Endangered Species Management Plan

for

Fort McClellan, Alabama

prepared by
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Directorate of Environment

DRAFT REPORT

22 January 1996

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ACRONYMS

AAD - Anniston Army Depot
ADCNR - Alabama Department of Conservation and Natural Resources
ADEM - Alabama Department of Environmental Management
ADOT - Alabama Department of Transportation
AFC - Alabama Forestry Commission
ANHP - Alabama Natural Heritage Program
AR - Army Regulation
BA - Biological Assessment
BETX - Benzene, Ethylbenzene, Toluene, Xylene
CEQ - Council on Environmental Quality
DERP - Defense Environmental Restoration Program
DOD - Department of Defense
DOE - Directorate of Environment
EA - Environmental Assessment
EOD - Explosive Ordnance Detachment
ESA - Endangered Species Act
ESML - Endangered Species Monitoring Log
EQCC - Environmental Quality Control Committee
GIS - Geographical Information System
GPS - Global Positioning System
INRMP - Integrated Natural Resource Management Plan
LRMP - Legacy Resource Management Program
MBB - Mohr's Barbara Buttons
MOA - Memorandum of Agreement
MOU - Memorandum of Understanding
NEPA - National Policy Act
NPDES - National Pollutant Discharge Elimination System
NPS - National Park Service
NTMB - Neotropical Migratory Birds
NWI - National Wetlands Inventory
pH - Alkalinity
Pb - Lead
RCW - Red-cockaded Woodpecker
ROW - Right-of-way
SINA - Special Interest Natural Area
TOC - Total Organic Carbon
TYG - Tennessee Yellow-eyed Grass
USEPA - United States Environmental Protection Agency
USFWS - United States Fish and Wildlife Service
USSCS - United States Soil Conservation Service

EXECUTIVE SUMMARY

Background: Army Regulation (AR 200-3) requires the preparation of Endangered Species Management Plans (ESMP) for listed and proposed threatened and endangered species and critical habitat present on military installations. Compliance with Chapter 11 of AR 200-3 involves coordination with other federal agencies responsible for the protection of these species.

This ESMP was designed to manage at a community or system level, thereby, insuring the protection of critical elements or species within these areas. The initial step involved developing an overall strategy under which management prescriptions would be developed (Section 1.0). The second step involved the identification and delineation of those communities that are rare, sensitive, unique or ecologically important (Section 2.0). For the purpose of this plan, these communities have been termed "Special Interest Natural Areas" (SINA). These communities support critical species or associations of species that are dependant on the maintenance of healthy ecological systems. Management goals for these areas are not necessarily compliance related, and represent army efforts to sustain natural communities under a multidisciplinary resource management program. The third section of the plan details management efforts for those species federally listed as endangered or threatened (Section 3.0). These species require the implementation of specific management prescriptions and review by the USFWS under Section 7 of the ESA. While these prescriptions are provided for individual species, an overall effort has been made to accomplish management goals through a broad ecological approach. The fourth section of the plan provides an overview of candidate and rare species that may represent potential contributions to federal listing in the future (Section 4.0).

Current Species Status: Sixteen SINAs have been identified and mapped on Fort McClellan; 11 on Main Post and 5 on Pelham Range. Four of these SINAs contain federally listed endangered or threatened species. Endangered species recorded on the installation include gray bat (Myotis grisescens) and Tennessee yellow-eyed grass (Xyris tennesseensis), while threatened species known from Fort McClellan are blue shiner (Cyprinella caerulea) and Mohr's barbara buttons (Marshallia mohrii). The red-cockaded woodpecker (Picoides borealis), an endangered species, was extirpated from installation lands during the early 1970s. Seven candidate and 38 species monitored by the Alabama Natural Heritage Program (ANHP) have also been recorded on Fort McClellan.

Habitat Requirements and Limiting Factors: Fire is a critical element in sustaining Mohr's barbara buttons and in recovering former red-cockaded woodpecker habitat. It should

also be recognized that active fire suppression and a less frequent fire regime are potential or ongoing threats to a number of SINAs within longleaf pine forests on Main Post.

Specialized habitat requirements for Tennessee yellow-eyed grass involve calcareous springs and early successional habitat, while the gray bat benefits from a mature streamside forest with a closed or partially closed canopy.

Management Objectives: Management will be for the protection and enhancement of existing populations on the installation and expansion into unoccupied suitable habitat.

Conservation Goals: These goals are to be accomplished through management and protection of SINAs. Baseline and annual inventories provide population estimates that can be used to assess site conditions each year. The overall goal is to sustain populations and, where possible, provide conditions for expansion into suitable adjacent lands. Boundaries for suitable habitat and possible areas for population expansion are provided on SINA maps.

Actions Needed:

Gray Bat

(1) Protection of Cane Creek forest corridor.
(2) Complete habitat suitability studies.
(3) Design future detailed surveys and studies (e.g. mist netting, cave studies, radio telemetry, etc.).
(4) Assess training mission effects through review of Fort Leonard Wood Biological Assessment (BA), and, possibly, prepare BA for Fort McClellan training mission.
(5) Provide oral and written guidance to trainers and land managers.

Blue Shiner

(1) Provide oral and written guidance to trainers and land managers
(2) Maintain open communications with state and federal agency personnel on population status and training restrictions.

Mohr's Barbara Buttons

(1) Insure site experiences wildfire or a prescribed burn annually.
(2) Conduct annual field evaluation and ocular inventory.
(3) Conduct weekly inspection of site to insure conditions remain stable.
(4) Search for new populations in suitable habitat.
(5) Provide oral and written guidance to trainers and land managers.

Tennessee Yellow-eyed Grass

(1) Control invasive plants through prescribed burning or mechanical methods.
(2) Monitor the expansion of kudzu along the eastern shore of Willett Springs, and implement control measures if necessary.
(3) Conduct annual site assessments and detailed inventories.

(4) Conduct a weekly inspection of sites to insure conditions remain stable.
(5) Search for new populations in suitable habitat.
(6) Provide oral and written guidance to trainers and land managers.

Red-cockaded Woodpecker

(1) Routinely search for abandoned and active clusters.
(2) Schedule a survey of Main Post every five years.
(3) Actively expand prescribed burning program into longleaf pine stands on Main Post.
(4) Complete detailed restoration plan for longleaf pine forests on Main Post.

Total Estimated Cost of Conservation Actions: Total estimated costs for the next five years are presented on Executive Summary Table 1. In-house costs are estimated at $20000 annually. Contract costs are presented separately according to survey requirements. A detailed discussion of costs can be found in Section 3 of the plan.

Contract costs for the gray bat represent potential survey requirements. After completion of initial studies and consultation with the USFWS, these estimates could change.

EXECUTIVE SUMMARY TABLE 1

FIVE YEAR ESTIMATE OF REQUIRED RESOURCES

SPECIES	FISCAL YEAR										TOTAL COST
	INHOUSE PERSONNEL					CONTRACT PERSONNEL					
	1	2	3	4	5	1	2	3	4	5	
Gray Bat	$4800	$4800	$4800	$4800	$4800	$29600	$162200				$215800
Blue Shiner	$700	$700	$700	$700	$700						$3500
Mohr's Barbara Buttons	$4000	$4000	$4000	$4000	$4000						$20000
Tennessee Yellow-eyed Grass	$5500	$5500	$5500	$5500	$5500						$27500
Red-cockaded Woodpecker	$5000	$5000	$5000	$5000	$5000		$30000				$55000
TOTAL	$20000	$20000	$20000	$20000	$20000	$29600	$192200				$321800

1.0 Introduction

Fort McClellan is located in northeastern Alabama adjacent to the Town of Anniston (Figure 1). The installation is comprised of three separate parcels of land that are situated within the Ridge and Valley Physiographic Province. Main Post (18,946 acres) is located just north of Anniston and includes the cantonment area and adjacent Choccolocco Mountain and foothills. Pelham Range (22,245 acres) is a field training area four miles to the west, and contains a more gentle relief with occasional ridges rising to over 900 feet above sea level. The Choccolocco Corridor (4,488 acres) connects Main Post to the Talladega National Forest and is leased from and managed by the Alabama Forestry Commission (AFC).

Fort McClellan's Endangered Species Management Plan (ESMP) has been prepared in accordance with the Endangered Species Act (ESA) and implementing regulations of the U.S. Fish and Wildlife Service (50 CFR Part 402). The plan was expanded to include goals and objectives described within Department of Defense (DOD) Directive 4700.4 and Army Regulation (AR) 200-3.

1.1 Management Plan

The preparation of an ESMP for Fort McClellan is required under Sections 5 and 6 of Chapter 11 (AR 200-3). This plan must provide an operating management and protection program for federally endangered, threatened, and proposed species, as well as, their critical habitat. Installations are also encouraged to include measures to monitor and conserve candidate species.

The preparation of an ESMP is a systematic, step-by-step process. The plan must contain at a minimum: survey and inventory information; conservation goals; management prescriptions; monitoring and inventory programs; and funding requirements. Upon approval by Fort McClellan's commander, the installations's Directorate of Environment (DOE) will request concurrence from the U.S. Fish and Wildlife Service (USFWS) and the Alabama Department of Conservation and Natural Resources (ADCNR). Upon concurrence by these agencies, the ESMP then becomes part of the cooperative plan and the installation's Integrated Natural Resources Management Plan (INRMP). The ESMP is reviewed annually and updated to insure conservation goals are met.

The need to manage communities and ecosystems at broader scales requires flexibility in the planning and design of management programs. This flexible approach is referred to as "adaptive resource management", and provides the ability

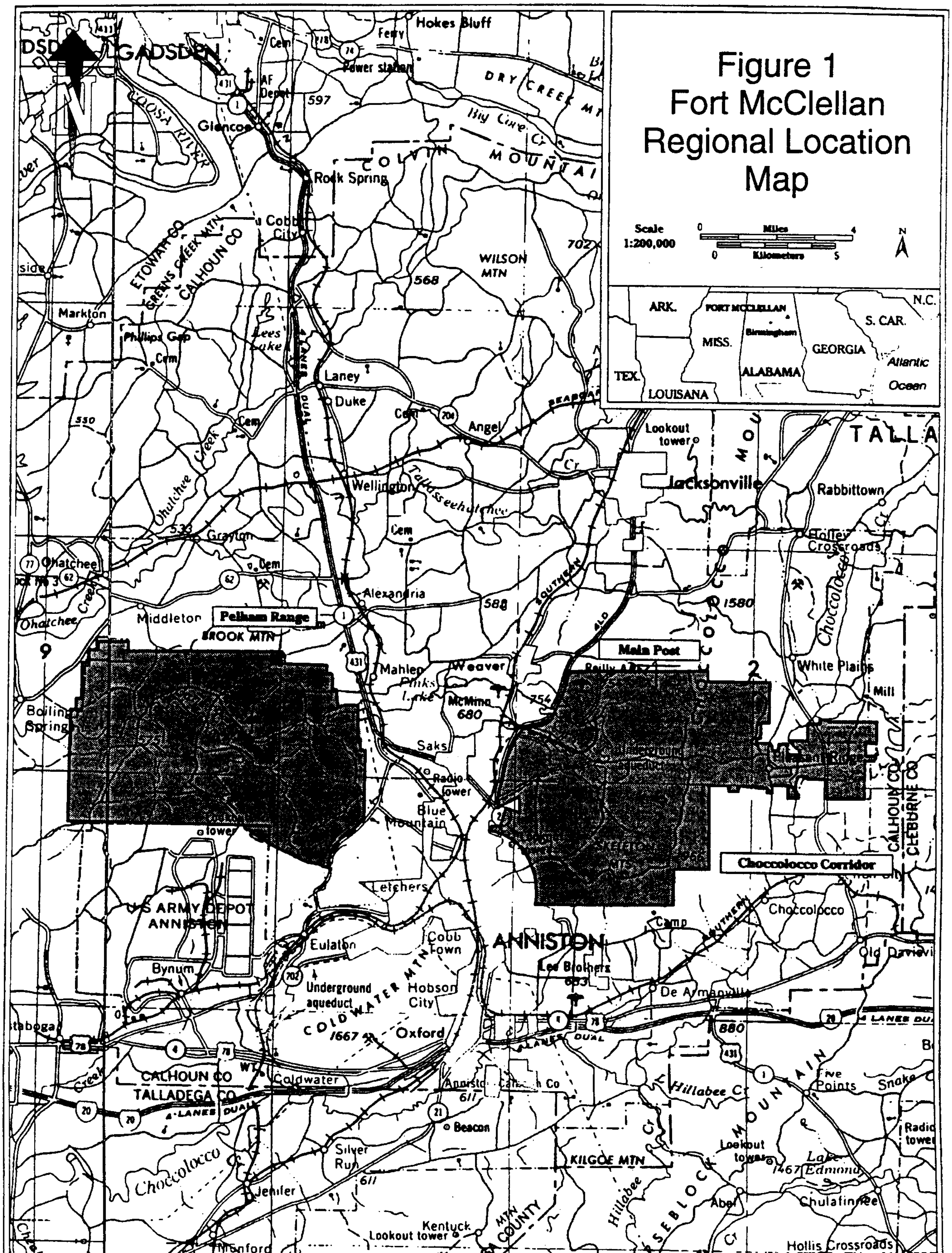


Figure 1
Fort McClellan
Regional Location
Map

to adjust management practices in response to new monitoring and survey information. This allows the formulation and immediate implementation of management prescriptions that are considered necessary to protect and manage species and communities. The plan however retains flexibility to be modified as new information becomes available.

1.2 Biodiversity

Chapter 11 of AR 200-3 establishes a goal to systematically conserve biological diversity on military lands. Only by protecting and sustaining natural occurring organisms and their ecological processes can these objectives be achieved.

Conserving and restoring biological biodiversity can be expected to minimize the number of species that legally must be protected as threatened and endangered. The implementation of measures to conserve biological diversity can, therefore, be considered a proactive management approach. The recovery of these populations through discretionary management is considered preferable to mandatory requirements under the ESA.

1.3 Management Program

The management and protection of federally listed species, and the stewardship of ecologically significant natural communities is a rapidly evolving discipline. Only recently has the importance of ecosystem management been a recognized objective on military installations. Prior to 1990, most efforts on Fort McClellan consisted of measures to insure the protection of wetlands, springs and aquatic systems. While these measures fulfilled many of the objectives of ecosystem management, comprehensive biological inventories have allowed us to expand management to include all significant biological communities and landscape types on Fort McClellan.

1.3.1 Current Management Program

Fort McClellan prepared an Integrated Natural Resource Management Plan (INRMP) in 1991. This plan describes forestry, wildlife, and land management programs on the installation. Endangered species are discussed within the wildlife section and were limited to an evaluation of potential species. A gradual shift from consumptive uses to a more balanced ecosystem management approach has occurred since preparation of this plan. In addition, extensive field surveys and studies have provided a far more detailed characterization of existing conditions then was previously known. The INRMP is scheduled for revision in 1996 and will incorporate the ESMP as a component of the new plan. Until this revision, all actions will be managed and reviewed under both the INRMP and the ESMP.

Fort McClellan has recently upgraded the installation's geographical information system (GIS) to include digitized maps of sensitive natural areas, as well as endangered, threatened and candidate species. These digitized maps will be used along with existing operational, terrain and biological overlays to further automate protection, monitoring and management of all natural resources on Fort McClellan. These capabilities were expanded in February, 1995 with the purchase of a global positioning system (GPS).

The installation is also preparing an Environmental Assessment (EA) of Fort McClellan's Master Plan Narrative and Training Operations. Information on endangered, threatened, candidate species, and significant biological areas is provided as part of the environmental baseline for evaluating existing and proposed actions. This information has been transferred to overlays for continuing use in assessing future mission changes and specific projects not included in the EA. The environmental sensitivity maps are available in hard copy and also digitized on the installation's GIS.

Fort McClellan has implemented a wide variety of procedures to insure the protection/management of listed species and sensitive/unique biological communities. Section 7 Consultation with the USFWS has involved the management/ protection of Tennessee yellow-eyed grass (Xyris tennesseensis). A preliminary management plan (Appendix C) was prepared for this federally endangered species and submitted to the USFWS for review (Appendix D). Fort McClellan has been managing this endangered plant according to procedures provided in the preliminary management plan.

An educational program directed at military trainers and land managers was initiated to insure the protection of listed species and sensitive biological communities. As part of this educational program "Environmental Constraint Maps" were prepared for both Main Post and Pelham Range. These maps provide the location of listed and candidate species, as well as, a variety of sensitive biological, environmental and cultural resources. Six thousand maps were printed and are currently distributed to field personnel through Range Control (Bldg. 3280) and the Environmental Office (Bldg. 141). Briefings are provided twice monthly to all incoming military units that train on Fort McClellan.

Fort McClellan has established an Environmental Quality Control Committee (EQCC). This committee is chaired by the installation commander and includes senior representatives of all major directorates, activities and tenants on the installation. The status of endangered species surveys and programs are routinely provided at these meetings. The preparation and approval of the ESMP has been coordinated through this committee.

The following actions have been implemented to more effectively manage listed and candidate species on Fort McClellan:

- Locations have been delineated on installation "Environmental Constraint Maps".
- A pamphlet, "Protecting Natural Resources in the Field, Fort McClellan, Alabama" is distributed with maps to provide more detailed guidance.
- Signs have been placed at each known area that states "Do Not Disturb Endangered Species Area".
- Photographs of listed species have been provided to the Provost Marshal (Game Wardens) and Range Control for display in prominent office locations.

1.3.2 Proposed Management Program

This ESMP was designed to manage at a community or system level, thereby, insuring the protection of critical elements or species within these areas. The initial step involved developing an overall strategy under which management prescriptions would be developed (Section 1.0). The second step involved the identification and delineation of those communities that are rare, sensitive, unique or ecologically important (Section 2.0). For the purpose of this plan, these communities have been termed "Special Interest Natural Areas" (SINA). These communities support critical species or associations of species that are dependant on the maintenance of healthy ecological systems. Management goals for these areas are not necessarily compliance related, and represent army efforts to sustain natural communities through a multidisciplinary resource management program. They should also be considered flexible with boundaries changing, and the addition or deletion of areas occurring during future plan revisions. The third section of the plan details management programs for those species federally listed as endangered or threatened (Section 3.0). These species require the implementation of specific management prescriptions and review by the USFWS under Section 7 of the ESA. While these prescriptions are provided for individual species, an overall effort has been made to accomplish management goals through a broad ecological approach. The fourth section of the plan provides an overview of candidate and rare species that may represent potential contributions to federal listing in the future (Section 4.0). These species were particularly important in identifying biological communities that deserve recognition and possible management to sustain a healthy environment.

Many of the management requirements for these species and communities have been implemented under Fort McClellan's

existing program (Section 1.3.1). The ESMP organizes existing programs into a structured plan that provides a comprehensive management strategy and specifies specific procedures for implementation on the installation. In addition, Fort McClellan organizations and tenants, as well as, the USFWS, Alabama Nongame Wildlife Program and the ANHP have been given an opportunity to comment and recommend additional management/protection measures that should be considered for inclusion in this plan.

1.4 Federally Protected Species

Those species listed pursuant to the Endangered Species Act of 1973 as endangered, threatened or proposed receive protection under Sections 7 and 9 of the Act (Section 3.0). While candidates for this listing are not protected, they represent species that may be listed at some point in the future, and are also managed and monitored on Fort McClellan under this plan (Section 4.0). There are additional listed and candidate species that potentially could inhabit or seasonally occur on the installation. A more detailed list of potential species can be found in ANHP (1994a, 1994b). Fort McClellan personnel will continue to search for new species through ongoing management programs and contract surveys.

