</i>	Rainbow Snake	Unknown				
				<i>Heterodon platirhinos</i>	Eastern Hognose Snake	Yes				
				<i>Heterodon simus</i>	Southern Hognose Snake	Unknown	t	Yes	Yes	
				<i>Lampropeltis getula</i>	Common Kingsnake	Yes				
				<i>Lampropeltis triangulum elapsoides</i>	Scarlet Kingsnake	Unknown				
				<i>Masticophis flagellum</i>	Coachwhip	Unknown				
				<i>Nerodia erythrogaster</i>	Plain-bellied Watersnake	Unknown				
				<i>Nerodia fasciata</i>	Banded Watersnake	Yes				
				<i>Nerodia floridana</i>	Eastern Green Watersnake	Unknown			Yes	
				<i>Nerodia sipedon</i>	Northern Watersnake	Unknown				
				<i>Nerodia taxipilota</i>	Brown Watersnake	Unknown				
				<i>Opheodrys aestivus</i>	Rough Green Snake	Unknown				
				<i>Pituophis melanoleucus</i>	Pine Snake	Unknown			Yes	
				<i>Regina rigida</i>	Glossy Crayfish Snake	Unknown				
				<i>Regina septemvittata</i>	Queen Snake	Unknown				
				<i>Seminatrix pygaea</i>	Black Swamp Snake	Unknown				
				<i>Storeria dekayi</i>	Brown Snake	Unknown				
				<i>Storeria occipitomaculata</i>	Red-bellied Snake	Yes				
				<i>Thamnophis sauritus</i>	Eastern Ribbon Snake	Unknown				
				<i>Thamnophis sirtalis</i>	Common Garter Snake	Yes				
<i>Virginia striatula</i>				Rough Earth Snake	Unknown					
<i>Virginia valeriae</i>				Smooth Earth Snake	Unknown					
Elapidae				Elapid Snakes	<i>Micrurus fulvius</i>	Eastern Coral Snake	Unknown			Yes
					<i>Agkistrodon contortrix</i>	Copperhead	Unknown			
					<i>Agkistrodon piscivorus</i>	Cottonmouth	Yes			
					<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	Yes	UR	Yes	Yes
					<i>Crotalus horridus</i>	Timber Rattlesnake	Unknown			
Viperidae				Vipers	<i>Sistrurus miliarius</i>	Pigmy Rattlesnake	Unknown			
					<i>Chelydra serpentina</i>	Common Snapping Turtle	Yes			
	<i>Clemmys guttata</i>	Spotted Turtle	Unknown		UR,u	Yes	Yes			

Reptiles

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1</sup> <sub>2</sub>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>
Testudines / Turtles	Emyridae	Common Water Turtles	<i>Deirochelys reticularia</i>	Chicken Turtle	Unknown			
			<i>Pseudemys floridana</i>	Florida Cooter	Yes			
			<i>Terrapene carolina</i>	Eastern Box Turtle	Yes			
			<i>Trachemys scripta</i>	Pond Slider	Yes			
	Kinosternidae	Mud and Musk Turtles	<i>Kinosternon baurii</i>	Striped Mud Turtle	Unknown			
			<i>Kinosternon subrubrum</i>	Eastern Mud Turtle	Yes			
			<i>Sternotherus minor</i>	Loggerhead Musk Turtle	Unknown			
			<i>Sternotherus odoratus</i>	Common Musk Turtle	Unknown			
	Testudinidae	Tortoises	<i>Gopherus polyphemus</i>	Gopher Tortoise	Yes	C,t	Yes	Yes
	Trionychidae	Softshell Turtles	<i>Apalone ferox</i>	Florida Softshell	Unknown			
<i>Apalone spinifera</i>			Spiny Softshell	Unknown				

<sup>1</sup> Protection Status by U.S.A or Georgia

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T = Federally Threatened Species; t = State Threatened Species

r = State Rare Species

C = Candidate for Federal Listing

u = State Unusual Species

UR = Under Review for Federal Listing

SA = Similarity of Appearance (Threatened)

<sup>2</sup> Source: GDNR 2020a; USFWS 2020.

<sup>3</sup> Source: GDNR 2015

<sup>4</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

Birds

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	BCC Species <sup>4</sup>	MBTA Species	Rare <sup>5</sup>	When Found on Installation
Accipitridae	Kites, Eagles & Hawks	<i>Pandion haliaetus</i>	Osprey	Unknown						Year-Round
		<i>Elanoides forficatus</i>	Swallow-tailed Kite	Unknown	r	Yes	Yes	Yes	Yes	Migrant
		<i>Ictinia mississippiensis</i>	Mississippi Kite	Yes						Year-Round
		<i>Haliaeetus leucocephalus</i>	Bald Eagle	Yes	GBE,t	Yes	Yes	Yes	Yes	Year-Round
		<i>Circus cyaneus</i>	Northern Harrier	Yes						Winter
		<i>Accipiter striatus</i>	Sharp-shinned Hawk	Yes						Winter
		<i>Accipiter cooperii</i>	Cooper's Hawk	Unknown						Year-Round
		<i>Buteo lineatus</i>	Red-shouldered Hawk	Yes						Year-Round
		<i>Buteo platypterus</i>	Broad-winged Hawk	Yes						Summer
		<i>Buteo jamaicensis</i>	Red-tailed Hawk	Yes						Year-Round
		<i>Aquila chrysaetos</i>	Golden Eagle	Unknown	GBE				Yes	Migrant
Alaudidae	Larks	<i>Eremophila alpestris</i>	Horned Lark	Unknown						Winter
Alcedinidae	Kingfishers	<i>Ceryle alcyon</i>	Belted Kingfisher	Yes						Year-Round
Anatidae	Waterfowl	<i>Aix sponsa</i>	Wood Duck	Yes						Year-Round
		<i>Anas acuta</i>	Northern Pintail	Unknown						Winter
		<i>Anas americana</i>	American Wigeon	Unknown						Winter
		<i>Anas clypeata</i>	Northern Shoveler	Unknown						Winter
		<i>Anas crecca</i>	Green-winged Teal	Yes						Winter
		<i>Anas discors</i>	Blue-winged Teal	Yes						Winter
		<i>Anas platyrhynchos</i>	Mallard	Yes						Year-Round
		<i>Anas rubripes</i>	American Black Duck	Unknown						Winter
		<i>Anas strepera</i>	Gadwall	Unknown						Winter
		<i>Anser albifrons</i>	Greater White-fronted Goose	Unknown						Winter
		<i>Aythya affinis</i>	Lesser Scaup	Unknown						Winter
		<i>Aythya americana</i>	Redhead	Unknown						Winter
		<i>Aythya collaris</i>	Ring-necked Duck	Unknown						Winter
		<i>Aythya marila</i>	Greater Scaup	Unknown						Winter
		<i>Aythya valisineria</i>	Canvasback	Unknown						Winter
		<i>Branta canadensis</i>	Canada Goose	Yes						Year-Round
		<i>Bucephala albeola</i>	Bufflehead	Unknown						Winter
		<i>Bucephala clangula</i>	Common Goldeneye	Unknown						Winter
		<i>Chen caerulescens</i>	Snow Goose	Yes						Winter
		<i>Chen rossii</i>	Ross's Goose	Unknown						Winter
		<i>Dendrocygna autumnalis</i>	Black-bellied Whistling-Duck	Unknown						Winter
		<i>Dendrocygna bicolor</i>	Fulvous Whistling-Duck	Unknown						Winter
		<i>Lophodytes cucullatus</i>	Hooded Merganser	Yes						Winter
<i>Melanitta perspicillata</i>	Surf Scoter	Unknown						Migrant		
<i>Mergus serrator</i>	Red-breasted Merganser	Unknown						Winter		
<i>Oxyura jamaicensis</i>	Ruddy Duck	Unknown						Winter		
Anhingidae	Aningas	<i>Anhinga anhinga</i>	Anhinga	Yes						Year-Round
Apodidae	Swifts	<i>Chaetura pelagica</i>	Chimney Swift	Yes						Summer
Ardeidae	Bitterns, Herons & Egrets	<i>Botaurus lentiginosus</i>	American Bittern	Unknown			Yes		Yes	Winter
		<i>Ixobrychus exilis</i>	Least Bittern	Unknown		Yes	Yes			Summer

Birds

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	BCC Species <sup>4</sup>	MBTA Species	Rare <sup>5</sup>	When Found on Installation
Ardeidae	Bitterns, Herons & Egrets	<i>Ardea herodias</i>	Great Blue Heron	Yes						Year-Round
		<i>Ardea alba</i>	Great Egret	Yes						Year-round
		<i>Egretta thula</i>	Snowy Egret	Yes						Summer
		<i>Egretta caerulea</i>	Little Blue Heron	Yes		Yes			Yes	Summer
		<i>Egretta tricolor</i>	Tricolored Heron	Unknown		Yes				Migrant
		<i>Bubulcus ibis</i>	Cattle Egret	Unknown						Summer
		<i>Butorides virescens</i>	Green Heron	Yes						Summer
		<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	Unknown					Yes	Year-Round
		<i>Nyctanassa violacea</i>	Yellow-crowned Night Heron	Yes				Yes	Summer	
Bombycillidae	Waxwings	<i>Bombycilla cedrorum</i>	Cedar Waxwing	Yes						Winter
Caprimulgidae	Nightjars	<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	Yes			Yes			Summer
		<i>Caprimulgus vociferus</i>	Whip-poor-will	Unknown			Yes			Migrant
		<i>Chordeiles minor</i>	Common Nighthawk	Yes						Summer
Cardinalidae	Cardinals & Grosbeaks	<i>Cardinalis cardinalis</i>	Northern Cardinal	Yes						Year-Round
		<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	Yes						Migrant
		<i>Passerina caerulea</i>	Blue Grosbeak	Yes						Summer
		<i>Passerina cyanea</i>	Indigo Bunting	Yes						Summer
		<i>Passerina ciris</i>	Painted Bunting	Unknown		Yes	Yes		Yes	Summer
		<i>Spiza americana</i>	Dickcissel	Unknown						
Cathartidae	New World Vultures	<i>Coragyps atratus</i>	Black Vulture	Yes						Year-Round
		<i>Cathartes aura</i>	Turkey Vulture	Yes						Year-Round
Certhiidae	Creepers	<i>Certhia americana</i>	Brown Creeper	Yes						Winter
Charadriidae	Plovers	<i>Charadrius semipalmatus</i>	Semipalmated Plover	Unknown						Migrant
		<i>Charadrius vociferus</i>	Killdeer	Yes						Year-Round
		<i>Pluvialis dominica</i>	American Golden-Plover	Unknown						Migrant
		<i>Pluvialis squatarola</i>	Black-Bellied Plover	Unknown						Migrant
Ciconiidae	Storks	<i>Mycteria americana</i>	Wood Stork	Yes	T,e	Yes		Yes		Migrant
Columbidae	Pigeons & Doves	<i>Columba livia</i>	Rock Pigeon	Yes						Year-Round
		<i>Streptopelia decaocto</i>	Eurasian Collared-Dove	Yes						Year-Round
		<i>Zenaida asiatica</i>	White-winged Dove	Unknown						Migrant
		<i>Zenaida macroura</i>	Mourning Dove	Yes						Year-Round
		<i>Columbina passerina</i>	Common Ground-Dove	Yes			Yes	Yes		Year-Round
Corvidae	Jays & Crows	<i>Cyanocitta cristata</i>	Blue Jay	Yes						Year-Round
		<i>Corvus brachyrhynchos</i>	American Crow	Yes						Year-Round
		<i>Corvus ossifragus</i>	Fish Crow	Yes						Year-Round
Cuculidae	Cuckoos & Anis	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	Unknown					Yes	Migrant
		<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	Yes						Summer
Emberizidae	Sparrows	<i>Pipilo erythrophthalmus</i>	Eastern Towhee	Yes						Year-Round
		<i>Peucaea aestivalis</i>	Bachman's Sparrow	Yes	r	Yes	Yes		Yes	Year-Round
		<i>Spizella passerina</i>	Chipping Sparrow	Yes						Winter
		<i>Spizella pallida</i>	Clay-colored Sparrow	Unknown						Migrant
		<i>Spizella pusilla</i>	Field Sparrow	Yes						Year-Round

Birds

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Emberizidae	Sparrows	<i>Pooecetes gramineus</i>	Vesper Sparrow	Yes						Winter
		<i>Chondestes grammacus</i>	Lark Sparrow	Unknown						Migrant
		<i>Passerculus sandwichensis</i>	Savannah Sparrow	Yes						Winter
		<i>Ammodramus savannarum</i>	Grasshopper Sparrow	Yes		Yes				Winter
		<i>Ammodramus henslowii</i>	Henslow's Sparrow	Unknown	r	Yes	Yes		Yes	Winter
		<i>Ammodramus leconteii</i>	Le Conte's Sparrow	Unknown			Yes			Winter
		<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	Unknown		Yes	Yes		Yes	Migrant
		<i>Passerella iliaca</i>	Fox Sparrow	Yes						Winter
		<i>Melospiza melodia</i>	Song Sparrow	Yes						Winter
		<i>Melospiza lincolni</i>	Lincoln's Sparrow	Unknown						Migrant
		<i>Melospiza georgiana</i>	Swamp Sparrow	Yes						Winter
		<i>Zonotrichia albicollis</i>	White-throated Sparrow	Yes						Winter
		<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	Yes						Winter
<i>Junco hyemalis</i>	Dark-eyed Junco	Yes						Winter		
Falconidae	Falcons	<i>Falco sparverius sparverius</i>	American Kestrel	Yes				Yes		Winter
		<i>Falco sparverius paulus</i>	Southeastern Kestrel	Unknown	r	Yes	Yes		Yes	Year-Round
		<i>Falco columbarius</i>	Merlin	Unknown						Migrant
Fringillidae	Finches	<i>Haemorhous purpureus</i>	Purple Finch	Yes						Migrant
		<i>Haemorhous mexicanus</i>	House Finch	Yes						Year-Round
		<i>Spinus pinus</i>	Pine Siskin	Yes						Migrant
		<i>Spinus tristis</i>	American Goldfinch	Yes						Year-Round
		<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Unknown						Migrant
Gaviidae	Loons	<i>Gavia immer</i>	Common Loon	Unknown						Winter
Gruidae	Cranes	<i>Grus canadensis</i>	Sandhill Crane	Unknown						Migrant
		<i>Grus americana</i>	Whooping Crane	No		Yes			Yes	Migrant
Hirundinidae	Swallows	<i>Progne subis</i>	Purple Martin	Yes						Summer
		<i>Tachycineta bicolor</i>	Tree Swallow	Yes						Migrant
		<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	Yes						Summer
		<i>Riparia riparia</i>	Bank Swallow	Unknown						Migrant
		<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	Unknown						Migrant
		<i>Hirundo rustica</i>	Barn Swallow	Yes						Summer
Icteridae	Blackbirds & Orioles	<i>Dolichonyx oryzivorus</i>	Bobolink	Unknown						Migrant
		<i>Agelaius phoeniceus</i>	Red-winged Blackbird	Yes						Year-Round
		<i>Sturnella magna</i>	Eastern Meadowlark	Yes						Year-Round
		<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	Unknown						Migrant
		<i>Euphagus carolinus</i>	Rusty Blackbird	Yes		Yes	Yes	Yes		Winter
		<i>Euphagus cyanocephalus</i>	Brewer's Blackbird	Yes						Winter
		<i>Quiscalus quiscula</i>	Common Grackle	Yes						Year-Round
		<i>Molothrus ater</i>	Brown-headed Cowbird	Yes						Year-Round
		<i>Icterus spurius</i>	Orchard Oriole	Yes						Summer
<i>Icterus galbula</i>	Baltimore Oriole	Unknown						Migrant		
Laniidae	Shrikes	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Yes		Yes	Yes		Yes	Year-Round
Laridae	Gulls & Terns	<i>Leucophaeus atricilla</i>	Laughing Gull	Unknown						Migrant





