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of Engineers**

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# **Environmental Assessment of Army-wide Management Guidelines for the Red-cockaded Woodpecker**

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## **Foreword**

This environmental assessment was conducted for the U.S. Army Center for Public Works (USACPW) under Military Interdepartmental Purchase Requests E87920542 and E87930325. The assessment was prepared to meet requirements of the National Environmental Policy Act.

The work was performed by the Natural Resources Division (EN), Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). Tim Hayden (USACERL) was author of this assessment. Assistance in scoping and review of drafts of this assessment was provided by MAJ Craig Teller (DAJA-EL), Phil Pierce (DAIM-EN), Dr. J.H. Carter III (consulting biologist), LTC (Ret.) Bruce Sneddon, and Randy Norris, Manroop Chawla, and Dr. David Tazik (USACERL). Don Cole (DAIM-EN) provided revenue data for installation forestry programs.

Information for installations considered in this assessment was provided by several installation biologists, major Army command (MACOM) representatives, and operations personnel. These individuals also provided review comments on earlier drafts of this report. Without their assistance, this assessment would not have been possible.

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# Table of Contents

Forward . . . . .	i
List of Tables . . . . .	v
<b>I. INTRODUCTION . . . . .</b>	<b>1</b>
A. Need for the Proposed Action . . . . .	1
B. Scope . . . . .	2
C. Guidelines Development and Public Involvement . . . . .	3
<b>II. AFFECTED ENVIRONMENT . . . . .</b>	<b>7</b>
A. Mission and History . . . . .	7
B. Physiographic and Habitat Features . . . . .	7
C. Mission Activities . . . . .	8
D. Current RCW Populations and Habitat . . . . .	8
E. Forest Management . . . . .	9
<b>III. ALTERNATIVES . . . . .</b>	<b>11</b>
A. Alternatives Eliminated From Detailed Analysis . . . . .	11
1. Stop all activities that may affect RCWs (11)	
2. Rescind 1984 guidelines (12)	
B. Alternatives Considered in Detail . . . . .	12
<b>IV. ENVIRONMENTAL AND SOCIOECONOMIC EFFECTS . . . . .</b>	<b>15</b>
A. Biological . . . . .	15
1. Red-cockaded Woodpecker (15)	
2. Other Threatened and Endangered Species (22)	
3. Timber Stand Development and Management (23)	
4. Biodiversity (25)	
B. Physical Environment . . . . .	26
1. Air Quality (26)	
2. Soils (27)	
3. Water Quality (28)	
C. Socioeconomic . . . . .	30
1. Cultural Resources (30)	
2. Recreation (30)	
3. Construction (31)	
4. Noise (31)	
5. Economic (32)	

V. CUMULATIVE EFFECTS AND CONCLUSION . . . . .	37
Appendix A: Management Guidelines . . . . .	39
Appendix B: Biological Assessment . . . . .	40
Appendix C: Public Review . . . . .	41
Appendix D: List of Experts . . . . .	42
Appendix E: 1984 Army Guidelines . . . . .	43

## List of Tables

Table 1. Army installations considered in this environmental assessment . . . . .	3
Table 2. Current number (1992-93) of active and inactive cluster sites known to occur on Army installations . . . . .	8
Table 3. Forestry program revenues and expenses . . . . .	34

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# **I. INTRODUCTION**

This environmental assessment provides an analysis of the environmental and socioeconomic effects of implementation of proposed Army-wide management guidelines for the red-cockaded woodpecker (RCW). The proposed action is a Department of Army initiative to establish baseline standards for management of RCWs on Army lands and for preparation of installation RCW endangered species management plans (ESMPs) in accordance with Chapter 11, Army Regulation (AR) 420-74. Two alternatives are considered in detail in this environmental assessment including (1) a "No Action" alternative by which installations continue to operate under 1984 Army RCW management guidelines and (2) the Army's preferred alternative of implementing proposed Army-wide management guidelines for the RCW (**Appendix A**). The "No Action" alternative provides the baseline for assessing cumulative effects of the Army's preferred alternative on the human environment.

This environmental assessment is programmatic in nature and does not provide analysis of site-specific environmental and socioeconomic effects. Future project-level activities associated with the proposed action on Army installations will require disclosure of site-specific effects in compliance with National Environmental Policy Act (NEPA) requirements, the Endangered Species Act (ESA), and other applicable laws as required.

A biological assessment has been prepared to assess the effects of implementation of the preferred alternative on threatened and endangered species in compliance with Section 7 requirements of the ESA. The biological assessment is appended to this environmental assessment (**Appendix B**) and is included in this analysis by reference where applicable.

## **A. Need for the Proposed Action**

The proposed action is the implementation of Army-wide management guidelines for RCWs on Army lands. These guidelines would supersede 1984 Army guidelines for RCW management on Army installations. The 1984 guidance was restricted primarily to forest management practices on installations with RCWs. This guidance did not address mission activities and other land-use practices as they relate to RCW management requirements. The 1984 guidelines would remain in effect under the "No Action" alternative. New Army guidance is required because of:

- Continued conflict between mission activities and RCW management requirements.
- Variable implementation of RCW management activities among installations.
- Lack of long-term planning for resolution of conflicts between mission requirements and RCW management.
- Inconsistencies in regulatory compliance requirements resulting from installation-specific Biological Opinions issued by the U.S. Fish and Wildlife Service.

The above factors have resulted in closures of ranges, increased restrictions of military activities, and non-attainment of RCW population goals or declines in populations on some installations. The objectives of the proposed action are to:

- Establish uniform Army policy and programmatic requirements for RCW management on Army installations.
- Provide baseline standards for regulatory compliance.
- Balance RCW management objectives with mission requirements.

## **B. Scope**

The scope of this environmental assessment is limited to assessing the environmental and socioeconomic effects resulting from implementation of proposed Army-wide management guidelines for RCWs.

The proposed RCW management guidelines are a Department of Army initiative. No other Department of Defense (DoD) service branch (Air Force, Navy, Coast Guard) currently would be subject to these guidelines. Installations considered in this environmental assessment are limited to those with lands under Department of Army management authority (Army-owned lands) that meet the following criteria:

- Installations with currently active RCW cluster sites.
- Installations with historical populations and inactive cluster sites that currently are maintaining some level of RCW habitat management or protection because of potential reactivation of these sites.

Nine Army installations (Table 1) meet the above criteria and are considered in this environmental assessment. Active RCW cluster sites currently are known to occur on six Army installations. Three installations had historical populations and currently are managing for RCWs in habitat associated with inactive cluster sites.

**Table 1. Army installations considered in this environmental assessment**

<b>Installation</b>	<b>State</b>	<b>Population Status</b>
Fort Benning	Georgia	RCWs present
Fort Bragg	North Carolina	RCWs present
Fort Gordon	Georgia	Historical population
Fort Jackson	South Carolina	RCWs present
Fort McClellan	Alabama	Historical population
Fort Polk	Louisiana	RCWs present
Fort Stewart	Georgia	RCWs present
Louisiana Army Ammunition Plant (LAAP)	Louisiana	Historical population
Military Ocean Terminal, Sunny Point (MOTSU)	North Carolina	RCWs present

National Guard installations are not considered in this environmental assessment. Lands on these installations are owned primarily by the host states and/or Department of Agriculture, U.S. Forest Service. States and the Forest Service have primary responsibility for natural resource management on these lands.

### **C. Guidelines Development and Public Involvement**

**1. Initial guidelines development:** The Army Endangered Species (ES) Team was formally established 20 April 1992 with the mission of developing and implementing proactive policies and strategies to resolve endangered species issues that have significant

impacts on the Army's training readiness. One of the first tasks of the ES Team was to develop an Army-wide RCW management plan.

During August 1992, the ES Team tasked the Environmental Division of the U.S. Army Construction Engineering Labs (USACERL) to provide technical support during the guidelines development process and to prepare an environmental assessment and biological assessment of the proposed action in compliance with NEPA and ESA requirements.