The red-cockaded woodpecker (RCW) historically occurred on the installation, and is known to inhabit the nearby Talladega National Forest. This management plan has been expanded to monitor and evaluate the future of this woodpecker in the local region. Details concerning this issue are provided in Section 3.2.1.

1.5 State Protected Species

Alabama has not enacted specific endangered species legislation, but has promulgated regulations that provide protection for certain nongame species. These regulations include "Alabama Nongame Regulation" (Chapter 220-2-92) and "Alabama Invertebrate Species Regulation" (Chapter 220-2-.98). Both regulations make it unlawful to take, capture, kill, or attempt to take, capture or kill; possess, sell, trade, or offer to sell or trade listed species without a scientific collection permit (Appendix H).

Unofficial listings for endangered, threatened and rare species have been compiled for Alabama through local universities and symposia. These publications include Mount (1986), Boschung (1976) and Freeman et al. (1979), and form the basis for ANHP rarity ranking system.

1.6 Alabama Natural Heritage Program

The ANHP is responsible for inventorying and maintaining

records of rare and uncommon biota in Alabama. Utilizing the Heritage ranking system developed by the Nature Conservancy, they have compiled rarity listings within the State of Alabama. While these species do not receive legislated protection, they do represent organisms deserving monitoring and, in some situations, unofficial protection/management measures. These species are particularly important in characterizing unique, rare or sensitive biological communities. They often provide a barometer for recognizing areas particularly susceptible to degradation.

Species on Heritage Program tracking lists that have been recorded on Fort McClellan are provided in Section 4.0. Specific records, detailed rankings and descriptions for these species are available within ANHP (1994a, 1994b). These species were critical in delineating and characterizing SINAs on Main Post. Tracking list species on Pelham Range, however, were not specifically used to identify SINAs. Future management programs by installation personnel will more fully characterize communities in which these species are found on Pelham Range.

1.7 Studies and Surveys

Fort McClellan has accomplished a variety of biological surveys and inventories over the previous 20 years. These studies provide the basis for present management/protection proposals. Initial studies involved delineating and identifying the distribution of community types that are present on the installation. Current and future surveys tend to focus on lands of significant ecological value, or groups or individual species that deserve more detailed investigation. The overall objective is to establish a balanced management program that protects/enhances ecological processes while complying with the legal requirement of managing/protecting federally listed species.

The ANHP was contracted in 1990 to prepare a comprehensive biological inventory of Fort McClellan. The primary purpose of this inventory was to investigate for the presence or potential presence of federally listed species, candidates for federal listing, and other rare or sensitive species. The investigation also identified the general character of Fort McClellan's biotic communities along with special or significant natural areas. This recent investigation represents the most comprehensive biological inventory of the installation and provided the initial baseline for constructing this management plan.

Provided below is a brief review of relevant and useful studies that provide information for managing/protecting biological systems and organisms on Fort McClellan.

1.7.1 Previous Studies

A Study of the Endangered and Threatened Plants and Animals on Fort McClellan Military Installation and Pelham Range, Calhoun County, Alabama (Mattee and Haynes 1979). The Geological Survey of Alabama conducted biological inventories that focused on fish and vascular plants. Detailed plant species lists and data collection sheets are provided. The study failed to identify any federally listed endangered or threatened species.

Fort McClellan, Alabama Forest Type Map and Stand Descriptions (Resource Management Service 1984). This forest inventory and mapping were accomplished as part of the forest management program. Detailed cover maps and stand information have proved invaluable to most biological studies and inventories.

Guide to the Wetland Communities of Fort McClellan, Alabama (Gaddy 1984). Field surveys and mapping were contracted through the USFWS, National Wetland Inventory (NWI). A summary guide of wetland communities and a draft NWI map of Pelham Range were prepared as part of this study.

Results of Red-cockaded Woodpecker Survey on Fort McClellan, Alabama (Summerour 1992). During breeding season an eminent regional ornithologist conducted red-cockaded woodpecker (RCW) surveys throughout pine dominated forests on Fort McClellan. History, habitat suitability and forest mapping were provided in a report. The surveys did not located any RCWs or excavated cavities (Appendix G).

Preliminary Wetland Survey, Fort McClellan and Pelham Range, Anniston, Alabama (U.S. Army Corps of Engineers 1992). A mapping and assessment of larger jurisdictional wetlands on Fort McClellan. The study includes a detailed analysis of wetland attributes, sensitivity to impacts and management potential.

Natural Areas Management Plan for Ft. McClellan, Alabama (Law Environmental 1993). A systematic review of significant or highly impacted lands that contain unique or unusual biological values. Includes a site evaluation, management goals, preliminary plans and cost estimates.

Effects of Habitat Fragmentation on Avian Neotropical Migrants at Fort McClellan, AL (Webb 1995). Breeding bird surveys were conducted within forested sections of Main Post. Transects were placed to evaluate the relationship of distance from forested edge to species distribution.

Natural Heritage Inventory of Fort McClellan, Main Post: Federal Endangered, Threatened, Candidate Species and State Listed Species (ANHP 1994a). An inventory of the 18,946 acre Main Post section of Fort McClellan. The final report

identifies 13 special-interest natural areas that contain five candidate species. The inventory did not reveal any species federally listed as endangered or threatened.

Natural Heritage Inventory of Fort McClellan, Pelham Range: Federal Endangered, Threatened, Candidate Species and State Listed Species (ANHP 1994b). An inventory of the 22,245 acre Pelham Range section of Fort McClellan. The final report identifies six special-interest natural areas that contain one endangered plant, one threatened plant, and two candidate species.

1.7.2 Current Biological Studies

Fort McClellan is conducting further investigations to more fully characterize biological systems on the installation. Information from these studies is expected to provide further guidance in the formulation of management programs. These projects were funded through the installation's environmental program and/or through the Department of Defense (DOD) Legacy Resource Management Program (LRMP).

The LRMP was established by Congress in 1991 to provide support for natural and cultural resource programs on military lands. The purpose of the Legacy Program is to "promote, manage, research, conserve and restore the priceless biological, geophysical and historical resources which exist on public lands, facilities, or property held by the Department of Defense".

The following projects are currently being conducted on Fort McClellan. Funds have been obligated and contracts have been awarded.

Inventory of Vascular Plants and Characterization of Plant Communities on Fort McClellan. This study was contracted to Dr. David Whetstone of Jacksonville State University. The project involves seasonal field surveys over a two-year period. Special emphasis is to be placed on characterizing unique or unusual plant communities (eg. seeps, rock outcroppings, etc.). A plant herbarium on Fort McClellan was established as part of this contract.

Neotropical Migratory Bird Surveys. Continuation of surveys previously conducted and published for 1995. This study was contracted to Dr. Randy Webb, formally of Jacksonville State University. Transects established in years one and two will be utilized as a basis for further surveys within fragmented and unfragmented forested tracts on the installation.

Longleaf Pine Restoration Plan. This study was contracted through the U.S. Forest Service to Auburn University. Investigations are directed at delineating continuous forested tracts on Main Post, and researching requirements

for maintaining and restoring this area to a viable longleaf pine ecosystem.

Purchase and Installation of Global Positioning System. This project has been contracted to the U. S. Army Engineer, Waterways Experiment Station. Although this project is directed at inventorying cultural resource sites, the GPS and Fort McClellan's GIS will be used to accurately map and monitor endangered species and unique biological communities.

Appalachian Cottontail Survey. This survey was contracted to Dr. Randy Webb, formally of Jacksonville State University. Surveys are to be conducted for this candidate species within mountainous sections of Main Post.

Willett Springs Biological Survey. This survey has been contracted to the ANHP. Investigations will characterize ecological communities with particular interest in populations of Tennessee yellow-eyed grass, an endangered species.

Artificial Nesting Success Study for Neotropical Migratory Birds. The study has been contracted to the ANHP. The project will study nest predation and nesting success within fragmented and unfragmented forested tracts on Main Post.

1.7.3 Proposed Biological Studies

Four studies have been proposed through the LRMP in FY 1996. Previous investigations revealed specific deficiencies in biological baseline information. Current proposals were developed to more fully assess the potential occurrence of critical species and evaluate unique ecological values associated with local communities. In most instances, these investigations will assess/inventory a specific group of organisms. A summary list of proposed studies is provided below.

Reptile and Amphibian Survey
Mollusk Survey
Caddisfly, Stonefly and Mayfly Survey
Longleaf Pine Restoration Plan - Phase II

2.0 Unique or Sensitive Biological Communities

2.1 Wetland and Aquatic Systems

2.1.1 Wetland Systems

Wetlands are considered one of the most productive and ecologically important natural systems on earth. In the past, these productive biological communities have often been viewed as wasteland and of little material value. This has lead to the progressive loss and degradation of wetlands throughout the United States. In an effort to offer protection to these important biological communities, the federal government has enacted the Clean Water Act and Executive Order 11990 (Protection of Wetlands).

Fort McClellan has long recognized stewardship of wetlands on army lands as an important responsibility. Wetland communities on the installation were originally characterized and mapped by Gaddy (1984). This survey identified 11 distinct wetland communities that can be classified Palustrine forested, shrub/scrub or emergent. Further mapping and evaluations were undertaken by U.S. Corps of Engineers (1992) to identify larger wetland complexes that could be more effectively managed and monitored. This latter study attempted to prioritize ecological importance and recommend management/protection guidelines. Subsequent management procedures were designed to remedy existing impacts on these wetlands and focus further management and studies on the more ecologically important wetlands.

The following actions have been implemented to more effectively manage wetlands on Fort McClellan:

- Locations of larger wetland complexes (U.S. Army Corps of Engineers 1992) have been delineated on installation "Environmental Constraint Maps" and are distributed through Range Control/Environmental Office.

- "Vehicles Restricted" signs have been placed around wetland complexes that are experiencing impacts from adjacent training or land management activities.

- Written guidance is provided to training units in pamphlet entitled "Protecting Natural Resources in the Field, Fort McClellan, Alabama".

- Digitized maps of wetlands are included on Fort McClellan's GIS.

- Briefings on the status of wetland management/protection are provided to command and organization leaders through quarterly EQCC meetings.

Briefings and printed material are provided through Range Control to new training units twice monthly.

Forestry operations adhere to Alabama's Best Management Practices for Forestry (AFC 1993).

2.1.2 Aquatic Systems

With the exception of three small man-made impoundments, tributaries to the Coosa River form the aquatic environment of Fort McClellan. Watersheds on the installation include those of Cane, Choccolocco, and Tallasseehatchee-Ohatchee Creeks. Cane Creek flows across the length of both Main Post and Pelham Range, and drains the majority of installation lands. A rather unique and unusual addition to Fort McClellan aquatic environment is the existence of a variety of calcareous and acid springs.

As with wetlands, streams and lakes are particularly susceptible to activities that contribute sediments and contaminated runoff. Fort McClellan closely monitors training and land management operations to insure contaminated runoff does not enter these waters. The potential environmental effects of all new actions and activities are evaluated under the National Environmental Policy Act (NEPA) and follow Council on Environmental Quality (CEQ) procedures.

Fort McClellan recently completed a comprehensive Soil Erosion Management Plan (Nakata Planning Group 1994). Aerial photographs were utilized to inventory lands degraded through soil erosion or sedimentation. The inventory was followed by on ground verification and the development of a management plan. The inventoried sites were prioritized according to existing or potential adverse impacts on the surrounding environment. Fort McClellan has programed funds through the 1383 process to remediate these areas in order of their prioritization. A Memorandum of Understanding (MOU) between Fort McClellan and the Soil Conservation Service is currently being prepared to provide support in final design and remediation actions.

The following actions have been implemented to insure the integrity and water quality of aquatic systems on Fort McClellan:

Locations of approved stream fording sites are delineated on installation "Environmental Constraint Maps" and are distributed through Range Control/Environmental Office.

Written guidance is provided to training units in a pamphlet entitled "Protecting Natural Resources in the Field, Fort McClellan, Alabama".

Digitized maps of surface water hydrology, major watersheds, minor watersheds, and flood prone areas are included on Fort McClellan's GIS.

Management programs and actions impacting installation streams are briefed to command and organization leaders through quarterly EQCC meetings.

Briefings and printed material are provided through Range Control to new training units twice monthly.

Forestry operations adhere to Alabama's Best Management Practices for Forestry (AFC 1993).

2.2 Special Interest Natural Area (SINA)

SINAs on Fort McClellan consist of those biological communities that harbored federal, candidate, or state-listed species, or those habitats containing single or groups of unique or unusual species. Because organisms are dependant on the habitat in which they live, management must be directed at insuring the health and vitality of the entire community. In many instances, the presence of a rare or declining species is the first indication that the community is under stress. By allowing this condition to continue, additional species in the community may also decline, necessitating the implementation of further protection or management actions. Through the proactive management and protection of these communities, the difficult task of recovering a species under a legal mandate at some future time could possibly be avoided. At the same time, Fort McClellan can contribute to conserving regional biodiversity by insuring the survival of these unusual and unique biological communities.

The commercial forest program on Fort McClellan has been excluded from all identified SINAs. While this policy informally existed within most of these sensitive ecological communities, the ESMP formalizes this policy as standard management. Situations, however, may be identified or develop in which forestry practices can be used to accomplish management objectives. The goals of any forestry operations within SINAs will be directed at insuring the integrity of these important ecological areas.

Sixteen SINAs have been delineated on Fort McClellan. Eleven of these areas can be found on Main Post (Figure 2), while five are located on Pelham Range (Figure 3). Detailed boundaries for these areas are provided on Figures 4 through 9. Some SINAs actually contain a community type (e.g. wetland or stream) along with a buffer to mitigate sedimentation and related disturbances. Within these sites, a "critical element" has been delineated to identify the