Birds

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	BCC Species <sup>4</sup>	MBTA Species	Rare <sup>5</sup>	When Found on Installation
Parulidae	Wood-warblers	<i>Parkesia noveboracensis</i>	Northern Waterthrush	Unknown						Migrant
		<i>Parkesia motacilla</i>	Louisiana Waterthrush	Yes						Summer
		<i>Geothlypis formosus</i>	Kentucky Warbler	Yes			Yes	Yes		Summer
		<i>Oporornis agilis</i>	Connecticut Warbler	Unknown						Migrant
		<i>Geothlypis philadelphia</i>	Mourning Warbler	Unknown						Migrant
		<i>Geothlypis trichas</i>	Common Yellowthroat	Yes						Year-Round
		<i>Setophaga citrina</i>	Hooded Warbler	Yes						Summer
		<i>Cardellina pusilla</i>	Wilson's Warbler	Unknown						Migrant
		<i>Cardellina canadensis</i>	Canada Warbler	Unknown						Migrant
		<i>Icteria virens</i>	Yellow-breasted Chat	Yes					Summer	
Passeridae	Old World Sparrows	<i>Passer domesticus</i>	House Sparrow	Yes						Year-Round
Phalacrocoracidae	Cormorants	<i>Phalacrocorax auritus</i>	Double-crested Cormorant	Yes						Year-Round
Phasianidae	Grouse & Turkeys	<i>Meleagris gallopavo</i>	Wild Turkey	Yes						Year-Round
Picidae	Woodpeckers	<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	Yes			Yes	Yes		Year-Round
		<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	Yes						Year-Round
		<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker	Yes						Winter
		<i>Picoides pubescens</i>	Downy Woodpecker	Yes						Year-Round
		<i>Picoides villosus</i>	Hairy Woodpecker	Yes						Year-Round
		<i>Picoides borealis</i>	Red-cockaded Woodpecker	No	E,e	Yes			Yes	Year-Round
		<i>Colaptes auratus</i>	Northern Flicker	Yes						Year-Round
		<i>Dryocopus pileatus</i>	Pileated Woodpecker	Yes						Year-Round
Podicipedidae	Grebes	<i>Podiceps auritus</i>	Horned Grebe	Unknown						Winter
		<i>Podiceps nigricollis</i>	Eared Grebe	Unknown						Migrant
		<i>Podilymbus podiceps</i>	Pied-billed Grebe	Yes						Year-Round
Rallidae	Rails	<i>Laterallus jamaicensis</i>	Black Rail	Unknown		Yes	Yes		Yes	Migrant
		<i>Rallus elegans</i>	King Rail	Unknown		Yes			Yes	Year-Round
		<i>Rallus limicola</i>	Virginia Rail	Unknown						Winter
		<i>Porzana carolina</i>	Sora	Unknown						Winter
		<i>Porphyrio martinica</i>	Purple Gallinule	Unknown						Summer
		<i>Gallinula galeata</i>	Common Gallinule	Unknown						Year-Round
		<i>Fulica americana</i>	American Coot	Unknown						Winter
Recurvirostridae	Stilts & Avocets	<i>Himantopus mexicanus</i>	Black-necked Stilt	Unknown		Yes			Yes	Migrant
		<i>Recurvirostra americana</i>	American Avocet	Unknown						Migrant
Regulidae	Kinglets	<i>Regulus satrapa</i>	Golden-crowned Kinglet	Yes						Winter
		<i>Regulus calendula</i>	Ruby-crowned Kinglet	Yes						Winter
Scolopacidae	Sandpipers & Phalaropes	<i>Tringa melanoleuca</i>	Greater Yellowlegs	Unknown						Winter
		<i>Tringa flavipes</i>	Lesser Yellowlegs	Unknown				Yes		Migrant
		<i>Tringa solitaria</i>	Solitary Sandpiper	Yes			Yes			Migrant
		<i>Tringa semipalmatus</i>	Willet	Unknown						Migrant
		<i>Actitis macularius</i>	Spotted Sandpiper	Unknown						Migrant
		<i>Bartramia longicauda</i>	Upland Sandpiper	Unknown			Yes			Migrant
		<i>Arenaria interpres</i>	Ruddy Turnstone	Unknown						Migrant
<i>Calidris alba</i>	Sanderling	Unknown						Migrant		



Birds

Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1, 2</sup>	High Priority Species <sup>3</sup>	BCC Species <sup>4</sup>	MBTA Species	Rare <sup>5</sup>	When Found on Installation
Tyrannidae	Flycatchers	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Unknown						Migrant
		<i>Contopus virens</i>	Eastern Wood-Pewee	Yes						Summer
		<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher	Unknown						Migrant
		<i>Empidonax vireescens</i>	Acadian Flycatcher	Yes						Summer
		<i>Empidonax traillii</i>	Willow Flycatcher	Unknown					Yes	Migrant
		<i>Empidonax minimus</i>	Least Flycatcher	Yes					Yes	Migrant
		<i>Sayornis phoebe</i>	Eastern Phoebe	Yes						Winter
		<i>Pyrocephalus rubinus</i>	Vermilion Flycatcher	Unknown						Migrant
		<i>Myiarchus crinitus</i>	Great Crested Flycatcher	Yes						Summer
		<i>Tyrannus verticalis</i>	Western Kingbird	Unknown						Migrant
		<i>Tyrannus tyrannus</i>	Eastern Kingbird	Yes						Summer
<i>Tyrannus forficatus</i>	Scissor-tailed Kingbird	Unknown						Migrant		
Tytonidae	Barn Owls	<i>Tyto alba</i>	Barn Owl	Unknown		Yes			Yes	Year-Round
Vireonidae	Vireos	<i>Vireo griseus</i>	White-eyed Vireo	Yes						Year-Round
		<i>Vireo flavifrons</i>	Yellow-throated Vireo	Yes						Migrant
		<i>Vireo solitarius</i>	Blue-headed Vireo	Yes						Winter
		<i>Vireo gilvus</i>	Warbling Vireo	Unknown						Migrant
		<i>Vireo philadelphicus</i>	Philadelphia Vireo	Unknown						Migrant
		<i>Vireo olivaceus</i>	Red-eyed Vireo	Yes						Summer

<sup>1</sup> Protection Status by U.S.A or Georgia

E = Federally Endangered Species; e = State Endangered Species

T = Federally Threatened Species; t = State Threatened Species

r = State Rare Species

GBE = Protected under Bald and Golden Eagle Act

<sup>2</sup> Source: GDNR 2020a; USFWS 2020.

<sup>3</sup> Source: GDNR 2015

<sup>4</sup> Source: USFWS 2008.

<sup>5</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

## Mammals

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>
Artiodactyla	Cervidae	Deer	<i>Odocoileus virginianus</i>	White-tailed Deer	Yes			
	Suidae	Old World Swine	<i>Sus scrofa</i>	Wild Boar	Yes			
Carnivora	Canidae	Wolves, Foxes & Coyotes	<i>Canis latrans</i>	Coyote	Yes			
			<i>Urocyon cinereoargenteus</i>	Gray Fox	Yes			
			<i>Vulpes vulpes</i>	Red Fox	Yes			
	Felidae	Cats	<i>Lynx rufus</i>	Bobcat	Yes			
	Mustelidae	Weasels, Skunks, Badgers & Otters	<i>Lontra canadensis</i>	River Otter	Unknown			
			<i>Mephitis mephitis</i>	Striped Skunk	Yes			
			<i>Mustela frenata</i>	Long-tailed Weasel	Unknown			
			<i>Mustela vison</i>	Mink	Unknown			
Procyonidae	Raccoons, Ringtails & Coatis	<i>Spilogale putorius</i>	Spotted Skunk	Unknown		Yes	Yes	
		<i>Procyon lotor</i>	Raccoon	Yes				
Chiroptera	Molossidae	Free-tailed Bats	<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat	Unknown			
	Vespertilionidae	Evening Bats	<i>Eptesicus fuscus</i>	Big Brown Bat	Unknown			
			<i>Lasiurus borealis</i>	Red Bat	Unknown			
			<i>Lasiurus cinereus</i>	Hoary Bat	Unknown			
			<i>Lasiurus intermedius</i>	Northern Yellow Bat	Unknown		Yes	Yes
			<i>Lasiurus seminolus</i>	Seminole Bat	Unknown			
			<i>Myotis austroriparius</i>	Southeastern Myotis	Unknown		Yes	Yes
			<i>Myotis lucifugus</i>	Little Brown Myotis	Unknown	UR	Yes	Yes
			<i>Nycticeius humeralis</i>	Evening Bat	Unknown			
<i>Pipistrellus subflavus</i>	Eastern Pipistrelle	Unknown						
<i>Plecotus rafinesquii</i>	Rafinesque's Big-eared Bat	Unknown						
Lagomorpha	Leporidae	Rabbits and Hares	<i>Sylvilagus aquaticus</i>	Swamp Rabbit	Unknown			
			<i>Sylvilagus floridanus</i>	Eastern Cottontail	Unknown			
			<i>Sylvilagus palustris</i>	Marsh Rabbit	Unknown			
Marsupialia	Didelphidae	Opossums	<i>Didelphis virginiana</i>	Virginia Opossum	Yes			
Rodentia	Castoridae	Beavers	<i>Castor canadensis</i>	Beaver	Yes			
	Cricetidae	New World Rats & Mice	<i>Microtus pinetorum</i>	Woodland Vole	Unknown			
			<i>Neotoma floridana</i>	Eastern Woodrat	Unknown			Yes
			<i>Ochrotomys nuttalli</i>	Golden Mouse	Unknown			
			<i>Ondatra zibethicus</i>	Muskrat	Unknown			
			<i>Oryzomys palustris</i>	Marsh Rice Rat	Unknown			
			<i>Peromyscus gossypinus</i>	Cotton Mouse	Unknown			
			<i>Peromyscus polionotus</i>	Oldfield Mouse	Unknown			
			<i>Reithrodontomys humulis</i>	Eastern Harvest Mouse	Unknown			
	<i>Sigmodon hispidus</i>	Hispid Cotton Rat	Unknown					
	Geomyidae	Pocket Gophers	<i>Geomys pinetis</i>	Southeastern Pocket Gopher	Unknown	t	Yes	Yes
	Muridae	Old World Rats & Mice	<i>Mus musculus</i>	House Mouse	Yes			
			<i>Rattus norvegicus</i>	Norway Rat	Yes			
			<i>Rattus rattus</i>	Black Rat	Unknown			
	Sciuridae	Squirrels	<i>Glaucomys volans</i>	Southern Flying Squirrel	Yes			
<i>Sciurus carolinensis</i>			Gray Squirrel	Yes				
<i>Sciurus niger</i>			Fox Squirrel	Yes				
<i>Tamias striatus</i>			Eastern Chipmunk	Unknown				
Insectivora	Soricidae	Shrews	<i>Blarina carolinensis</i>	Southern Short-tailed Shrew	Yes			

Mammals

Order	Family	Common Family Name	Species	Common Name	Confirmed on MCLB	Legal Status <sup>1,2</sup>	High Priority Species <sup>3</sup>	Rare <sup>4</sup>
Insectivora	Soricidae	Shrews	<i>Cryptotis parva</i>	Least Shrew	Unknown			
			<i>Sorex longirostris</i>	Southeastern Shrew	Unknown			
	Talpidae	Moles	<i>Scalopus aquaticus</i>	Eastern Mole	Unknown			
Xenarthra	Dasypodidae	Armadillos	<i>Dasyopus novemcinctus</i>	Nine-banded Armadillo	Yes			

<sup>1</sup> Protection Status by U.S.A or Georgia

E = Federally Endangered Species; e = State Endangered Species

T = Federally Threatened Species; t = State Threatened Species

r = State Rare Species

C = Candidate for Federal Listing

UR = Under Review for Federal Listing

<sup>2</sup> Source: GDNR 2020a; USFWS 2020.

<sup>3</sup> Source: GDNR 2015

<sup>4</sup> Designated rare by Georgia Department of Natural Resources. Source: GDNR 2020a

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## **APPENDIX D**

### **Fact Sheets for Rare, Threatened, and Endangered Species Confirmed to Occur at Marine Corps Logistics Base Albany**

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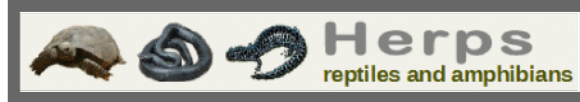


Photo by Jim Flynn. Image may be subject to copyright.

## *Gopherus polyphemus* (Daudin, 1802)

Gopher Tortoise

**Federal Protection:** Candidate

**State Protection:** Threatened

**Global Rank:** G3

**State Rank:** S3

**SWAP High Priority Species (SGCN):** Yes

**Element Occurrences (EOs) in Georgia:** 311

**Habitat Summary for element in Georgia:** Sandhills; dry hammocks; longleaf pine-turkey oak woods; old fields

### Description

The official state reptile of Georgia, the gopher tortoise is a relatively large terrestrial turtle, obtaining a maximum carapace length of 38 cm (15 inches), though averaging 23-28 cm (9-11 inches). Its oblong carapace is unkeeled and domed, somewhat flattened, and brown or gray in color. Distinctive growth annuli are evident in juveniles and young adults, usually becoming obscured later in life. The yellowish plastron is hingeless and has conspicuous elongated gular scutes (especially long on males). With the exception of the yellowish limb sockets, the scaly skin of adults is typically dark gray. Perhaps the most characteristic features of gopher tortoises are the elephantine hind limbs and the flattened, shovel-like forelimbs. The head is wide and rounded, with a pair of seasonally swollen mental glands on the chin. Hatchlings have yellowish skin as well as yellow-centered scutes, both of which gradually darken with age. Males have slightly concave plastrons.

### Similar Species

No native species should be confused with the gopher tortoise

### Habitat

Along with sandy soil for burrowing, sunlight availability and abundant herbaceous vegetation are the key habitat requirements for this reptile. Gopher tortoises are a characteristic species of the rapidly disappearing longleaf pine and wiregrass community, which includes sandhills, dry flatwoods, and turkey oak scrub. Historically, this community was represented by an open-canopied forest that allowed abundant sunlight penetration and conditions favorable for a rich growth of herbaceous vegetation. Unfortunately, very little of this naturally occurring habitat still exists; therefore, many tortoises have been forced into artificial habitats, such as roadsides and old fields, that retain the three key requirements.

### Diet

A wide variety of succulent grasses and forbs; fruits, such as those of legumes, are eaten in season. Carrion is occasionally taken.

### Life History

Gopher tortoises dig unbranched burrows up to, and sometimes greater than, 10 m (33 feet) long. The burrows are excavated wide enough to allow room for the tortoise to turn around at any point and may have an enlarged terminal chamber. A single tortoise may dig more than one burrow each season, and occupancy of a burrow by more than one tortoise may occur, at least temporarily. These characteristics make population estimates based on burrow counts obviously difficult. Burrows provide winter hibernacula, retreats from the summer heat, and shelter from fire for not only the tortoise, but also for hundreds of invertebrate and vertebrate animal species. Tortoises also benefit plant life by returning leached nutrients to the surface, creating bare, competition-free areas of soil; and by dispersing seeds through fruit consumption and subsequent defecation elsewhere. For these reasons, the gopher tortoise has been termed a "keystone species" of the longleaf pine community, meaning its existence is critical to the existence of many other species. Courtship and mating occur from April through early June. Nesting reaches a peak in early June but may last until mid-July. Females, which may not attain sexual maturity until 19-20 years of age, produce only once clutch each year and usually construct nests in the burrow mounds. An average of six white, nearly spherical eggs are deposited, and hatching follows an incubation period of 97-106 days. Nests and hatchlings are preyed upon by a variety of mammals and snakes, though raccoons are apparently the chief predators at most sites.

### Survey Recommendations

Gopher tortoises are best located by conducting pedestrian searches for their distinctive burrows. Burrow openings are half-moon shaped and an apron of excavated sand fans out in front of the opening. Active burrows (those most likely to have a resident tortoise) have aprons mostly devoid of plants and debris, do not have spider webs within, may show tracks or slides from the tortoise, and may have scat in and around them.

### Range

Gopher tortoises occur in the Coastal Plain from southern South Carolina south and westward to extreme eastern Louisiana. Extant or historical localities in Georgia are known throughout the southern half of the state below the Fall Line. They are absent from the Okefenokee Swamp and most barrier islands. Tortoises observed or collected from St. Simons Island, and possibly Cumberland Island, were likely of an introduced origin rather than naturally occurring. In 1994, a large number of tortoises was salvaged from an industrial park development site in Bulloch County and relocated to St. Catherine's Island, where successful reproduction has occurred. Tortoises observed or collected from the Piedmont and mountains of Georgia are undoubtedly released or escaped animals.

### Threats

The loss and alteration of the longleaf pine-wiregrass community through agricultural and silvicultural activities, urban sprawl, and fire suppression has eliminated many populations and isolated most others. It has been estimated that the average female gopher tortoise in Georgia has an effective rate of reproduction of about 5.8 hatchlings per 10 years, assuming annual egg laying. This naturally low fecundity is only worsened by isolation, unnaturally high populations of certain predators, suboptimal habitat conditions, and other factors. Tortoises forced into roadside habitats due to a lack of suitable surrounding land are obviously more vulnerable to vehicle impacts and collection by humans. In the past, tortoise populations in many areas were heavily decimated by human exploitation for food, a practice now illegal but which may continue in some areas. The introduction of gasoline into the burrows of gopher tortoises ("gassing") is a technique used by

some rattlesnake hunters to force the snakes to the surface. This illegal practice is typically fatal to all burrow inhabitants.

### Georgia Conservation Status

Gopher tortoise populations are found on many public lands in the Coastal Plain. Those with large populations include Ft. Stewart Military Reservation, Ft. Benning Military Reservation, General Coffee State Park, Seminole State Park, George L. Smith State Park, Reed Bingham State Park, Alapaha River WMA, Alligator Creek WMA, Ochoopee Dunes WMA, and Doerun Pitcherplant Bog WMA. Other large protected populations are found on several The Nature Conservancy preserves, as well as at [Joseph W. Jones Ecological Research Center at Ichauway] ([http://www.jonesctr.org/conservation/monitoring\\_mapping/rcw\\_restoration\\_study\\_area.html](http://www.jonesctr.org/conservation/monitoring_mapping/rcw_restoration_study_area.html)).

### Conservation Management Recommendations

A priority should be placed upon the protection of remaining natural longleaf pine forests, which will not only benefit the gopher tortoise but a large suite of rare animals and plants as well. The use of periodic controlled burns should be practiced to reduce hardwood vegetation and promote grasses and forbs. Subsidized predators may need to be controlled in areas of high human activity, such as state parks.