An initial draft of the proposed guidelines was prepared by members of the Army ES Team. Early revisions of the guidelines and scoping of environmental and socioeconomic resource categories potentially affected by the proposed action were accomplished during meetings and correspondence among the ES Team, representatives of Army Major Commands (MACOMS), installations, USACERL, and contractor representatives. The Army ES Team conducted informal consultations regarding the proposed action with the Fish and Wildlife Service, including two meetings at the Fish and Wildlife Service Region 4 Headquarters in Atlanta, Georgia during December 1992 and May 1993.

In a letter dated 11 December 1992, USACERL notified the Fish and Wildlife Service of the Army's intent to prepare a biological assessment of potential impacts of the proposed action on threatened and endangered species and requested a list of threatened and endangered species potentially occurring on affected installations. The Fish and Wildlife Service provided this information to USACERL by letter dated 15 January 1993.

**2. Public and Expert Involvement:** A Notice of Intent (NOI) was published 16 February 1993 in the Federal Register (Vol 58, 29:85-88) establishing the Army's intent to conduct an environmental assessment on the effects on the human environment of the proposed action and inviting public participation and involvement in the guidelines development process. Following publication of the NOI, the ES Team received 14 requests for draft copies of the proposed guidelines when available. The Army provided copies of a 17 May 1993 draft of the proposed guidelines to all requesters by letter dated 25 May 1993. Concurrent to responding to requests for copies of the draft guidelines, copies were provided to, and comments solicited from, an additional 32 individuals/organizations representing a spectrum of state and non-government natural resource agencies. The Army ES Team received review comments from six individuals

and organizations. The list of requesters and individuals/organizations receiving copies of the 17 May 1993 draft guidelines are listed in **Appendix C**. Written responses are on file in the office of the Army Deputy Chief of Staff of Operations and Plans (DCSOPS), Pentagon, Washington D.C.

The ESA requires consideration of the best scientific data available for consideration in biological assessments of proposed actions potentially affecting Federally threatened and endangered species. USACERL requested by letter dated 28 June 1993 review comments for the 17 May 1993 draft guidelines from 13 recognized RCW experts. These individuals have extensive research and management experience in RCW biology and ecology and associated ecosystems, and are affiliated with universities and other Federal agencies. Five of these individuals provided review comments to USACERL. The list of experts queried are listed in **Appendix D**, and their written comments are on file at the Natural Resources Division, USACERL, Champaign, Illinois.

Issues raised by public and expert review focused primarily on three areas including:

- Clarification of technical points and document inconsistencies.
- Impacts of guideline implementation on RCWs, associated species and habitats, and other biological resources.
- Organizational responsibility for guideline implementation.

Issues elicited from public and expert review that were not incorporated as revisions or clarifications in the preferred alternative are addressed in **Section IV. Environmental and Socioeconomic Effects** where appropriate.

**3. Final Proposed Guideline Development:** Following release of the 17 May 1993 draft for public comment, the Army ES Team, with technical support from USACERL and contract personnel, revised the proposed guidelines based on public comments, expert comments, and additional comments from representatives of Army MACOMS and installations. Informal discussions were also held with representatives from the U.S. Fish and Wildlife Service, including one meeting at the Region 4 Headquarters in Atlanta during November 1993. This revision process resulted in the Army's preferred alternative, which is the subject of analysis in this environmental assessment.

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## **II. AFFECTED ENVIRONMENT**

Detailed descriptions of current activities, physical environment, and status of red-cockaded woodpecker populations and other threatened and endangered species on individual installations are provided in Sections 2 and 3 of the biological assessment appended to this document (Appendix B). The following is a brief synopsis of information available in the biological assessment.

### **A. Mission and History**

The nine installations considered in this environmental assessment (Table 1) fall under four Army Major Commands: Forces Command, Training and Doctrine Command, Army Materiel Command, and Military Traffic Management Command. These installations have military training and support missions that support the Army's mission to be ready to fight and win military conflicts anywhere in the world on terms favorable to the United States and its allies. Except for the Military Ocean Terminal, Sunny Point (MOTSU), these installations were initially established to meet national defense requirements associated with World Wars I and II.

### **B. Physiographic and Habitat Features**

Installations considered in this environmental assessment are located in five southeastern states: North Carolina, South Carolina, Georgia, Alabama, and Louisiana.

Physiographic provinces represented by installations include Fall Line Sandhills of the Atlantic Coastal Plain Province, Atlantic Coastal Plain Province, Valley and Ridge Province of Appalachian Highlands, Gulf Coastal Plain Province, and the Hilly Coastal Plain Province. Upland habitats on these installations typically are dominated by pine and mixed pine-hardwood forest. Mixed hardwoods dominate low lying mesic sites and stream bottoms. Predominant pine species on these installations include longleaf, loblolly, and slash pines. Presettlement upland habitats on most of the installations likely were dominated by fire-maintained longleaf pine forest and longleaf pine savanna. A variety of aquatic and wetland communities found in the southeastern United States are represented on installations considered in this environmental assessment.

### C. Mission Activities

The full range of training, maneuver, and combat support activities conducted by the Army in support of its mission are conducted on subject installations. These activities include the full range of troop and mechanized maneuver, live-fire training from small arms through tank and heavy artillery, paradrops, and aviation training. Training is conducted from small unit through brigade- and division-sized exercises.

### D. Current RCW Populations and Habitat

Current numbers of RCW cluster sites known to occur on installations are shown in Table 2. Section 3 of the biological assessment (Appendix B) provides information on current survey status and population trends.

**Table 2. Current number (1992-93) of active and inactive cluster sites known to occur on Army installations.**

Installation	Inactive	Active	Total
Fort Benning	85	180	265
Fort Bragg	148	288	436
Fort Gordon	30+	0	30+
Fort Jackson	32	14	46
Fort McClellan	see BA	0	0
Fort Polk (see BA)	34 (Army lands) 30 (Forest Service)	58 (Army lands) 90 (Forest Service)	92 (Army lands) 120 (Forest Service)
Fort Stewart	55 (estimate)	165 (estimate)	220 (estimate)
LAAP	2	0	2
MOTSU	3	6	9

Virtually no true old-growth RCW habitat occurs on these installations today. Existing pine forests generally represent second- and third-growth stands. RCWs typically are

found nesting in relict trees that were left because of defects or remain from seedtree cuts that were never harvested. Some pine stands, particularly in live-fire areas, have reached an age class suitable for RCW nesting because they have not been accessible to commercial harvest.

Although some project-related foraging habitat analyses have been conducted, data are generally unavailable to comprehensively assess current RCW habitat availability and quality on installations. These data will become available within the next two years as installations update forest surveys to assess current forest condition and availability of foraging habitat.

## **E. Forest Management**

Forestry programs on most subject installations are in a period of transition largely due to RCW forest management requirements. Historically, production of commercial forest products had priority over timber management for other values, including endangered species. Currently, production of commercial forest products in RCW habitat areas generally is subordinate to RCW habitat management requirements due to the requirements of Biological Opinions and the Endangered Species Act.

Historically, timber management on Army installations in the Southeast emphasized production of pine sawtimber, poles, and pulpwood products. Silvicultural practices were typified by even-aged management using large clearcuts, seed tree, and shelterwood cuts and short rotations of less than 80 years. Establishment of pine plantations heavily favored loblolly and slash pine over longleaf. Active fire suppression in pine habitats favored natural regeneration of loblolly, slash pine, and other pine species over longleaf. The net effect on forest composition was similar to trends in commercially managed pine forests throughout southeastern U.S., including a decrease in longleaf acreage and forests characterized by young, even-aged stands dominated by other pine species.

The requirement of RCWs for old-growth pine for nest/roost cavities and foraging habitat has caused forestry management programs to increase rotation age in RCW habitat. While even-aged management still dominates forest prescriptions on most installations, restrictions on cutting of large sawtimber have increased emphasis on thinning cuts and single-tree selection. Recent installation forest plans increasingly emphasize conversion

to longleaf on appropriate sites. Currently, the dominant methods for longleaf regeneration on installations are seedtree and shelterwood cuts that remove other pine species in longleaf/mixed pine stands or thin existing longleaf stands together with a prescribed burning program . To date, few acres have been planted in longleaf.