Figure 2
Vicinity Map
Special Interest Natural Areas, Main Post

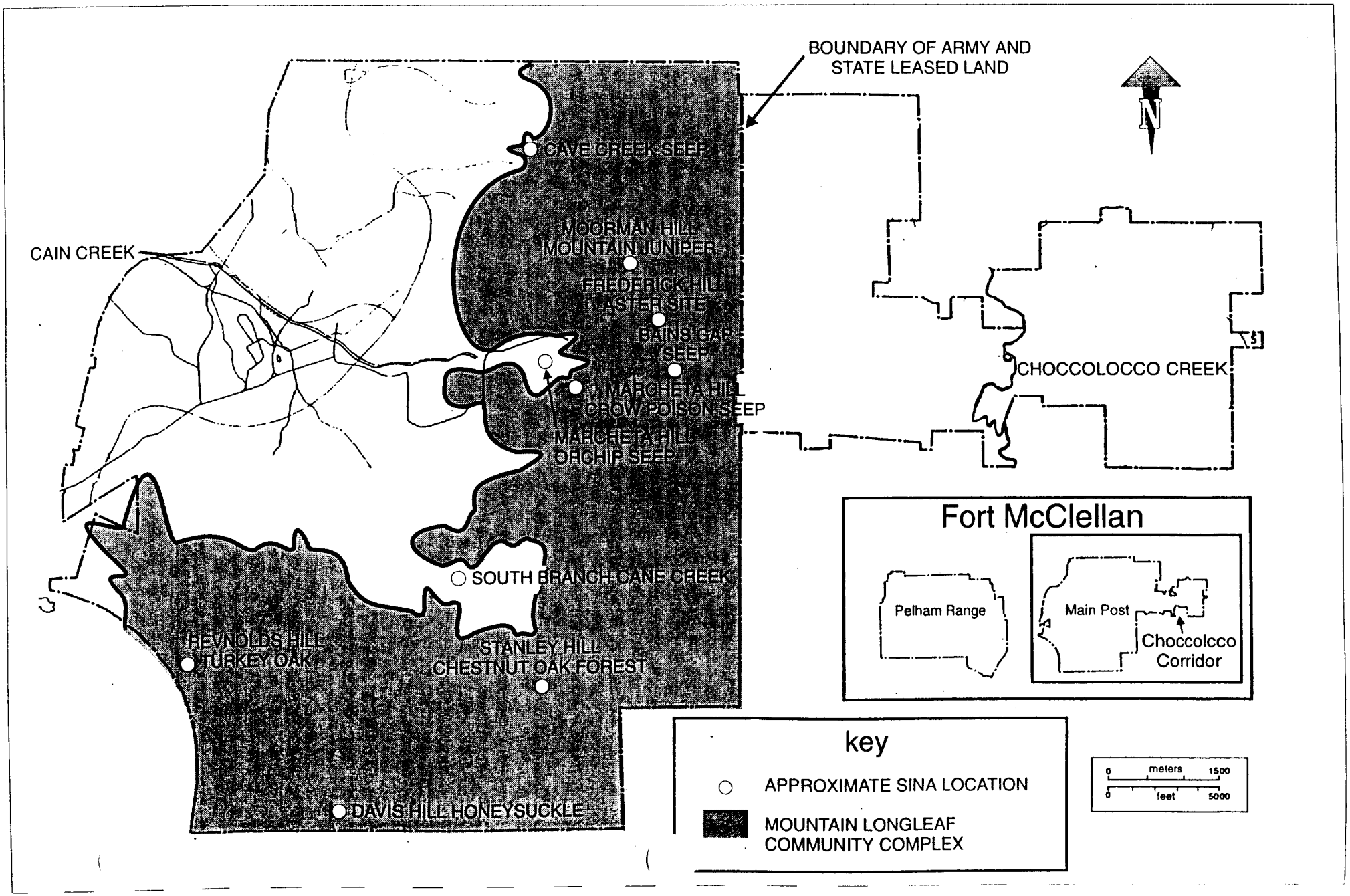


Figure 3
Vicinity Map
Special Interest Natural Areas, Pelham Range

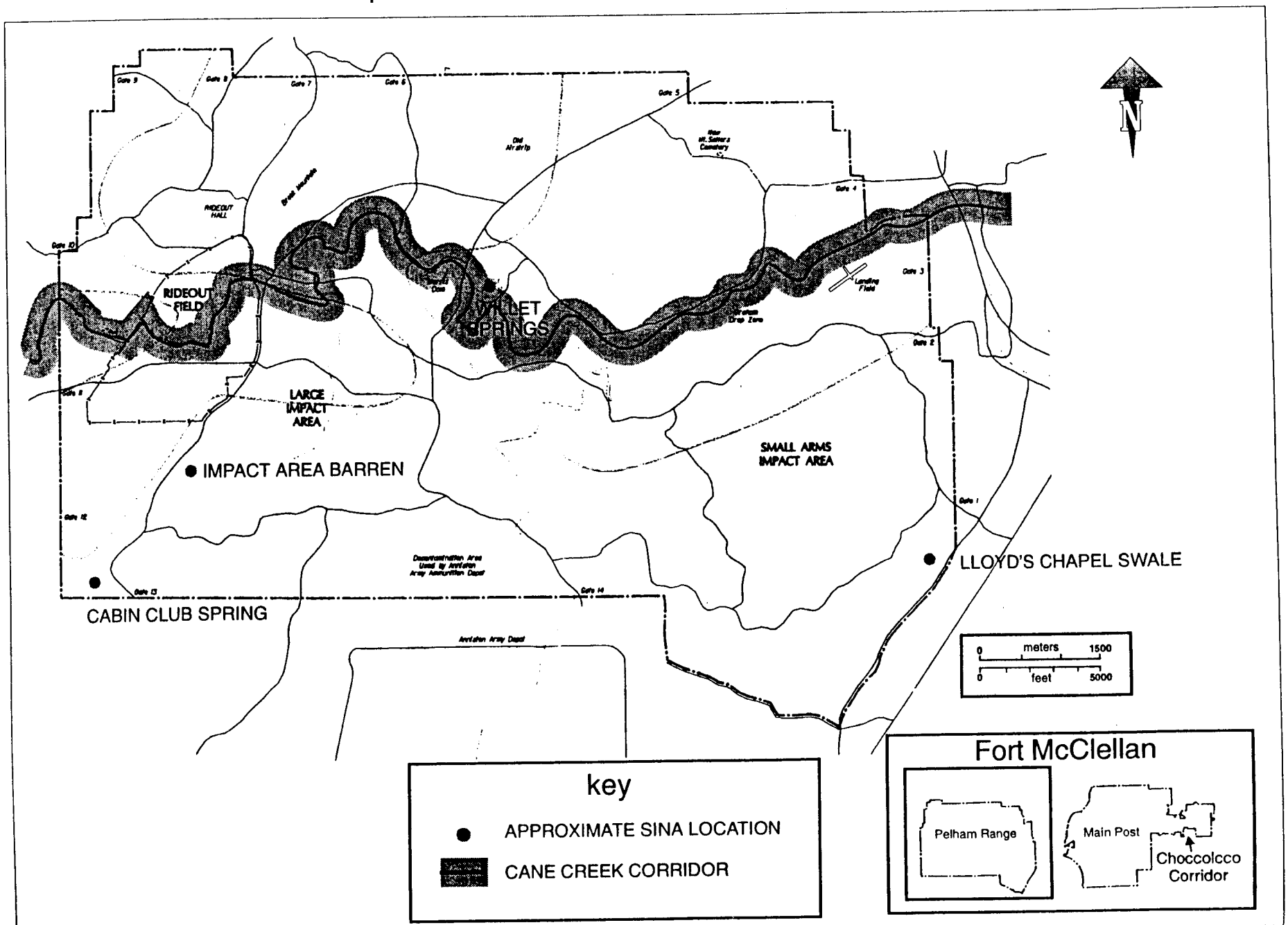


Figure 4
Site Map
Special Interest Natural Areas, Main Post

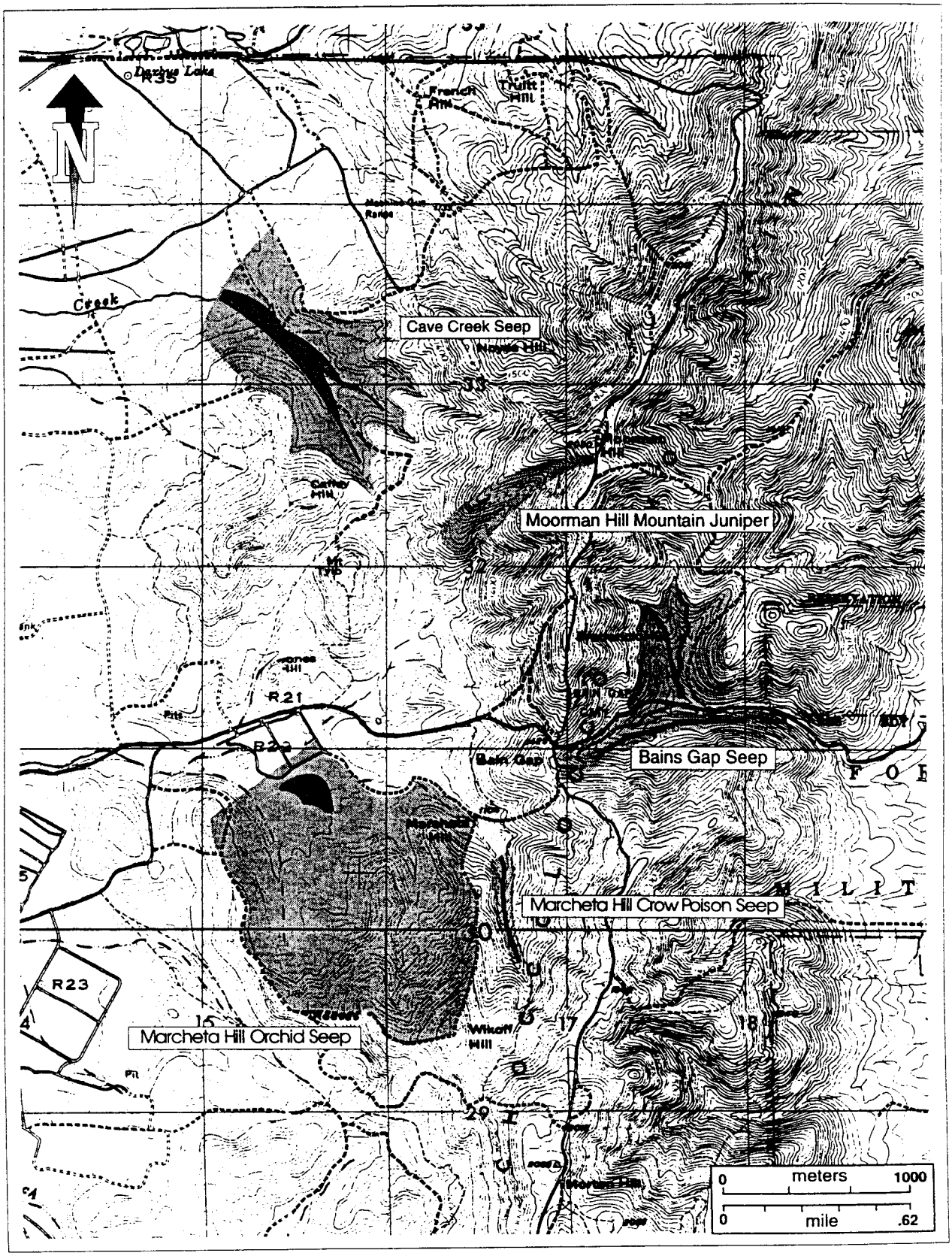


Figure 5
Site Map
Special Interest Natural Areas, Main Post

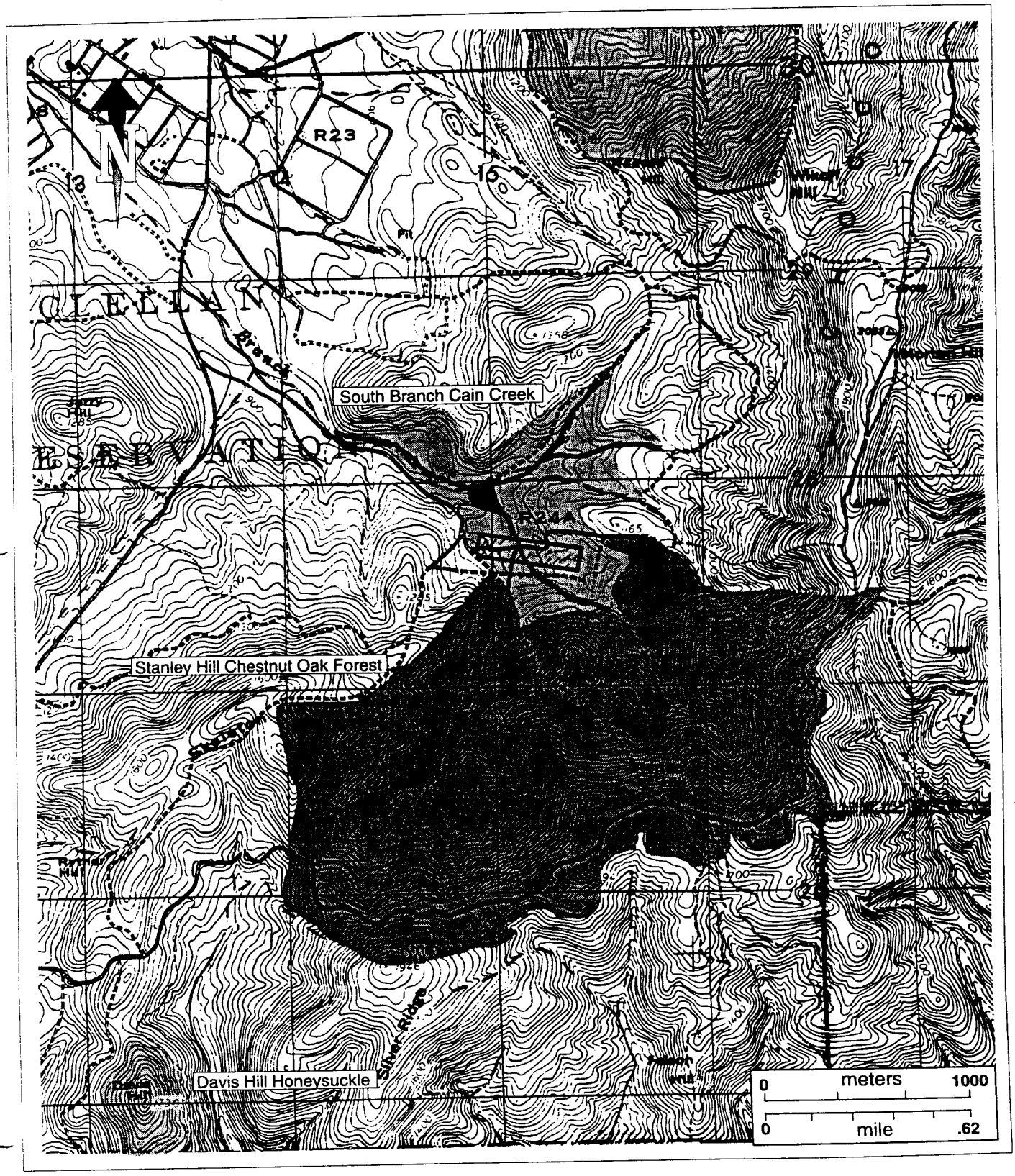


Figure 6
Site Map
Special Interest Natural Areas, Main Post

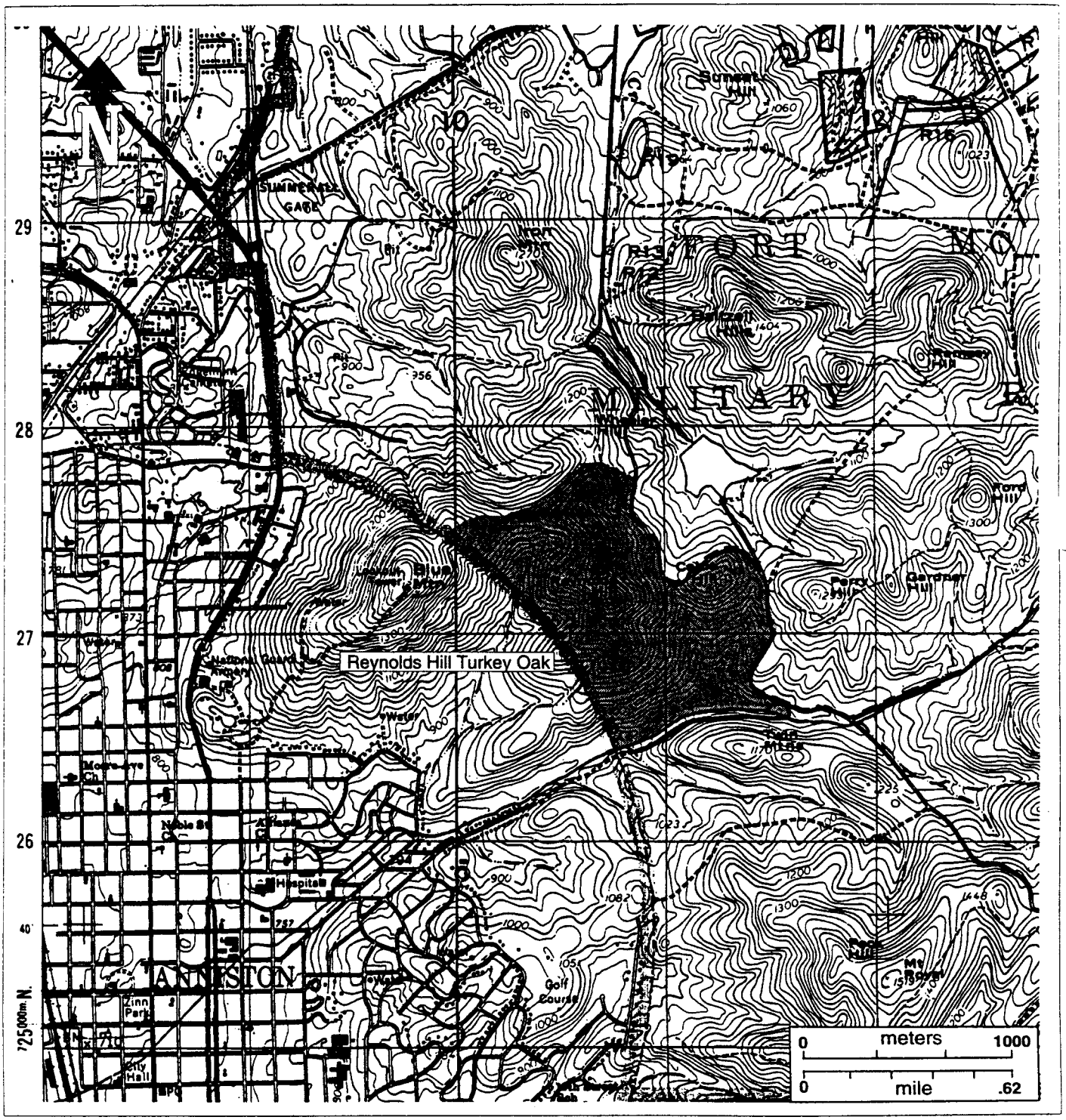


Figure 7
Site Map
Special Interest Natural Areas, Pelham Range

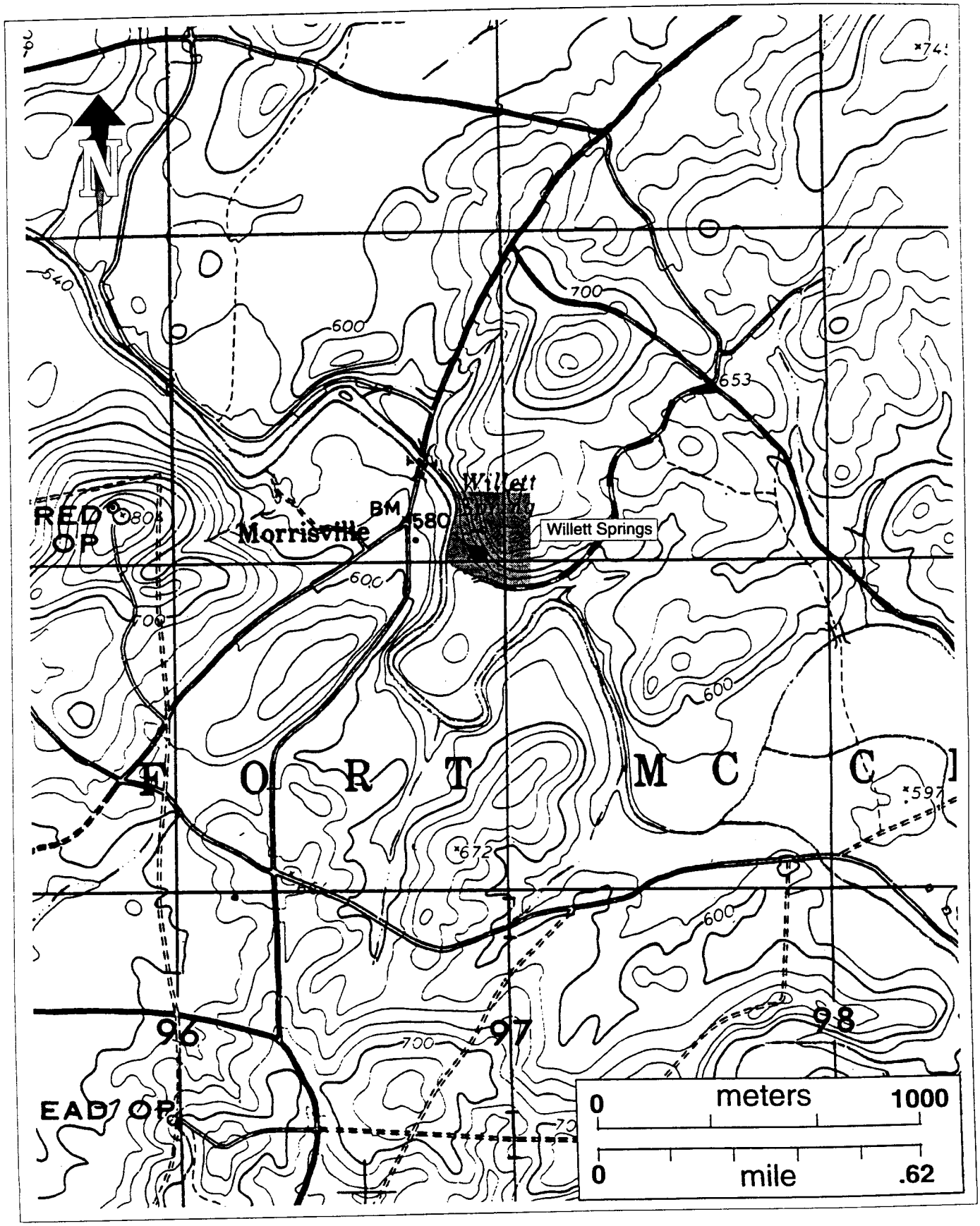


Figure 8
Site Map
Special Interest Natural Areas, Pelham Range

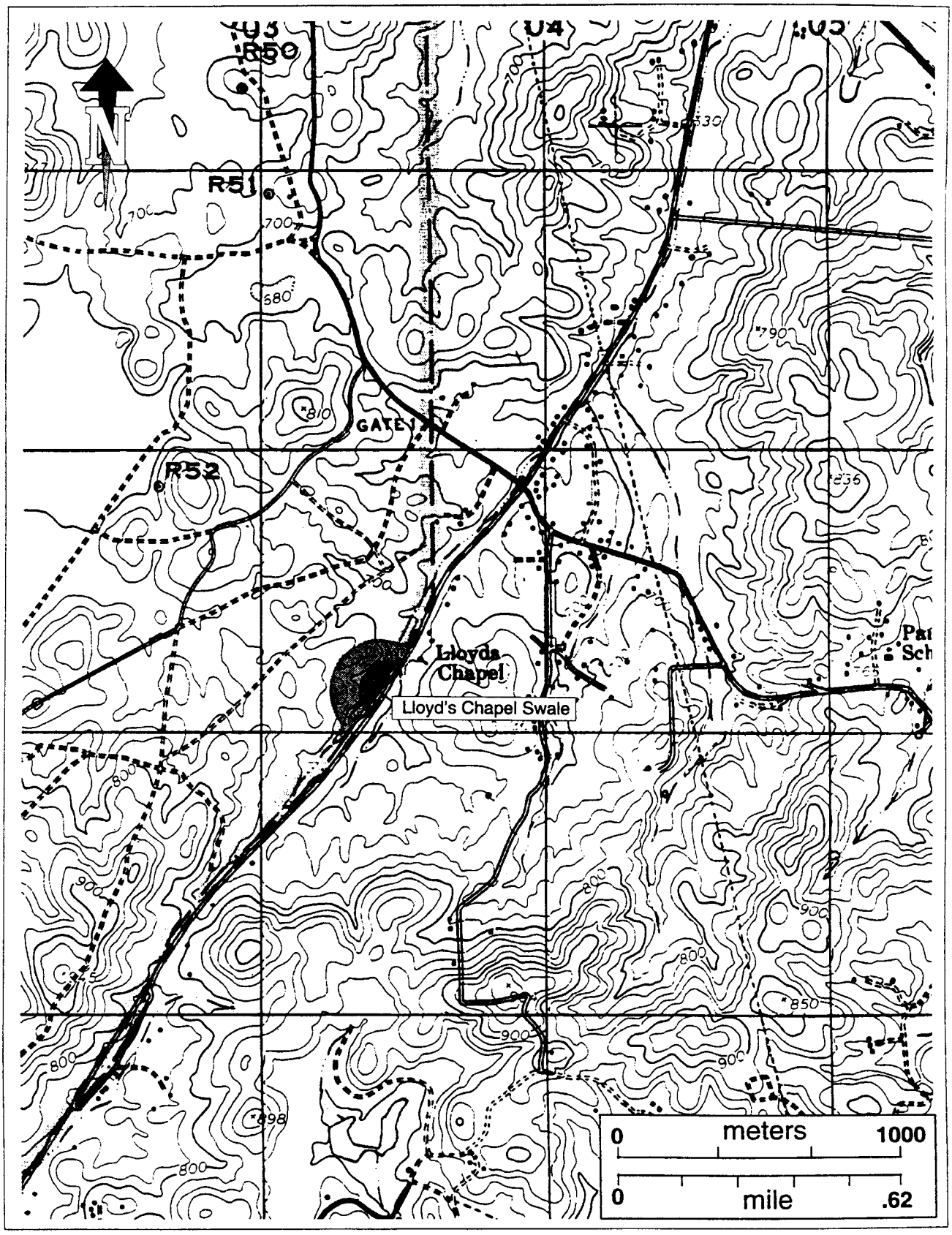
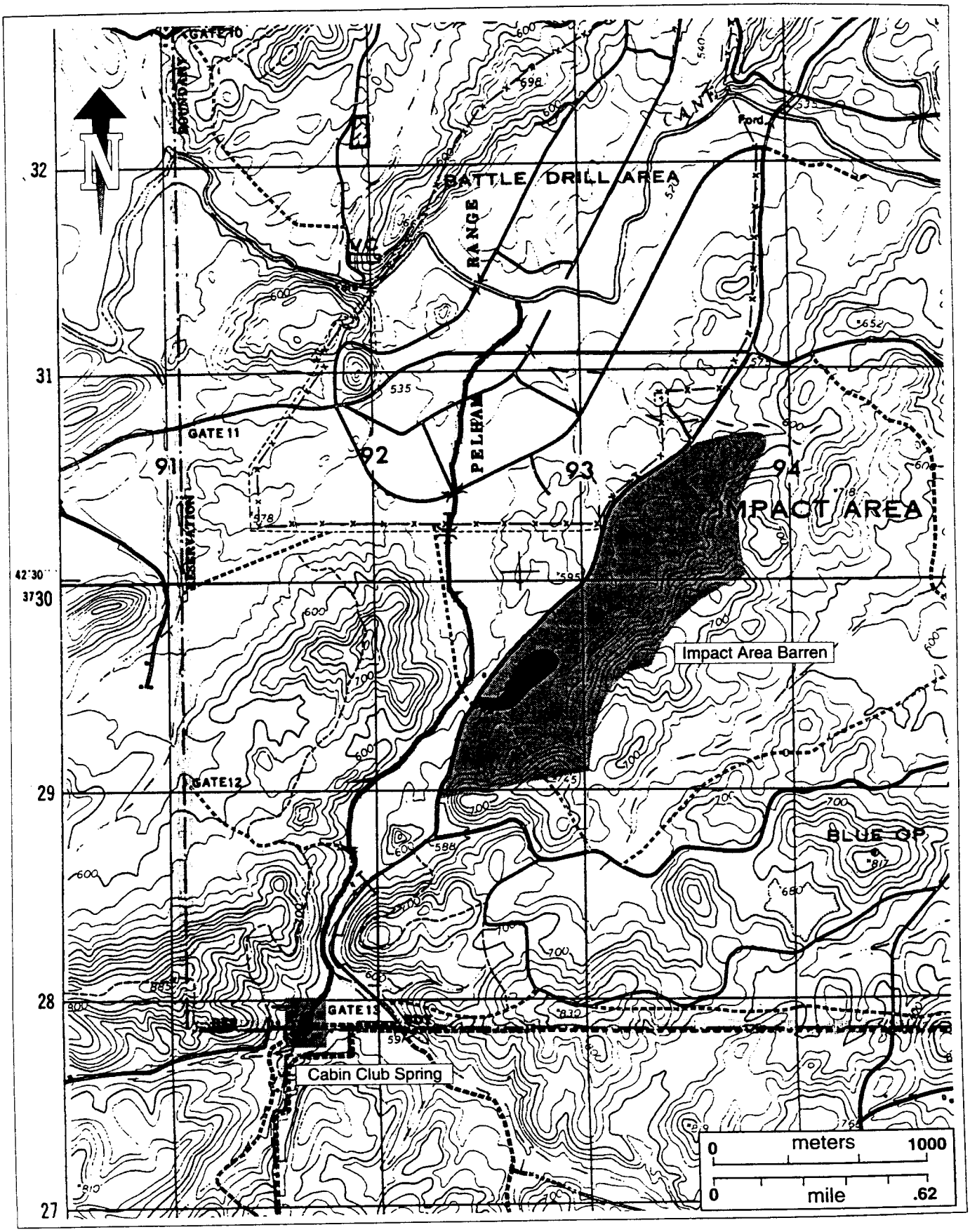


Figure 9
Site Map
Special Interest Natural Areas, Pelham Range



community of concern and vulnerability. The following section provides a brief description of each area along with the management prescription.

2.2.1 Main Post

SINAs on Main Post were identified at both regional and community levels (ANHP 1994a). In the case of the "Mountain Longleaf Community Complex", the SINA is actually comprised of a mosaic of differing forest types. In this situation, the ecological significance of the area is best understood from a regional context. The remaining ten SINAs, were identified from the presence of unique or unusual species within a local community. These areas tend to be inclusions within the above SINA, and form part of the mosaic that enhances the ecological importance of the entire forest complex. Management techniques can be expected to differ somewhat between these two scales. On the more expansive cover type, an overall management policy is established and broad-based management goals are formulated. The remaining SINAs are comprised of local community types and can generally be managed under more specific guidance. A map providing the general location of SINAs can be found on Figure 2, while more detailed site boundaries are provided on Figures 4-6.

2.2.1.1 Mountain Longleaf Community Complex

Description. This forest cover occurs throughout the steeper slopes and higher elevations on the south and east of Main Post, and encompasses approximately 12,000 acres (Figure 2). The boundary delineated on Figure 2 constitutes those lands classified as "Stony Rough Land" (USSCS 1961) and represents a conservative estimate of contiguous forests on Main Post.

Much of this forest has been highly altered through historical logging and forest fire control. Portions of this forest, however, do provide exceptional examples of mature longleaf pine forest. Other areas include longleaf pine only as a component and may be an indication of a formerly wider distribution of this forest type.

The continuity of installation forests, as well as, contiguous forests to the north, east and south actually provide a single forest cover of much larger proportions. Of particular significance is a leased forested pathway (Choccolocco Corridor) that connects to more expansive forests within the Talladega National Forest (Figure 1). The management of Main Post forests in a contiguous tract represents an important contribution to conserving regional biodiversity, as well as, potential benefits to neotropical migratory birds (NTMB) and other forest interior species.

The Army has entered into a Memorandum of Agreement (MOA)

with other federal agencies to participate in the Federal Neotropical Migratory Bird Conservation Committee. As a party to this MOA, the Army has agreed to abide by its terms and to embrace the goal of conserving NTMB. DOD has assumed a leadership role in this conservation effort and has prepared a strategic plan for participation in the program now known as "Partners in Flight" (DOD 1994). Fort McClellan has supported these conservation efforts through field surveys and regional working groups.

During 1994 and 1995 field surveys were undertaken on Main Post to evaluate the importance of contiguous forests in maintaining breeding populations of NTMB (Webb 1995). These studies were accomplished through point counts and revealed that fragmented forests supported significantly fewer species of NTMB. The interior of large unfragmented forests on Main Post provide habitat for many species that are unable to adapt and survive in early successional or disturbed cover types. Large tracts of contiguous unfragmented forest are regionally becoming less common as Alabama continues to develop.

These forest were classified as noncommercial forest land in the INRMP (Pittman et al. 1991). This policy was instituted because of environmental constraints, low soil fertility and the poor quality of remaining timber. Steep slopes, poor soils and lack of access create significant environmental problems during timber harvest. Additionally, most remaining commercial timber is too widely scattered for commercial harvest. While this policy change has eliminated the highgrading of timber removal that historically occurred, it also has decreased the ability of the installation to expend commercial forest funds on these lands. Future management of these lands will be programed through the environmental 1383 process to allow the implementation of new management programs.

Historically, the red-cockaded woodpecker inhabited portions of this forest type. Discussions concerning this listed endangered species are provided in Section 3.2.

Management. Because this forest cover comprises much of Main Post, it is important that a multidisciplinary approach compatible with the training mission be applied to this rather expansive area. In most situations this can best be achieved by establishing policy guidance for managing and utilizing these lands. This policy will attempt to maximize the retention of these forests in a contiguous tract. Where possible, new development will be directed to peripheral lands and activities that require forest removal will be discouraged within the forested interior. In particular, efforts will be taken to insure the continuity of forested pathways throughout Main Post and accessible to and from off-post lands.

Incremental losses or local impacts within this area can be expected to create minimal regional ecological effects in most instances. These local situations, however, will be assessed individually through the NEPA process utilizing this new environmental guidance policy. The assessment process will consider if reasonable alternatives or sites to the proposal exist.

Decline of the longleaf pine forest is related to past forest management and fire control policies. Fort McClellan recognizes the need to change strategy and is currently funding the preparation of a Longleaf Pine Management/ Restoration Plan. This plan was contracted through the U.S. Forest Service to Auburn University (Section 1.3.2). The objective is to establish the feasibility and procedures that should be implemented to manage and restore these forests. The formulation of specific management/restoration procedures will be evaluated and provided on the completion of this study. Specific recommendations will be incorporated into the present management plan.

Immediate changes in management, however, can be implemented in regard to fire control and suppression. Active fire suppression has been a primary factor in the decline of this fire adapted forest type. Until recently, policy has been based on minimizing the expenditures of fire control funds on noncommercial forest land. Fires have been actively suppressed to minimize expenditures, and lands have been excluded from the prescribed burning program. New policy within pine dominated portions of this forest involve a change in both fire control and prescribed burning policy. Wildfires will be evaluated on an individual basis by the responding fire control officer. If the wildfire can be safely contained within existing roads, it will be allowed to burn to all firebreaks. An additional effort will be made to schedule prescribed burns within some of the better longleaf pine dominated forests. Some of these prescribed burns will be scheduled during the growing season to take advantage of better hardwood control. Environmental funds will be programed through the 1383 process to support this addition to the prescribed burning program. A more comprehensive policy will be provided on completion of the U.S. Forest Service/Auburn Study.

2.2.1.2 Marcheta Hill Orchid Seep

Description. The spring seepage to the west of Marcheta Hill constitutes one of the more important SINAs on Main Post (Figure 4). This wetland is the largest forested seepage on the installation and contains two federal candidate 2 species; white-fringeless orchid (Plantanthera integrilabia) and Diana butterfly (Speyeria diana). The population of white-fringeless orchid is particularly significant with over

250 individuals recorded. Additional plants on the ANHP tracking list include rose pink (Sabatia capitata) and soapwort gentian (Gentiana saponaria).

The frequency of wildfires within this wetland community appears to have been responsible, at least in part, for the unusual and unique herbaceous cover. The area is located directly behind Range 21 along Bain's Gap Road. Tracer fire on this range has caused numerous wildfires that have eliminated shrub cover along the margins of the seepage.

Management. The ecological significance of this wetland has been recognized for several years. "Do Not Disturb Endangered Species Area" signs have been place along the wetland's boundary. This site is also included on "Environmental Constraint Maps" provided to military units and land managers. Photographs of white fringeless orchid are displayed in the natural resource office and have been provided to both Range Control and the Provost Marshal.