### References

- Auffenberg, W., and R. Franz. 1982. The status and distribution of the gopher tortoise (*Gopherus polyphemus*). Pages 95-126 in Bury, R. B., ed. North American tortoises: conservation and ecology. U.S. Fish and Wildlife Service, Wildlife Resources Report 12.
- Birkhead, R., and T. D. Tuberville. 2008. Gopher tortoise *Gopherus polyphemus*. Pp. 514-516 in Jensen, J. B., C. D. Camp, J. W. Gibbons, and M. J. Elliott (eds.). Amphibians and Reptiles of Georgia. University of Georgia Press, Athens. 575 pp.
- Birkhead, R. D., C. Guyer, S. M. Hermann, W. K. Michener. 2005. Species composition and seasonal abundance of seeds ingested by gopher tortoises (*Gopherus polyphemus*) in a southeastern pine savanna. American Midland Naturalist 154:143-151.
- Boglioli, M. D., W. K. Michener, and C. Guyer. 2000. Habitat selection and modification by the gopher tortoise, *Gopherus polyphemus*, in Georgia longleaf pine forest. Chelonian Conservation and Biology 3: 699-705.
- Diemer, J. E. 1986. The ecology and management of the gopher tortoise in the southeastern United States. Herpetologica 42: 125-133.
- Diemer, J. E.. 1992. Gopher tortoise. Pages 123-127 in Moler, P. E., ed. Rare and endangered biota of Florida. Vol. 3. Amphibians and Reptiles. University Press of Florida, Gainesville. 291pp.
- Eubanks, J. O., W. K. Michener, and C. Guyer. 2003. Patterns of movement and burrow use in a population of gopher tortoises (*Gopherus polyphemus*). Herpetologica 59: 311-321.
- Landers, J. L., J. A. Garner, and W. A. McRae. 1980. Reproduction of gopher tortoises (*Gopherus polyphemus*) in southwestern Georgia. Herpetologica 36: 351-361
- Speake, D. W. 1986. Gopher tortoise. Pages 41-42 in Mount, R. H., ed. Vertebrate animals of Alabama in need of special attention. Alabama Agricultural Experiment Station, Auburn University, Auburn. 124 pp.
- Tuberville, T. D., E. E. Clark, K. A. Buhlmann, and J. W. Gibbons. 2005. Translocation as a conservation tool: site fidelity and movements of repatriated gopher tortoises (*Gopherus polyphemus*). Animal Conservation 8: 349-358.
- Vitt, L. J. 1981. A survey of the status, distribution and abundance of potentially threatened and endangered vertebrate species in Georgia, Part II: reptiles and amphibians. Unpublished Report to Georgia Department of Natural Resources. 210 pp.

### Authors of Account

John B. Jensen

### Date Compiled or Updated

J. Jensen, Dec. 2007: original account

K. Owers, Sept. 2009: updated status and ranks, added pictures

G. Krakow, July 2011: update federal status

J. Jensen, Apr. 2018: updated text



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Georgia DNR – Wildlife Resources





Photo by Tim Keyes. (Georgia DNR – Wildlife Resources).

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## *Peucaea aestivalis* (Lichtenstein, 1823)

Bachman's Sparrow

**Federal Protection:** No US federal protection

**State Protection:** Rare

**Global Rank:** G3

**State Rank:** S2

**SWAP High Priority Species (SGCN):** Yes

**Element Occurrences (EOs) in Georgia:** 339

**Habitat Summary for element in Georgia:** Open pine or oak woods; old fields; brushy areas, young large grassy pine regeneration areas

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## Description

The Bachman's sparrow is 12.5-15.2 cm (4.9-6.0 in) in length and weighs 18-22 grams (0.65-0.8 oz).

Adult birds have a gray face with a reddish-brown cap on the top of the head and a thin reddish-brown stripe that runs from the back of the eye to the nape. The cheek, throat, and upper breast are buff to grayish. The lower breast and abdomen are lighter buff to whitish. Alternating reddish-brown and gray vertical stripes run down the nape of the neck and back to the top of the rump.

Wing feathers and the feathers of its long, rounded tail are reddish-brown. Legs are yellow to brownish-gray in color and the bill is grayish to dull grayish-brown.

## Similar Species

The Bachman's Sparrow could be confused with the rufous form of the field sparrow (*Spizella pusilla*) and the immature swamp sparrow (*Melospiza georgiana*). The field sparrow differs by having a very distinct white eye-ring, pink bill, white wing bars, gray nape, and reddish-brown back with thin black stripes rather than reddish-brown and gray stripes. Immature swamp sparrows have a dark brown cap, gray face and nape, thin dark stripe behind the eye that does not extend to the nape, and a whitish chin with a thin black malar (mustache) stripe. The back is reddish-brown with wide, dark striping that does not extend up the neck. Wing and tail feathers are a dark rufous color. Field sparrows often use some of the same microhabitats as Bachman's sparrows while most often swamp sparrows inhabit damp or wet brushy areas in fields and open woods.

## Habitat

Mature open pinewoods, regenerating clear-cuts (both pine and hardwood), utility rights-of-way, and old pastures with a dense ground cover of grasses (particularly wiregrass, bluestem, or broomsedge) and forbs, or palmetto scrub. This sparrow is often associated with open, mature pine forests where red-cockaded woodpeckers are found, since this habitat often provides the thick grassy ground cover this sparrow prefers. However, it will be lost from these sites well before the red-cockaded woodpecker if burning is not frequent enough since it does not tolerate encroachment by hardwood trees and shrubs.

## Diet

Invertebrates, including beetles and weevils, grasshoppers, Lepidoptera, crickets, millipedes, snails, and spiders; seeds of grasses (especially *Panicum*), sedges, and some forbs gleaned from the ground surface.

## Life History

The Bachman's sparrow is secretive and shy most of the year and due to its habit of stealthily running on the ground through dense cover it is difficult to see. Territorial singing by males may start as early as February in the Coastal Plain and often continues through the summer. Singing activity declines as nesting progresses, though later increases as subsequent nesting attempts are made. Males will sing from the ground, low shrubs, and the lower branches of pine trees. Their distinctive song is a series of whistles and trills. Nesting usually starts in April and can last through August. The female lays 3 or 4 eggs (range 2-5) in a nest she constructs at the base of a grass clump, small shrub, or pine seedling. The nest, made of grasses, forbs, and rootlets, is usually domed. Eggs take 12-14 days to hatch and fledging occurs 9-10 days later. The female does all of the incubating and brooding, but both parents feed the young, which disperse from the natal area three weeks to a month after fledging. This species will usually have two, and possibly three, broods per year.

## Survey Recommendations

The most effective survey method for this species during the breeding season is the use of point counts, particularly the aural component which includes listening for singing males as they advertise their territories. These counts can be conducted along transects, such as roads, to increase efficiency and maximize the number of points covered. Territorial singing is most consistent during the first three hours after sunrise on sunny days from March through June.

Another method, call playback, can be effective during the breeding season and throughout the year in good habitat where this sparrow may remain territorial year-round. From 2006-2008 Wildlife Conservation Section staff conducted baseline surveys for Bachman's sparrows at several sites on state conservation lands slated for habitat restoration. These lands included Dawson Forest, Tuckahoe, Yuchi, Di-Lane, Clarks Hill, Ocmulgee, Rum Creek, Sandhills, Chickasawatchee, Doerun Pitcherplant Bog, and Silver Lake WMAs. Baseline surveys provided data used to gauge changes in habitat suitability after restoration. Follow up surveys were conducted at many of these

sites in 2018-2019 to help determine whether these restoration efforts were effective in increasing Bachman's sparrow numbers. Additional surveys will be run at many of these sites, as well as other sites, in coming years.

## Range

Found throughout much of the southeastern United States, this species was once much more common and widely distributed within this region. In the late 1800s and early 1900s, populations expanded northward, probably in response to creation of suitable habitat conditions as forests were cleared and farms abandoned, and it could be found as far north as southwestern Pennsylvania, southern Ohio, Indiana, and Illinois. In Georgia this bird is primarily found in the Coastal Plain with scattered sites across the southern Piedmont and occasional reports from the northern Piedmont and mountains.

## Threats

The Bachman's sparrow has become increasingly rare with changes in agriculture and forestry.

Much of this decline is probably due to conversion of grassy fields to row crops or intensively grazed pastures, fire suppression in forested habitats, and dense stocking of pine seedlings when replanting. Continued expansion of these practices to areas of suitable habitat will lead to further reduction of Bachman's sparrow populations.

## Georgia Conservation Status

Major concentrations occur at quail plantations in the southwest corner of the state, particularly the Red Hills region, at Joseph Jones Ecological Research Center, Ft. Benning, Ft. Stewart, Okefenokee and Piedmont National Wildlife Refuges, and Oconee National Forest. Additional populations are found at Dawson Forest, Yuchi, Di-Lane, Clarks Hill, Moody Forest, Sprewell Bluff, Rum Creek, Chickasawhatchee, Mayhaw, River Creek, Sandhills, Doerun Pitcherplant Bog, and Silver Lake WMAs.

## Conservation Management Recommendations

Breeding Bird Survey (BBS) data indicate declining population trends of 1.9% and 3.4% per year from 1966-2015 in Georgia and survey-wide, respectively. While some caution needs to be exercised when interpreting these results due to the low numbers of birds detected along most routes, other surveys and anecdotal evidence also suggest significant population declines in recent decades. The Partners in Flight conservation initiative has designated this bird an extremely high priority species warranting conservation attention further supporting the need for conservation action.

Bachman's sparrows are most often found in older pine stands (60-plus years) with widely spaced trees; however, maintaining lower basal areas within younger stands can provide suitable conditions for grass and forb growth, and consequently for this sparrow. Regular burning is needed in pine woods habitats, and often in fields, to control shrub and sapling growth that would inhibit herbaceous ground cover. A burning cycle of 2-3 years in pine woods habitat will usually give the best results. Managers on private timberlands can provide suitable habitat by thinning and burning middle-aged pine plantations. Clear-cuts that are not too densely restocked can also provide suitable habitat for several years after planting. Research conducted in replanted loblolly pine (*Pinus taeda*) plantations in the Piedmont suggests that Bachman's sparrows only use larger (>35 ha) stands that are very young (<3 years old) in this forest type. Due to the rapid growth of these pines the canopy quickly closes leaving a very limited temporal window where the habitat is suitable for this species. In comparison, regenerating longleaf pine habitat usually remains suitable for several years and Bachman's sparrows are able to use much smaller stands. This difference seems to be a function of tree structure, as young longleaf pines shoot up in a "rocket phase" where there is very little lateral growth, allowing for a much longer window before canopy closure and a denser ground cover of grasses and forbs. Additionally, young longleaf pines can be burned much sooner after establishment than loblolly or slash pine (*Pinus elliottii*).

## References

Brennan, L. A., J. L. Cooper, K. E. Lucas, B. D. Leopold, and G. A. Hurst. 1995. Assessing the influence of Red-cockaded Woodpecker colony site management on non-target forest vertebrates in loblolly pine forests of Mississippi: Study design and preliminary results. Pp. 309-319 in D. L. Kulhavy, R. G. Hooper, and R. Costa, eds., Red-cockaded Woodpecker: Recovery, Ecology, and Management. Center for Applied Studies in Forestry, College of Forestry, Stephen F. Austin State University, Nacogdoches, TX.

- Burleigh, T. D. 1958. Georgia Birds. University of Oklahoma Press, Norman. 746pp.
- Dunning, J. B., and B. D. Watts. 1990. Regional differences in habitat occupancy by Bachman's sparrow. *Auk* 107: 463-472.
- Dunning, J. B., Jr. P. Pyle, and M. A. Patten. 2018. Bachman's Sparrow (*Peucaea aestivalis*), version 3.1. *In* The Birds of North America (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.
- Gobris, N. M. 1992. Habitat occupancy during the breeding season by Bachman's sparrow at Piedmont National Wildlife Refuge in Central Georgia. M.S. Thesis, University Georgia, Athens. 45pp.
- Gobris, N. M. 2010. Bachman's Sparrow (*Aimophila aestivalis*). Pp. 374–375 *in* T. M. Schneider, G. Beaton, T. S. Keyes, and N. A. Klaus, eds. The Breeding Bird Atlas of Georgia. University of Georgia Press, Athens.
- Hunter, W. C. 1990. Handbook for Nongame Bird Management in the Southeast Region. U.S. Fish and Wildlife Service, Atlanta, GA. 178pp.
- Partners in Flight. 2016. Partners in Flight watch list. <http://partnersinflight.org/resources/pif-watch-list-table-2016/>
- Plentovich, S., J. Tucker, N. R. Holler, and G. Hill. 1998. Enhancing Bachman's Sparrow habitat via management of Red-cockaded Woodpeckers. *Journal of Wildlife Management* 62:347-354.
- Sauer, J. R., D. K. Niven, J. E. Hines, D. J. Ziolkowski, Jr, K. L. Pardieck, J. E. Fallon, and W. A. Link. 2017. The North American Breeding Bird Survey, Results and Analysis 1966-2015. Version 2.07.2017 USGS Patuxent Wildlife Research Center, Laurel, MD.
- Schneider, T. M. 1999. Bachman's Sparrow (*Aimophila aestivalis*). Pp. 32–33 *in* T. W. Johnson, J. C. Ozier, J. L. Bohannon, J. B. Jensen, and C. Skelton, eds., Protected Animals of Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Wildlife–Natural Heritage Section, Social Circle.
- Tucker, J. W. Jr., G. E. Hill, and N. R. Holler. 1998. Managing mid-rotation pine plantations to enhance Bachman's Sparrow habitat. *Wildlife Society Bulletin* 26:342–348.

### Authors of Account

Todd M. Schneider and Timothy S. Keyes

### Date Compiled or Updated

T. Schneider, 1999: original account

T. Schneider and T. Keyes, July 2010: modified and edited text

K. Owers, July 2010: updated status and ranks, added picture

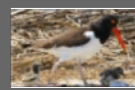
T. Schneider, April 2019: added photos

T. Schneider, 21 Decemembr, 2019: modified and edited text



Photo by Tim Keyes. (Georgia DNR – Wildlife Resources).





\*profile under revision



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## *Haliaeetus leucocephalus* (Linnaeus, 1766)

Bald Eagle

**Federal Protection:** No US federal protection

**State Protection:** Threatened

**Global Rank:** G5

**State Rank:** S3

**SWAP High Priority Species (SGCN):** Yes

**Element Occurrences (EOs) in Georgia:** 267

**Habitat Summary for element in Georgia:** Edges of lakes and large rivers; seacoasts

### Description

Adult bald eagles are easily recognized by their familiar dark brown body and contrasting white head and tail. The bill, eyes, legs, and feet are yellow. Immature birds vary slightly in appearance depending on their age. They are generally dark brown with varying light patches, and the eyes and bill are dark. Full adult plumage is not attained until sexual maturity at about 5 years of age. The total length ranges from 76 to 109 cm (30-43 in), the wingspread from 182 to 249 cm (72-98 in), and the weight from 3.6 to 5.4 kg (8-12 lbs). Females are noticeably larger than males, and the average size of both sexes increases with latitude such that birds nesting in the northern states and Canada are significantly larger than birds nesting in southern states. Although there appears to be a continuous size gradient and no real genetic differences nor distinct breeding ranges, southern



eagles are considered to be of the subspecies *H. l. leucocephalus* and northern eagles of the subspecies *H. l. alascensis*.

## Similar Species

Golden eagles (*Aquila chrysaetos*) can look similar to juvenile and sub-adult bald eagles. Juvenile golden eagles have distinct white patches on the upper and lower wings near the tips and the base of the tail is white on both the upper and lower side with a distinct broad, dark band on the trailing edge. Juvenile and sub-adult bald eagles have varying amounts of white on the undersides of their wings, but it is more mottled in appearance and usually concentrated closer to the body. Sub-adult bald eagles often have white mottling on the breast and often on the back and upper wings near the body as well. The tails of both juvenile and sub-adult bald eagles also have varying amounts of white on the underside and often some white on the upper surface. Usually there is a narrow band of dark brown on the trailing edge of the tail, but this band is much narrower and less distinct than that of the golden eagle. Golden eagles of all ages will have a golden-brown head whereas juvenile and sub-adult bald eagles will have a dark brown head often with various amounts of white mottling.

## Habitat

Juvenile bald eagles and non-nesting adults can be seen throughout Georgia, but known nesting activity is concentrated mostly along the coast and near major rivers, wetlands, and reservoirs in the southern and central parts of the state. Like other members of the "fish eagle" group, bald eagles almost always nest near open water. The coastal area, including the barrier islands, marsh islands, and nearby mainland, has always provided good eagle nesting habitat historically and still supports the greatest population density. However, construction of reservoirs such as Seminole, Walter F. George, Oconee, Allatoona, Carters, Clarks Hill, Nottley and West Point, has increased suitable inland nesting habitat. Bald eagles prefer isolated sites for nesting but are adapting to the presence of human disturbance in some areas. The nest is usually in a large, open-topped pine near open water, often on high ground if available. Occasionally cypress trees are used.

## Diet

Fish; waterfowl, particularly coots during the eagle nesting season, and other birds; turtles; small mammals; and carrion.