Prescribed burning programs are in transition for reasons similar to those affecting forest products production. Historically, wildfires were actively suppressed and prescribed burns were limited primarily to improve downrange visibility in live-fire areas and prevention of wildfires. The result was increased fuel loads and midstory encroachment, the latter being an important factor in RCW population declines on some installations. In recent years, management prescriptions were developed on some installations that increased the area of prescribed burns and shortened burn rotations. Although dormant season burns still predominate, there is a trend toward increased growing season burning for improved midstory control in RCW habitat.

### III. ALTERNATIVES

Alternatives to the proposed action initially were developed from meetings and correspondence between the Army Endangered Species Team, USACERL, and contractor representatives. The results of this scoping process were the following four alternatives, two of which were dropped from further consideration for the reasons listed below. The two alternatives that receive further consideration in this environmental assessment are (1) a "No Action" alternative and (2) the Army's preferred alternative, which is implementation of proposed Army-wide RCW management guidelines. Comments from public, MACOM and installation representatives, expert reviewers, and representatives of the U.S. Fish and Wildlife Service on a 17 May 1993 draft version of the proposed guidelines were considered in subsequent revisions, which culminated in the final proposed guidelines assessed in this environmental assessment. Public and expert issues that were not resolved in revisions to proposed guidelines are discussed in this environmental assessment in **Section IV Environmental and Socioeconomic Effects**.

#### A. Alternatives Eliminated From Detailed Analysis

##### 1. Stop all activities that may affect RCWs, including military training, on installations with RCW populations.

**Reason for elimination:** The primary mission of the Army is to train and prepare troops to fight and win military conflicts anywhere in the world on terms favorable to the United States and its allies. All activities conducted on Army installations are subordinate to this mission objective. Elimination of training on installations with RCWs would be incompatible with the Army's mission and with established National Defense policies of the United States. Shifting these activities to other locations would result in significant regional and national economic costs, social impacts, and impacts to national security. The scope of military activities conducted on affected installations and the land area required to support these activities makes it unlikely that suitable alternative areas could be identified. Although shifting military activities to other areas could reduce potential impacts on the RCW, alternative areas would then be subject to potential environmental impacts from military activities. Such a result does not provide a long-term resolution to conflicts between military training and conservation of sensitive environmental resources.

## **2. Rescind 1984 guidelines and leave RCW management activities and policy to the discretion of individual installations.**

**Reason for elimination:** Rescinding all Army-level guidelines for management of RCWs on Army lands would expose the Army to increased risk of violation of the Endangered Species Act because of the absence of standards that ensure uniformly effective RCW management throughout the Army. This alternative also is inconsistent with policy statements of the Army leadership that the Army will be a leader among Federal agencies in the proactive conservation of threatened and endangered species consistent with accomplishing mission requirements. As a Federal agency, the Department of Army has a legal obligation under Section 7 of the Endangered Species Act to further the purpose of the Act to conserve and protect threatened and endangered species and to ensure that activities conducted by the Army are not likely to jeopardize the continued existence of threatened and endangered species. Army-level responsibility for management of RCWs is appropriate because training activities and other land use practices on Army installations are often conducted by directive from the Department of Army, and because the RCW currently occurs on six Army installations in the southeastern United States.

### **B. Alternatives Considered in Detail**

Alternative 2, implementation of the proposed Army-wide RCW management guidelines, is the Army's preferred alternative. The full text of the proposed guidelines are provided in **Appendix A**. Alternative 1, the "No Action" alternative, provides the baseline for assessing effects of Alternative 2.

**ALTERNATIVE 1: No Action.** The 1984 "Policy and Management Guidelines for Red-cockaded Woodpecker on Army Installations" would continue to provide Department of Army guidance for RCW management on Army lands. Installation activities related to RCW management would remain unchanged from current conditions. The full text of the 1984 guidelines is provided in **Appendix E**.

Under this alternative, installation management activities would remain unchanged from current conditions and would be directed by requirements of the 1984 Army guidelines, installation-specific Biological Opinions, and individual installation policies. Current conditions have resulted in, and may continue to result in, non-attainment of installation

population goals, U.S. Fish and Wildlife RCW Recovery Plan objectives for the species, regulatory non-compliance, and potential for continued degradation of habitat over time. These conditions do not fulfill Department of Army regulatory responsibilities and policy goals of proactive conservation of threatened and endangered species consistent with accomplishing mission requirements. As discussed in **Section I.A Need For the Proposed Action**, the 1984 guidelines do not adequately address critical RCW management issues on Army installations, and do not incorporate current regulatory guidance and biological information.

**ALTERNATIVE 2 (Preferred Alternative): Implement proposed Army-wide Red-cockaded Management Guidelines.** Full text of the proposed guidelines is provided in **Appendix A.** Implementation of this alternative would:

- Establish Army policy goals for RCW conservation.
- Require determination of installation RCW population goals and development of installation RCW endangered species management plans to achieve those goals.
- Establish inventory, inspection, and monitoring requirements.
- Require delineation of RCW habitat management units (HMUs).
- Prescribe management practices and marking guidelines within HMUs.
- Define allowable military activities within HMUs.
- Provide guidelines for RCW augmentation and translocation.

The proposed guidelines in this environmental assessment are the result of input from the Army ES Team, Army MACOMS, installations, USACERL, contractor representatives, U.S. Fish and Wildlife Service, and public and expert review over a period from June 1992 to October 1993.

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## **IV. ENVIRONMENTAL AND SOCIOECONOMIC EFFECTS**

This section discusses environmental and socioeconomic effects anticipated from implementation of proposed Army-wide RCW management guidelines (Alternative 2), which is the Army's preferred alternative. Alternative 1 is "No Action" and provides the baseline for assessing effects of implementation of the preferred alternative. Resource categories that may be affected by implementation of the preferred alternative were identified in meetings and correspondence between the Army Endangered Species Team and USACERL personnel and from public and expert review comments.

This environmental assessment determines that the Army's preferred alternative, implementation of proposed Army-wide RCW management guidelines (**Appendix A**), will have no cumulative adverse effects on biological, physical, social, or economic resources.

### **A. Biological**

Issues identified from public and expert review of the 17 May 1993 draft version of the proposed guidelines were related primarily to effects of the preferred alternative on biological resources. Issues that were not resolved in subsequent revisions of the proposed guidelines are discussed below.

#### **1. Red-cockaded Woodpecker**

Effects to the red-cockaded woodpecker (RCW) due to implementation of the proposed management guidelines (Alternative 2) are disclosed in the biological assessment (**Appendix B**). The biological assessment concluded that no significant adverse impacts to the RCW would occur from implementation of the proposed action. Activities discussed below are those associated with public and expert review comments that were not resolved in subsequent revisions of the proposed guidelines.

**ACTIVITY:**            **Responsibility for implementation of RCW management prescriptions.**

**Alternatives 1 and 2**

**Effects:** Responsibility for natural resource management on installations is established in AR 420-74. Any Army personnel (military or civilian) who violates environmental laws or regulations are subject to disciplinary action or penalties under the law. Ultimately, the installation Commander is responsible for all activities conducted on the installation, including environmental compliance. Implementation of Alternative 2 would not change current management and compliance responsibilities.

**Issues:** Two reviewers commented that the proposed guidelines do not adequately address accountability for implementation of proposed RCW management activities.

One reviewer stated that the proposed guidelines do not provide a timetable for development of installation Endangered Species Management Plans.

**Response:** See discussion of effects under Alternatives 1 and 2, above, related to natural resource management responsibility. Chapter 11, AR 420-74 addresses target deadlines for development and review of installation ESMPS.

**ACTIVITY:** Army policies applicable to RCW management.

#### **Alternative 1**

**Effects:** Section A Policy , of the 1984 Army Guidelines defines management goals, land areas subject to management, and inventory and monitoring requirements. No Army policy is established under this alternative related to regional conservation, mission requirements, or staffing and funding.

#### **Alternative 2**

**Effects:** Section III of the proposed guidelines establishes the conceptual

basis for specific management activities prescribed in the proposed management guidelines and establishes Army policies applicable to RCW management including conservation, mission requirements, interagency cooperation, ecosystem management, staffing and funding, conservation on adjacent lands, regional conservation, and management strategies. Implementation of these Army policies will benefit conservation efforts for the RCW.