The continuation of the existing fire regime is considered the most critical management requirement. According to verbal accounts, this area experiences a wildfire at least once every two years. To insure this frequency continues, a prescribed burn will be instituted if the area has not experienced a fire by March 1 of the second year. As with other lands within the "Mountain Longleaf Community Complex", a permissive burn policy concerning wildfires will also benefit this wetland. A written fire occurrence record will be maintained for the area.

This wetland has been impacted by past fire control and range maintenance operations. A temporary firebreak bisecting the wetland has been used on a recurring basis to contain range fires. Additional range maintenance activities have also intruded on the wetland edge. Heavy equipment and vehicles will be restricted from the wetland during all future fires and maintenance activities. Maintenance will be confined to the boundaries of Range 21 and will be restricted beyond the last target berm. Wildfires and prescribed burns will utilize existing roads and firebreaks as control lines, and the temporary firebreak through the site will be allowed to successionally evolve as part of the wetland.

The U.S. Forest Service and The USFWS are currently preparing a Memorandum of Understanding (MOU) on the white fringeless orchid. Fort McClellan intends to participate as a cooperator in this multi-agency agreement. The MOU will encourage the formulation of new management techniques and increase the dissemination of relevant information to cooperators. Fort McClellan will modify this management plan to reflect new information that becomes available through this MOU. In the interim, Fort McClellan initiated a site evaluation and inventory in 1995 (Appendix A). This

inventory will be continued on an annual basis to monitor changes in the orchid population.

2.2.1.3 Bains Gap Seep

Description. Two separate SINAs were originally delineated along the east slope of Choccolocco Mountain (ANHP 1994a). A careful review of the sites indicate that they could more effectively be managed as a single SINA. The combined SINA comprises a single stream paralleling Bains Gap Road and a second ephemeral drainage that flows into this stream (Figure 4). Small spring seepages can be found along portions of this stream. The SINA is surrounded by a "Typic Mesophytic Forest" on slopes above the streams.

The significance of this community is based on the presence of both plant and caddisfly species. An isolated population of a candidate 2 plant, Fraser's loosestrife (Lysimachia fraseri) can be found in a small seep adjacent to the stream. A candidate 2 caddisfly, Polycentropus carlsoni has also been collected along this stream. In addition, six other caddisflies on the ANHP tracking list were documented from this SINA.

Management. The location of this stream/seep within 15 feet of Bains Gap Road makes protection the most critical management concern. Signs have been posted at this location and the site has been delineated on installation "Environmental Constraint Maps". Briefings concerning proximity to the road have been provided to land managers, military units and through the EQCC. These briefings will be provided on a recurring basis, particularly in reference to maintenance requirements along Bains Gap Road.

Although fire is generally not considered critical to the survival of the plant, there may be benefits of eliminating some of the competing hardwood shrubs. Wildfires will, therefore, be evaluated on an individual basis and allowed to burn if security of off-post areas can be assured. Although wildfires have occurred on these lands, only one is known within the previous ten years.

Because similar stream/seepage areas exist throughout Main Post, systematic searches will be conducted to find new populations. This stream, in particular, may provide a pathway for seed dispersal and will be considered a high priority area for routine surveys. Because the stream flows downstream across the installation boundary, coordination concerning the presence of these species will be undertaken with the off-post landowner, the Alabama Forestry Commission.

Protection of the watershed is considered critical to the future integrity of this drainage. The stream drains a steep valley on the upper reaches of Choccolocco Mountain. Erosion

and sedimentation could, therefore, pose a serious potential concern. Only existing roads necessary for the training mission will be used by vehicles on the east side of the mountain. Land managers are directed to take special precautions in minimizing maintenance requirements on area roadways. Fort McClellan uses sand and not salt during the winter on steep grades, and will continue this policy in the future.

2.2.1.4 Cave Creek Seep

Description. This wetland seep is located in the headwaters of Cave Creek north and northwest of Caffey Hill (Figure 4). The site consists of a large seepage flat with more xeric slopes to the northeast and southwest. A small population (three individuals) of the candidate 2, white fringeless orchid, was originally recorded by the ANHP (1994a). Subsequent visits to the site, however, have failed to relocate this species. Additional plants on the ANHP tracking list that have been found within this SINA include pink lady's slipper (Cypripedium acaule) and soapwort gentian.

This headwater seep has received little protection, management or study in the past. Unimproved roads both parallel and bisect the drainage, and could possibly contribute sediments to the wetland.

Management. Because existing roads through the site can contribute sediments to this drainage, measures will be implemented to improve road conditions and minimize possible adverse impacts. The steep unimproved road that bisects the seep from northeast to southwest will be closed to vehicle traffic. A 500 foot segment of this road fords the drainage and immediately climbs a very steep grade to the ridge above. This road segment can be closed with little effect on the overall road and firebreak system. An additional unimproved road parallels the drainage through the entire area. This road follows a rather level grade with a hard base and appears to contribute few sediments to the adjacent drainage. The road is necessary for training and fire control, but will be maintained under a less frequent schedule. Currently, the road is designated as a primary firebreak and is maintained on a three year schedule. By designating this segment as a secondary firebreak, active maintenance will be eliminated and the road will be allowed to revert to a woods trail. The condition of this road will be periodically reviewed to insure that maintenance or other measures are not required.

Wildfires occasionally burn through this seep and, probably, benefit some of the unusual herbaceous plants that occur within these wetlands. Because this area is located within the "Mountain Longleaf Community Complex", it will benefit from fire management policy prescribed for longleaf pine

forests (Section 2.2.1.1).

Timber harvesting currently is not planned or scheduled within this watershed. Auburn University, however, is preparing a longleaf pine management/restoration plan that will focus on lands surrounding this SINA. If timber harvesting and other silvicultural techniques are recommended to restore the longleaf pine community, special care will be taken to consider potential impacts and possible mitigative measures that should be implemented to protect this wetland seepage.

An active effort will be taken by installation natural resource personnel to relocate the white fringeless orchid population, and more fully characterize other species that may occur in this seep.

2.2.1.5 South Branch Cane Creek

Description. Headwaters of the South Branch Cane Creek include significant stream, mountain seep and typic mesophytic forest communities (Figure 5). The surrounding forested mountain slopes are critical to the integrity of these aquatic and wetland communities. Much of this watershed includes the forested slopes of the Stanley Hill SINA (Section 2.2.1.7). A candidate 2 caddisfly, Polycentropus carlsoni, and an even rarer single site endemic caddisfly, Hydroptila setigera, have been collected from this stream (Mettee and Haynes, 1979). An additional 13 caddisfly species from this stream are included on the ANHP tracking list.

Both past and present military activities have taken place along this small stream. Because of isolation within a mountainous section of Main Post, this site has been used for a variety of restrictive or security training types in the past. Much of this area was formerly a chemical munitions disposal training area. Until 1973, training with chemical warfare agents, Mustard and Sarin, reportedly took place on this range. A 1.5 acre disposal site adjacent to the stream has been identified and fenced to prevent entry. This site is currently under investigation through the Department of Defense Installation Restoration Program. This program is coordinated through the Alabama Department of Environmental Management (ADEM) and the U.S. Environmental Protection Agency (USEPA) as part of the Defense Environmental Restoration Program (DERP). Any remediation of this site will require analysis through the NEPA process. Potential environmental effects on this headwater stream and unique biota will be considered in the EA.

Current training facilities along this headwater stream are limited to a single smoke generation range, Range 24-A. Approximately 10 acres have been cleared of trees and planted

in a maintained grass cover. A fog oil drum storage facility has been constructed to support range operations. This facility was designed with a stormwater retention tank and oil/water separator, and operates under NPDES permit AL0055999. Discharges are monitored for pH, TOC, Pb, BETX, Napthalene, oil/grease, and water flow. This storage facility operates in compliance with standards established for this permit.