## Life History

Eagles form permanent pair bonds, but individuals will find another mate if the original is lost. They construct large stick nests in tall trees near water; used year after year, the nest can become quite large over time. Periodically, an eagle pair might construct and move into a new nest near the original one. In Georgia, courtship and nest-building typically occur in October and November. Two to three eggs are then laid in December or January and incubated for about 35 days. Both parents participate in incubation and caring for the 1-2 (rarely 3) young. The eaglets fledge at about 12 weeks, typically in late March or April, but they remain under parental care for several more weeks. Nesting chronology throughout the state varies by several weeks and seems to be dependent primarily upon the habits of individual pairs and secondarily upon latitude. Bald eagles do not reach maturity until their fifth year, when they attain their adult plumage characterized by the white head and tail. Sub-adult birds sometimes pair with adults but usually do not nest successfully. Many juvenile eagles from the southeastern U. S. migrate northward during their first summer and return before winter. A smaller proportion of older age-class juveniles head north each season. Adults from Georgia are essentially non-migratory, but they might wander away from the nesting area until the next nesting season.

## Survey Recommendations

Helicopter surveys of known nesting sites should be conducted in January to determine territory occupancy and second flights in March to determine nest productivity. Additionally, searches for new nest sites should be made in areas reported to have significant bald eagle activity during the breeding season and in other likely areas.

## Range

Bald eagles are found throughout most of the U. S. and Canada and very northern Mexico. Nesting occurs at scattered sites throughout their range with only a few nests documented in Mexico. Until the last few decades, nesting eagles in Georgia were reported primarily from the coastal area with only one non-coastal nest reported (in the Okefenokee Swamp in 1936). In recent decades their

breeding range has spread throughout the state with about one-third of all nests still located in the six coastal counties, but significant numbers scattered across the Coastal Plain and Piedmont. A few nests now occur in the mountains. Inland impoundments have greatly increased the amount of suitable habitat in the state and nesting occurs on almost all major reservoirs. Additionally, eagle nests are now found on several smaller reservoirs, along some stretches of major rivers, on natural ponds in the extreme south-central part of the state, and near some Coastal Plain aquaculture facilities.

## Threats

Bald eagle populations in the U.S. had apparently begun to decline more than a century ago, probably due to predator control efforts and habitat alteration. During the 1960s, most of the problems suffered by bald eagle populations, as well as several other species, were traced to the impacts of DDT (dichloro diphenyl trichloroethane), a pesticide that was widely used on agricultural and forest lands beginning in 1947. The chemical entered the eagles' food chain and killed some birds directly. Usually, however, it accumulated in the bodies of prey animals, and then in the eagles themselves where it impaired reproduction. Use of DDT was outlawed in the U. S. in 1972, but it is still manufactured here and used elsewhere. Other persistent toxic chemicals such as PCBs, mercury, and other pesticides and herbicides, continue to pose potential threats to eagles and other wildlife. This species is still susceptible to poisoned baits used for predator control and euthanized carcasses containing pentobarbital, and some eagles are still being injured or killed by gunshot. Nesting habitat is also being lost. A recent concern in Georgia and some other southeastern states is the appearance of a mysterious and often fatal neurological disease called avian vacuolar myelinopathy (AVM) that appears to be linked to toxic algae growing on submerged plants. Apparently, eagles are affected when they consume diseased American coots that have incidentally ingested the algae while feeding on plants.

## Georgia Conservation Status

Ossabaw, St. Catherines, Sapelo, Little Tybee, Wassaw, Cumberland, Blackbeard, Little St. Simons, other islands and isolated marsh hammocks; Army Corps of Engineers land at Seminole, Allatoona, Strom Thurmond, West Point, Carters, and Walter F. George lakes; Oconee National Forest, Ft. Stewart, Ft. Benning, Grassy Pond (Air Force), Reed Bingham State Park, Dodge County and Big Lazar Public Fishing Areas; Georgia Power Plant Wansley; Blanton Creek WMA; Bond Swamp NWR; and Silver Lake WMA .

## Conservation Management Recommendations

In Georgia, bald eagles were apparently fairly common along the coast up until the middle of the 20th century. However, by the 1950s population declines had been detected. The decline continued until the last known successful nest was noted on St. Catherines Island in 1970. It was not until 1981, on Ossabaw Island, that an eagle pair again produced young in the state. A hacking program from 1979-1995 released young bald eagles on Sapelo and Butler Islands on the coast and at Lake Allatoona north of Atlanta to help reestablish the population. By the time this hacking program was discontinued a total of 89 birds had been released. It is unknown how successful these efforts were due to the difficulty in tracking released birds, but at least one of these birds nested in South Carolina. Others might have nested in Georgia or elsewhere. The nesting population has likely grown and expanded primarily as a result of the ban on DDT as well as other conservation and management efforts. By 1994 the Georgia nesting population surpassed the initial recovery goal of 20 occupied territories. In 1995 the eagle was federally down-listed to threatened, and after continuing to experience widespread population recovery was delisted in August of 2007. By 2010 there were 135 known occupied nesting territories in Georgia. Presently, all known eagle nests are monitored each year to determine occupancy, productivity, and management needs. New nests are found through reports from the public and through surveys of likely habitat. As both the human and eagle populations continue to increase, these two species will more frequently come into contact with each other. Continuing public education is necessary to ensure that attitudes and policy will be conducive to eagle survival. Resolution of management conflicts arising from eagle nests on private land will continue to be a high priority. The objective will be to protect the integrity of the nest site such that the pair will continue to produce young, while at the same time recommending as few management restrictions as is necessary to the landowner.

## References

Bent, A. C. 1937. Life histories of North American birds of prey, Part 1. U. S. National Museum Bulletin 167.

Green, N. 1985. The bald eagle. Pages 509-531 *in* R. L. Di Silvestro, ed. Audubon wildlife report 1985. National Audubon Society, New York.

Johnsgaard, P. A. 1990. Hawks, eagles, and falcons of North America. Smithsonian Institution Press, Washington D.C. 403pp.

Odom, R. R. 1981. Current status and reintroduction of the bald eagle in Georgia. *The Oriole* 45:1-14.

Ozier, J. C. 1997. Status and management of the bald eagle in Georgia. Georgia Department of Natural Resources. Unpublished Report. International Bald Eagle Days Conference., Chattanooga, Tenn. 16 Jan. 1997. 8pp.

Stalmaster, M. V. 1987. The bald eagle. Universe Books, New York. 227pp.

Stalmaster, M. V. 1988. Bald eagle. Pages 187-237 *in* R. S. Palmer, ed. Handbook of North American raptors. Vol. 4. Yale University Press, New Haven, Conn.

U.S. Fish and Wildlife Service. 1989. Southeastern states bald eagle recovery plan. U.S. Department of the Interior, Atlanta, Ga. 63pp.

### **Authors of Account**

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### **Date Compiled or Updated**

J. Ozier, 1999: original account

J. Ozier, 2010: Breeding Bird Atlas species account

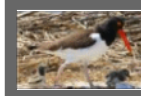
T. Schneider, July 2010: modified and edited text

K. Owers, July 2010: updated status and ranks, added picture

T. Schneider, May 2019 added juvenile photo



Juvenile. Photo by Dan Vickers. Image may be subject to copyright.



\*profile under revision



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## *Mycteria americana* Linnaeus, 1758

Wood Stork

**Federal Protection:** Listed Threatened

**State Protection:** Endangered

**Global Rank:** G4

**State Rank:** S3

**SWAP High Priority Species (SGCN):** Yes

**Element Occurrences (EOs) in Georgia:** 46

**Habitat Summary for element in Georgia:** Cypress/gum ponds; impounded wetlands with islands or emergent cypress; marshes; river swamps; bays

### Description

The wood stork is a very large, long-legged wading bird about 85-113 cm (33-44 in) in height with a wingspan of 150-165 cm (59-65 in), and a large, down-curved bill. The plumage is mostly white, but the wing-tips, trailing edge of the wings, and tail are black with a greenish sheen. Legs are black, but the toes are pink. The neck and head of adults is not feathered, and the skin is grayish black with a scale-like appearance; the bill is also grayish black in color. Juveniles have a yellow bill, and the head and neck are covered with sparse, hair-like feathers. The bill gradually darkens, and the feathers on the head are lost with full adult plumage reached in the bird's fourth year. Male and female plumages are similar.

### Similar Species

The adult white ibis (*Eudocimus albus*) can look similar to the wood stork from a distance and in flight but is substantially smaller (63 cm; 25 in long) with pinkish-red to pinkish-orange face, bill, and legs, and only the very tips of the wings are black. Also, white feathers cover the neck and top of

the head. Juvenile white ibis have a dark head, bill, and legs and a white rump. The upper surface of the wings and the upper back are dark brown while the undersides of the wings are white with a dark brown trailing edge, which can look similar to that of the wood stork.

## Habitat

Wood storks use a variety of freshwater and estuarine wetlands for breeding, feeding, and roosting. They are colonial nesters, and several nests are often located in the same tree. Colony size in Georgia has ranged from fewer than 12 to more than 500 nests. They are typically located in trees in standing water or on islands 1-20 m (3-66 ft) above the water. Storks will occasionally use the same large colonies for many years, but most colonies are shorter lived, and many are established and abandoned after a single year; few last more than 20 years. The longest-lived colonies in Georgia are deep water ponds with vegetated islands. These sites are typically manmade and managed impoundments that maintain deep water even in relatively dry years. Water levels of natural wetland sites tend to fluctuate dramatically year to year, making their use by storks less predictable. When water levels are low, predators such as raccoons can access nesting trees and wood storks often forego nesting or abandon their nests early in the nesting season.

## Diet

Primarily fish; sometimes amphibians (mostly tadpoles), crayfish, crabs, grass shrimp, beetles, grasshoppers, snakes, small alligators, and other small aquatic animals. Rarely birds including rails and grackles and small mammals including mice, rats, and shrews.

## Life History

Wood storks feed using a technique known as tacto-location or grope feeding. Usually this involves wading through shallow water with a partially-opened bill or probing into the water. When the bill touches a fish, or other prey, it snaps shut with a rapid reflex motion, one of the fastest known for vertebrates. In addition, they will also feed by holding their bill still and stirring the sediment with their feet and often shuffle their feet and flash their wings to startle prey. Tacto-location is particularly effective in turbid water where it would be impossible to see prey. Preferred prey include fish from about 2 to 25 cm (0.7-10 in) in length. This feeding strategy is very effective during seasonal (or tidal) drawdowns of wetlands when fish are concentrated in shallow pools. In southern Florida, the onset of breeding begins at the start of the dry season, when drying wetlands concentrate prey. The birds depend on successive drying of the wetlands to provide adequate food to raise their young, and rising water levels can cause the adults to abandon nestlings, which subsequently starve. Wood storks use a variety of feeding sites in both freshwater and estuarine wetlands to obtain adequate food. In coastal Georgia, storks feed in small tidal creeks at low tide when fish, especially mummichogs (*Fundulus heteroclitus*), are presumably concentrated. Storks often forage at considerable distances from the nesting colony. The birds take advantage of thermal updrafts to soar and glide to feeding sites. Birds followed to feeding sites from a colony in east-central Georgia usually chose sites that were within 20 km (12 mi) of the colony, but occasionally foraged as far as 29 km (18 mi) from the colony. In Georgia breeding usually begins in March. Clutch size ranges from 2 to 5 eggs (usually 3), and incubation takes about 27-32 days. After hatching, one adult remains with the young, shading the chicks from the sun when necessary. Both adults feed the young by regurgitating food onto the nest platform. Young storks begin learning to fly at about 8 weeks of age; however, the young often remain at the colony and return to the nest platform to be fed by adults until they are around 12 weeks old. Although a few birds have been documented to breed in their third year, most do not breed until their fourth year when adult plumage is attained. The maximum longevity of a bird in the wild is over 20 years, but the wood stork may live to over 30 years of age in captivity. There are currently several birds that are more than 20 years old still nesting every year at Harris Neck NWR.

## Survey Recommendations

Conduct aerial surveys of all known nesting sites in early May to determine the number of active nests. Survivorship and productivity can be assessed at selected sites and used as an index of overall population health. Banding chicks at select sites can provide additional data such as site fidelity, dispersal, breeding age, and longevity. Unmanned Aerial Vehicles (UAVs) have been used to monitor stork colonies at some remote sites.

## Range

The wood stork's breeding range includes the southeastern U.S., both coasts of Mexico and Central America, Cuba, Hispaniola, and South America from Colombia to Argentina. In the U.S., it breeds in Florida, Georgia, South Carolina, and North Carolina. This species was first recorded nesting in



Georgia in 1965 at Blackbeard Island NWR. Breeding colonies have been documented at least once at 56 different locations in 18 counties primarily along the coast or in southwest Georgia. Following the breeding season, wood storks may disperse northward to North Carolina, Tennessee, and Arkansas. A few wood storks may be seen in the Georgia Piedmont, well north of breeding colonies, during late summer and fall, but the most heavily used habitat during fall is coastal marshes. Beginning in late summer, wood storks from many widely separated breeding colonies gather into communal roosts along the coast. Over 100 birds may roost at favored sites, which are used year after year. The birds rest at the roost during high tide and move out into the saltmarsh to feed during low tide. Birds that nested in Georgia have been tracked south to southern Florida in winter; however, in most years a few birds remain along the coast in McIntosh, Glynn, and Camden counties.

## Threats

The breeding population of wood storks in the southeastern U.S. declined from an estimated 15,000-20,000 pairs in the 1930s to a low of 4,500-5,700 pairs from 1977-1980. The lowest annual estimate occurred in 1978 when 2,500 pairs bred. However, this probably reflected the combined influence of a low population and poor nesting conditions; many storks may not have attempted to breed that year. Prior to the mid-1970s, nesting in Georgia was sporadic with only small numbers of nesting birds. Nesting in South Carolina did not start until 1981. As large colonies in southern Florida steadily declined in the early 1980s the number of nesting birds in South Carolina and Georgia steadily increased resulting in a shift of the breeding distribution of this species. Loss of habitat is the primary threat to stork populations. In addition to direct loss of feeding habitat through draining and filling of wetlands, the disruption of the natural cycle of seasonal drying in southern Florida is believed to have caused the loss of major breeding colonies in Everglades National Park. Although wood storks benefit from seasonal drying of foraging habitat, water levels in the colony must remain deep enough to prevent access by predators. When a nesting colony dries up, raccoons are able to invade the area and eat the storks' eggs or young. This dependence on several types of wetlands (deep water for nesting and shallow water for foraging) makes storks particularly vulnerable to wetland loss, and fluctuations in rainfall. Human disturbance and contaminants are other potential threats.

## Georgia Conservation Status

While recent years have seen declines from our high count of nests in 2014, the overall trend in the state is still positive. It does appear that numbers to our north (breeding in South Carolina and North Carolina) have increased while Georgia numbers have declined, perhaps indicating an ongoing northward expansion of the breeding range. Productivity data has been collected for many years in Georgia from over 30 different colonies. Productivity measures surpassed the recovery target of 1.5 chicks per pair in 21 out of 29 survey years. Typically, coastal colonies (within 20km of the coast) have slightly higher productivity than inland colonies, perhaps due to more predictable access to food in the intertidal zone. Range-wide wood stork numbers continue to grow, and Georgia clearly represents a significant part of the recovery of the species.

## Conservation Management Recommendations

The U.S. Fish and Wildlife Service's Recovery Plan goal for down-listing the wood stork from endangered to threatened was a population of 6,000 pairs (3-year average) and regional productivity greater than 1.5 chicks per nest. They were officially downlisted to threatened in 2014. The goal for delisting is 10,000 pairs (5-year average), with regional productivity greater than 1.5 chicks per nest, and 2,500 successful pairs in south Florida. Recovery tasks include identification and protection of existing foraging and nesting habitat, restoration of historically important habitat in the Everglades, and monitoring of the population through periodic surveys. The Georgia population averaged 1,922 pairs per year from 2011-2018. The largest nesting effort ever recorded in the state occurred in 2014 when a total of 2,950 pairs nested in 22 colonies. Numbers dropped following 2014 with a low of 1594 pairs nesting in Georgia in 2018 but have rebounded with 2564 nests in 2019. This pattern fits an overall all positive trend for nesting pairs in Georgia, but with significant variability year to year. On a local scale, management of artificial feeding lakes and construction of artificial nesting structures where nest trees have been lost can enhance wood stork reproductive success. Both have been used effectively at Harris Neck National Wildlife Refuge on the Georgia coast, which coincidentally is the best site in the state to view this species. Protection of breeding colonies is critical for recovery of the wood stork. Habitat management guidelines developed by the U.S. Fish and Wildlife Service provide information on buffers for nesting colonies and important roost sites. Most stork colonies are located on private land, so working with private landowners is important for their long-term conservation.