**Issues:** Concerning Section III.D *Ecosystem Management* in the proposed guidelines, one reviewer stated that phrases such as "health of sustaining ecosystem" and "ecosystem integrity" were vague and not objectively measurable and should be eliminated.

**Response:** The science for objectively quantifying ecosystem parameters relevant to conservation of biological diversity and sensitive resources is in its infancy. However, conservation biologists and national policy increasingly recognize that long-term conservation of individual species is achieved most effectively by an ecosystem-based approach. The proposed guidelines establish the Army's intent to incorporate the concept of ecosystem management in its management activities to the extent possible based on currently available scientific information.

**ACTIVITY:** **Determination of installation population goals.**

#### **Alternative 1**

**Effects:** Under the "No Action" alternative, the 1984 Army guidelines establish population goals on installations as maintenance of "(1) present populations or (2) a viable population of 250 colonies at a density of one clan per 200 to 400 acres of suitable habitat available for forest management." This alternative does not provide guidance to installations on which of the two goals is appropriate for a particular installation. It also does not require that installations specifically state their population goal and does not define a process

for determining installation-specific population goals.

## **Alternative 2**

**Effects:** Alternative 2 does not establish a fixed habitat-based population goal or installation-specific goal. Alternative 2 establishes a process to assess site-specific habitat and land-use characteristics, including mission requirements, related to current and future conditions that affect RCW populations on the installation. Based on this assessment, an installation must then determine its population goal in consultation with the U.S. Fish and Wildlife Service and explicitly state that goal in the installation's RCW Endangered Species Management Plan (ESMP). Effect of this process will be the establishment of realistic RCW population goals based on present and future conditions. Established population goals will define future management requirements and will provide an objective standard to assess effectiveness of installation RCW management activities.

**Issues:** Several reviewers commented on establishment of installation population goals under Alternative 2. Specific comments and response are discussed below.

**Comment:** "What biological criteria are to be used in setting the population goals?" This reviewer commented that these criteria need to be spelled out. This reviewer also commented that "There have been significant problems associated with interpretation of whether the goal needs to be in terms of total birds, colonies, or breeding pairs, and how much variance can be expected due to natural fluctuations. The ultimate goal should not be a target set in stone."

Another reviewer commented that "The size of reasonable population goals is left too vague, and does not incorporated MVP (minimum viable population) thinking."

**Response:** Section V.B.2 of the proposed guidelines establishes basic biological parameters to be considered when establishing installation population goals. Site-specific population modeling and habitat requirements are not within the scope of this Army-wide guidance. Installations will determine specific population parameters that will be used to define population goals in consultation with the U.S. Fish and Wildlife Service during development of installation-specific ESMPs. Guidance provided in Alternative 2 recognizes that modeling of critical site-specific biological parameters requires flexibility to adapt to changing circumstances and new scientific information. Section V.B.2 states that U.S. Fish and Wildlife Service RCW Recovery Plan objectives will be considered in establishing installation population goals. The current Recovery Plan and anticipated revisions do address MVP in determining recovery populations and objectives, and would be considered in the development of installation RCW ESMPs during required consultations with the U.S. Fish and Wildlife Service.

**Comment:** "...There must be scientific justification/rationale for the various key numbers" in developing installation population goals. "If the Department of Army sets population goals, in consultation with the U.S. Fish and Wildlife Service, and such goals achieve recovery, then it is unnecessary for the Army to pursue population goals beyond recovery."

**Response:** The process outlined in Sections V.A and V.B of the proposed guidelines requires detailed analysis of a variety of biological and land-use parameters used for establishing installation population goals. Once population goals are achieved, providing for additional population growth is consistent with the Army's proactive conservation policy and responsibilities under the Endangered Species Act for recovery of the species. Population growth beyond stated goals will allow the Army increased flexibility in use of its lands to achieve mission objectives. Installation population goals that ultimately contribute to recovery and delisting

of the species will allow maximum use of training lands.

**Comment:** "The stated RCW population goal of at least equal to the current population is not reasonable nor realistic when you take into account the overall RCW recovery plan objectives. Isolated populations on small bases are not likely to ever be viable. Thus, it is unreasonable to attempt to maintain populations on acres which are not large enough to support a critical threshold of 250 breeding pairs."

**Response:** Few contiguous land areas under a single management authority are large enough to support 250 breeding pairs in the southeastern U.S. due to land-ownership patterns, current habitat availability, and current distribution of RCW populations. **Sections III.F and V.B.2** of the proposed guidelines acknowledge that RCW conservation must be addressed within the context of populations both on and off the installation. Existing genetic models suggest that populations less than 250 breeding pairs may not be viable. However, active management interventions can enhance demographic as well as genetic viability of small populations and may enable these populations to exist indefinitely. Maintenance of small existing populations is consistent with the Army's legal obligations under the Endangered Species Act. **Sections V.H and V.J** of the proposed guidelines describe methodologies that can be used to help maintain small populations on installations.

**ACTIVITY:** **Deletion of Inactive Clusters From Management.**

**Alternative 1**

**Effects:** There are no Army-wide criteria for deletion of inactive clusters from management. Currently, installations must initiate consultation with the Fish and Wildlife Service to delete these clusters from management.

## **Alternative 2**

**Effects:** This alternative allows clusters that have been inactive for five consecutive years to be exempt from management requirements and allows covering of inactive cavities in deleted clusters to discourage reactivation. The intent is to reduce conflicts between critical mission requirements and RCWs, particularly in live-fire areas. This alternative could negatively impact RCWs if suitable replacement habitat is unavailable. However, clusters may be deleted and cavities covered only after consultation with the U.S. Fish and Wildlife Service and only after suitable replacement clusters have been designated to achieve the installation's population goals. Deactivation in this case may reduce conflicts with mission activities but may not contribute to attaining population goals. Under these conditions there will be no net effect, either positive or negative, to RCW populations. Deletion of specific clusters will not alter the requirement that installations provide adequate habitat and recruitment areas to achieve stated population goals.

**Issues:** Two expert reviewers stated their disagreement with deletion of clusters from management and covering of inactive cavities and asserted this is inconsistent with attaining and promoting population growth beyond installation goals.

**Response:** See discussion of effects under Alternative 2, above.

**ACTIVITY:** **Augmentation and Translocation.**

## **Alternative 1**

**Effects:** As defined in the proposed guidelines, no augmentation or translocation activities are being conducted on any installation considered in this environmental assessment. There are no Army-wide criteria for implementing these activities on Army installations under this alternative.

## **Alternative 2**

**Effects:** This alternative allows installations to consider augmentation (as defined in the proposed guidelines) to enhance productivity in single bird clusters and, in exceptional circumstances, translocation to mitigate potential risks to birds in live fire areas and to provide flexibility for Army training activities. The proposed guidelines acknowledge that currently there are serious limitations associated with these techniques. Any plan to implement these activities will require U.S. Fish and Wildlife Service approval, and must be accompanied by an intensive monitoring program. Under these criteria, no significant negative effects to RCW populations are anticipated from implementation of this guidance. Successful implementation of either augmentation or translocation could enhance RCW populations and be useful in maintaining small populations on installations. Potential constraints on some military activities may be alleviated, and translocation and augmentation must be conducted within the context of achieving stated installation population goals. The proposed guidelines do not specify whether augmentation and translocation would be conducted within or between populations. This determination will be made during installation-specific consultations with the U.S. Fish and Wildlife Service concerning these activities.

**Issues:** Two expert reviewers noted limited success in translocation and that with current technology usefulness of these techniques as management tools is doubtful.

**Response:** See discussion of effects under Alternative 2 above.

## **2. Other Threatened and Endangered Species**

**ACTIVITY:** Implementation of proposed guidelines.

## **Alternative 1**

**Effects:** Effects of current installation activities on other threatened and endangered species will remain unchanged under this alternative. Proactive RCW management activities that may benefit other threatened and endangered species, such as shorter prescribed burning rotations, would be left to the discretion of individual installations or be determined by regulatory mandates of Biological Opinions.