Management. The primary management goal on this stream is to insure the maintenance of water quality and minimize the influx of sediments from surrounding upland areas. The forested slopes of this watershed are not included within the commercial forest program and provide a stable cover that minimizes erosion and sedimentation. Range 24-A operations constitute the primary source of possible degradation to this headwater stream.

Existing guidance to Range 24-A personnel has been limited to the placement of vehicle restriction signs on the north side of the range. A review of site conditions, however, indicate a more structured plan is needed to insure protection of the stream and adjacent wetlands. Portions of Range 24-A have become eroded, and sedimentation of lower range areas have resulted. Most sedimentation has been confined to the range and prevented from reaching the stream by the presence of a vegetation buffer along the stream. In an effort to minimize erosion/sedimentation potential and remediate existing eroded conditions, the range will be revegetated and a streamside vegetation boundary will be designated. The establishment and maintenance of a permanent
grass cover on denuded areas is critical in stabilizing the range. In addition, the existing vegetation buffer along the stream has been important in filtering sediments and preventing significant sediment loads from reaching the stream. Signs will be placed to designate the vegetation buffer boundary.

Another possible source of sediments to the stream could originate from firebreaks that cross the stream at several locations. Firebreak maintenance at fording locations will be minimized to reduce soil disturbances within these sensitive areas. An additional firebreak/woods road that parallels the upper reaches of the stream will be designated as a secondary firebreak and reviewed periodically for maintenance requirements. Crossing of the stream by tracked and wheeled vehicles will be restricted to existing fords and undertaken only when absolutely necessary.

An allow burn policy will be applied to all wildfires unless range facilities are threatened or danger of containing the fire exists. This SINA will also be included in the prescribed burning program for Range 24-A.

2.2.1.6 Moorman Hill Mountain Juniper

Description. This SINA encloses the westerly ridge of Moorman Hill at an elevation of about 1,800 feet (Figure 4). The local habitat is "dry Virginia pine-oak forest", grading into "mountain longleaf pine" below the ridge. The site is very stoney with a number broad rockfaces.

The significance of this area is based on the presence of common juniper (Juniperus communis) within protected rock faces along the ridge. This is the first known occurrence of common juniper in the State of Alabama, and also a southern range extension for the species.

This ridge is rather isolated and protected from most activities on Fort McClellan. Historical fires have been rather severe along this ridge, eliminating many of the larger trees on steep slopes. While juniper may be sensitive to fires, these events may well have benefited the plant by opening up the forest and allowing this plant to survive within protected rockfaces.

Management. The isolation of this area provides adequate protection from routine training and land management activities. The continued presence of low intensity fires, however, is considered important to the survival of these plants (ANHP 1994a). Because this site is contiguous with downslope longleaf pine forests, the prescribed burn program will be expanded to include this ridge. The fire prescription will involve igniting a low intensity backfire along the ridge. The frequency will be determined by the need to burn longleaf pine forests and would probably target three year intervals.

2.2.1.7 Stanley Hill Chestnut Oak Forest

Description. This site is located on the northern and western slopes of Kings and Stanley Hills, and represents the single largest tract of mesic woodlands on Main Post (Figure 5). The entire site is actually an inclusion within the extensive "Mountain Longleaf Community Complex" (Section 2.2.1.1). These forests, however, are identified separately because of their potential importance to breeding neotropical migratory birds.

Management. This site will be considered a component of the "Mountain Longleaf Community Complex", and will be managed according to objectives and prescriptions developed for the combined areas. These lands were previously excluded from the commercial forest program because of steep slopes, poor soils, and low quality of standing timber.

An allow burn policy will be implemented for wildfires that

are reported on these lands. Because these woodlands have been identified as particularly valuable to breeding birds, active suppression will be considered a preferred option from April to June. These lands are capable of supporting multiple uses and do not require the formulation of additional management or restrictive guidelines.

2.2.1.8 Reynolds Hill Turkey Oak

Description. This SINA is located on the upper slopes of Reynolds and Cable Hills along the southwestern boundary of Main Post (Figure 6). The forest is dominated by mature longleaf pine and should be considered an inclusion within the previously described "Mountain Longleaf Community Complex" (Section 2.2.1.1). The significance of this site is based on the occurrence of a small population of turkey oak (Quercus laevis). This occurrence represents a major disjunction from known populations of turkey oak in Alabama.

These forests are isolated from most existing activities on Fort McClellan, and are infrequently used for reconnaissance and foot maneuvers. Although the area underwent timber harvesting in the 1960s or 1970s, field surveys indicated that little harm or alteration has occurred to the area (ANHP 1994a). The entire site, however, has since been eliminated from the commercial forestry program in Fort McClellan's most recent Integrated Natural Resource Management Plan (Pittman et al. 1991). This action was initiated because of steep slopes, poor soils and low timber quality.

Management. This site will be considered as a component of the "Mountain Longleaf Community Complex", and will be managed according to objectives and prescriptions developed for the combined areas. Because timber harvesting has opened the understory to sunlight, fire has been identified as a critical requirement for controlling the profusion of shrubs (ANHP 1994a). This site will, therefore, be given priority in scheduling growing season burns. An allow burn policy regarding wildfires will also be instituted throughout these forests. The proximity of Anniston to the west, however, could create smoke problems that must be considered during any prescribed burning or wildfire operations.

2.2.1.9 Davis Hill Honeysuckle

Description. This SINA is located on the upper slopes of Davis Hill above the 1300 foot contour (Figure 5). Forest types on the area include "dry Virginia pine forest" and Piedmont monadnock forest" associated with "mountain longleaf pine forest". The significance of this site is based on the presence of yellow honeysuckle (Lonicera flava), a plant included on the ANHP tracking list.

Management. This site forms an inclusion within the contiguous "Mountainous Longleaf Community Complex" (Section 2.2.1.1). General management policies applied to this contiguous forest will also be suitable for management of Davis Hill Honeysuckle. Because honeysuckle is not a fire adapted plant, fire is not critical to the plant's survival and the site will not be considered a priority for prescribed burning. Allow burn policies, however, will be implemented for wildfires. The proximity of this site adjacent the southern installation boundary, however, makes smoke an important consideration for both wildfires and prescribed burning.

The area will be evaluated annually to insure that the canopy remains open allowing light to reach the understory. A limited overstory removal effort will be implemented should the canopy increase and threaten the survival of yellow honeysuckle.

2.2.1.10 Marcheta Hill Crow Poison Seep

Description. This small headwater seep is located along the east side of Marcheta Hill (Figure 4). The dominant community is a "typic mesophytic forest", including the rocky aspect of the "mixed pine-hardwood colluvial forest". The significance of this site is based on the putative occurrence of crow poison (Zigadenus leimanthoides), a plant included on the ANHP tracking list.

This small headwater stream and seep are closely associated with the previously discussed and larger Marcheta Hill Orchid Seep (Section 2.2.1.2). The lower reaches of the seep, however, have been altered and degraded from construction and use of Ranges 24 and 21. Only the upper reaches of the seep remain in a relatively undisturbed condition.

Management. This site will be considered as an inclusion within the "Mountain Longleaf Community Complex", and will be managed according to the objectives and prescriptions developed for the longleaf pine community. Fire will not specifically be prescribed for this site, but wildfires will be allowed to burn when conditions permit.

2.2.1.11 Frederick Hill Aster Site

Description. This SINA is located on sunny exposures along the steep western slopes of Choccolocco Mountain north of Bain's Gap. The site contains the single documented population of sky-blue aster (Aster azureus) in the State of Alabama. This plant is restricted to a very dry version of the "Piedmont monadnock forest" type, which is part of the much more widespread "Mountain Longleaf Community Complex". Because this aster is probably far more widespread in distribution, specific SINA boundaries will not be delineated

until further surveys have more accurately inventoried and studied the plant. The general location of known records is provided on Figure 2.

Management. Fire should be considered critical to the maintenance of open areas needed for this plant's survival. Immediate plans will encourage an allow burn policy on lands known to contain this species. Once the distribution is more fully known, specific prescribed burn policies can be formulated.

2.2.2 Pelham Range

SINAs on Pelham Range were inventoried and identified through a separate investigation (ANHP 1994b). Within this study, a SINA was deemed to be any biological community that harbored a population of at least one federally-listed or candidate species. Four such areas were identified within the bounds of Pelham Range (Figures 3,7-9). A fifth SINA, the Cane Creek Corridor, has since been added to the list (Figure 3).

2.2.2.1 Willett Springs

Description. The Willett Springs SINA is located in the central portion of Pelham Range adjacent to Cane Creek (Figure 7). This natural area includes a perennial spring, impounded two acre pool, and a 50 meter spring run. Willett Springs is located directly adjacent to an operational military training site. This area has been maintained and used by military trainers for many years. The border of the spring pool has been cleared of woody vegetation and planted in grass. Military trainers have mowed this grass as part of their normal maintenance requirements.

A large population of Tennessee yellow-eyed grass (Xyris tennesseensis), a federally endangered species, can be found along the wetland border of the spring pool. A detailed description and management plan for this endangered plant has been provided in Section 3.1.4.

The pygmy sculpin (Cottus pygmaeus), a federally threatened species, is known only from Coldwater Spring and its run in Calhoun County. Coldwater Spring is located five miles south of Pelham Range and provides the source of potable water for Calhoun County. The recovery plan for this species proposes that systematic surveys of suitable springs within the Coosa drainage be undertaken with the intent of eventually establishing new populations (USFWS 1991c). Fort McClellan reviewed and concurred on the draft recovery plan (Appendix B). Both Willett Springs and the Cabin Club Spring were considered potential transplant sites by installation personnel. Concurrence on the plan does not constitute any funding commitments and an actual evaluation of habitat suitability would take place at some future time.

Field horsetail (Equisetum arvense) can also be found along the spring pool and run. This plant is included on the ANHP tracking list. The cool microclimate created by this spring is responsible for the presence of these plants on the southern periphery of their range.

Management. Detailed management requirements for Tennessee yellow-eyed grass (TYG) are provided in Section 3.1.4. While these management efforts can be expected to benefit the entire wetland community, additional studies have been programed to more fully managed this SINA under a broader ecosystem approach. A comprehensive ecological inventory/ evaluation of Willett Springs will provide a baseline for managing this calcareous spring complex. This study has been funded under the LRMP and contracted to the ANHP (Section 1.7.2).

Because this spring is located adjacent to an operational training area, additional efforts have been implemented to avoid adverse impacts from training and recreation. Information signs have been placed around the spring pool and trainers have been briefed on the significance and sensitivity of this wetland complex. The Directorate of Environment currently performs all maintenance activities around the spring.

2.2.2.2 Lloyd's Chapel Swale

Description. The Lloyd's Chapel Swale SINA is located along the southeastern boundary of Pelham Range (Figure 8). An ephemeral spring flows from Fort McClellan property onto adjacent Alabama Department of Transportation (ADOT) lands. The area has been severely altered through human activities. On federal property, a boundary road has been constructed across the seepage area. Together with road use and erosion/ sedimentation, this area has been continually impacted and altered. The DOT portion of the site has been planted in grass and is periodically mowed.

The presence of a significant population of TYG, a federally endangered plant, is responsible for designation of this area as a SINA. A detailed description and management program for this plant has been provided in Section 3.1.4.

Management. Intensive use and alteration to this wetland community appears to have been critical to the survival of TYG. Proposed management within this SINA will, therefore, focus on the maintenance of this plant which requires open sunlight and disturbed conditions. As further information on this species becomes available, a broader management program may be feasible. Until that time, management prescriptions provided in Section 3.1.4 will be followed.

2.2.2.3 Impact Area Barren

Description. This SINA is located on the western portion of the Large Impact Area (Figure 9), and is entirely confined to an impact area containing unexploded ordnance. The impact area is classified off-limits to all personnel under Fort McClellan Regulation 350-2. Any access must first be coordinated and authorized by Range Control and the Explosive Ordnance Detachment (EOD).

The SINA is comprised of an open xeric hardpan savanna ranging from relatively dense to an open tree canopy. The herb layer is dominated by grasses, sedges and rushes, with strong legume and composite components. The virtual absence of invasive exotics, at least on portions of the site, suggest that some of this area has never been disturbed by plowing. Shallow ephemeral streams overlying a shale bedrock can be found throughout this area.

The presence of a population of Mohr's barbara buttons (Marshallia mohrii), a federally threatened plant, is responsible for the designation of this area as a SINA. These plants are found along ephemeral streams that flow through the site. An ocular estimate recorded about 3,000 individuals along the drainages during June, 1995. A detailed description and management program for this plant has been provided in Section 3.1.3.

Management. Recurring wildfires have been responsible for maintaining this site in an open savanna condition. The continuation of this fire regime is considered critical to the long term maintenance of this community. Detailed management prescriptions can be found in Section 3.1.2.

2.2.2.4 Cabin Club Spring

Description. This SINA is located in the southwestern corner of Pelham Range near the installation's boundary (Figure 9). A small spring and calcareous pool approximately 100 feet in diameter and three feet deep comprise most of this natural area. The spring run enters a tributary to Cane Creek a short distance from the spring pool. This tributary stream originates from a number of nearby springs on and off-post, and is considered part of the SINA.

The pygmy sculpin, a federally threatened species, is known only from Coldwater Spring and its run in Calhoun County. Coldwater Spring is located five miles south of Pelham Range and provides the source of potable water for Calhoun County. The recovery plan for this species proposes that systematic surveys of suitable springs within the Coosa drainage be undertaken with the intent of eventually establishing new populations (USFWS 1991c). Fort McClellan reviewed and concurred on the draft recovery plan (Appendix B). Both

Willett Springs and the Cabin Club Spring were considered potential transplant sites by installation personnel. Concurrence on the plan does not constitute any funding commitments and an actual evaluation of habitat suitability would take place at some future time.

Another fish classified as a candidate, the coldwater darter (Etheostoma ditrema), has also been collected from the tributary stream below the spring (Mettee and Haynes 1979). More recent sampling efforts by both ADCNR and ANHP, however, have failed to relocate this species.

Management. The spring pool does not appear to be experiencing adverse impacts from surrounding activities. The watershed immediately above the spring run, however, includes sections of the Anniston Army Depot (AAD). Construction and related activities on the AAD appear to contribute silt and sediments to the stream and may effect habitat suitability for the coldwater darter. Additionally, the Pelham Range boundary has not been surveyed in this area, and a clear boundary line and fence are absent. Portions of this area, including the spring, are accessed and used by local civilians. A recreational cabin has been constructed with direct access to the spring pool.

Active management is not considered necessary for maintenance of the SINA. Protection and periodic monitoring however, are needed to ensure the spring is not disturbed. A 1383 project will be submitted to monitor water quality, complete boundary surveys, and install security fencing.

2.2.2.5 Cane Creek Corridor

Description. Cane Creek flows in a westerly direction across seven miles of Pelham Range (Figure 3). The stream is about 18 feet in width with two year low flows averaging 15 cfs (Hayes 1978). The Pelham Range stream corridor is forested with the exception of a single training area on the western edge of the range.

Under the Nature Conservancy's Southeastern Regional Ecological Community Classification system, two basic community types typify the Cane Creek floodplain; sweetgum-mixed bottomland oak forest and sycamore-sweetgum-American elm bottomland forest. Most forests along this corridor consist of mature trees.

The designation of the Cane Creek Corridor as a SINA is based on mist net captures of gray bats (Myotis grisescens) during August, 1995. Gray bats are currently classified as endangered by the USFWS. Mist nets were set up at two locations along Cane Creek with gray bats comprising 41 percent of total mist net captures. The results of this survey indicate that Cane creek provides foraging habitat for

this species. Cave roosts are not known from Pelham Range, or within 65 km of the installation. A more detailed description of gray bat status and management are provided in Section 3.1.1.

Management. Current management prescriptions involve the protection and maintenance of the Cane Creek forest corridor. The foraging use of Cane Creek was revealed in recent mist net surveys along Cane Creek. Research on gray bats has revealed that removal of the forest canopy along streams can lead to increased predation upon and avoidance by gray bats. Until the completion of more indepth studies on gray bat distribution and habitat suitability, the maintenance and protection of the forested stream corridor is considered the primary management requirement. A detailed status review, survey requirements and preliminary management prescriptions are provided in Section 3.1.1.

3.0 Federally Endangered, Threatened or Proposed Species

3.1 Extant Populations

Four species listed as endangered or threatened by the USFWS have been recorded on Fort McClellan (Table 1). The army recognizes their obligations under Section 7 and 9 of ESA, and have prepared management/protection programs to insure the continued presence of these species on Fort McClellan.

An attempt has been undertaken to manage these species by insuring the integrity and health of the entire community. This has been accomplished through the delineation of SINAs identified in Section 2.0. Discussions in Section 3.0 are referenced to applicable SINAs where a more broad based understanding and management approach is presented. Section 3.0, however, presents baseline information and prescriptions specific to listed species as required under Section 7 of the ESA.

Time, cost and personnel estimates have been developed for all listed species. These estimates are provided under two separate categories; in-house staff and contract studies. In-house personnel will accomplish educational, management, monitoring and routine inspection requirements. Personnel costs were developed for technician ($16/hr) and professional ($26/hr) positions. Contract study estimates involve more specialized inventory or field assessments that require the services of private contractors. A summary of total costs are provided on Executive Summary Table 1.

Fort McClellan maintains a computer log of endangered/ threatened species observations. This Endangered Species Monitoring Log (ESML) records the status of populations, as well as, significant events within individual communities. A camcorder is also used to maintain a visual record of populations.

Program checklists will be completed annually to evaluate accomplishments and compliance with the installation's ESMP (Appendix J).

3.1.1 Gray Bat (Myotis grisescens)

3.1.1.1 Description

The gray bat was officially listed as endangered by the U.S. Fish and Wildlife Service in 1976 (USFWS 1976). A recovery plan with the objective of delisting was subsequently prepared and approved in July, 1982 (USFWS 1982).

The gray bat is the largest member of the genus Myotis in the eastern United States. The forearm measures 40-46 mm, and

Table 1

FEDERALLY ENDANGERED AND THREATENED SPECIES
FORT MCCLELLAN, ALABAMA

Latin Name	Common Name	Status	Location (SINA)	Map
Myotis grisescens	Gray Bat	Endangered	Cane Creek Corridor	Figure 3
Cyprinella caerulea	Blue Shiner	Threatened	Choccolocco Creek -Leased Land (SINA Not Designated)	Figure 2
Marshallia mohrii	Mohr's Barbara Buttons	Threatened	Impact Area Barren	Figure 9
Xyris tennesseensis	Tennessee Yellow-eyed Grass	Endangered	Willett Springs Lloyd's Chapel Swale	Figure 7 Figure 8

the bat weighs from 7-16 gms (usually 8-11 gms). The gray bat is easily distinguished from other bats by unicolored dorsal fur. All other eastern bats have distinctly bi- or tri-colored fur on the back. Following molt in July and August, gray bats are dark gray, but often bleach to chestnut brown or russet between molts. The wing membrane connects to the foot at the ankle rather than at the base of the first toe, as in other species of Myotis (USFWS 1982).

3.1.1.2 Distribution

The gray bat is a monotypic species that occupies a limited geographic range in limestone karst areas of the southeastern United States. Populations are found mainly in Alabama, northern Arkansas, Kentucky, Missouri and Tennessee (USFWS 1982).