## References

- Bryan, A. L., Jr. 1994. Wood stork roost sites in the coastal zone of Georgia and South Carolina in 1994. Report to the U.S. Fish and Wildlife Service, Savannah Coastal Refuges, Savannah, GA. 17pp.
- Bryan, A. L., Jr., and M. C. Coulter. 1987. Foraging flight characteristics of wood storks in east-central Georgia, U.S.A. *Colonial Waterbirds* 10:157-161.
- Comer, J. A., M. C. Coulter, and A. L. Bryan, Jr. 1987. Overwintering locations of wood storks captured in east-central Georgia. *Colonial Waterbirds* 10:162-166.
- Coulter, M. C., W. D. McCort, and A. L. Bryan, Jr. 1987. Creation of artificial foraging habitat for wood storks. *Colonial Waterbirds* 10:203-210.
- Hancock, J. A., J. A. Kushlan, and M. P. Kahl. 1992. Storks, ibises, and spoonbills of the world. Academic Press, Harcourt Brace Jovanovich, London. 385pp.
- Harris, M. J. 1995. Status of the wood stork in Georgia, 1965-1993. Pages 34-46 *in* Proceedings of the Wood Stork Symposium. The Georgia Conservancy, Savannah, GA.
- Harris, M. J. 1999. Wood Stork (*Mycteria americana*). Pp. 52–53 *in* T. W. Johnson, J. C. Ozier, J. L. Bohannon, J. B. Jensen, and C. Skelton, eds., Protected Animals of Georgia. Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Wildlife–Natural Heritage Section, Social Circle.
- Kahl, M. P. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. *Ecological Monographs* 34:97-117.
- Kushlan, J. A. 1976. Wading bird predation in a seasonally fluctuating pond. *Auk* 93:464-476.
- Murphy, T. M. 1993. Status of the wood stork in South Carolina. Pages 30-33 *in* Proceedings of the Wood Stork Symposium. The Georgia Conservancy, Savannah, GA.
- Ogden, J. C. 1993. Wood stork symposium keynote address: An overview for protection and recovery of the wood stork. Pages 10-18 *in* Proceedings of the Wood Stork Symposium. The Georgia Conservancy, Savannah, GA.
- Ogden, J. C., D. A. McCrimmon, Jr., G. T. Bancroft, and B. W. Patty. 1987. Breeding populations of the wood stork in the southeastern United States. *Condor* 89:752-759.
- Robinette, J. R., J. P. Davis, and J. L. Hall. 1993. U.S. Fish and Wildlife Service wood stork enhancement and restoration projects in coastal Georgia. Pages 57-63 *in* Proceedings of the Wood Stork Symposium. The Georgia Conservancy, Savannah, GA.
- Tsai, R., P. Frederick, and K. D. Meyer. 2011. Finding Wood Stork Habitat and Conserving the Right Features. Final Report for Georgia Department of Natural Resources, Brunswick, GA.
- U.S. Fish and Wildlife Service. 1996. Revised recovery plan for the U.S. breeding population of the wood stork. U.S. Fish and Wildlife Service, Atlanta, Georgia. 76pp.
- Winn, B., and J. C. Ozier. 2010. Wood Stork (*Mycteria americana*). Pp. 114–115 *in* T. M. Schneider, G. Beaton, T. S. Keyes, and N. A. Klaus, eds. The Breeding Bird Atlas of Georgia. University of Georgia Press, Athens.

## Authors of Account

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## Date Compiled or Updated

M. Harris, 1999: original account

B. Winn and J. Ozier, 2010: Breeding Bird Atlas species account

T. Schneider, July 2010: modified and edited text

K. Owers, July 2010: updated status and ranks, added picture

A. Day, November 2019: updated status and ranks, modified text





Pteroglossaspis ecristata by Dan Hipes.  
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## *Pteroglossaspis ecristata* (Fern.) Rolfe

Wild Coco

**Federal Protection:** No US federal protection

**State Protection:** Threatened

**Global Rank:** G2G3

**State Rank:** S2

**SWAP High Priority Species (SGCN):** Yes

**Element Occurrences (EOs) in Georgia:** 16

**Habitat Summary for element in Georgia:** Grassy saw palmetto barrens; longleaf pine grasslands, sometimes with *Schwalbea americana*

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## Description

Perennial **herb** up to 5.5 feet (170 cm) tall, with 2 - 4 basal **leaves** 6 - 28 inches (15 - 70 cm) long and up to 1.4 inches (1 - 3.5 cm) wide, erect, pleated, with 3 - 5 conspicuous veins. The **flower stalk** is 5.5 feet (30 - 170 cm) tall, leafless except for a few small bracts, with a cluster of 5 - 30 flowers at the top. **Flowers** are up to 0.8 inch (1 cm) long, twisted inward to the stalk, with a stiff floral bract 2.4 inches (6 cm) long behind each flower. **Sepals and lateral petals** are yellowish-green to pinkish and folded forward over the lip; the **lip** is 3-lobed, with a prominent central lobe that is dark maroon with green margins but lacking a crest. The **fruit** is an erect, rounded capsule up to 0.8 inch (2 cm) long.

## Similar Species

In flower, Wild Coco resembles no other species. However, its leaves are similar to those of other orchids such as grass pinks (*Calopogon* spp.) but are stiffer and occur in two's or three's instead of singly. The leaves also resemble those of the seedlings of Saw Palmetto but are softer and lack the woody, saw-toothed leaf stalk of Saw Palmettos.

## Related Rare Species

*Pteroglossaspis ecristata* is the only species in that genus in North America. More than thirty other orchid species are rare in Georgia.

## Habitat

Longleaf pine sandhills, flatwoods, oak scrub, and disturbed clearings in these habitats.

## Life History

Wild Coco is a perennial herb that reproduces sexually by seed. It blooms only every few years, usually only after a fire. Often many flowers will bloom at once and remain open for about a week; they are probably pollinated by bees. Little else is known about the reproductive biology of this species; closely related species in the genus *Eulophia* are known to be both self- and cross-fertile.

## Survey Recommendations

Surveys are best conducted during flowering (July–September) and fruiting (September–November).

## Range

Coastal Plain of Georgia, Florida, Alabama, Mississippi, Louisiana, South Carolina, and North Carolina; Cuba.

## Threats

Destruction of habitat by conversion to pine plantations, pasture, fields, and residential and commercial development; fire suppression. Invasion by the exotic pest plant Cogon Grass.

## Georgia Conservation Status

*Pteroglossaspis ecristata* is ranked S2 by the Georgia Department of Natural Resources, indicating that it is imperiled in Georgia. It is listed as Threatened by the State of Georgia. Sixteen populations have been documented in Georgia since seen the 1940s, about half on public or conservation lands, but only four have been confirmed in recent years.

## Conservation Management Recommendations

Use prescribed fire to create sunny openings in sandhills and flatwoods and reduce competition from woody species. Avoid logging, bedding, and plowing fire lanes in sandhills and flatwoods. Eradicate Cogon Grass.

## References

Brown, P.M. and S.N. Folsom. 2004. Wild orchids of the southeastern United States, north of peninsular Florida. University Press of Florida, Gainesville.

Chafin, L.G. 2007. Field guide to the rare plants of Georgia. State Botanical Garden of Georgia and University of Georgia Press, Athens.

Luer, C.A. 1972. The native orchids of Florida. New York Botanical Garden, New York

NatureServe. 2019. *Pteroglossaspis ecristata* comprehensive report. NatureServe Explorer. Arlington, Virginia. <http://explorer.natureserve.org/servlet/NatureServe?searchName=Pteroglossaspis+ecristata>

Romero-González, G.A. 2003. *Pteroglossaspis ecristata* species account. Flora of North America, Vol. 26, Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, New York. [http://www.efloras.org/florataxon.aspx?flora\\_id=1&taxon\\_id=242101875](http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101875)

Schotz, A.R. 2006. *Pteroglossaspis ecristata* – wild coco, giant orchid Orchid Family (Orchidaceae). Rare Plants of Louisiana Fact Sheet, Louisiana Department of Wildlife and Fisheries. [http://dev.wlf.louisiana.gov/sites/default/files/pdf/fact\\_sheet\\_plant/32092-Pteroglossaspis%20ecristata/pteroglossaspis\\_ecristata.pdf](http://dev.wlf.louisiana.gov/sites/default/files/pdf/fact_sheet_plant/32092-Pteroglossaspis%20ecristata/pteroglossaspis_ecristata.pdf) OR [http://184.106.97.89/sites/default/files/pdf/fact\\_sheet\\_plant/32092-Pteroglossaspis%20ecristata/pteroglossaspis\\_ecristata.pdf](http://184.106.97.89/sites/default/files/pdf/fact_sheet_plant/32092-Pteroglossaspis%20ecristata/pteroglossaspis_ecristata.pdf)

Schotz, A.R. 2003. Threatened and endangered species: giant orchid. Alabama's Treasured Forests, Winter: 28-29. [http://www.forestry.alabama.gov/Pages/Informational/Treasured\\_Forests/Magazine/2003\\_Winter.pdf](http://www.forestry.alabama.gov/Pages/Informational/Treasured_Forests/Magazine/2003_Winter.pdf)

Sorrie, B.A. 1993. *Pteroglossaspis ecristata* element stewardship abstract. The Nature Conservancy, Arlington, Virginia.

Weakley, A.S. 2015. Flora of the southern and mid-Atlantic States. University of North Carolina Herbarium, University of North Carolina, Chapel Hill. <http://www.herbarium.unc.edu/flora.htm>

### Authors of Account

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### Date Compiled or Updated

L. Chafin, July 2008: original account

K. Owers, Feb. 2010: added pictures

L. Chafin, March 2020: updated original account





Pteroglossaspis ecristata, illustration by Jean C. Putnam Hancock. Image may be subject to copyright.



Pteroglossaspis ecristata by Dan Hipes.  
Image may be subject to copyright.



[Pteroglossaspis ecristata](#) by Alan Cressler. Image may be subject to copyright.

# **APPENDIX E**

## Internet Resources

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1 **Federal**

- 2 • Air Force Certification Programs  
3 ([https://www.acq.osd.mil/eie/afpmb/training\\_courses.html](https://www.acq.osd.mil/eie/afpmb/training_courses.html))
- 4 • Aquatic Nuisance Species Task Force (<http://www.anstaskforce.gov>)
- 5 • EPA Environmental Dataset Gateway  
6 (<https://edg.epa.gov/metadata/catalog/main/home.page>)
- 7 • EPA, Education (<http://www.epa.gov/osw/education/train.htm>)
- 8 • EPA, Region 4 (Southeast) Water Division (<https://www.epa.gov/aboutepa/organization-epas-region-4-office-atlanta#wd> )
- 9
- 10 • EPA, Riparian Zone and Stream Restoration  
11 (<https://archive.epa.gov/ada/web/html/riparian.html> )
- 12 • EPA, Water Quality Standards for Surface Waters  
13 (<http://water.epa.gov/scitech/swguidance/standards>)
- 14 • EPA, Water Topics (<https://www.epa.gov/environmental-topics/water-topics#our-waters>)
- 15 • National Military Fish and Wildlife Association (<https://www.nmfwa.org/>)
- 16 • National Interagency Fire Center (<http://www.nifc.gov/>)
- 17 • National Invasive Species Council (<https://www.doi.gov/invasivespecies/>)
- 18 • USACE, Savanna Georgia Regulatory Division, Wetlands and Waters of the U.S.  
19 (<http://www.sas.usace.army.mil/Missions/Regulatory.aspx> )
- 20 • USDA, Animal and Plant Health Inspection Service (APHIS) Wildlife Services  
21 (<http://www.aphis.usda.gov/>)
- 22 • USDA, National Conservation Practice Standards  
23 (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/cp/ncps/>)
- 24 • USDA, National Invasive Species Information Center, Georgia State Resources  
25 (<https://www.invasivespeciesinfo.gov/us/georgiahttps://www.invasivespeciesinfo.gov/us/georgia>)
- 26
- 27 • USDA NRCS – Georgia (<http://www.nrcs.usda.gov/wps/portal/nrcs/site/ga/home/>)
- 28 • USDA NRCS Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov/>)
- 29 • USDA NRCS, Migratory Bird Habitat Initiative  
30 (<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/initiatives/?cid=steldevb1027669>)
- 31
- 32 • U.S. Forest Service (<http://www.fs.fed.us>)
- 33 • U.S. Forest Service, Wildland Fire (<http://www.fs.fed.us/fire/safety/index.html>)
- 34 • U.S. Forest Service, Fire Effects Information System (<https://www.feis-crs.org/feis/>)
- 35 • USFWS, A System for Mapping Riparian Areas in the Western United States  
36 (<http://www.fws.gov/wetlands/Documents/A-System-for-Mapping-Riparian-Areas-In-The-Western-United-States-2009.pdf>)
- 37
- 38 • USFWS, Birds of Conservation Concern  
39 (<https://digitalmedia.fws.gov/digital/collection/document/id/1249/rec/1>)
- 40 • USFWS, Endangered Species Program (<http://www.fws.gov/endangered/laws-policies/index.html>)
- 41
- 42 • USFWS, Georgia Field Offices (<http://www.fws.gov/georgia/>)
- 43 • USFWS, Law Enforcement (<http://www.fws.gov/southwest/lawenforcement/index.htm>)



- 44 • USFWS, Migratory Bird Data Center ( <https://www.fws.gov/birds/surveys-and->
- 45 [data/migratory-bird-data-center.php](https://www.fws.gov/birds/surveys-and-data/migratory-bird-data-center.php) )
- 46 • USFWS, National Conservation Training Center (<http://nctc.fws.gov/>)
- 47 • USFWS National GIS Datasets (<http://www.fws.gov/gis/data/national/index.html>)
- 48 • USFWS, National Wetlands Inventory (<http://www.fws.gov/wetlands/>)
- 49 • USFWS, Southeast Region Migratory Bird Program
- 50 (<https://www.fws.gov/southeast/birds/migratory-birds/>)

## 51 **State**

- 52 • Albany Georgia, Recreation and Parks Department ([https://www.albanyga.gov/about-](https://www.albanyga.gov/about-us/city-departments/recreation-parks-department)
- 53 [us/city-departments/recreation-parks-department](https://www.albanyga.gov/about-us/city-departments/recreation-parks-department))
- 54 • Albany GA/Dougherty County, Stormwater Pollution Control
- 55 ([https://www.albanyga.gov/about-us/city-departments/engineering-](https://www.albanyga.gov/about-us/city-departments/engineering-department/stormwater-pollution-control)
- 56 [department/stormwater-pollution-control](https://www.albanyga.gov/about-us/city-departments/engineering-department/stormwater-pollution-control))
- 57 • GDNR, Education (<http://www.gadnr.org/education>)
- 58 • GDNR, Environmental Protection Division (<http://www.georgiaepd.org/>)
- 59 • GDNR, Fishing (<http://www.georgiawildlife.com/fishing/>)
- 60 • GDNR, Fishing Regulations(<http://www.georgiawildlife.com/fishing/regulations>)
- 61 • GDNR, Georgia Flood M.A.P. Online Digital Flood Insurance Rate Maps (DFIRMs)
- 62 (<http://map.georgiadfirm.com/>)
- 63 • GDNR, Hunter Education (<https://georgiawildlife.com/hunting/huntereducation>)
- 64 • GDNR, Hunting Regulations(<http://www.eregulations.com/georgia/hunting/>)
- 65 • ( )
- 66 • GDNR, Protected Wildlife Species (<https://georgiawildlife.com/species>)
- 67 • GDNR, Watershed Protection Branch, ([https://epd.georgia.gov/about-us/watershed-](https://epd.georgia.gov/about-us/watershed-protection-branch)
- 68 [protection-branch](https://epd.georgia.gov/about-us/watershed-protection-branch))
- 69 • GDNR, Wildlife Division (<http://www.georgiawildlife.org/>)
- 70 • GDNR, Wildlife Resources Division Maps (<https://georgiawildlife.com/locations/wrd>)
- 71 • Georgia Association of Floodplain Management (<http://www.gafm.clubexpress.com/>)
- 72 • Georgia Cooperative Extension Office (<http://www.caes.uga.edu/extension/>)
- 73 • Georgia Cooperative Fish and Wildlife Research Unit
- 74 (<http://www.coopunits.org/Georgia/>)
- 75 • Georgia Department of Agriculture (<http://agr.georgia.gov/>)
- 76 • Georgia Department of Health (<http://health.state.ga.us/>)
- 77 • Georgia Forestry Commission (<http://www.gfc.state.ga.us/forest-management/>)
- 78 • Georgia Forestry Commission, Prescribed Fire ([http://www.gfc.state.ga.us/forest-](http://www.gfc.state.ga.us/forest-management/prescribed-fire/)
- 79 [management/prescribed-fire/](http://www.gfc.state.ga.us/forest-management/prescribed-fire/))
- 80 • Georgia Invasive Species Task Force (<http://www.gainvasives.org>)
- 81 • Georgia Soil and Water Conservation Commission (<http://gaswcc.georgia.gov/>)
- 82 • Georgia Soils and Water Commission, Partners in Fish and Wildlife
- 83 (<http://gaswcc.georgia.gov/partners-fish-and-wildlife>)
- 84 • Georgia Natural Resources Foundation (<http://georgianrf.org/>)
- 85 • Georgia NPDES Stormwater General Permits ([https://epd.georgia.gov/forms-](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm)
- 86 [permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm)
- 87 [storm](https://epd.georgia.gov/forms-permits/watershed-protection-branch-forms-permits/storm-water-forms/npdes-industrial-storm))

- 88 • Georgia Stormwater Management Manual  
89 (<http://www.atlantaregional.com/environment/georgia-stormwater-manual>)

## 90 **Navy**

- 91 • NAVFAC GeoReadiness Center ([http://proceedings.esri.com/library/userconf/eucom-](http://proceedings.esri.com/library/userconf/eucom-africom10/papers/georeadiness-program.pdf)  
92 [africom10/papers/georeadiness-program.pdf](http://proceedings.esri.com/library/userconf/eucom-africom10/papers/georeadiness-program.pdf))  
93 • Navy Public Health Training Center ([http://www.med.navy.mil/sites/nmcphc/nepmu-](http://www.med.navy.mil/sites/nmcphc/nepmu-6/Pages/education-and-training.aspx)  
94 [6/Pages/education-and-training.aspx](http://www.med.navy.mil/sites/nmcphc/nepmu-6/Pages/education-and-training.aspx))  
95 • OPNAVINST 6250.4 (series): Pest Management Programs.  
96 ([https://www.navfac.navy.mil/navfac\\_worldwide/pacific/fecs/southwest/about\\_us/our\\_se](https://www.navfac.navy.mil/navfac_worldwide/pacific/fecs/southwest/about_us/our_services/Environmental/conservation/applied_biology.html)  
97 [rvices/Environmental/conservation/applied\\_biology.html](https://www.navfac.navy.mil/navfac_worldwide/pacific/fecs/southwest/about_us/our_services/Environmental/conservation/applied_biology.html))