## **Alternative 2**

**Effects:** The biological assessment (**Appendix B**) determined that no adverse impacts to other threatened and endangered species would occur from implementation of this alternative. Some habitat management practices prescribed in this alternative, such as shorter prescribed burn rotations and forest management practices that emulate presettlement conditions, may benefit some species occurring in RCW habitat. Installations will still be required to assess impacts of project-level activities on other threatened and endangered species in accordance with Section 7 of the Endangered Species Act.

### **3. Timber Stand Development and Management**

**ACTIVITY:** Implementation of timber stand prescriptions for timber production or RCW habitat management in RCW habitat areas.

## **Alternative 1**

**Effects:** Effects of historical silvicultural practices on Army installations are discussed in **Section II** of this environmental assessment. Traditional silvicultural practices on installations have tended toward short-rotation, even-aged systems with regeneration of historical longleaf sites to loblolly or other pine species. Production of commercial forest products has been emphasized over forest management for other values, including endangered species.

## **Alternative 2**

**Effects:** Forest management prescriptions in RCW habitat areas under this alternative emphasize maintenance of quality RCW habitat over commercial timber production. Longer rotations under this alternative and silvicultural practices that emulate presettlement conditions will result in an increase in old-growth, sustained-yield pine stands. Emphasis on regeneration of longleaf pine on appropriate sites will reverse historical trends of regenerating longleaf sites to loblolly and other pine species. This alternative does not dictate specific silvicultural methods to achieve stated objectives. This will provide forest managers flexibility in adapting silvicultural practices to site-specific conditions and management requirements. Where even-aged silvicultural systems are used, rotation ages specified in this alternative will ensure availability of old-growth trees preferred by RCWs for cavity construction. Increased rotation age in foraging habitat will reduce the forest area required to meet foraging requirements.

**Issues:** Several comments were received related to silvicultural prescriptions under the proposed guidelines. General issues raised included:

- (1) Concern that characterization and definition of "historical pine ecosystem" contained within the proposed guidelines are too vague or cannot be reliably determined from available data.
- (2) Silvicultural systems to be applied are not adequately specified.
- (3) Disagreement among reviewers regarding applicability of timber rotations specified in the proposed guidelines.

**Response:** Issues 2 and 3 are addressed in "Effects" under

Alternative 2, above. Concerning historical forest conditions inhabited by RCWs, research has shown that old-growth longleaf is the preferred pine species for construction of nest cavities. Adequate data are available to show that extensive fire-maintained longleaf forests were a dominant presettlement forest type throughout the southeastern United States. The few remaining examples of old-growth longleaf pine stands, such as the Wade Tract, exhibit age class and stand structure characteristics described in the proposed guidelines.

#### **4. Biodiversity**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

##### **Alternative 1**

**Effects:** There is no established Army policy or guidance that addresses effects of RCW management on biodiversity and other wildlife and plant species.

##### **Alternative 2**

**Effects:** Implementation of this alternative will result in a net positive benefit to regional biodiversity. The scope of specific management prescriptions under this alternative is limited to RCWs; however, **Section III.D** of the proposed guidelines establishes that RCW conservation is part of a broader goal to conserve biological diversity on Army lands. Silvicultural and habitat management practices that emulate natural processes and presettlement habitat conditions are prescribed under this alternative. Old-growth, fire-maintained longleaf forests contribute a significant and increasingly threatened component to regional biodiversity in the southeastern United States. Fire-maintained forests in the Southeast support many plant and animal species that are currently state or Federally

listed as threatened or endangered. Land-use practices in RCW habitat that may affect other plant and animal species, including timber harvest and pine straw harvest, will not increase under this alternative and likely will be reduced.

**Issues:** Comments from one public reviewer expressed concern that the guidelines emphasize single-species management when a multi-species, ecosystem-based approach is needed. Concern was also expressed that timber cutting, pine straw harvest, and other habitat maintenance activities addressed in the proposed guidelines may negatively impact other plant and animal species.

**Response:** See discussion of "Effects" under Alternative 2 above.

## **B. Physical Environment**

### **1. Air Quality**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

#### **Alternative 1**

**Effects:** None of the Army installations considered in this analysis are located in non-attainment areas for Federal air quality standards. Prescribed burning conducted under this alternative does not currently exceed Federal or state air quality standards.

#### **Alternative 2**

**Effects:** Frequency and area of prescribed burns likely would increase on many installations with implementation of Alternative 2. Increased frequency and area of prescribed burns would increase atmospheric smoke levels, potentially increase safety risks on nearby public roads due to decreased visibility, and potentially increase

atmospheric irritants to humans in nearby urban areas. Alternative 2 would require installations to conduct prescribed burns in accordance with all local, state, and Federal air quality laws and regulations. All installations considered in this analysis currently are responsible for coordinating prescribed burning activities with city, county, or state agencies responsible for smoke management to minimize human and air quality impacts. On several installations, scheduled burns have been cancelled or postponed due to smoke management concerns. Implementation of the proposed guidelines will not reduce the installations' responsibility for safety and air quality standards associated with a prescribed burn program.

## **2. Soils**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

### **Alternative 1**

**Effects:** Soil disturbing activities associated with timber harvest, pine straw raking, plowing of fire breaks, clearing of pine and hardwood midstory, and Army training activities in RCW habitat (off-road vehicle maneuver) would continue at current levels.

### **Alternative 2**

**Effects:** Alternative 2 will have a net positive effect in reducing the level of soil disturbing activities in RCW habitat areas. Implementation of the proposed guidelines will not increase the level of soil-disturbing military activities. Proposed guidelines restrict mechanical baling of pine straw within cluster sites and require a sufficient interval between pine straw harvests to provide fuel loads sufficient to carry prescribed burns. This requirement will reduce, to some extent, current levels of pine straw harvest on specific sites. A likely reduction in timber harvest in RCW habitat will reduce the level of

soil disturbance associated with timber harvesting activities. Use of fire plows will be restricted within cluster sites except in emergencies. Fire plows have been routinely used within cluster sites on at least one installation. Soil disturbances from mechanical hand-clearing of midstory should be negligible. Long-term, increases in burn frequency will reduce requirements for mechanical control of midstory in RCW habitat.

This alternative requires control of excessive erosion in RCW habitat management units. Erosion that results in either excessive sedimentation in habitat areas or root exposure can increase mortality of trees. Under this alternative, soil disturbing activities associated with military vehicle activity may increase in specific areas within RCW cluster sites on some installations. However, effects on RCW habitat associated with soil disturbance must be monitored and activities discontinued if there is evidence of adverse effects. Also, implementation of the guidelines will not increase overall levels of military vehicle activity on the installation.

Hot prescribed burns resulting from high fuel loads and burning under environmental conditions conducive to hot fires may sterilize soil for a period of time, which potentially lowers soil fertility and productivity. However, burns also will release nutrients for uptake by new plant growth, and increased fire frequency will aid in management of excessive fuel loads.

### **3. Water Quality**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

#### **Alternative 1**

**Effects:** Effects to water quality from timber harvest, prescribed burns, and herbicide and pesticide use would continue at current levels.

## Alternative 2

**Effects:** A likely reduction in timber harvest and clearcutting in RCW habitat management units may reduce peak flows and sediment inputs associated with timber harvest practices. Short-term herbicide use may increase to achieve management requirements for midstory control. Improper herbicide use associated with midstory control may contaminate ground and surface waters. Alternative 2 requires herbicide application in accordance with all state and Federal laws and standards. Long-term, the need for herbicide use to control midstory will be reduced due to prescribed burn control of midstory. Pesticide use for southern pine beetle control in RCW clusters is prohibited under Alternative 2.