Within Alabama, gray bats are known from approximately 40 cave systems in 11 northern counties. Almost all these caves are associated with the Tennessee River valley. Transient bats do utilize a cave in Conecuh County, and it is possible that other caves in southern Alabama support populations of this species (Mount 1986). Gray bat roosting caves have not been identified within 65 km of Fort McClellan. To the north, three roosting caves (Portersville Bat, Lykes and Stanley Carden Caves) have been recorded between Portersville and Fort Payne. To the west, the closest roosting cave is Anderson Cave, which is over 70 km from the installation (M. Bailey, pers comm).

Mist net surveys were conducted on and adjacent to Fort McClellan between August 8 and 13, 1995 (R. Madej, pers comm). Gray bats were captured along both Choccolocco Creek (state leased land) and Cane Creek (Pelham Range). Out of 42 bats captured during the survey, 15 (36 percent) proved to be gray bats. This preliminary data indicate that stream corridors (Cane and Choccolocco Creeks) provide at a minimum foraging habitat for gray bats in this region of the State.

Because the nearest known gray bat roost is over 65 km from Fort McClellan, the capture of gray bats, particularly at such a high rate, was not anticipated. The implications of these captures are that additional unknown roosts most likely exist within 20 km of Fort McClellan.

Captures along Choccolocco Creek were made within the Choccolocco State Forest (Figure 2). Seven bats were captured, two of which were gray bats (29%). This land is administered by the Alabama Forestry Commission (AFC) and leased to the army for training purposes (U.S. Army Corps of Engineers 1994). Within the lease agreement, the AFC has retained all responsibility for the management of natural resources. Fort McClellan use of the land is restricted to those activities approved by the AFC 30 days in advance.

Training within leased land is generally limited to light intensity foot maneuvers. Because the blue shiner, a threatened species, also inhabits Choccolocco Creek, existing "Environmental Constraint Maps" depict this area as sensitive habitat containing endangered species. The forest manager for the AFC was advised of gray bat captures on August 9, 1995. The ANHP was also advised of this discovery during the following weeks.

Captures along Cane Creek were made within the Pelham Range portion of the installation (Figure 3). Cane Creek flows across the length of Pelham Range and enters the Coosa River five miles to the west. Of 32 bats captured in mist nets, 13 (41%) were gray bats. Except for an open training area on the western edge of the Pelham Range, streamside areas are undeveloped and entirely forested. ANHP was advised of gray bat captures on Pelham Range during August, 1995.

3.1.1.3 Life History/Ecology

The gray bat is almost entirely restricted to cave habitats, and, with rare exception, roosts in caves year-round. Approximately 95 percent of the entire known population hibernates in only nine caves each winter, with more than half in a single cave. Undisturbed summer colonies in Tennessee and Alabama contain from 5,000 to 250,000 or more bats each, with most numbering 10,000 to 50,000 (USFWS 1982).

Most gray bats migrate seasonally between winter hibernating caves and summer maternity and bachelor caves. Mating takes place prior to hibernation, with fertilization and implantation delayed until spring. Following emergence in late March to early April, gravid females congregate at traditional maternity caves. Males and nongravid females usually emerge later, mid-April to mid-May, and form smaller groups at selected caves within the colony's home range. Each female gives birth to a single offspring during late May or early June. During late summer and early fall, colonies disperse to winter caves (Mount 1986).

Gray bat summer roosts are usually located within four km of major water bodies. Most foraging occurs within 5 m of the water's surface, usually near a shoreline or streambank. Individuals establish foraging territories, which are actively defended. These foraging territories may be established as far as 20 km from the roost cave. Surveys in Tennessee have demonstrated that gray bats feed almost exclusively on mayflies at certain times of the year (Mount 1986).

Forested areas surrounding and between caves, as well as, over water-feeding habitat are clearly advantageous to gray bat survival. Forest cover provides increased protection from predators such as Screech Owls. In addition, surveys

have demonstrated that reservoirs and rivers that have been cleared of their adjacent forest canopy are avoided as foraging areas by gray bats (USFWS 1982).

3.1.1.4 Reason for Listing

Surveys during the late 1960's and 1970's revealed a decline of approximately 80 percent in gray bat populations throughout their range. As a consequence of their combined thermoregulatory and other habitat requirements, gray bats congregate in larger numbers and in fewer hibernating caves than any other North American bat. This concentration of such a large proportion of the population into so few caves constitutes the most serious threat to gray bat survival. According to the recovery plan (USFWS 1982), the following are considered to be specific factors known or suspected of causing gray bat population declines: human disturbances at hibernating and maternity caves; pesticide applications; chemical pollution and siltation of waterways; deforestation of areas around caves and foraging areas; inundation of caves by new impoundments; alteration of foraging areas from creation of impoundments; increased cave commercialization and improper gating; and natural cave flooding and closure of cave entrances.

Since preparation of the recovery plan, initiatives to purchase and protect roosting caves have been responsible for an overall increase in the gray bat population (USFWS 1991d). With an increasing population, consideration may be given to downlisting the gray bat to threatened in the near future (R. Currie, pers comm).

3.1.1.5 Conservation Measures

According to the recovery plan (USFWS 1982), actions to recover gray bat populations should include acquisition and protection of caves, prevention of habitat destruction and degradation, public education, and further research, particularly on the effects of environmental disturbances. A number of federal and state agencies have been active in acquisition, protection and management actions at gray bat caves.

Gray bats only recently were discovered to forage on Fort McClellan lands. During mist net surveys conducted from August 8 through 13, 1995, 15 gray bats were captured along Cane Creek (Pelham Range) and Choccolocco Creek (state leased land). Section 2.2.5 of the Recovery Plan Narrative (USFWS 1982) recommends that foraging areas and travel lanes be included in Section 7 Consultation requirements for federal facilities.

Because data on Fort McClellan are limited to a single sampling effort in August, 1995, further research is needed

before the significance of the gray bat presence can be clearly demonstrated. Existing data, however, strongly indicate that larger stream corridors, such as Choccolocco and Cane Creeks, provide foraging habitat for this species. Preliminary management prescriptions will, therefore, be implemented prior to the completion of future investigations. These management programs will focus on maintaining existing forested corridors along Cane Creek. Choccolocco Creek is not within the management jurisdiction of the army, and the AFC has been advised of gray bat captures. More detailed efforts in characterizing the importance of army lands in gray bat survival are provided under the monitoring plan.

3.1.1.6 Conservation Goals

Conservation goals are to protect and maintain the forested corridor along Cane Creek. This will be accomplished through the designation of Cane Creek and the adjacent floodplain forest on Pelham Range as a SINA. A description of this area can be found in Section 2.2.2.5. These goals will be modified to include other lands and values once a more indepth investigation/biological assessment has been completed.

Specific guidelines will be provided concerning forestry and land clearing operations within this stream corridor. Although most of these activities are restricted or curtailed under existing policy, any new proposed activity will consider potential effects on the gray bat. Future goals will be directed at objectives established in the recovery plan (USFWS 1982).

3.1.1.7 Management Prescriptions and Actions

Management prescriptions are intended to protect and maintain the forested corridor along Cane Creek. Because Pelham Range is used for field training exercises, most of the area is undeveloped and maintained in a forest cover. Forestry and land clearing/development projects are the primary threats to this streamside corridor.

Forestry operations on Pelham Range primarily involve the management and harvest of pine species. Because of environmental (e.g. erosion, sedimentation, etc.) and ecological (e.g. wetlands, neotropical migrants, unique biota, etc.) issues, the majority of floodplain forests have been excluded from timber harvest plans. Only floodplain terraces that contain a major pine component undergo timber harvesting. In addition, Best Management Practices" (AFC 1993) are included as a requirement of all timber sale contracts. Requirements for streamside management zones will be expanded to include at least 50 feet as specified for lands managed for wildlife objectives. Although Best Management Practices allow a partial cut within this zone,

Fort McClellan will restrict all timber harvesting.

Any proposed land clearing or development projects along Cane Creek would represent a landuse change that would trigger a National Environmental Policy Act (NEPA) review. Potential effects on an endangered species would have to be considered, and alternative site analysis seriously evaluated. In addition, such actions would require Section 7 Consultation requirements on a project by project basis.

3.1.1.8 Monitoring Plan

The formulation of a final management program is dependant on the findings of ongoing and proposed studies. A Biological Assessment (BA) on the gray bat is currently being prepared for the training mission at Fort Leonard Wood, Missouri. This BA is in response to the Base Realignment and Closure Commission's decision to move training missions from Fort McClellan to Missouri. The BA includes a detailed assessment of the training mission on Fort McClellan and should prove useful in evaluating training impacts on the installation.

Fort McClellan has recently initiated a phased study to identify gray bat distribution and habitat use on the installation. The initial phase involves a background search to document historical records, known caves, and acquire and review maps. This will be followed by a habitat suitability study using detailed local maps and a field reconnaissance. On completion of the habitat suitability study, the findings will be used in coordination with state and federal agencies to design and determine the need for future monitoring and/or survey programs.

3.1.1.9 Time, Cost and Personnel

Funding requirements include in-house and contract personnel. In-house personnel will accomplish management, administration, consultation, monitoring and protection. Contract personnel would complete technical inventories, surveys and assessments. Contract personnel estimates could increase or decrease depending on survey and consultation results. The actual requirement to conduct mist netting, radio telemetry and cave studies will be determined through Section 7 consultation with the USFWS.

In-house Personnel		Hrs	Cost
Professional ($26/hr)	-	160	$4186
Technician ($16/hr)		40	$ 640
Subtotal			$4826
Contract Personnel			
Background Search/Habitat Study			$19500
Agency Coordination			$10140

Mist Netting (Possible)	$56940
Radio Telemetry (Possible)	$71500
Cave Studies (Possible)	$33800
Subtotal	$191880
Total	$196706

3.1.2 Blue Shiner (Cyprinella caerulea)

3.1.2.1 Description

The blue shiner was officially listed as threatened by the U.S. Fish and Wildlife Service in 1992 (USFWS 1992a). A final recovery plan with the objective of delisting was subsequently prepared in August, 1995 (USFWS 1995).

The blue shiner is a medium-sized minnow that may attain 10 cm in total length. It often appears to be dusky blue with pale yellow fins. The scales are strongly diamond-shaped and outlined with melanophores. The lateral line is distinct. Mature males develop nuptial tubercles, a lemon yellow coloration in the fins and a metallic blue sheen on the body during breeding season. Females apparently do not develop tubercles or breeding colors (USFWS 1993).

3.1.2.2 Distribution

Historically, the blue shiner inhabited the Cahaba and Coosa River systems of the Mobile drainage in Alabama, Georgia and Tennessee (Pierson and Krotzer 1987). The fish has since been extirpated from the Cahaba River system. Within Alabama, the blue shiner is currently restricted to Weogufka and Choccolocco Creeks, and the lower reaches of the Little River. In Tennessee the range includes the Conasauga River, and a tributary, Minnewauga Creek. In Georgia, the blue shiner historically occurred in the Conasauga, Coosawattee and Oostanaula River systems. Collections in the last ten years, however, have been limited only to the Conasauga River. At the present time, the blue shiner is believed to comprise six separate populations within the three state area (USFWS 1995). Populations of blue shiner have been fragmented and isolated rangewide, and are, therefore, vulnerable to adverse impacts (USFWS 1993).

Within Choccolocco Creek, the blue shiner is limited to about 22.6 km of main channel and the lower reaches of Shoal Creek (Pierson and Krotzer 1987). Optimal habitat for the blue shiner can be found from Shoal Creek south to the Town of DeArmanville (M. Pierson, pers comm).

The Choccolocco Corridor is leased by the Army from the AFC. Approximately two miles of Choccolocco Creek flow across this army leased corridor in a southerly direction (Figure 2).

The entire length of the stream within the corridor is considered optimal habitat for the blue shiner.

3.1.2.3 Habitat/Ecosystem

Habitat preference on Choccolocco Creek appears to be slack to slow current over sand or mixture of boulders, cobble, and sand. Blue shiners were collected at a depth from 15 cm to one meter. Lateral pools away from the main run of the stream, and backwaters with sand substrate were ideal habitat (Pierson and Krotzer 1987).

The blue shiner appears intolerant of high turbidity and is probably a mid-depth feeder competitively dependant on high visibility (Mount 1986). The spawning period appears to extend from early May to late August with multiple clutches of eggs being deposited. Research indicates that blue shiners live for three years, and that most spawning fish are two years old. Mortality of adults during August and September is high, and possibly results from exhaustion during spawning (USFWS 1993).

3.1.2.4 Reason for Listing

The blue shiner currently inhabits only a remnant of its' former range. The recent extirpation of the blue shiner from the Cahaba River system is attributed to water quality degradation resulting from urbanization, sewage pollution, and strip mining activities. Within the Coosa River system, populations have been reduced and fragmented by flood control and hydropower reservoirs. Remaining isolated populations are particularly susceptible to environmental change. Continuing urbanization of north Georgia and the increasing demand for water by metropolitan areas also constitute threats to this species (USFWS 1993).

3.1.2.5 Conservation Measures

Studies on water quality and population trends in the Cahaba River are continuing, and should allow the development of a course of action to eventually restore habitat and re-establish the blue shiner in the Cahaba River (USFWS 1993). Water quality enhancement planning actions are also under way in Georgia and Tennessee (USFWS 1995).

The blue shiner can be found within a section of Fort McClellan leased from the AFC. This land is administered by the AFC and used by the Army for training purposes (U.S. Army Corps of Engineers 1994). Within the lease agreement, the AFC has retained all responsibility for the management of natural resources, including plants and wildlife. Fort McClellan use of the land is restricted to those activities approved by the AFC 30 days in advance. Training within leased land is generally limited to light intensity foot

maneuvers.

3.1.2.6 Conservation Goals

Although Fort McClellan is explicitly prohibited from performing resource management activities, the Army recognizes their responsibility to insure protection of Choccolocco Creek during military training. Conservation goals involve protection measures that can be accomplished through educational briefings and field guidance materials.

3.1.2.7 Management Prescriptions and Actions

Management prescriptions are limited to educational programs developed for military trainers. Briefings are provided to military trainers that designate Choccolocco Creek as sensitive lands containing endangered species. The location of all endangered species on Fort McClellan are provided on "Environmental Constraint Maps" that are available through Range Control and the environmental office. A field guide entitled, "Protecting Natural Resources in the Field" is provided along with maps and allows trainers to understand specific activities that can take place on sensitive areas.

Any training activity that disturbs land or water must first be reviewed by the installation's environmental office. If the proposed activity may effect an endangered species, NEPA and Section 7 documentation would be required.

3.1.2.8 Monitoring Plan

Monitoring the status of populations within Choccolocco Creek is the responsibility of the AFC and the ADCNR. Fort McClellan natural resource personnel review the status of these populations through contacts with the ANHP and the USFWS Ecological Services in Jackson, Mississippi.

3.1.2.9 Time, Cost and Personnel

Funding requirements are limited to in-house personnel involved in briefings, providing written guidance and interacting with agency personnel.

In-house Personnel		Hrs	Cost
Professional ($26/hr)	-	20	$520
Technician ($16/hr)	-	10	$160
Total			$680

3.1.3 Mohr's Barbara's Buttons (Marshallia mohrii)

3.1.3.1 Description

Mohr's barbara's buttons (MBB) was officially listed as

threatened by the U.S. Fish and Wildlife Service in 1988 (USFWS 1988). A recovery plan with the objective of delisting was subsequently prepared and approved in November, 1991 (USFWS 1991b).

MBB is a perennial, 30-70 cm tall, single stemmed with a few basal leaves 6-10 cm long. The leaves are alternate and elliptical with long-winged petioles and three main veins. The leaves are concentrated around the base with upper leaves becoming smaller and narrower. Two to six flower heads, 1.5 cm long, 2.5 cm wide, grow on a ridged, sparsely hairy stem at the top of one flower stalk in a candelabra shape. Each flower is white with narrow petals. MBB flowers from May through June. The fruit is dry, hard, 1-seeded with bristle-tipped ends sticking out from the flower head (Jackson et al. 1992).

3.1.3.2 Distribution

According to the recovery plan (USFWS 1991b), MBB is known from both the Cumberland Plateau and Ridge and Valley physiographic regions. With the exception of a single site in Walker County, Alabama, all recent records, however, were confine to the Ridge and Valley. Within Alabama, fifteen extant populations were identified in Bibb (1), Etowah (4) and Cherokee (10) Counties. The largest populations were recorded in Cherokee County with an estimated 1,000 plants at two sites. Seven sites supported limited populations (12-50 individuals) and six supported moderate-sized populations (100-200 individuals). Within Georgia, seven populations were located in Floyd County. Three sites supported limited populations (17-50 individuals) and four supported moderate-sized populations (100-300).

Since preparation of the recovery plan, 47 additional local sites have been discovered in Bibb County, Alabama. These local sites represent about 10 new population centers (C. Norquist, pers comm).

The Fort McClellan site also represents a new site discovered since recovery plan preparation. This population is located within the Large Impact Area on Pelham Range and contains about 3,000 individuals (Figure 9). This site is considered one of the largest populations outside Bibb County.

3.1.3.3 Habitat/Ecosystem

MBB typically occurs in moist, prairie-like forest openings and along shale-bedded streams. It can often be found around natural spring and seep areas on poorly drained sandy-clay soils that have a high organic content. The surrounding forest is often composed of mixed hardwoods and oaks with scattered pine (Jackson et al. 1992). MBB usually occurs in full sunlight or partial shade in a grass-sedge community.

Silphium terebinthinaceum is a common associate and one of the best indicators of suitable soils (USFWS 1991b).

This species appears to maintain itself only in areas which are naturally or artificially cleared and was probably maintained naturally through occasional fire or local soil conditions that promoted a grass-sedge community.

The Fort McClellan population of MBB is located along the margins of a shallow shale bedded ephemeral stream within an active explosive impact area (Figure 9). Fires resulting from explosive munitions occur annually within this impact area. The high frequency of fire has prevented woody encroachment and maintained conditions favorable to MBB. Because many of the known populations of MBB are associated with roadside ROWs, the Fort McClellan population may represent one of the few naturally maintained remaining populations.

3.1.3.4 Reason for Listing

The recovery plan recorded only 15 locations for MBB in 1991 (USFWS 1991b). Because of limited distribution and few individuals at many sites, the plant was considered vulnerable to future declines. Many of the known sites occur on roadside right-of ways (ROW) or on private land, and are particularly susceptible to habitat alteration. Recovery criteria for delisting require 15 viable populations that are protected from present and foreseeable human-related and natural threats.

With discovery of additional populations of MBB in Bibb County, delisting may be possible in the future if protection of sites can be demonstrated (C. Norquist, pers comm).

3.1.3.5 Conservation Measures

According to the recovery plan (USFWS 1991b), informal agreements have been established between the USFWS and ADOT to protect populations located along ROWs. This agreement involves the abolishment of herbicides near sites and a special mowing schedule. Another long-term agreement exists with a private landowner in Cherokee County.

Recently, the Nature Conservancy has entered into negotiations to purchase some of the sites in Bibb County (C. Oberholster, pers comm). The completion of this effort would provide protection for some of the largest remaining populations of MBB.

Fort McClellan's MBB population was first recorded by the ANHP (1994b), and the USFWS was advised about this discovery in November, 1993 (Appendix E). The location of this population within an explosive impact area has prevented the

implementation of a comprehensive monitoring and management program. Fort McClellan Regulation 350-2 forbids entry into any dud impact areas without approval of the Range Control Officer. Current Range Control policy permits entrance only when escorted by Explosive Ordnance Detachment (EOD) personnel. These restrictions limit monitoring to relatively short recurring visits.