## 98 **Department of Defense (DOD)**

- 99 • Conserving Biodiversity on Military Lands  
100 ([http://www.dodbiodiversity.org/ch5/index\\_6.html](http://www.dodbiodiversity.org/ch5/index_6.html))  
101 • DODINST 4150.07: DOD Pest Management Program.  
102 ([https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415007p.pdf?ver=20](https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415007p.pdf?ver=2017-09-15-121506-797)  
103 [17-09-15-121506-797](https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/415007p.pdf?ver=2017-09-15-121506-797))  
104 • DOD Legacy Program Tracker (<https://www.denix.osd.mil/legacy/home/>)  
105 • DOD Natural Resources Conservation Compliance Program  
106 (<http://www.dodnaturalresources.net/Resources.html>)  
107 • DOD, Natural Resource Programs and INRMP Implementation: Partnering Tools  
108 ([http://www.dodworkshops.org/files/Training/SikesModules/Mod8\\_PartnerTools\\_FINAL](http://www.dodworkshops.org/files/Training/SikesModules/Mod8_PartnerTools_FINAL_july09.pdf)  
109 [\\_july09.pdf](http://www.dodworkshops.org/files/Training/SikesModules/Mod8_PartnerTools_FINAL_july09.pdf))  
110 • DOD Partners in Flight (PIF) (<http://www.dodpif.org/>)  
111 • Natural Resources Funding Manual (September 2009)  
112 ([http://www.dodnaturalresources.net/files/AEC\\_EcoFunding\\_Manual\\_082010\\_FINAL](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf)  
113 [VERSION.pdf](http://www.dodnaturalresources.net/files/AEC_EcoFunding_Manual_082010_FINAL_VERSION.pdf))  
114 • DOD INRMP Resources (<http://www.dodnaturalresources.net/INRMP-Resources.html>)  
115 • DOD INRMP Manual (2013)  
116 (<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/471503m.pdf>)

## 117 **Universities**

- 118 • University of Georgia, College of Agricultural and Environmental Sciences  
119 (<https://www.caes.uga.edu/>)  
120 • University of Georgia, College of Agricultural & Environmental Sciences, Dougherty  
121 County Cooperative Extension (<http://www.caes.uga.edu/extension/dougherty/>)  
122 • University of Georgia, College of Agricultural & Environmental Science, Forest  
123 Stewardship Program ([https://extension.uga.edu/topic-areas/environment-natural-](https://extension.uga.edu/topic-areas/environment-natural-resources/forestry.html)  
124 [resources/forestry.html](https://extension.uga.edu/topic-areas/environment-natural-resources/forestry.html))  
125 • University of Georgia, College of Agriculture and Environmental Sciences, Pond  
126 Management ([https://extension.uga.edu/county-offices/jackson/agriculture-and-natural-](https://extension.uga.edu/county-offices/jackson/agriculture-and-natural-resources/pond-mangement.html)  
127 [resources/pond-mangement.html](https://extension.uga.edu/county-offices/jackson/agriculture-and-natural-resources/pond-mangement.html))  
128 • University of Georgia, Museum of Natural History, Georgia Wildlife Web  
129 (<https://naturalhistory.uga.edu/>)

- 130 • University of Georgia, Warnell School of Forestry and Natural Resources  
131 (<http://www.warnell.uga.edu/>)  
132 • University of Georgia's Carl Vinson Institute (<http://www.cviog.uga.edu/>)  
133

134 **NGOs**

- 135 • The Association of Fish and Wildlife Agencies (<http://www.fishwildlife.org/>)  
136 • Atlanta Audubon Society (<https://www.atlantaaudubon.org/>)  
137 • Audubon, Georgia ([http://www.n-georgia.com/audubon\\_society.htm](http://www.n-georgia.com/audubon_society.htm))  
138 • Center for Invasive Species and Ecosystem Health (<http://www.bugwood.org>)  
139 • Center for Plant Conservation (<https://saveplants.org/>)  
140 • eBird (<https://ebird.org/home>)  
141 • Georgia Chapter of the American Fisheries Society (<http://gaafs.org/>)  
142 • Georgia Chapter of The Wildlife Society (<http://wildlife.org/georgia/>)  
143 • Georgia Ornithological Society (<https://www.gos.org/>)  
144 • Georgia Prescribed Fire Council, (<http://www.garxfire.com/>)  
145 • Georgia Wildlife Federation (<http://www.gwf.org/>)  
146 • International Hunter Education Association, Hunter Education Requirements ([http://ihea-](http://ihea-usa.org/hunting-and-shooting/requirements/hunter-education-requirements)  
147 [usa.org/hunting-and-shooting/requirements/hunter-education-requirements](http://ihea-usa.org/hunting-and-shooting/requirements/hunter-education-requirements))  
148 • Invasive and Exotic Species of the Thirteen Southern States  
149 (<http://www.invasive.org/seweeds.cfm>)  
150 • Lady Bird Johnson Wildflower Center  
151 (<http://www.wildflower.org/organizations/search.php?state=GA> )  
152 • NatureServe (<http://www.natureserve.org/>)  
153 • TNC, Georgia ([https://www.nature.org/en-us/about-us/where-we-work/united-](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/)  
154 [states/georgia/](https://www.nature.org/en-us/about-us/where-we-work/united-states/georgia/))  
155 • TNC Migratory Bird Program (<http://my.nature.org/birds/>)  
156 • TNC, Protecting Native Plants and Animals  
157 ([http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-](http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml)  
158 [plants-and-animals-taking-on-the-invaders.xml](http://www.nature.org/ourinitiatives/habitats/forests/howwework/protecting-native-plants-and-animals-taking-on-the-invaders.xml))  
159 • Sustainable Agriculture Network (<http://www.sare.org/>)  
160 • Society of Wetland Scientists (<http://www.sws.org/>)  
161 • Society for Ecological Restoration (<http://www.ser.org/>)

162 **Other**

- 163 • Chehaw (<http://chehaw.org/>)  
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**APPENDIX F**  
**INRMP Project Data**

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209 Appendix F describes the projects to be implemented by MCLB Albany. Projects were identified  
210 by the MCLB Albany NRM in consultation with wildlife biologists at NAVFAC MIDLANT, as  
211 well as with federal, state, and county wildlife biologists, foresters, and land managers. For each  
212 project, Appendix F discusses the purpose, location, description, monitoring need, baselines, and  
213 legal requirements, and identifies the relevant INRMP goals, objectives, and management  
214 strategies of Section 4 – Natural Resource Management. It is the intent of MCLB Albany to  
215 implement the projects as described in Appendix F to the greatest extent possible. The  
216 implementation of projects is largely dependent upon availability of funds. Recognizing the  
217 uncertainties in funding and the possibility of changes to MCLB Albany military mission and its  
218 civilian and military staffing, the implementation of projects will proceed as directly and  
219 completely as possible. Table F-1 summarizes the projects.

220  
221 Funding for implementation of the INRMP will come from MCLB Albany; O&M, MC funds;  
222 NAVFAC and Marine Corps natural resources fund sources; or non-DOD funding options. All  
223 funding will be sought through the ENCORE system. Every effort will be made to acquire funding  
224 to implement DOD mandatory projects in the timeliest manner possible. Stewardship-type projects  
225 will be funded through forestry, agricultural outlease, fish and wildlife, Legacy, or other fund  
226 sources as funding and personnel resources become available.  
227



**Table F-1. INRMP Projects Table.**

<b>Project No.</b>	<b>Project Description</b>	<b>INRMP Page Ref.</b>	<b>Scheduled Implementation (FY)</b>	<b>Legal Driver(s)</b>	<b>Funding Priority</b>
1	<b>Natural Resources GIS and Mapping</b> - Update natural resource datasets and layers according to GEOFidelis Geospatial Data Layer Specifications including wetlands, vegetation, special status species, and all applicable layers.	F-9	FY21	7, 9, 15, 17, 28, 30, 32, 33	M
2	<b>Invasive Species Management and Control</b> - Identify locations of invasive and/or exotic plant and animal species. Develop geodatabase and attribute tables, management guidelines, prioritize and implement appropriate control response in accordance with the Integrated Pest Management Plan. Develop protocols for reducing the spread of and preventing the introduction of invasives/exotics.	F-11	FY21	1, 2, 3, 7, 11, 20, 21, 22, 24, 33, 37	S
3	<b>RTE or Special Concern Species and Habitat Protection</b> - Monitor status and population of rare, threatened, endangered, or special concern plant and animal species, and natural communities. Identify critical habitats and evaluate potential for restoration or enhancement of natural communities. Develop restoration plans for longleaf pine and enhancement of areas of native groundcover to benefit habitat for species of concern.	F-13	Start in FY21 through life of INRMP	7, 8, 14, 15, 16, 18, 19, 20, 24, 35, 38, 42	M
4	<b>Fish and Wildlife Habitat Improvement</b> - Conduct management and implement projects to enhance habitat for rare, threatened, endangered, or special concern species, as well as other wildlife and natural communities, including control of invasive plant species, prescribed burning, and management plans for open areas.	F-17	Start in FY21 through life of INRMP	3, 7, 14, 15, 18, 19, 20, 24, 30, 33, 38, 42	S

Project No.	Project Description	INRMP Page Ref.	Scheduled Implementation (FY)	Legal Driver(s)	Funding Priority
5	<p><b>Forest Management</b> - Conduct forest management practices that promote multiple-use of forest areas including wildlife habitat enhancement, outdoor recreation, forest health, access, and safety. Practices include timber harvesting, insect and disease surveillance, and conducting timber cruise of merchantable stands.</p> <p><b>Fire Management</b> - Conduct prescribed fire management, including procuring fire management equipment, reducing forest fuel loads, removing debris piles, installing new and improving existing firebreak system, and conducting prescribed burns on a 1–3 year rotation.</p>	F-21	Start in FY21 through life of INRMP	2, 4, 7, 13, 15, 18, 20, 25, 26, 33, 39, 41, 46	S
6	<p><b>Outdoor Recreation Management</b> - Promote outdoor recreation and manage hunting and fishing programs. Management of fisheries program includes oversight of pond facilities and the Annual Buddy Fishing Tournament, stocking, fertilization, feeding, invasive species management, renovation and/or other appropriate measures. Management of hunting program includes hunter education program and hunter qualification, assessing deer population through camera and other survey methods, setting season quotas and harvest restrictions, oversight of the Conservation Volunteer Program, and compiling and analyzing data to ensure sustainable harvest.</p>	F-25	Start in FY21 through life of INRMP	6, 10, 15, 20, 23, 27, 29, 32, 36, 44	S
7	<p><b>Natural Resource Outreach and Education</b> - Promote natural resources outreach by educating installation staff, the general public, about natural resources on MCLB Albany. Outreach efforts include overseeing development and operations of the Natural and Cultural Resources Center and Indian Lake Nature Trail and Boardwalk, contributing to news articles and special events, and other forms of educational outreach.</p>	F-27	Start in FY21 through life of INRMP	10, 15, 34	S

Project No.	Project Description	INRMP Page Ref.	Scheduled Implementation (FY)	Legal Driver(s)	Funding Priority
8	<b>Nuisance Animal Management and Control</b> - Address issues related to nuisance domestic animals, feral animals, and wildlife including coordinating with State and federal wildlife agencies, updating Base Animal Control order, utilizing appropriate abatement techniques, maintaining database of nuisance complaints, and other actions.	F-29	Start in FY21 through life of INRMP	22, 37, 40, 43, 45	S
9	<b>INRMP Updates</b> - Ensure INRMP is kept current, reflecting: Installation and Region Management direction, current projects, new natural resources information, current regulatory guidelines and policies, and mission requirements.	F-31	Start in FY21 through life of INRMP	15, 17, 20, 23, 26, 30, 32, 33, 39	M

**Funding Priority**

M = Mandatory Project; S = Stewardship Project

**Legal Drivers**

(1)	7 USC 136	Federal Insecticide Fungicide and Rodenticide Act	(27)	EO 11644	Off-Road Vehicles on Public Lands
(2)	7 USC 2801	Federal Noxious Weed Act	(28)	EO 11988	Floodplain Management
(3)	7 USC 2814	Management of Undesirable Plants on Federal Lands	(29)	EO 11989, Section 9	Off-Road Vehicles on Public Lands
(4)	10 USC 2665	Military Construction Authorization Act – Sale of Certain Interests in Lands, Logs	(30)	EO 11990	Wetlands Protection
(5)	10 USC 2667	Non-excess property of Military Departments and Defense Agencies	(31)	EO 12088	Pollution Control
(6)	10 USC 2671	Military Construction Authorization Act – Military Reservations and Facilities- Hunting, Fishing, and Trapping	(32)	EO 12962	Recreational Fisheries
(7)	16 USC 1531 & 1536	Endangered Species Act	(33)	EO 13112	Invasive Species
(8)	16 USC 2901	Fish and Wildlife Conservation Act	(34)	EO 13834	Leadership in Environmental Management
(9)	16 USC 2912	North American Wetlands Conservation Act	(35)	EO 13186	Responsibilities of Federal Agencies to Protect Migratory Birds
(10)	16 USC 670c	Public Access and Outdoor Recreation	(36)	EO 13443	Facilitation of Hunting Heritage and Wildlife Conservation
(11)	16 USC 4701	National Invasive Species Act	(37)	OPNAVINST 6250.4 (series)	Pest Management Programs
(12)	16 USC 590A	Soil and Water Conservation Act	(38)	Public Law 107-314, 2003	National Defense Authorization Act
			(39)	Public Law 93-378	Resources Planning Act

(13)	16 USC 620	Forest Resources Conservation and Shortage Relief Act	(40)	Armed Forces Pest Management Board Technical Guide No. 37	Management of Stray Animals on Military Installations
(14)	16 USC 661-666c	Fish and Wildlife Coordination Act	(41)	DOD National Wildfire Coordination Group Federal Wildland Fire Policy	DOD Wildfire Management
(15)	16 USC 670a-o	Sikes Act Improvement Act	(42)	Georgia Administrative Code, Sections 27-3-130 to 133	Protection of Endangered Wildlife
(16)	16 USC 703-712	Migratory Bird Treaty Act	(43)	Official Code of Georgia, Title 4, Ch. 11	Georgia Animal Protection Provisions
(17)	33 USC 1251	Clean Water Act	(44)	Georgia Administrative Code, Sections 27-2-5.1	Georgia Hunting and Fishing Provisions
(18)	32 CFR 190	Natural Resources Management Program	(45)	Official Code of Georgia 16-12-4	Georgia Offenses Against Public Health and Morals Provisions (Animal Cruelty)
(19)	50 CFR 17	Endangered and Threatened Wildlife and Plants	(46)	The Guidance for Implementation of Federal Wildland Fire Management Policy	Wildfire Management
(20)	MCO 5090.2	Marine Corps Environmental Compliance			
(21)	60 FR 40837	Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds			
(22)	DODI 4150.07	DOD Pest Management Program			
(23)	DODD 4700.4	Natural Resources Management Program			
(24)	DODI 4715.03	Natural Resources Conservation Program			
(25)	DODI 6055.6	DOD Fire and Emergency Services Program			
(26)	DODI 7310.5	Accounting for Production and Sale of Forest Products			

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1	<b>Project No. 1:</b>	<b>Natural Resources GIS and Mapping</b>
2		
3	<b>Purpose:</b>	Create and update natural resource datasets and layers according to
4		GEOFidelis Geospatial Data Layer Specifications including
5		wetlands, vegetation, special status species, and all applicable
6		layers.
7		
8	<b>Goals and Objectives:</b>	Supports the following INRMP goals and objectives:
9		
10		<b>Goal 2:</b> Assess the impact of invasive species on MCLB
11		Albany, prioritize treatment, and conduct control measures.
12		
13		<b>Objective 2.2</b> Identify invasive species infestation locations.
14		
15		<b>Goal 3:</b> Rare, Threatened and Endangered Species (RTE)
16		Habitat Management and Surveys.
17		
18		<b>Objective 3.1</b> Identify existing locations of rare, threatened or
19		endangered species.
20		
21		<b>Goal 4:</b> Address issues related to nuisance domestic animals,
22		feral animals, and wildlife aboard MCLB Albany.
23		
24		<b>Objective 4.1</b> Correspond with, utilize and cooperate with state and
25		federal wildlife agencies, local animal control or other organizations
26		on nuisance control activities.
27		
28		<b>Objective 4.2</b> Employ appropriate abatement and/or removal
29		techniques to address nuisance wildlife, feral animal, and domestic
30		animal complaints.
31		
32		<b>Objective 4.3</b> Manage database of MCLB Albany nuisance animal
33		interactions.
34		
35		<b>Goal 8:</b> Enforce compliance with Federal and State
36		environmental, natural, and cultural resources laws, Marine Corps
37		policies, and other guidelines.
38		
39		<b>Objective 8.2</b> Define clear boundaries for hunting, fishing, and
40		other outdoor recreational areas.
41		
42	<b>Location:</b>	Installation-wide.
43		
44	<b>Baseline:</b>	Some existing geospatial data available.
45		



46 **Description:** Geospatial data creation, updates, and mapping are necessary for  
47 implementation of, and updates to, the INRMP, and for proper  
48 natural resources management and decision making. This powerful  
49 management tool provides natural resources managers with a  
50 comprehensive database that includes a spatial component in which  
51 aerial photographs, survey and monitoring data, and various other  
52 natural resource information are all tied to a geographical location.  
53 Data delivery of mapping in GIS format allows integration of natural  
54 resources information with mission objectives, other base activities,  
55 web-based information data and links, and other technology. This  
56 project is interlinked with other INRMP projects and is a cost  
57 efficient method to bring all natural resources programs and  
58 information together to promote proper management as required.