Under some conditions, loss of herbaceous ground cover and duff layer from prescribed burns could result in increased erosion potential and sedimentation of adjacent surface waters. Steep slopes with sandy soils subject to "hot" burns that entirely remove the duff layer, basal growth, and root systems of herbaceous plants would be particularly susceptible to increased erosion. However, several factors related to prescribed burning under the proposed guidelines will mitigate the potential for excessive erosion after burns. Most prescribed burns are conducted under conditions conducive to "cool" burns that tend to leave basal areas and root systems of herbaceous plants intact, thus maintaining much of the soil-holding capability. The proposed guidelines also call for an increased emphasis on growing season burns. Herbaceous vegetation typically emerges quickly after growing season burns so that the soil-holding benefit of live vegetation is rapidly regained. Because of this rapid revegetation, growing season burns in the southeastern U.S. typically offer a short window of opportunity for increased erosion due to vegetation loss. Finally, a program of prescribed burning as described under the proposed guidelines should reduce fuel loads and increase herbaceous ground cover. These factors will help reduce the incidence of soil-damaging hot fires and

enhance the soil-holding properties that herbaceous vegetation provides.

## **C. Socioeconomic**

### **1. Cultural Resources**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

#### **Alternatives 1 and 2**

**Effects:** No effects on cultural resources are anticipated. Plow lines associated with increased prescribed burning under Alternative 2 potentially could disturb archeological sites. However, protection and survey requirements under current laws for cultural and historical artifacts would not be affected by implementation of the proposed RCW management guidelines.

### **2. Recreation**

**ACTIVITY:** Implementation of proposed Army-wide RCW management guidelines.

#### **Alternatives 1 and 2**

**Effects:** No effects on recreation activities are anticipated from implementation of Alternatives 1 and 2. Recreation activities on Army lands are restricted due to security and safety considerations. Neither of these alternatives directly addresses restrictions on recreation activities related to RCW management. If installations designate recreation areas in RCW habitat management units, restrictions on recreational activities may be required; however, such designation is considered unlikely. Continuation of recreational activities in areas with RCWs would require

consultation with the Fish and Wildlife Service. Hunting activities on installations are typically short-term and transient in nature and would be consistent with guidelines for transient troop movements through RCW clusters. Fort Jackson, for example, does not allow attachment of deer stands to trees in cluster sites.

### **3. Construction**

**ACTIVITY:** **Implementation of proposed Army-wide RCW management guidelines.**

#### **Alternatives 1**

**Effects:** No change in restrictions on construction activities is anticipated from implementing Alternative 1. Under Section 7 of the Endangered Species Act, all construction activities that potentially effect RCW habitat are subject to consultation with the U.S. Fish and Wildlife Service.

#### **Alternative 2**

**Effects:** If implementation of Alternative 2 increases RCW populations, this may cause increased constraints on construction in RCW habitat areas. However, increased RCW populations and improved habitat conditions resulting from implementation of these guidelines also may allow installations greater flexibility in mitigating construction activities affecting RCW habitat. The requirement under Alternative 2 to integrate present and future mission activities (including construction) in development of installation RCW management plans will help alleviate potential conflicts.

### **4. Noise**

**ACTIVITY:** **Implementation of proposed Army-wide RCW management guidelines.**

## **Alternatives 1 and 2**

**Effects:** No effects are anticipated from implementation of Alternatives 1 and 2.

### **5. Economic**

**ACTIVITY:** **Regulatory compliance.**

#### **Alternative 1**

**Effects:** Under Alternative 1, regulatory compliance with the Endangered Species Act has resulted in economic costs to installations due to range closures, modifications to ranges and construction projects, and land acquisitions for mitigation. Some of these costs are the result of inadequate integration of endangered species management requirements with installation master planning. Compliance costs associated with a lack of installation planning will not be alleviated under Alternative 1.

#### **Alternative 2**

**Effects:** Compliance obligations under law (and associated costs) will continue under either Alternative 1 or 2. Full implementation of RCW management requirements and planning under Alternative 2 will result in increased costs to some installations. However, consideration of mission requirements in developing installation ESMPs under Alternative 2 will reduce compliance costs resulting from inadequate long-term planning as described under Alternative 1, above, and **Section I.A Need for the Proposed Action**. An objective of the proposed guidelines is to provide installation planners a blueprint for integrating mission requirements with RCW management requirements, thus reducing costs associated with conflicting objectives.

**ACTIVITY:** Forest management in RCW habitat.

**Alternative 1**

**Effects:** It is anticipated that current installation forestry program revenue would remain unchanged due to RCW management requirements under Alternative 1. Table 3 shows forestry program revenue and expenses during 1990-92 for installations considered in this environmental assessment. Totals shown in Table 3 include revenue from all forest products, but most revenue is derived from timber sales (sawtimber, pole, and pulpwood) and, to a lesser degree, pine straw sales. Total forestry program expenses for these installations exceeded revenue in two of the three years. For the entire three-year period there was a net income of \$96,000 for all installations. Net revenue for individual installations was variable, but expenses of six of the nine installations exceeded revenues in two or more years.

Sale of pine straw currently is conducted on six installations. Pine straw can provide a significant revenue source for individual installations. Annual pine straw revenues for Fort Jackson have ranged from \$130-200,000 in recent years. Sale of pine straw on other installations such as Fort Polk and Fort Stewart is a minor contributor to total revenue.

**Alternative 2**

**Effects:** The primary economic effect of implementing this alternative is related to an expected short-term reduction in timber harvests due to increased rotation ages and current U.S. Fish and Wildlife Service guidelines for foraging requirements in RCW habitat. Timber harvest already is restricted in cluster sites and associated foraging habitat on installations where RCWs occur. This limitation is represented in revenues for 1990-92 (Table 3). Installation-specific effects on timber revenues from implementing Alternative 2 will depend on current timber availability and quality, current RCW populations and habitat quality, and future installation population

**Table 3. Forestry program revenues and expenses (\$000), 1990-92, for installations considered in this assessment.**

Installation	1990		1991		1992	
	Expenses (\$000)	Revenues (\$000)	Expenses (\$000)	Revenues (\$000)	Expenses (\$000)	Revenues (\$000)
Fort Benning	568	115	623	572	691	521
Fort Bragg	700	710	716	543	683	452
Fort Gordon	211	181	348	118	240	14
Fort Jackson	252	225	299	384	301	235
Fort McClellan	199	244	150	241	147	169
Fort Polk	356	815	409	868	470	737
Fort Stewart	1,509	1,349	1,344	1,207	1,429	1,261
LAAP	93	259	76	478	123	410
MOTSU	49	21	58	3	50	56
<b>Totals</b>	<b>3,937</b>	<b>3,920</b>	<b>4,023</b>	<b>4,415</b>	<b>4,134</b>	<b>3,855</b>
<b>Net income</b>	<b>1990 = \$ -17</b>		<b>1991 = \$ 392</b>		<b>1992 = \$ -279</b>	

goals established under the proposed guidelines. Population goals for most installations likely will be higher than existing populations. Designation of additional habitat management units to support population goals will result in harvest restrictions in these areas.

Cumulative economic effects from decreased timber harvest are expected to be negligible. Total area of the nine installations (and subordinate installations) is 377,950 ha. Less than half this land is available for commercial timber production due to mission constraints and off-limit areas. Army land available for commercial forestry on these nine installations represents less than two-tenths of one percent of commercial forests in the Southern Region (USDA, Forest Service). Short-term effects from implementation of Alternative 2 may reduce timber sales on some installations. Long-term effects will tend toward establishment of forests with sustainable yields and increased availability of high-quality sawtimber due to longer rotations.

Army forestry programs are required to pay States 40 percent of net revenues. In years where expenses exceed revenues, payments are zero dollars. Under Alternative 1, total payment to States during 1990-92 was approximately \$920,000 (average \$306,000 per year). The bulk of these payments is generated from three installations: Fort Polk, Fort McClellan, and Louisiana Army Ammunition Plant. Fort McClellan and Louisiana Army Ammunition Plant currently do not have RCW populations and a decline in State payments from these installations is not anticipated unless intensive RCW translocation and recruitment is initiated in the future. Based on annual expenses and revenues, Fort Polk averaged \$158,000 per year in State payments during 1990-92, with these funds going primarily to the Vernon Parish school district. Any decline in State payments from Fort Polk related to Alternatives 2 potentially could affect local school districts; however, potential long-term effects on the regional or state economy are expected to be negligible.

No cumulative adverse economic effects are expected at the regional and state levels. Reductions in timber availability may impact local forest product industries in the short-term. However, in the long-term, forestry management practices under Alternative 2 will provide a stable, sustainable yield of high-quality timber products to local industries dependent on forest products production.