An evaluation of this site indicates the high frequency of uncontrolled fires has been responsible for the survival this plant community. The continuation of the existing fire regime was considered the most critical management requirement.

During 1995, a limited monitoring program was implemented for MBB. This was accomplished during mid-June and comprised an ocular estimate of individuals and a video recording. The initial survey revealed about 3,000 individuals scattered along an ephemeral drainage. The shallow soils over a shale layer formed open barrens that supported the plants.

3.1.3.6 Management Prescriptions and Actions

Continuation of the existing high frequency fire regime is considered critical to the longterm survival of this population. Wildfires occurring within this area will be monitored and recorded in the Endangered Species Monitoring Log (ESML). After each fire, the site will be visited and the extent of the burn recorded. If fire has not annually occurred by March 15, a prescribed burn will be scheduled for the site. This burn will be undertaken prior to green-up which usually occurs during the first week of April.

Surveys to identify additional populations are routinely conducted by installation biologists. These surveys are generally scheduled during the flowering period in June and concentrate on areas containing potential habitat. The results of these surveys are entered on the installation's ESML.

3.1.3.7 Monitoring Plan

Because access to the explosive impact area is restricted, monitoring activities must be limited to brief visits and the collection of qualitative information. All visits will be coordinated through Range Control and EOD personnel. Ocular estimates and field observations will be recorded in the ESML. A camcorder will be used to maintain an annual visual record of the population and site conditions.

3.1.3.8 Time, Costs and Personnel

Funding requirements are limited to in-house personnel and may involve briefings, providing written guidance, agency

interaction, prescribed burning, and field monitoring.

In-house Personnel		Hrs	Cost
Professional ($26/hr)	-	120	$3120
Technician ($16/hr)	-	50	$ 800
Total			$3920

3.1.4 Tennessee Yellow-eyed Grass (Xyris tennesseensis)

3.1.4.1 Description

Tennessee yellow-eyed grass (TYG) was officially listed as endangered by the U.S. Fish and Wildlife Service in 1991 (USFWS 1991a). A recovery plan with the objective of delisting was subsequently prepared and approved in June, 1994 (USFWS 1994). Fort McClellan is considered a responsible party within the implementation schedule for recovering this species.

TYG is a perennial, 0.5-0.8 meters tall, narrow-leaved plant that grows in clumps. This species grows from a fleshy bulb-like base that is wrapped with small, dark-purple, outer leaves. The more interior leaves are larger, longer, flat to slightly twisted, smooth-edged and linear. These inner leaves are deep green in color, 20-50 cm long and up to 1 cm wide. This plant flowers in late summer. The flowers are borne on a short, cone-like blunt spike 1 cm tall at the top of a brown, straight leafless stem. The flower stem is usually 1/3 or more taller than the leaves, and is flattened and noticeably two ridged near the top. The flowers look like miniature irises. They are short-lived and yellow with 3 petals 5 cm long, 3 cm wide with 3 curved sepals that have rounded ends and minute teeth. The flowers unfold for only a few hours per day around noon. The fruit is a capsule hidden behind a bract in the flower cone. Seeds are small, elliptical, 1/2 mm long and finely ribbed with about 20 lines (Jackson et al. 1992).

3.1.4.2 Distribution

According to the recovery plan (USFWS 1994), 14 populations of TYG are known to exist. These include eight sites in Alabama, two in Georgia, and four in Tennessee. These populations encompass portions of three states and three physiographic provinces. The plant's most consistent and widespread distribution, however, appears to be the Ridge and Valley physiographic province extending from northwestern Georgia to northeast Alabama. All Fort McClellan lands are located within the Ridge and Valley physiographic province.

Two separate populations of TYG have been located on the Pelham Range portion of Fort McClellan. A detailed description of the two sites can be found in Sections 2.2.2.1

and 2.2.2 2 (Figures 7 & 8). These two populations are approximately five miles apart. The recovery plan recognizes these sites as distinct populations because they are separated by physical barriers such as roads and forest.

Recent inventories on The Anniston Army Depot (AAD) have located an additional population of TYG directly south of Pelham Range. A total of three sites are now known from Calhoun County. The next closest population can be found approximately 45 miles to the northeast in Bartow County, Georgia.

The three sites on Pelham Range and AAD are the only populations of TYG that are isolated within federal lands. A fourth population is partially on National Park Service (NPS) land in Lewis County, Tennessee and also receives some protection. Because the ESA provides only limited protection to plants on private lands, populations on federal land are considered critical to the recovery of the species. The recovery plan specifically tasks Fort McClellan to insure protection/ management of these populations.

3.1.4.3 Habitat/Ecosystem

Suitable habitat for TYG includes nearly permanent moisture regimes, open, sunny conditions, and calcareous bedrock or thin calcareous soils. The recovery plan also identifies the possible importance of disturbance within these systems for maintaining suitable habitat. The Tennessee sites typically include areas where a sloughing action, possibly resulting from erosion, maintain sites in an early successional stage. Conditions at the Georgia and Alabama sites are less distinctive and include a variety of conditions responsible for suitable habitat. Some of these conditions include exposed bedrock, gravel bars, roadside ditches and an abandoned farm pond. Trees and shrubs are characteristically absent from most of these sites.

Conditions on Fort McClellan are very similar to those encountered at other sites. Pelham Range sites have been altered through training and maintenance operations to form open areas exposed to recurring disturbances or mowing. At Willett Springs this has involved frequent mowing of the grassed border above the spring pool. At Lloyd's Chapel Swale, disturbances from road use and maintenance were critical to exposing mineral soils. The continuation of disturbances is considered critical to the longterm survival of these populations. Monitoring programs at the two sites revealed that mowing and/or soil disturbances are needed to maintain these populations. Between 1993 and 1994 population declines were attributed to increased plant competition and, in particular, invasion of woody species at both sites. Without periodic disturbances to these areas, succession can be expected to slowly eliminate suitable habitat.

3.1.4.4 Life History

The life history of TYG is poorly understood at the present time. According to the recovery plan, this plant often occurs in dense clumps with over 70 flowering culms (USFWS, 1994). On Fort McClellan the plant can sometimes be found as a single plant, particularly within disturbed, mowed or transitional upland areas. Basic questions on life history needing further research include sunlight requirements for seed germination, seedling mortality, time of germination, age at flowering and fruiting, longterm survivorship, and fruiting peak.

3.1.4.5 Reason for Listing

At the time of listing (USFWS 1991a), seven populations were known to exist and two or three other sites were known to have been extirpated. A review of the seven existing sites, revealed four of these to be declining. Landuse practices such as timber management, conversion to agriculture, impoundment of wetlands, herbicide spraying, and off-road vehicles were or have been responsible for habitat loss. (USFWS 1994).

3.1.4.6 Conservation Measures

Very little protection is currently afforded to TYG. Efforts in Tennessee to provide protection for this plant have met with marginal success. A registry between the NPS and the State of Tennessee provides protection for some plants at this site.

Fort McClellan prepared inventories, preliminary management plans and status reviews for TYG populations in 1995, 1994 and 1993 (Appendix C). The 1995 inventory represents the most recent assessment of these populations, and contains an analysis and management prescription based on the entire three year monitoring program. All three annual status reports provide inventory maps, ecological observations, potential disturbances and management requirements. The 1993 report was submitted to and received the concurrence of the USFWS (Appendix D). Fort McClellan proposed further management prescriptions in spring, 1995. The USFWS concurred with these prescriptions (Appendix D) and the installation completed required field efforts during May, 1995.

Fort McClellan's 1993 inventory and preliminary management plan were submitted to the recovery plan coordinator by the USFWS. The recovery plan (USFWS, 1994) cites the implementation of the preliminary plan as insuring the management and protection of populations on the installation. The recovery plan stresses the significance of populations on

Fort McClellan to the future recovery of the species. With the exception of one population partially on NPS land, all known populations on federal lands were located on Fort McClellan. The significance of Fort McClellan's populations is further elevated by the NPS populations consisting of only a few plants in 1992. Since the preparation of the recovery plan, an additional population has been located on federal land within the AAD.

3.1.4.6.1 Willett Springs

Willett Springs is located in the center of Pelham Range about 200 feet from Cane Creek (Figure 7). This spring was impounded prior to army ownership in 1941, and has since functioned as a recreational and training area on the post. Water levels are stable with an overflow pipe discharging excess waters to a stream below the dam. TYG occurs in clumps along the waters edge and in small detached tussocks. In moist areas a few feet inland of the waters edge, the plant can be found in association with a variety of sedges, grasses and other herbaceous plants. In more inland areas, the population is primarily composed of scattered single plants. Limiting factors seem to involve moisture, light and competition.

The 1993 inventory (Appendix C) concluded that the clearance of woody vegetation and frequent mowing were responsible for the continued presence of TYG along the spring pool's wetland edge. These activities opened the margins of the pool to sunlight allowing TYG to become established. Management requirements during the first year consisted of mowing the upland grass border and familiarizing trainers with the plant. Because of the possibility of physically damaging the pool's wetland edge, a narrow band was left unmowed adjacent to the pool. Other potential disturbances identified during the inventory involved the occasional presence of beaver and the existence of kudzu along portions of the pool. Both disturbances were judged not to be an immediate threat to TYG.

The 1994 status review (Appendix C) provided a comparison between 1993 and 1994, and evaluated and recommended further management practices. Successful protection measures included educational programs and the maintenance of warning signs around the site. It was apparent from the inventory that succession was rapidly reclaiming the pool's edge. Woody seedlings, such as pine, dogwood, sweetgum, tulip and maple had become established. More robust oldfield species were beginning to shade the pool's edge. A critical recommendation of this inventory was to implement a program to periodically mow the wetland edge. Burning was not considered feasible in this moist habitat. Winter or early summer were considered the most appropriate period to conduct this practice. The presence of beaver, kudzu, and cattails

(Typha latifolia) within and along the pool's edge were also assessed. Disturbances from these invasive plants and animals were judged not to constitute an immediate threat to TYG.

During May, 1995 the wetland edge of Willett Springs pool was trimmed with a weedeater. A chainsaw was used to remove some of the larger shrubs and seedlings. This action was coordinated through the USFWS (Appendix D)

The August, 1995 inventory recorded twice as many flowering spikes as were recorded in 1994. TYG appeared to have benefited from reduced competition and increased sunlight resulting from the mechanical control of herbaceous and woody vegetation. The distribution of the population along the edge of the pool, however, shifted between 1994 and 1995. While a general increase throughout the site could be attributed to mechanical control of competitive vegetation, there was a significant increase in the number of plants along the eastern pool margin. These plants also appeared robust and particularly healthy. The only factor that effected this area and not others was the occurrence of a wildfire on 20 March 1995.

Kudzu represents a potential threat along the eastern shore of the spring pool. The steep rocky bank in this area prevents mowing, which effectively controls this invasive plant in other areas. Kudzu was not currently impacting TYG, but does pose a threat should it expand further onto the pool's margin.

3.1.4.6.2 Lloyd's Chapel Swale

The second population of TYG can be found five miles southeast of the Willet Springs along the installation's boundary (Figure 8). Approximately half the population is located within the confines of Pelham Range, while remaining plants are located across the fence on the ADOT ROW. The seepage area has been impacted by road construction and traffic on Fort McClellan property, and through periodic mowing and maintenance activities on ADOT lands. This ephemeral spring appears to be dependant on weather conditions to insure a continuous flow. During spring and early summer, the spring is usually flowing and a wide area of saturated soils is present. By August and late summer, however, the spring often ceases to flow and the area of saturated soils become restricted to the immediate environs of the spring.

During the first half of 1993, this site experienced serious impacts from traffic along the boundary road. Saturated soils within the road formed an impassable mud hole. Vehicles avoided this obstacle by going around the mud hole and subsequently extending disturbances into adjacent

vegetated areas containing TYG. To eliminate these impacts, earthen berms were constructed north and south of the site and the road was closed to traffic. Signs were also posted to identify the area as containing endangered species.

An annual inventory and site assessment were initiated during August, 1993 (Appendix C). This initial assessment revealed the population to be evenly divided between Fort McClellan and ADOT lands. The actual spring is located on Fort McClellan and flows across the boundary onto the ROW. The earthen berms had prevented vehicle access to the area and the previous disturbances recorded were not observed. Brush and tree limbs piled along the road were noted as eliminating habitat that appeared suitable for TYG. This debris was subsequently removed during the following winter.

A second inventory and assessment were prepared during August, 1994 (Appendix C). These results revealed several important factors influencing the future of this population. (1) Precipitation was greater during 1994 and appears to have provided a larger area of suitable habitat during the second year. The ephemeral nature of this spring may well indicate that population levels can be expected to fluctuate from year to year at this site. (2) Relatively recent mowing of the ADOT ROW revealed that TYG responds rapidly to disturbances such as mowing. TYG was one of the initial plants to take advantage of reduced competition and dominated much of the area. The long-term survivability of these plants, however, was not clear and requires further investigation. Although plants were flowering, they were small and may disappear as other plants recover and offer more competition. (3) Portions of the seepage on Fort McClellan property provided further insight into the ability of TYG to sustain itself without management intervention. As with the Willett Springs population, TYG did not compete well with aggressive herbaceous and woody invaders in this community. Much of this habitat became overtopped by competing plants eliminating all TYG. Remaining areas containing TYG were associated with depressions in the seep and disturbed areas along the roadside. (4) Another significant factor at this site involved the construction of the earthen berms. It was apparent that disturbances along this road were in part responsible for the survival of TYG. Vehicle and road maintenance disturbances within this area had been eliminated and conditions favored more aggressive herbaceous and woody plants. This problem was further compounded from continued sedimentation of the site from surrounding surface water runoff. Historically, these sediments had been removed through road maintenance activities. Without sediment removal the area was slowly being transformed into a more upland community.

Based on recommendations of the 1994 inventory, the earthen berms were removed and movable gates were installed during

May, 1995. The former roadway through the site was cleaned off with a bulldozer and accumulated sediments removed. Herbaceous vegetation was trimmed with a weedeater and shrubs and saplings were removed with a chainsaw to reduce competition from invasive plants.

A total of 2272 flowering spikes were recorded during the 1995 inventory. This inventory total is comparable to numbers recorded during the 1994 inventory. The previous inventory, however, occurred during a wet summer when soils were saturated and the spring was flowing. Environmental conditions during 1995 were more comparable to conditions that existed at the site in 1993. The 1995 inventory, however, recorded two and one-half times more plants then the 1993 count. This increase in flowering plants is attributed to the implementation of management recommendations formulated in the 1994 status review.

3.1.4.7 Conservation Goals

Conservation goals are to establish and maintain stable populations of TYG at both Willett Springs and Lloyd's Chapel. Existing monitoring surveys have demonstrated that an active management program must be implemented to insure the longterm survival of these populations. This management program will be confined to suitable habitat at the two sites.

Population goals will be monitored through an annual inventory and habitat assessment. The inventory will be accomplished through a count of flowering spikes. Because individual plants are difficult to differentiate in the field, flowering spikes were selected as the most feasible approach for monitoring the population. While this method may not necessarily reflect an accurate count of individuals, it should provide comparable numbers between years, as well as, an overall indicator of population vitality. The accompanying annual habitat assessment will qualitatively review factors that are influencing or impacting the population. Modifications in the management program will be dependant on this annual survey. Any changes to the management program will be coordinated through the USFWS.

3.1.4.8 Management Prescriptions and Actions

The Recovery Plan Implementation Schedule requests that Fort McClellan participate in accomplishing three tasks: (1) enforce protective legislation; (2) develop management plans; and (3) search for new populations.

Fort McClellan implemented an annual inventory and status review to insure an interim management program protected and maintained these sites during the preparation of a comprehensive final management plan. These inventories and

management reviews were accomplished in 1993, 1994 and 1995 (Appendix C). Management recommendations identified in these status reports were coordinated with the USFWS in 1993 and 1994 (Appendix D). All recommended management procedures from 1993 and 1994 inventories have been fully implemented. The annual status review has been considered a successful method to monitor these populations and will be continued in future years.

Fort McClellan has implemented a detailed education and enforcement program to insure protection of these two populations. The Provost Marshal (the military's enforcement office) has been briefed on the army's legal responsibility for protecting these plants. Enforcement personnel have been provided tours of the sites and photographs suitable for framing. The sites are well posted and briefings have been provided to maintenance crews and trainers on allowable activities. Locations have also been included on environmental constraint maps that are made available to all field activities.

Natural resource personnel on Fort McClellan are familiar with TYG and routinely search for this plant during the course of their daily activities. Because of the plant's specialized habitat requirements, it has been possible to search suspected calcareous springs and seeps for possible new populations. To date, there have been no additional populations located on Fort McClellan. Photographs have been taken of TYG and habitat on the installation. These are displayed in the Natural Resource Office and made available to other interested activities on Fort McClellan.

3.1.4.8.1 Willett Springs

The mechanical control of weedy vegetation was considered a success and responsible for an increase in flowering plants throughout the spring pool in 1995. The dramatic increase of robust TYG plants along the eastern shore, however, indicates that other factors may also be influencing populations. The only factor effecting this area was a March wildfire that burned down to the wetland edge. Because of possible benefits attributable to this fire, a prescribe burning program will be initiated on a trial basis over the entire site. The effects of the burn program will be assessed in 1996 and a decision to continue or return to mechanical control will be determined.

Kudzu currently represents a threat to TYG along the pool's eastern shore. Control during 1995-96 will involve hand removal and prescribed burning. Burning, although not usually considered a kudzu control method, does seem to have suppressed kudzu to some degree. Together with hand control, this may prove to be an acceptable method to contain existing kudzu. The success of these control efforts will be assessed

in 1996 and a decision to continue or implement more aggressive control measures will be determined. If kudzu becomes a more active threat and an aggressive control program is deemed necessary, coordination with the USFWS will be initiated prior to herbicide selection and use adjacent to the spring pool.

3.1.4.8.2 Lloyd's Chapel Swale

The site is considered relatively stable with the removal of earthen berms and installation of movable gates. The road will remain closed unless a need to use this road arises during dryer periods of the year. The road will be maintained using a bulldozer prior to each May. Sediments that have accumulated on the site will be cleaned out of the depression within the roadway.

The results of herbaceous and woody removal were considered positive and will be continued on an annual basis prior to each June. Because of possible beneficial effects from fire, prescribed burning will be considered the first choice for weed control. This site, however, is located on the installation boundary and will prove difficult to secure for burning. If burning proves too difficult, the second choice will be mechanical control with a weedeater and chainsaw.

3.1.4.9 Monitoring Plan

The annual inventory/habitat assessment will be conducted between the 1st and 15th of each August. These dates were selected to allow consistent comparisons to be made between years. Annual field surveys will involve an inventory of plants and a qualitative assessment of habitat conditions.

The inventory will be accomplished through counts of individual flowering spikes. Two biologists will conduct concurrent counts within sections of the wetland. The average of each section count will be tallied, and all section counts will be totalled at the end of the inventory.

The qualitative habitat assessment will identify existing conditions or impacts that may beneficially or adversely influence the future integrity of these populations. Factors that have been identified and evaluated during previous inventories include beavers, kudzu, sedimentation, and competition

The sites will also be visited on a routine basis throughout the year. Observations will be entered on the ESML. A camcorder will be used to maintain an annual or event record of conditions at the two sites.

3.1.4.10 Time, Costs and Personnel

Funding requirements are limited to in-house personnel, and may involve briefings, providing written guidance, agency interaction, management and field monitoring.