59  
60 Geospatial data improvements will facilitate the implementation and  
61 monitoring of projects and the production of monitoring reports and  
62 public relations products, and will improve opportunities to compete  
63 for Marine and DOD awards programs and grant applications for  
64 special programs and projects.

65  
66 The advancement and integration of GIS into all aspects of planning  
67 at MCLB Albany would reduce the expected work load for INRMP  
68 implementation and improve data-sharing and coordination with  
69 outside entities and agencies.

70  
71 Specific management strategies to support this project are identified  
72 in INRMP Section 4.3.3 - GIS, Data Integration, Access, and  
73 Reporting.

74  
75 **Monitoring:** None.

76  
77 **Legal Driver(s):** Sikes Act Improvement Act of 1997, 16 USC 670 (a) et seq.;  
78 Endangered Species Act of 1973 as amended, 16 USC Section 1531  
79 et seq.; Section 404 of the Federal Water Pollution Control Act  
80 (CWA), as amended, 33 USC 1251 et seq.; North American  
81 Wetland Conservation Act, 16 USC 2912; Recreational Fisheries,  
82 EO 12962; Wetlands Protection, EO 11990; Floodplain  
83 Management, EO 11988; Invasive Species, EO 13112; and Marine  
84 Corps Environmental Compliance and Protection Manual MCO  
85 5090.2.  
86

87	<b>Project No. 2:</b>	<b>Invasive Species Management and Control</b>
88		
89	<b>Purpose:</b>	Manage and control invasive and exotic plant and animal species at
90		MCLB Albany at acceptable levels to minimize their negative
91		impacts and promote native ecosystems.
92		
93	<b>Goal and Objectives:</b>	Supports the following INRMP goal and objectives:
94		
95		<b>Goal 2:</b> Assess the impact of invasive species on MCLB
96		Albany, prioritize treatment, and conduct control measures.
97		
98		<b>Objective 2.1</b> Develop protocols for reducing the spread of
99		invasive species.
100		
101		<b>Objective 2.2</b> Identify invasive species infestation locations.
102		
103		<b>Objective 2.3</b> Treat invasive species with appropriate chemical or
104		mechanical means of control that are not harmful to sensitive
105		inhabitants of the ecosystem.
106		
107		<b>Goal 5:</b> Review pest management at the Installation and
108		ensure utilization of integrated pest management (IPM) techniques.
109		
110		<b>Objective 5.1</b> Perform functions of the Integrated Pest
111		Management Coordinator.
112		
113		<b>Objective 5.2</b> Update Integrated Pest Management Plan.
114		
115	<b>Location:</b>	Installation-wide.
116		
117	<b>Description:</b>	Numerous invasive or nuisance plant species have been documented
118		on the Installation, including several high-priority species such as
119		Lespedeza bicolor, Chinese privet, sacred bamboo, Japanese
120		honeysuckle, and Japanese climbing fern, and lantana. Two non-
121		native invasive wildlife species (feral cat and feral hog) are also
122		known to occur on the Installation. The Installation will survey the
123		extent of invasive and exotic species and develop an invasive and
124		exotic species control plan that will identify and describe invasive
125		and exotic species, and schedule removal. This project involves the
126		following activities to manage and control invasive and exotic
127		species to acceptable levels:
128		
129		• Identify locations of invasive and/or exotic plant and animal
130		species.
131		• Develop geodatabase and attribute tables, management
132		guidelines.

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- Prioritize and implement appropriate control response (chemical and mechanical treatments, prescribed fire, cultural controls, and biocontrols) in keeping with Integrated Pest Management Plan.
  - Within duck habitat, control buttonbush by 90 percent.
  - Develop protocols for reducing the spread and preventing the introduction of noxious invasive species on MCLB Albany.

141 Specific management strategies to support this project are identified  
142 in INRMP Section 4.1.3.1 – Invasive Plant and Noxious Weed  
143 Management and Section 4.2.5 - Invasive and Nuisance Wildlife  
144 Management.

145

146 **Baseline:** Baseline has been established for some species and communities,  
147 but datasets will be improved upon and data gaps filled during  
148 survey phases of the project.

149

150 **Monitoring:** MCLB Albany will follow up on invasive species management  
151 activities as needed based on the species and required action(s)  
152 taken, and will inventory treated areas of invasive plant species  
153 annually to determine the effectiveness of the implemented removal  
154 methods and to identify any adaptive measures needed.

155

156 **Legal Drivers:** Federal Noxious Weed Act of 1974, 7 USC 2801, Sec. 2814 (a);  
157 Management of Undesirable Plants on Federal Lands, 7 USC 2814;  
158 DOD Pest Management Program, DODINST 4150.07; Endangered  
159 Species Act, 16 USC 1531 & 1536; National Invasive Species Act,  
160 16 USC 4701; Invasive Species, EO 13112; Federal Insecticide,  
161 Fungicide, and Rodenticide Act, 7 USC 136; Pest Management  
162 Programs, OPNAVINST 6250.4 (series); Natural Resources  
163 Conservation Program, DODINST 4715.03; President’s Executive  
164 Memorandum on Environmentally and Economically Beneficial  
165 Landscape Practices on Federal Landscaped Grounds, 60 FR 40837;  
166 and Marine Corps Environmental Compliance and Protection  
167 Manual, MCO 5090.2.

168

169	<b>Project No. 3:</b>	<b>RTE or Special Concern Species and Habitat Protection</b>
170		
171	<b>Purpose:</b>	To protect and monitor the status and population of rare, threatened
172		and endangered or special concern plant and animal species present
173		on MCLB Albany.
174		
175	<b>Goals and Objectives:</b>	Supports the following INRMP goals and objectives:
176		
177		<b>Goal 3:</b> Rare, Threatened and Endangered Species (RTE)
178		Habitat Management and Surveys.
179		
180		<b>Objective 3.1</b> Identify existing locations of rare, threatened or
181		endangered species.
182		
183		<b>Objective 3.2</b> Conserve and manage RTE species and habitats to
184		promote biodiversity.
185		
186		<b>Goal 6:</b> Implement a sound forest and fire management
187		program.
188		
189		<b>Objective 6.2</b> Plan and implement a longleaf pine restoration
190		program.
191		
192	<b>Location:</b>	Installation-wide.
193		
194	<b>Description:</b>	There are no federal or state listed plant species or federally
195		designated critical habitats known to occur on the Installation.
196		However, two rare plants of special conservation concern (poppy
197		mallow; crestless plume orchid) and three natural communities
198		(Clayhill Longleaf Woodland, Limesink Pond/Pond Cypress Pond,
199		South Atlantic Willow Oak Flatwoods Forest), have been confirmed
200		on the Installation.
201		
202		Nine federally or state protected wildlife species and species of
203		special concern have been identified on the Installation. Federally
204		protected species include wood stork, gopher tortoise, eastern
205		diamondback rattlesnake, and bald eagle. State-protected species
206		include Bachman's sparrow, eastern tiger salamander, northern
207		bobwhite, and loggerhead shrike.
208		
209		This project will involve coordination with appropriate branches and
210		partners and the following actions identified below to conserve and
211		protect species of special significance on the Installation. Specific
212		activities will be identified and prioritized by the NRM.
213		

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- Monitor status and populations of rare, threatened, endangered, or special concern plant and animal species, and natural communities.
  - Identify critical habitats and evaluate potential for restoration or enhancement of natural communities.
  - Develop restoration plans for longleaf pine and enhancement of areas of native groundcover to benefit habitat for species of concern (gopher tortoise and Bachman’s sparrow).

223 Specific management strategies to support this project are identified  
224 in INRMP Section 4.1.5 - Rare, Threatened, and Endangered Plant  
225 Species and Natural Communities Management; Section 4.2.7 -  
226 Rare, Threatened, and Endangered Wildlife Species Management;  
227 Section 4.2.7.1 – Federally Listed and Candidate Species; Section  
228 4.2.7.2 – State Listed Species; and, Section 4.2.7.3 – Other Species  
229 of Special Concern.

230

231 **Baseline:**

232 Biological surveys for RTE species and habitats were conducted on  
233 the installation in 1990, 1992, 1995 and 2013. Datasets will be  
234 improved upon and data gaps filled during survey and plan  
235 development phases of the project and implementation of this  
236 INRMP.

237 **Monitoring:**

238 MCLB Albany will monitor as needed based on the management  
239 measures/strategies implemented to determine the effectiveness of  
240 the action, and to identify any adaptive measures needed.

241 **Legal Driver(s):**

242 Natural Resources Management Program, 32 CFR 190; Endangered  
243 Species Act, 16 USC 1531 et seq.; 50 CFR 17, Endangered and  
244 Threatened Wildlife and Plants; Sikes Act Improvement Act of  
245 1997, 16 USC 670 (a)-(o); Fish and Wildlife Conservation Act, 16  
246 USC 2901; Fish and Wildlife Coordination Act, 16 USC 661-666c;  
247 National Defense Authorization Act (NDAA), Public Law 107-314,  
248 2003; Migratory Bird Treaty Act (MBTA), 16 USC 703-712;  
249 Responsibilities of Federal Agencies to Protect Migratory Birds, EO  
250 13186; Natural Resources Conservation Program, DODINST  
251 4715.03; Marine Corps Environmental Compliance and Protection  
252 Manual, MCO 5090.2; and Protection of Georgia Endangered  
253 Wildlife, Georgia Administrative Code, Sections 27-3-130 to 133.

254	<b>Project No. 4:</b>	<b>Fish and Wildlife Habitat Improvement</b>
255		
256	<b>Purpose:</b>	Conduct management and implement projects to enhance habitat for
257		rare, threatened, endangered, or special concerns species, as well as
258		other wildlife and natural communities on MCLB Albany.
259		
260	<b>Goal and Objectives:</b>	Supports the following INRMP goal and objectives:
261		
262		<b>Goal 1:</b> Restore, manage, preserve, and/or enhance
263		ecologically significant plant communities, including wetlands.
264		
265		<b>Objective 1.1</b> Assess current native groundcover and develop
266		guidelines for maintaining species diversity and abundance.
267		
268		<b>Objective 1.2</b> Restore native groundcover.
269		
270		<b>Objective 1.3</b> Enhance pollinator habitats by converting non-native
271		landscaped areas to native wildflowers and forbs.
272		
273		<b>Goal 6:</b> Implement a sound forest and fire management
274		program.
275		
276		<b>Objective 6.1</b> Conduct prescribed burns and manage wildfire risk
277		by creating and maintaining firebreaks, reducing fuel loads, and
278		improving wildland-urban interfaces.
279		
280		<b>Objective 6.2</b> Plan and implement a longleaf pine restoration
281		program.
282		
283	<b>Location:</b>	Installation-wide.
284		
285	<b>Description:</b>	Numerous opportunities exist to enhance or restore habitats on
286		MCLB Albany for the benefit of the fish and wildlife found on the
287		Installation. In some cases, these efforts would also promote habitats
288		for species of special concern. This project will involve coordination
289		with appropriate branches and partners to enhance fish and wildlife
290		habitat through the activities described below. Specific activities
291		will be identified and prioritized by the NRM.
292		
293		• Control invasive plant species.
294		• Conduct prescribed burns.
295		• Develop management plans for open areas (rights-of-way,
296		golf course, old housing footprint) on installation.



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- Develop restoration plans for longleaf pine and for the enhancement of areas of native groundcover to benefit habitat for species of concern (gopher tortoise, Bachman’s sparrow).

302 Specific management strategies to support this project are identified  
303 in INRMP Section 4.1 - Land Management; Section 4.2 - Fish and  
304 Wildlife Management; and Section 4.3 - Forestry Management.

305

306 **Baseline:**

307 Some existing inventories and management activities (as referenced  
308 in the INRMP) have been conducted to establish baseline conditions  
309 of fish and wildlife habitats on the Installation. Activities proposed  
310 by the NRM will build upon this information and fill data gaps.

311 **Monitoring:**

312 MCLB Albany will monitor as needed based on the management  
313 measures/strategies implemented to determine the effectiveness of  
314 the action, and to identify any adaptive measures needed.

315 **Legal Driver(s):**

316 Natural Resources Management Program, 32 CFR 190; Endangered  
317 and Threatened Wildlife and Plants, 50 CFR 17; Endangered  
318 Species Act, 16 USC 1531 et seq.; Fish and Wildlife Conservation  
319 Act, 16 U.S.C 2901 et seq.; Invasive Species, EO 13112;  
320 Management of Undesirable Plants on Federal Lands, 7 USC 2814;  
321 Sikes Act Improvement Act of 1997, 16 USC 670 (a) et seq;  
322 National Defense Authorization Act (NDAA), Public Law 107-314;  
323 Fish and Wildlife Coordination Act, 16 USC 661-666c Natural  
324 Resources Conservation Program, DODINST 4715.03, Wetlands  
325 Protection, EO 11990; and Marine Corps Environmental  
326 Compliance, MCO 5090.2.

327	<b>Project No. 5:</b>	<b>Forest and Fire Management</b>
328		
329	<b>Purpose:</b>	Conduct forest management practices that promote multiple-use of
330		forest areas including wildlife habitat enhancement, outdoor
331		recreation, forest health, access, and safety. Conduct prescribed fire
332		management and control natural burns on MCLB Albany to promote
333		healthier, more sustainable forest resources, to reduce fuel loads,
334		and to ensure the continuation of fire-dependent plant and wildlife
335		species.
336		
337	<b>Goals and Objectives:</b>	Supports the following INRMP goal and objectives:
338		
339		<b>Goal 3:</b> Rare, Threatened and Endangered Species (RTE)
340		Habitat Management and Surveys.
341		
342		<b>Objective 3.2</b> Conserve and manage RTE species and habitats to
343		promote biodiversity.
344		
345		<b>Goal 6:</b> Implement a sound forest and fire management
346		program.
347		
348		<b>Objective 6.1</b> Conduct prescribed burns and manage wildfire risk
349		by creating and maintaining firebreaks, reducing fuel loads, and
350		improving wildland-urban interfaces.
351		
352		<b>Objective 6.2</b> Plan and implement a longleaf pine restoration
353		program.
354		
355		<b>Objective 6.3</b> Manage timber in a manner compatible with
356		multiple-use strategies.
357		
358		<b>Objective 6.4</b> Monitor forest health and implement actions to
359		address forest insect, disease or other mortality threats.
360		
361		<b>Objective 6.5</b> Submit Quarterly Forestry Reports.
362		
363		<b>Objective 6.6</b> Update forestry databases, GIS layers, and inventory.
364		
365	<b>Location:</b>	Activities will be completed on specific forest compartments as
366		directed by the NRM. Wildfire control will be administered where
367		needed.
368		
369	<b>Description:</b>	Forest management on MCLB Albany generally involves actions for
370		the commercial production and sale of forest products (including
371		practices such as timber management, timber sales, reforestation,
372		timber stand improvement), and where feasible the benefit of other

373 components such as wildlife habitat, aesthetics, and recreation. A  
374 healthy, well-managed, sustainable forest is a primary objective of  
375 forest management at MCLB Albany. This project will involve the  
376 activities described below to promote multiple-use of forest areas.  
377 Specific activities will be identified and prioritized by the NRM.

- 378
- 379 • Timber harvesting.
- 380 • Insect and disease surveillance.
- 381 • Conduct timber cruise of merchantable stands.
- 382

383 Prescribed fires are a management tool used to reduce forest fuels  
384 that could generate a high intensity fire and destroy natural  
385 resources. When applied properly, fire can also have the additional  
386 benefits of improving habitat for many plant and wildlife species  
387 (i.e., long leaf pine communities, bobwhite quail, white-tailed deer,  
388 turkey, gopher tortoise, indigo snake, and Bachman’s sparrow). This  
389 project will involve the activities described below to improve forest  
390 health and reduce wildfire threats. Specific activities will be  
391 identified and prioritized by the NRM.

- 392
- 393 • Procure fire management equipment.
- 394 • Reduce forest fuel loads.
- 395 • Remove debris piles.
- 396 • Install new and improving existing firebreak system.
- 397 • Conduct prescribed burns on a 1–3 year rotation.
- 398

399 Specific management strategies to support this project are identified  
400 in INRMP Section 4.3 - Forestry Management, and more  
401 specifically in Section 4.3.4 – Management by Forest Cover Type  
402 and Section 4.3.7 – Fire Management.

403

404 **Baseline:** The Installation possesses some baseline forest data and geospatial  
405 data for forest compartments and management units based on a 2006  
406 forest inventory. An updated inventory was completed in 2014.  
407 Forest inventories obtain estimates of timber volumes, stand  
408 conditions, timber types, size or product classes, and other general  
409 information needed for planning purposes for commercial  
410 timberlands.