No significant effects on pine straw revenues are expected from implementation of Alternative 2. Installations with pine straw harvest activities currently restrict mechanical raking and baling within RCW cluster sites. Longer harvest rotations to provide adequate fuel loads for prescribed burns could reduce revenues; however, in the long-term this would be offset by increased quality and area available for pine straw harvest due to midstory control and increased regeneration to longleaf. Increased quality and area available for pine straw collection potentially could also offset revenue loss associated with decreased timber sales.

## **V. CUMULATIVE EFFECTS AND CONCLUSION**

No significant cumulative adverse effects on biological, physical, social, or economic resources are anticipated from implementation of the preferred alternative.

Implementation of the preferred alternative will have a net positive installation-specific effect on RCW populations, forest resources, and some physical resources, such as soils, through habitat management practices and a reduction in soil disturbing activities.

Possible cumulative effects could result from changes in timber harvest and prescribed burning practices on installations due to implementation of the preferred alternative; however, no cumulative adverse effects are anticipated. Timber sales from public lands in the southeastern United States (primarily U.S. Forest Service lands) are expected to decline somewhat in the future due to RCW management requirements. Potential declines in timber production from Army lands associated with implementation of the preferred alternative will not contribute significantly to any decrease in timber production in the southeastern U.S., since total sales from Army lands represent less than one percent of total timber production from public lands in the Southern Region. Shortfalls in other commercial products such as pine straw due to RCW management from Army lands can be compensated by production from other private and public lands.

If other land management agencies increase use of prescribed burns as a habitat management tool in the Southeast, regional air quality could be degraded. No Army installations subject to the proposed guidelines are currently located in non-attainment areas for federal air quality standards. In the future, if increased burn rotations on Army installations contribute to regional degradation in air quality, this potentially can be mitigated by smoke easements for prescribed burns or regional coordination of burn programs among land management agencies.

No other cumulative adverse effects on social, physical, economic, or biological resources are anticipated from implementation of the preferred alternative.

Increases in RCW populations on Army lands resulting from implementation of the proposed guidelines will have a positive cumulative effect toward recovery of the RCW. Army lands currently support a significant percentage of the entire known RCW

population. Any increase in RCW populations on Army lands will be a significant step toward attaining current U.S. Fish and Wildlife Service RCW Recovery Plan objectives in several portions of the RCW's range. Army lands also support substantial populations of other threatened and endangered plant and animal species. Habitat management activities associated with implementation of the preferred alternative, such as increases in prescribed burning, may benefit populations of these other species and contribute to recovery of these species.

## **Appendix A: Management Guidelines**

### **Management Guidelines for the Red-cockaded Woodpecker on Army Installations**

**(Preferred Alternative)**

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Management Guidelines  
for the Red-cockaded Woodpecker  
on Army Installations

Table of Contents  
(References to paragraphs)

- I. General
  - A. Purpose
  - B. Applicability
  - C. Revision
  - D. Mission
  - E. Existing Biological Opinions
- II. Consultation
- III. Army Policies Applicable to RCW Management
  - A. Conservation
  - B. Mission Requirements
  - C. Cooperation with U.S. Fish and Wildlife Service
  - D. Ecosystem Management
  - E. Staffing and Funding
  - F. Conservation on Adjacent Lands
  - G. Regional Conservation
  - H. Management Strategy
- IV. Definitions
- V. Guidelines for Installation RCW ESMPs
  - A. RCW ESMP Development Process
  - B. RCW Population Goal
  - C. Surveys, Inspections, and Monitoring Programs
  - D. RCW Habitat Management Units (HMUs)
    - 1. Designation of HMUs
    - 2. Areas included within HMUs
    - 3. Minimization of RCW management impacts on the installation's mission
    - 4. Demographic and genetic interchange
  - E. HMU Management Practices
    - 1. Clusters and recruitment stands within HMUs
    - 2. Other areas within HMUs
    - 3. Midstory control
    - 4. Erosion control
    - 5. Impact/danger and direct fire areas
  - F. Timber Harvesting and Management in HMUs
  - G. Pine Straw Harvesting within HMUs
  - H. Restoration and Construction of Cavities
  - I. Protection of Clusters
    - 1. Markings
    - 2. Training within RCW clusters
  - J. Augmentation and Translocation

I. General.

A. Purpose. The purpose of these guidelines is to provide standard RCW management guidance to Army installations for developing installation endangered species management plans (ESMPs) for the Red-cockaded Woodpecker (RCW). Installation RCW ESMPs will be prepared according to these guidelines and chapter

11, AR 420-74, Land, Forest, and Wildlife Management. These guidelines establish the baseline standards for Army installations in managing the RCW and its habitat. Installation RCW ESMPs will supplement these guidelines with detailed measures to meet installation-specific RCW conservation needs. The requirements in RCW ESMPs will apply to all activities on the installation.

B. Applicability. The guidelines are applicable to Army installations where the RCW is present and to installations with inactive clusters that the installation, in consultation with the U.S. Fish and Wildlife Service (FWS), continues to manage in an effort to promote reactivation.

C. Revision. These guidelines will be revised as necessary to be consistent with the latest RCW recovery plan and to incorporate the latest and best scientific data available.

D. Mission. The Army's goal is to train for assigned combat and other missions while concurrently developing and implementing methods to assist in the recovery and delisting of the RCW.

E. Existing Biological Opinions. Installations will continue to comply with the requirements of existing biological opinions until RCW ESMPs are prepared in accordance with these management guidelines and chapter 11, AR 420-74 and are approved through consultation with the FWS. RCW ESMPs should be drafted to incorporate the requirements of existing biological opinions, as modified to conform to these management guidelines through consultation with the FWS.

## II. Consultation.

A. In preparing RCW ESMPs and taking action that may affect the RCW, installations will comply with the consultation requirements of section 7 of the Endangered Species Act (ESA); the implementing FWS regulations at 50 CFR part 402; and chapter 11, AR 420-74.

B. Early entry into informal consultation with the FWS is key to resolving potential problems and establishing the foundation to address issues in a proactive and positive manner. If, through informal consultation, the FWS concurs in writing that the RCW ESMP or other action is not likely to adversely affect any endangered or threatened species, formal consultation is not required. Issue resolution through informal consultation is the preferred method of consultation.

C. In consulting with the FWS on RCW ESMPs and other actions that may affect the RCW, the opinions of the FWS will normally be consistent with these guidelines. In exceptional cases, however, FWS opinions may require installations to take measures inconsistent with these guidelines. After every effort has been made at the installation and MACOM levels to resolve inconsistencies, installations will report, through MACOM channels, to the Office of the Director of Environmental Programs (ODEP), Headquarters, Department of the Army, FWS opinions that are not consistent with these guidelines. ODEP will expeditiously review these reports and determine if HQDA-level

action is necessary. If feasible, installations should delay implementation of measures recommended by the FWS that are inconsistent with these guidelines until after the ODEP review is completed.

### III. Army Policies Applicable to RCW Management.

A. Conservation. Implementation of RCW ESMPs, prepared in accordance with these guidelines, will meet the Army's responsibility under the ESA to assist in conservation of the RCW. Conservation, as defined by the ESA, means the use of all methods and procedures which are necessary for endangered and threatened species survival and to bring such species to the point of recovery where measures provided by the ESA are no longer necessary.

B. Mission Requirements. Installation and tenant unit mission requirements do not justify violating the ESA. The keys to successfully balancing mission and conservation requirements are long-term planning and effective RCW management to prevent conflicts between these interests. In consultations with the FWS, installations will attempt to preserve the ability to maintain training readiness, while meeting ESA conservation requirements.

C. Cooperation with U.S. Fish and Wildlife Service. The Army will work closely and cooperatively with the FWS on RCW conservation. Installations should routinely engage in informal consultation with the FWS to ensure that proposed actions are consistent with the ESA requirements.