In-house Personnel		Hrs	Cost
Professional ($26/hr)	-	150	$3900
Technician ($16/hr)	-	100	$1600
Total			$5500

3.2 Historical Populations

3.2.1 Red-cockaded Woodpecker (Picoides borealis)

3.2.1.1 Description

The red-cockaded woodpecker (RCW) was officially listed as endangered by the USFWS in 1970. A recovery plan with the objective of delisting was subsequently prepared and approved on August 24, 1979. A revision to the recovery plan replaced the original, and was approved on April 11, 1985 (USFWS 1985).

The RCW is slightly larger than a bluebird, about 18.3 cm in length. The back and top of the head are black. Numerous, small white spots arranged in horizontal rows on the back give a ladder-back appearance. The cheek is white and the chest dull white with small black spots on the side. Males and females look almost alike, except males have a small red streak above the cheek. Juvenile males have a small red patch on the very top of the head until fall (Hooper et al. 1980).

3.2.1.2 Distribution

The RCW is endemic to the pine forests of the southeastern United States. Clearance of pine forests and short rotation forestry practices have resulted in RCW population declines and a contraction in the bird's range. This species is still found in all southern and southeastern coastal states from Texas into southern Virginia, and in the interior, small populations are found in southeastern Oklahoma, southern Arkansas, eastern Tennessee, and southern Kentucky. The largest populations are in Coastal Plain forests of the Carolinas, Florida, Georgia, Alabama, Mississippi, Louisiana, eastern Texas and in Sandhills forests of the Carolinas (USFWS 1985).

According to a census conducted for the recovery plan (USFWS 1985), the total number of active clusters on all Federal lands is estimated to exceed 3,000. The largest number of active clusters (2,121) were found on National Forests. The second largest number of clusters (340) were located on DOD lands. More recent surveys on military lands have

inventoried 711 active RCW clusters (USACERL, 1994b).

The last remaining active RCW cluster on Fort McClellan was recorded in 1968. Subsequent surveys in 1972, 1982 and 1985 failed to find birds, and the cluster was classified inactive (Summerour 1992). Because of a proposal to develop this site for military training, Fort McClellan entered into Section 7 Consultation in 1986. A copy of this proposal and "no affect" determination by the USFWS is provided in Appendix F. All cavity trees at this former site have since fallen to the ground. A more complete description of historical populations and recent surveys on Fort McClellan can be found in Appendix G.

Although the RCW no longer inhabits Fort McClellan, active clusters are known from the Talladega National Forest to the east. Four active clusters are located 5 to 7 miles from Main Post (D. Thurmond, pers comm).

3.2.1.3 Life History/Ecology

The RCW is a group forming, cavity-nesting, nonmigratory bird endemic to pine forests. The RCW roosts and nests in cavities excavated in mature pines. The aggregation of cavity trees used by a group of birds is termed "cluster". Depending on tree species, cavity trees average more than 80 years old. A territory of from less than 100 acres to over 250 acres is defended against all other RCWs. The birds primarily forage on live pines 30 years of age or older (USFWS 1992b).

RCWs are cooperative breeders with auxiliary or helper birds aiding a mated pair in rearing of their offspring. Clan size is usually two to four birds at the beginning of nesting season, and four to six birds after young have fledged. The helpers that aid in rearing young are usually male offspring of one or both of the breeders from the previous year. Egg laying generally occurs from April through May, and clutch size ranges from two to five eggs. Young will usually fledge within 26 to 29 days. Survival rates for fledglings are usually higher at nests attended by helpers (USFWS 1985).

Active cavities are usually found in open, park-like stands of pine. Most authorities believe that birds will not tolerate dense hardwood stocking in the midstory. Historically, wildfire was critical to maintaining the open understory that existed in these forests. Today, prescribed burning is often required to maintain these desired characteristics.

3.2.1.4 Reason for Listing

The RCW was listed as endangered because of perceived rarity, population declines, and presumed reductions in available

nesting habitat. The primary reason for this decline is often attributed to a decrease in oldgrowth pine that resulted from land clearing and forestry practices. These losses have been greatest in the longleaf-slash pine forest types, which are preferred nesting habitat for the woodpecker. As this trend continues, RCWs are further threatened by habitat fragmentation and population isolation within remaining forest tracts (USFWS 1985).

3.2.1.5 Conservation Measures

The Army formulated guidelines for managing the RCW on military lands in 1984. These guidelines primarily involved population goals and inventory requirements. While the effects of forest management practices were discussed, the guidelines did not address mission and other land use activities. In response to these guidelines, Fort McClellan modified forest management policy to allow only selective thinning within existing longleaf pine stands.

Although active clusters were not known to occur on Fort McClellan after 1972, the proximity of the installation to clusters in the Talladega National Forest (5-7 miles), and the presence of mature longleaf pine on Main Post, established a potential for recolonization. To assess this possibility, field surveys were conducted during the 1992 nesting period (Appendix G). This rather intense survey was conducted by an eminent regional ornithologist and involved over 170 hours in the field (Summerour 1992). RCWs were not seen or heard, nor were active clusters found during the course of the survey. This report also evaluated habitat suitability and potential for recolonization. Although Pelham Range contained fragments of longleaf pine forests and abundant foraging habitat, this tract of land was considered to be isolated from existing clusters and lacked oldgrowth pines suitable for nesting. Main Post was discovered to contain scattered remnants of oldgrowth longleaf pine and limited foraging habitat. The largest tracts of longleaf pine on Main Post were found on Caffey Hill in Training Area 16E. This forested tract is also relatively close (5 mi) to active clusters in the Talladega National Forest. The potential for birds to pioneer the area was considered small, although not impossible. The existence of sufficient foraging habitat and oldgrowth trees to sustain a population of RCWs, however, was considered questionable.

During 1992, the Army initiated a process to revise and update Army-wide RCW management conservation requirements in compliance with the ESA. These guidelines were made available to installations during June, 1994 (U.S. Army 1994). The revised guidelines were formulated with the following objectives:

Establish general Army policy goals for RCW

conservation.

Require determination of installation RCW populations goals and development of installation management plans to achieve these goals.

Establish inventory and monitoring requirements.

Require delineation of habitat management units.

Prescribe management practices and marking guidelines within HMUs.

Establish consultation requirements and management recommendations in impact/danger areas and direct fire areas.

Define allowable military activities within HMUs.

Provide guidelines for augmentation and translocation of RCWs.

Both an Environmental Assessment (USACERL 1994a) and a Biological Assessment (USACERL 1994b) were prepared for implementation of these management guidelines. Fort McClellan was evaluated within both documents. The assessment team reviewed historical records and performed field visits. Although historical cavity trees were visited during field visits, no active or recently inactive cavity trees were identified. Historical cavities lacked any remnant of resin, and provided only faint evidence of a plate. The USFWS provided written concurrence on these army-wide guidelines on March 16, 1994 (Olds 1994)

These revised guidelines are considered applicable to "Army installations where the RCW is present and to installations with inactive clusters that the installation, in consultation with the USFWS, continues to manage in an effort to promote reactivation" (U.S. Army 1994). Because Fort McClellan does not contain active or inactive clusters suitable for management, these guidelines are not currently applicable to the installation's resource management program.

3.2.1.6 Management Prescriptions and Actions

Fort McClellan recognizes the ecological importance of the expansive pine forests on Main Post. These contiguous forests contain a number of unusual species that benefit from a mosaic of biological communities. Longleaf pine forms a primary component of this system, and is managed from a broad ecological perspective. Current management prescriptions for these forests are provided in Section 2.2.1.1 under the Mountain Longleaf Community Complex SINA.

To develop a more indepth understanding of management needs on these lands, Fort McClellan has funded longleaf pine research by Auburn University and the U.S. Forest Service (Section 1.7.2). The results of this research and future studies will be used to develop a broad based management prescription that maximizes benefits throughout these forests. Existing management prescriptions will be modified under an adaptive resource management approach to incorporate changes as they are discovered and developed.

3.2.1.7 Monitoring Plan

Because active and inactive clusters are not found on Fort McClellan, a detailed monitoring program for this species has not been prepared. The potential for recolonization does exist and installation-wide surveys will be scheduled at five year intervals. Field personnel will also be educated on habitat requirements and cluster characteristics to identify optimal habitat and new birds should they pioneer the area.

3.2.1.8 Time, Cost and Personnel

Funding requirements for in-house personnel involve briefings, agency interaction, and field monitoring. Contract personnel will be scheduled to resurvey Main Post during spring, 1997.

In-house Personnel	Hrs	Cost
Professional ($26/hr)	140	$3640
Technician ($16/hr)	80	$1280
Subtotal		$4820
Contract Personnel		
Survey (1997)		$30000

4.0 Unique or Unusual Species Not Receiving Federal Protection

A number of species have been found on Fort McClellan that currently do not receive protection under existing federal regulations. Some are candidates for possible inclusion on the federal list, while others represent unusual, rare or population extensions of more common species. While these records are important for determining the rarity of local species, the communities associated with these populations are often of even greater significance. These species can often be considered barometers for identifying those biotic communities that are regionally uncommon or disappearing. The maintenance and protection of these communities is important in conserving biological diversity and proactively managing for endangered species. By effectively managing these noteworthy communities, the need to list species in the future could possibly be avoided. These species were critical in identifying SINA that are described in Section 2.2.

Although Fort McClellan attempts to manage from a community approach, the importance of individual species in critical need of protection or management is recognized. Some of these organisms are legally protected and are discussed within Section 3.1. Others, however, are only under consideration for listing, and are not afforded this protection at the present time. These candidate species comprise those organisms that may be listed in the near future and deserve special consideration in conserving and maintaining biological resources on the installation. They also represent those species that should be considered in planning and proposing any longterm construction or operational programs. The listing of any of these species can be expected to lead to Section 7 and 9 legal requirements. By considering this possibility at the planning stage, possible alternatives, mitigation and future requirements can be considered prior to the commitment of funds and resources.

A comprehensive list of candidate, state protected and ANHP ranked species are provided on Table 2. Seven candidate, one state protected and 38 species ranked by the ANHP have been recorded on Fort McClellan. The location of candidate species on the installation are provided on Table 3.

The following discussions provide an overview and status of each candidate species known to inhabit installation lands. More detailed information on management of communities containing these species is provided under Special Interest Natural Areas (Section 2.2).

TABLE 2

RARE AND UNCOMMON SPECIES RECORDED ON FORT MCCLELLAN

Latin Name	Main Post	Pelham Range	Common Name	Federal Status	State Protection	ANHP Status
MAMMALS						
Sylvilagus obscurus	X		Appalachian Cottontail	C2		G4S1
FISHES						
Etheostoma ditrema		X	Coldwater Darter	C2	Yes	G2S1
MOLLUSKS						
Elimia gerhardti	X	X	Coldwater Elimia	C3		G?S?
INSECTS						
Speyeria diana	X		Diana	C2		G3S?
Cheumatopsyche harwoodi	X		Caddisfly			G?S2
Heteroplectron americanum	X		Caddisfly			G?S2
Hydroptila consimilis	X		Caddisfly			G?S2S3
H. setigera	X		Caddisfly			G1S1
H. talladega	X		Caddisfly			G?S1
Ironoquia punctatissima	X		Caddisfly			G?S2
Molanna blenda	X		Caddisfly			G?S2
Ochrotrichia confusa	X		Caddisfly			G?S2
Polycentropus carlsoni	X		Carlson's Polycentropus Caddisfly	C2		G1G3S1
Protoptila maculata		X	Caddisfly			G?S2
Psilotreta frontalis	X		Caddisfly			G?S2
Pycnopsyche gentilis	X		Caddisfly			G?S1
P. lepida	X		Caddisfly			G?S2

Latin Name	Main Post	Pelham Range	Common Name	Federal Status	State Protection	ANHP Status
P. luculenta	X		Caddisfly			G?S2
Rhyacophila glaberrima	X		Caddisfly			G?S2
R. nigrita	X		Caddisfly			G?S2
R. torva	X		Caddisfly			G?S2
Triaenodes taenia	X		Cold Spring Triaenodes Caddisfly			G?S1
PLANTS						
Aster azureus	X		Sky-blue Aster			G5S1
Cypripedium acaule	X		Pink Lady's Slipper			G5S3
Echinacea pallida	X		Pale Coneflower			G4G5S2
E. purpurea	X		Eastern Purple Coneflower			G4G5S2
Equisetum arvense		X	Field Horsetail			G5S2
Gentiana saponaria	X	X	Soapwort Gentian			G5S3
Juniperus communis	X		Ground Juniper			G5S1
Lonicera flava	X		Yellow Honeysuckle			G5S3
Lysimachia fraseri	X		Fraser's Loosestrife	C2		G2G3S1
Monotropa hypopithys		X	Pinesap			G5S2
Platanthera integrilabia	X		White Fringeless Orchid	C2		G2S1
P. flava		X	Southern Rein Orchid			G4S3
Sabatia capitata	X		Rose Pink			G2S2
Scutellaria alabamensis		X	Alabama Skullcap			G?S2
Trillium lancifolium		X	Narrow-leaved Trillium			G3S3
Zigadenus leimanthoides	X		Crow-poison			G4QS1

TABLE 3

CANDIDATE SPECIES RECORDED ON FORT MCCLELLAN

Latin Name	Common Name	Special Interest Natural Area (SINA)
Syvilagus obscurus	Appalachian Cottontail	Mountain Longleaf Community Complex
Etheostoma ditrema	Coldwater Darter	Cabin Club Spring
Elimia gerhardti	Coldwater Elimia	Cane Creek Corridor
Speyeria diana	Diana	Marcheta Hill Orchid Seep
Polycentropus carlsoni	Carlson's Caddisfly	Bains Gap Seep Cave Creek Seep
Lysimachia fraseri	Fraser's Loosestrife	Bains Gap Seep
Planthera integrilabia	White Fringeless Orchid	Marcheta Hill Orchid Seep Cave Creek Seep

Appalachian Cottontail. The New England Cottontail ranges from the boreal forests of New England to the southern Appalachian Mountains. Recently, two morphological distinct taxa were described from what was formerly considered to be a single species (Chapman et al. 1992). The southern taxa is now referred to a the Appalachian Cottontail. This rabbit has been collected within the Talladega Mountains to the west of Main Post (Mount 1986), and was considered a potential resident on Fort McClellan during past surveys. A specimen collected by the ANHP on Main Post has been identified as possibly being Appalachian Cottontail (ANHP 1994a). To further investigate the potential occurrence of this rabbit, Fort McClellan has sponsored surveys within the higher elevations of Main Post (Section 1.3.2). Because this rabbit is usually associated with high elevation forests and rhododendron thickets, conservation measures may be linked to those that benefit other forest interior species in the Mountain Longleaf Community Complex SINA (Section 2.2.1.1).

Coldwater Darter. This darter can be found in the Coosa River system from Shelby and Coosa counties northeastward into Georgia and Tennessee. During the late 1970s, two specimens were collected from an unnamed tributary on the western half of Pelham Range (Mettee and Haynes 1979). More recent sampling efforts, however, have failed to provide additional documentation of this species on Fort McClellan (Catchings 1989; ANHP 1994b). In recent years, this small stream has experienced increased flows and sediment loads originating offpost, as well as, alterations of downstream areas from extensive beaver impoundments. Recent evaluations have indicated poor to marginal habitat available along this stream complex (ANHP 1994b). The potential, however, remains that the coldwater darter could persist at some unknown locality, and this stream will be included and managed as part of the Cabin Club Spring SINA (Section 2.2.2.4).

Coldwater Elimia. This freshwater snail has been reported from north Georgia to the lower tributaries of the Coosa River in Alabama. Surveys by Yokely (1992) found the coldwater elimia along most of Cane Creek east of Highway 77. This distribution would include both Main Post and Pelham Range. Recent studies of Coosa River gastropods have found this species to be widely distributed and relatively common throughout the system (Bogan and Pierson 1993). A status review of aquatic snails prepared by the U.S. Fish and Wildlife Service (Hartfield 1993) has since recommended that the category status for coldwater elimia be lowered to 3C. This status is applied to species that are found to be more abundant then previously believed. It also removes the species from consideration for listing unless future surveys demonstrate population declines or substantial threats. Management prescriptions were, therefore, not considered necessary to insure the continued survival of the snail. Efforts to manage and protect the Cane Creek Stream Corridor

SINA, however, can also be expected to benefit snail populations.

Diana Butterfly. Habitat affinity for this butterfly includes wet, rich forested valleys and mountainsides, and relatively undisturbed forests, especially near streams (ANHP 1994a). Two females were observed within the Marcheta Hill Orchid Seep SINA on Main Post (Section 2.2.1.2). Management prescriptions for this SINA, along with those for the Mountain Longleaf Community Complex (Section 2.2.1.1) can be expected to benefit this species. Marcheta Hill Orchid Seep is actually an inclusion within the larger Mountain Longleaf Pine Complex. The presence of this species tends to support the ecological importance of spring seep communities within this large intact forest community.

Carlson's Polycentropus Caddisfly. The entire known distribution of this caddisfly is confined to Alabama and South Carolina, where it is also considered rare (Harris et al. 1991). Alabama records are limited to two sites, both of which are located on the Main Post portion of Fort McClellan. The presence of this caddisfly was instrumental in delineating two SINAs: Bains Gap Seep (Section 2.2.1.3) and South Branch Cane Creek (Section 2.2.1.5). The significance of this record is enhanced by the documentation of 17 additional rare caddisflies from these two SINAs, including a single site endemic, Hydroptila setigera (ANHP 1994a). Both SINAs are inclusions within the Mountain Longleaf Pine Complex SINA (Section 2.2.1.1) and add further support to the ecological importance of streams and springs within this large forested tract. Because only two sites have been surveyed for caddisflies, and additional potential habitat on Main post is suspected, Fort McClellan has proposed additional surveys within forested tracts on Main Post (Section 1.3.3).

Fraser's Loosestrife. This plant is known from the mountains of northeast Alabama, north Georgia, Tennessee and the Carolinas, and is considered rare throughout its' range. A single population was discovered along a headwaters stream on Bains Gap and is included within the Bains Gap Seep SINA (Section 2.2.1.3). Further surveys have failed to reveal additional populations. Because these plants are located adjacent to a county road, additional measures have been implemented to insure proper management and protection of this species. Signs have been placed along the road stating, "Do Not Disturb Endangered Species Area". The location of this site has been delineated on Fort McClellan Environmental Constraint Maps, and are made available to trainers and land managers. This SINA is also an inclusion within the larger Mountain Longleaf Community Complex SINA, and provides further support to the ecological importance of wetlands within this large forested tract.

White Fringeless Orchid. This orchid occurs in bogs and seepages along wooded streambanks and ravines from the coastal plain of Mississippi through Alabama, Georgia, Tennessee, Kentucky, the Carolinas and Virginia. The plant was recorded within two SINA on Main Post: Marcheta Hill Orchid Seep (Section 2.2.1.2) and Cave Creek Seep (Section 2.2.1.4). The Marcheta Hill population is quite extensive with 252 flowering individuals in 1993 and 213 in 1995. Fort McClellan prepared an annual site evaluation and inventory in 1995 and will continue to inventory this site on an annual schedule (Appendix A). The U.S. Fish and Wildlife Service anticipates the listing of this orchid in the near future. It is, therefore, critical that plans and programs on Fort McClellan take into consideration future Section 7 requirements. The population at Marcheta Hill actually represents one of the largest known populations of this rare orchid (R. Currie, pers comm). White fringeless orchid was also recorded in the Cave Creek Seep in 1992. Subsequent surveys in 1993 and 1995, however, failed to relocate these plants.

Protection measures for this plant have been implemented and include signage and mapping similar to that described for Fraser's loosestrife. Both SINAs are also inclusions within the Mountain Longleaf Complex and contribute to the ecological value and diversity of the entire system.

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