411

412 **Monitoring:** An annual review of forest and fire management activities will be  
413 performed to determine necessary program changes.

414

415 **Legal Driver(s):** Natural Resources Management Program, 32 CFR 190; Endangered  
416 Species Act, 16 USC 1531 et seq.; Sikes Act Improvement Act of  
417 1997, 16 USC, 670 (a)-(o); Military Construction Authorization Act  
418 – Sale of Certain Interests in lands, logs, 10 USC 2665; Forest

419 Resources Conservation and Shortage Relief Act, 16 USC 620;  
420 Resources Planning Act, Public Law 93-378, 1974; Accounting for  
421 Production and Sale of Forest Products, DODINST 7310.5; DOD  
422 Fire and Emergency Services Program, DODINST 6055.6; Wildfire  
423 Management, Guidance for Implementation of Federal Wildland  
424 Fire Management Policy; DOD Wildfire Management, DOD  
425 National Wildfire Coordination Group Federal Wildland Fire  
426 Policy; and Marine Corps Environmental Compliance and  
427 Protection Manual, MCO 5090.2.  
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451	<b>Project No. 6:</b>	<b>Outdoor Recreation Management</b>
452		
453	<b>Purpose:</b>	Promote outdoor recreation and manage hunting and fishing programs for active duty and reserve military personnel, their dependents and accompanied guests; federal civilian employees, their dependents and accompanied guests; and military retirees.
454		
455		
456		
457		
458	<b>Goal and Objective:</b>	Supports the following INRMP goal and objectives:
459		
460		<b>Goal 7:</b> Support outdoor recreation involving the consumptive or non-consumptive utilization of natural resources.
461		
462		
463		<b>Objective 7.1</b> Manage game populations to provide hunting opportunity consistent with ecological and cultural carrying capacity.
464		
465		
466		
467		<b>Objective 7.2</b> Manage woods, roads, and trails to provide multiple user benefits.
468		
469		
470		<b>Objective 7.3</b> Provide angling opportunity and support game fish populations in Covella Pond, Robinson Pond, Horseshoe Pond, and Indian Lake by maintaining facilities to make this possible.
471		
472		
473		
474		<b>Objective 7.4</b> Work with Marine Corps organizations, NGOs, local clubs, societies, and other organizations, to support opportunities for outdoor recreation.
475		
476		
477		
478	<b>Location:</b>	Installation wide where appropriate and designated for each activity.
479		
480	<b>Description:</b>	MCLB Albany offers quality outdoor recreational opportunities to improve the quality of life for Navy personnel and authorized guests where appropriate and feasible. Opportunities include non-consumptive uses such as hiking, biking, bird-watching, etc. as well as consumptive uses such as hunting and fishing. This project will involve the activities described below to promote outdoor recreation at MCLB Albany. Specific activities will be identified and prioritized by the NRM.
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489		<ul style="list-style-type: none"><li>• Manage fisheries program to include oversight of pond facilities and the Annual Buddy Fishing Tournament, stocking, fertilization, feeding, invasive species management, renovation and/or other appropriate measures.</li></ul>
490		
491		
492		
493		<ul style="list-style-type: none"><li>• Manage hunting program to include hunter education program and hunter qualification, assessing deer population through camera and other survey methods, setting season quotas and harvest restrictions, oversight of the Conservation Volunteer</li></ul>
494		
495		
496		



497 Program, and compiling and analyzing data to ensure  
498 sustainable harvest.

499  
500 Specific management strategies to support this project are identified  
501 in INRMP Section 4.2 – Outdoor Recreation Management.

502  
503 **Baseline:** Baseline has been established for some species associated with  
504 recreational use such as sport fish and game species (as referenced  
505 in the INRMP). Datasets will be improved upon and data gaps filled  
506 during survey phases of the project as directed by the NRM.

507  
508 **Monitoring:** MCLB Albany will monitor as needed based on the management  
509 measures/strategies implemented to identify any adaptive measures  
510 needed. The Installation will also closely monitor the outdoor  
511 recreational opportunities, potential impacts, and the carrying  
512 capacity of the resources being utilized.

513  
514 **Legal Driver(s):** Off-Road Vehicles on Public Lands, EO 11644 and EO 11989,  
515 Section 9; Recreational Fisheries, EO 12962; Facilitation of Hunting  
516 Heritage and Wildlife Conservation, EO 13443; Georgia Hunting  
517 and Fishing Provision, Georgia Administrative Code 27-2-5.1;  
518 Military Construction Authorization Act – Military Reservations  
519 and Facilities – Hunting, Fishing, and Trapping, 10 USC 2671;  
520 Sikes Act Improvement Act of 1997, 16 USC 670a(b)(1)(G); Public  
521 Access and Outdoor Recreation 16 USC 670c; Natural Resources  
522 Management Program, DOD 4700.4; and Marine Corps  
523 Environmental Compliance and Protection Manual, MCO 5090.2.

524  
525

526	<b>Project No. 7:</b>	<b>Natural Resources Training, Education, and Outreach</b>
527		
528	<b>Purpose:</b>	Promote natural resources outreach by educating installation staff
529		and the general public about natural resources found on MCLB
530		Albany.
531		
532	<b>Goals and Objective:</b>	Supports the following INRMP goals and objectives:
533		
534		<b>Goal 8:</b> Enforce compliance with Federal and State
535		environmental, natural, and cultural resources laws, Marine Corps
536		policies, and other guidelines.
537		
538		<b>Objective 8.4</b> Provide education and training to authorized
539		personnel on MCLB Albany to prevent violation of environmental,
540		natural, and cultural resource laws (Conservation Law Enforcement
541		Program).
542		
543		<b>Objective 8.5</b> Provide training and equipment to the Conservation
544		Law Enforcement Officer to enforce applicable Federal and State
545		laws.
546		
547	<b>Objective 8.6</b>	Provide training to Natural and Cultural Resources Manager in
548		MCLB Albany compliance with applicable Federal and State
549		conservation laws.
550		
551		<b>Goal 9:</b> Conduct educational outreach activities for natural
552		and cultural resources in partnership with local organizations.
553		
554		<b>Objective 9.1</b> Collaborate with wildlife agencies, universities,
555		colleges, and others to achieve regional conservation goals.
556		
557		<b>Objective 9.2</b> Contribute to news articles, Welcome Aboard Brief,
558		and other media events.
559		
560		<b>Objective 9.3</b> Coordinate Conservation Volunteer Program.
561		
562		<b>Objective 9.4</b> Coordinate National Bowhunters Education
563		Foundation course.
564		
565		<b>Objective 9.5</b> Oversee opening and daily operations of the Natural
566		and Cultural Resources Center and the Indian Lake Boardwalk.
567		
568	<b>Location:</b>	Installation wide where appropriate and designated for each activity.
569		
570	<b>Description:</b>	This project will involve the activities described below to promote
571		natural resources outreach at MCLB Albany and will include

572 coordination with local, regional, state, national, or international  
573 organizations or public groups as appropriate to promote awareness  
574 of the Installations natural resources. Specific activities will be  
575 identified and prioritized by the MCCA Department and Installation  
576 NRM.

- 577
- 578 • Oversee development and operations of the Natural and Cultural
  - 579 Resources Center and Indian Lake Nature Trail and Boardwalk.
  - 580 • Contribute to news articles and special events, and other forms
  - 581 of educational outreach.
  - 582 • Manage the Conservation Volunteer Program to provide
  - 583 opportunities for residents, employees, or members of the
  - 584 general public to assist or participate in NRP activities or events.
  - 585

586 Specific management strategies to support this project are identified  
587 in INRMP Section 4.4.3 – Educational Outreach and 4.5 –  
588 Integrated Ecosystems Management and Partnering.

589

590 **Baseline:** Cooperative agreements with local or regional fish and wildlife  
591 agencies, conservation organizations, and education organizations  
592 have been initiated in the past and will continue to be supported.

593

594 **Monitoring:** None.

595

596 **Legal Driver(s):** Sikes Act of 1997, 16 USC 670a(b)(1)(G); Public Access and  
597 Outdoor Recreation, 16 USC 670c; Efficient Federal Operations,  
598 EO 13834; and Marine Corps Environmental Compliance and  
599 Protection Manual, MCO 5090.2.

600  
601

602	<b>Project No. 8:</b>	<b>Nuisance Animal Management and Control</b>
603		
604	<b>Purpose:</b>	Address issues related to nuisance domestic animals, feral animals, and wildlife at MCLB Albany.
605		
606		
607	<b>Goal and Objectives:</b>	Supports the following INRMP goal and objectives:
608		
609		<b>Goal 4:</b> Address issues related to nuisance domestic animals, feral animals, and wildlife aboard MCLB Albany.
610		
611		
612		<b>Objective 4.1</b> Correspond with, utilize and cooperate with state and federal wildlife agencies, local animal control or other organizations on nuisance control activities.
613		
614		
615		
616		<b>Objective 4.2</b> Employ appropriate abatement and/or removal techniques to address nuisance wildlife, feral animal, and domestic animal complaints.
617		
618		
619		
620		<b>Objective 4.3</b> Manage database of MCLB Albany nuisance animal interactions.
621		
622		
623		<b>Goal 5:</b> Review pest management at the Installation and ensure utilization of integrated pest management (IPM) techniques.
624		
625		
626		<b>Objective 5.1</b> Perform functions of the Integrated Pest Management Coordinator.
627		
628		
629		<b>Objective 5.2</b> Update Integrated Pest Management Plan.
630		
631	<b>Location:</b>	Installation-wide.
632		
633	<b>Description:</b>	Wildlife species (e.g., feral and domestic cats, domestic dogs, Canada geese, insects, rodents, domestic dogs, bats, snakes, fox, and skunks) can become a nuisance and create a threat to human health and/or the military mission. This plan will be implemented to address such issues with nuisance and will involve the following activities:
634		
635		
636		
637		
638		
639		
640		<ul style="list-style-type: none"><li>• Coordinate with State and federal wildlife agencies.</li></ul>
641		<ul style="list-style-type: none"><li>• Update Installation Animal Control order.</li></ul>
642		<ul style="list-style-type: none"><li>• Utilize appropriate abatement techniques.</li></ul>
643		<ul style="list-style-type: none"><li>• Maintain database of nuisance complaints.</li></ul>
644		<ul style="list-style-type: none"><li>• Other actions as dictated by the incident and species.</li></ul>
645		

646 Specific management strategies to support this project are identified  
647 in INRMP Section 4.2.5 - Invasive and Nuisance Wildlife  
648 Management.  
649

650 **Baseline:** Established database of nuisance wildlife complaints from 2014 to  
651 2019.  
652

653 **Monitoring:** MCLB Albany will follow up on nuisance species management  
654 activities as needed based on the species and required action(s) taken  
655 to determine the effectiveness of the implemented removal methods  
656 and to identify any adaptive measures needed.  
657

658 **Legal Drivers:** Pest Management Programs, OPNAVINST 6250.4 (series); DOD  
659 Pest Management Program, DODINST 4150.07; Georgia offenses  
660 Against Public Health and Morals Provisions (Animal Cruelty),  
661 Official Code of Georgia 16-12-4; Georgia Animal Protection  
662 Provisions, Official Code of Georgia Title 4, Chapter 11;  
663 Management of Stray Animals on Military Installations, Armed  
664 Forces Pest Management Board Technical Guide No. 37.  
665  
666

667	<b>Project No. 9:</b>	<b>INRMP Updates</b>
668		
669	<b>Purpose:</b>	Ensure the MCLB Albany INRMP is kept current, reflecting:
670		Installation and Region Management direction, current projects,
671		new natural resources information, current regulatory guidelines and
672		policies, and mission requirements.
673		
674	<b>Goal and Objective:</b>	Supports the following INRMP goals and objectives:
675		
676		<b>Goal 1:</b> Restore, manage, preserve, and/or enhance
677		ecologically significant plant communities, including wetlands.
678		
679		<b>Objective 1.1</b> Assess current native groundcover and develop
680		guidelines for maintaining species diversity and abundance..
681		
682		<b>Goal 2:</b> Assess the impact of invasive species on MCLB
683		Albany, prioritize treatment, and conduct control measures..
684		
685		<b>Objective 2.1</b> Develop protocols for reducing the spread of
686		invasive species.
687		
688		<b>Objective 2.2</b> Identify invasive species infestation locations.
689		
690		<b>Goal 3:</b> Rare, Threatened and Endangered Species (RTE)
691		Habitat Management and Surveys.
692		
693		<b>Objective 3.1</b> Identify existing locations of rare, threatened or
694		endangered species.
695		
696		<b>Objective 3.2</b> Conserve and manage RTE species and habitats to
697		promote biodiversity.
698		
699		<b>Goal 4:</b> Address issues related to nuisance domestic animals,
700		feral animals, and wildlife aboard MCLB Albany.
701		
702		<b>Objective 4.1</b> Correspond with, utilize and cooperate with state and
703		federal wildlife agencies, local animal control or other organizations
704		on nuisance control activities.
705		
706		<b>Goal 6:</b> Implement a sound forest and fire management
707		program.
708		
709		<b>Objective 6.2</b> Plan and implement a longleaf pine restoration
710		program.
711		



712 **Objective 6.3** Manage timber in a manner compatible with  
713 multiple-use strategies.  
714  
715 **Objective 6.6** Update forestry databases, GIS layers, and inventory.  
716  
717 **Goal 7:** Support outdoor recreation involving the  
718 consumptive or non-consumptive utilization of natural resources.  
719  
720 **Objective 7.1** Manage game populations to provide hunting  
721 opportunity consistent with ecological and cultural carrying  
722 capacity.  
723  
724 **Objective 7.2** Manage woods, roads, and trails to provide multiple  
725 user benefits.  
726  
727 **Goal 8:** Enforce compliance with Federal and State  
728 environmental, natural, and cultural resources laws, Marine Corps  
729 policies, and other guidelines.  
730  
731 **Objective 8.2** Define clear boundaries for hunting, fishing, and  
732 other outdoor recreational areas.  
733  
734 **Goal 9:** Conduct educational outreach activities for natural  
735 and cultural resources in partnership with local organizations.  
736  
737 **Objective 9.1** Collaborate with wildlife agencies, universities,  
738 colleges, and others to achieve regional conservation goals.  
739  
740 **Goal 10:** Provide technical and other support for the  
741 completion of the 2021 Integrated Natural Resources Management  
742 Plan for MCLB Albany.  
743  
744 **Objective 10.1** Prepare Integrated Natural Resources  
745 Management Plan for MCLB Albany 2021.  
746  
747 **Location:** Installation-wide.  
748  
749 **Description:** In accordance with 32 Code of Federal Regulations (CFR) Part 190,  
750 the Sikes Act, and MCO 5090.2, the INRMP will be reviewed on a  
751 yearly basis and re-approved every five years. Installations are not  
752 required to revise their INRMP within a specified time interval;  
753 however, a formal review of the INRMP is required every five years  
754 in coordination with USFWS and state partners. The review process  
755 will take into account changes in military mission requirements and  
756 legal mandates and information obtained from monitoring programs  
757 and surveys. Revisions will be reviewed for consistency with the

758 military mission, federal and state laws, and the ecosystem  
759 management goals and objectives of the INRMP.  
760  
761 The revision process will be conducted under the direction of the  
762 MCLB Albany CO; revisions will require consultation with and  
763 approval by the Installation CO, the Installation NRM, the Regional  
764 NRM, and the USFWS.  
765  
766 **Baseline:** Existing INRMP; current surveys. Future proposed surveys and  
767 monitoring will be added as appropriate.  
768  
769 **Monitoring:** None.  
770  
771 **Legal Driver(s):** Sikes Act Improvement Act of 1997, 16 USC 670 et seq.; Marine  
772 Corps Environmental Compliance and Protection Manual, MCO  
773 5090.2; Natural Resources Management Program, DODD 4700.4;  
774 Wetlands Protection, EO 11990; Invasive Species, EO 13112;  
775 Recreational Fisheries, EO 12962; Section 404 of the Federal Water  
776 Pollution Control Act (Clean Water Act), as amended, 33 USC  
777 1251; Accounting for Production and Sale of Forest Products,  
778 DODINST 7310.5; and Resources Planning Act, Public Law 93-  
779 378.  
780  
781  
782  
783  
784

# **APPENDIX G**

## External Stakeholder Correspondence

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[PLACEHOLDER FOR USFWS CORRESPONDENCE]

**From:** Ingram, Dallas <Dallas.Ingram@dnr.ga.gov>  
**Sent:** Monday, October 19, 2020 6:42 PM  
**To:** Robbins CIV Julie M <julie.m.robbins@usmc.mil>  
**Subject:** [Non-DoD Source] RE: Draft INRMP

Only one comment.

Dallas Ingram  
State Quail Coordinator, Game Management

**Wildlife Resources Division**  
(404) 985-0426

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**From:** Robbins CIV Julie M [<mailto:julie.m.robbins@usmc.mil>]  
**Sent:** Monday, October 5, 2020 12:35 PM  
**To:** Ingram, Dallas <[Dallas.Ingram@dnr.ga.gov](mailto:Dallas.Ingram@dnr.ga.gov)>; [Jim\\_Bates@fws.gov](mailto:Jim_Bates@fws.gov)  
**Subject:** Draft INRMP

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dallas and Jim,  
Here is the draft INRMP for your review.  
V/r,  
Julie



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