D. Ecosystem Management. Conservation of the RCW and other species is part of a broader goal to conserve biological diversity on Army lands consistent with the Army's mission. Biological diversity and the long-term survival of individual species, such as the RCW, ultimately depend upon the health of the sustaining ecosystem. Therefore, RCW ESMPs should promote ecosystem integrity. Maintenance of ecosystem integrity and health also benefit the Army by preserving and restoring training lands for long-term use.

E. Staffing and Funding. Installation commanders are responsible for ensuring that adequate professional personnel and funds are provided for the conservation measures prescribed by these guidelines and RCW ESMPs. Commanders are responsible for accurately identifying the funding needed to meet the requirements of these guidelines. RCW conservation projects are funded through environmental channels and will be identified in the Environmental, Pollution Prevention, Control and Abatement Report (RCS 1383).

F. Conservation on Adjacent Lands. Necessary habitat for the RCW includes nesting and foraging areas. Both of these RCW habitat components may be located entirely on installation lands. There may be instances, however, where one of these components is located on installation land, while the other is located on adjacent or near-by non-Army land. Installations should initiate cooperative management efforts with these landowners, if such efforts would compliment installation RCW conservation initiatives.

G. Regional Conservation. The interests of the Army and the RCW are best served by encouraging conservation measures in areas off the installation. Installations should participate in promoting cooperative RCW conservation plans, solutions, and efforts with other federal, state, and private landowners in the surrounding area.

H. Management Strategy. These guidelines require installations to adopt a long-term approach to RCW management consistent with the military mission and the Endangered Species Act. First, installations are required to establish an installation RCW population goal in consultation with the FWS using the methodology described in para V.B below. Once established, the installation must designate sufficient nesting and foraging habitat to attain and sustain the goal. The goal will also dictate the required management intensity level. Next, installations must develop an ESMP to attain and sustain the installation RCW population goal in perpetuity in accordance with chapter 11, AR 420-74. Third, installations are required to ensure that all units and personnel that conduct training and other activities at the installation comply with the requirements of the installation RCW ESMP.

#### IV. Definitions.

Augmentation - Relocation of an RCW, normally a juvenile/fledgling female, from one active cluster to another active cluster.

Basal area (BA) - The cross-sectional area (square feet) of trees per acre measured at approximately four and one-half feet from the ground.

Biological diversity - The variety of life and its processes. It includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Buffer zone - The zone extending outward 200 feet from the outermost cavity trees in a cluster.

Cavity - An excavation in a tree made, or artificially created, for roosting and nesting by RCWs.

Cavity restrictor - A metal plate that is placed around an RCW cavity to prevent access by larger species. A restrictor also prevents a cavity from being enlarged, or if already enlarged, shrinks the cavity entrance diameter to a size that prevents access by larger competing species.

Cavity start - An incomplete cavity excavated by, or artificially created for, RCWs.

Cavity tree - A tree containing one or more active or inactive RCW cavities or cavity starts.

Cluster - The aggregate area encompassing cavity trees occupied or formerly occupied by an RCW group plus a 200 foot buffer zone (formerly called "colony").

Effective breeding pairs - Groups that successfully fledge young.

Group - A social unit of one or more RCWs that inhabits a cluster (formerly called "clan"). A group may include a solitary, territorial male; a mated pair; or a pair with helpers (offspring from previous years).

Habitat Management Unit (HMU) - Designated area(s) managed for RCW nesting and foraging, including clusters and areas determined to be appropriate for recruitment and replacement stands.

Impact/danger areas - The ground within the training complex used to contain fired or launched ammunition or explosives and the resulting fragments, debris, and components from various weapons systems.

Population - A RCW population is the aggregate of groups which are close enough together so that the dispersal of individuals maintains genetic diversity and all the groups are capable of genetic interchange. Population delineations should be made irrespective of land ownership.

Provisioning - The artificial construction of cavities or cavity starts.

Recovery population - A total of 250 or more effective breeding pairs annually, for a five year period.

Recruitment - The designation and management of habitat for the purpose of attracting a new breeding group to that habitat.

Recruitment stand - A stand of trees, minimum of 10 acres in size, with sufficient suitable RCW nesting habitat identified to support a new RCW group. Stand and supporting foraging area should be located 3/8 mile to 3/4 mile from a cluster or other recruitment stand.

Relict tree - a pine tree usually more than 100 years old having characteristics making it attractive to the RCW for cavity excavation.

Replacement stand - a stand of trees, minimum of 10 acres in size, identified to provide suitable nesting habitat for colonization when the current cluster becomes unsuitable. The stand should be approximately 20 - 30 years younger than the active cluster. While it is preferable for replacement stands to be contiguous to the active colony, at no time should they be more than 1/4 mile from the cluster, unless there is no suitable alternative.

Stand - an aggregation of trees occupying a specific area and sufficiently uniform in species composition, age, arrangement, and condition so as to be distinguishable from the forest on adjoining areas.

Sub-population - the aggregate of groups which are close enough together to allow for demographic interchange between

groups. A sub-population does not have a significant demographic influence on adjacent sub-populations, but there is sufficient genetic interchange between the sub-populations to be considered one population.

Translocation - the relocation of one or more RCWs from an active cluster to an inactive cluster or recruitment stand that contains artificially constructed cavities.

#### V. Guidelines for Installation RCW ESMPs.

Installations will prepare RCW ESMPs and manage RCW populations according to the following guidelines.

##### A. RCW ESMP Development Process.

Preparation of installation RCW ESMPs requires a systematic, step-by-step approach. RCW populations (current and goal), RCW habitat (current and potential), and training and other mission requirements (present and future) must be identified. Detailed analysis of these factors and their interrelated impacts are required as a first step in the development of an ESMP. Installations should use the following or a similar methodology in conducting this analysis:

1. Identify the current RCW population and its distribution on the installation.
2. Identify areas on the installation suitable or potentially suitable for RCW nesting and foraging habitat.
3. Establish the installation RCW population goal with the FWS according to the guidance in B below. The installation RCW population goal will at least equal the current population.
4. Identify installation and tenant unit mission requirements. Overlay these requirements on the RCW distribution scheme.
5. Identify mission requirements that are incompatible with the conservation of RCW habitat.
6. Identify areas where conflicting mission requirements could be relocated to avoid RCW habitat.
7. Identify critical mission areas where activities cannot be relocated.
8. In consultation with the FWS, identify areas that will be subject to the expanded training guidelines in paragraph V.I.2.c below.
9. Identify areas which could support RCW augmentation or translocation.
10. Identify areas suitable for RCW habitat and free of conflicting present and projected mission activities. These are prime areas for designation as recruitment stands.

11. Analyze the information developed above using the guidance contained in these guidelines.

12. Prepare the RCW ESMP to implement the best combination of options, consistent with meeting the established RCW population goal, while minimizing adverse impacts to training readiness and other mission requirements.

#### B. RCW Population Goal.

1. One of the first steps in RCW management is to determine an installation population goal in accordance with paragraph V.B.2 below. Once this goal is established, it is used to designate the amount of land needed for RCW HMUs and the appropriate level of management intensity.

2. ESMPs must clearly state the installation RCW population goal. This goal will be established through informal or formal consultation with FWS. Goals should be carefully calculated considering the current and future installation and tenant unit missions, the amount and distribution of current and future suitable habitat on and off the installation, the quality of the habitat, the current size of the RCW population, the distribution of clusters, the configuration of sub-populations, the land ownership patterns, the recovery potential (see 3 below), the RCW Recovery Plan objectives, etc. The goal should strike a reasonable balance between the present and future installation and tenant unit missions and conservation. Once established, the population goal will determine the amount of installation land to be managed as RCW habitat. Goals should be considered long-term but are subject to change, through consultation with the FWS, based upon changing circumstances and new scientific information

3. The population goal established for an installation will dictate the required RCW management intensity level. A population that has achieved the installation goal need only be maintained at that level, however, installations should continue to encourage population growth where feasible and compatible with the military mission. In contrast, any population that has not achieved its population goal requires an active recruitment/augmentation strategy. A maintenance strategy is appropriate for populations which have attained the maximum population that can be supported by available suitable habitat, irrespective of population size. However, maintenance activities will vary according to the population size, for example, smaller nonviable populations may require occasional augmentation, predator control, etc.

#### C. Surveys, Inspections, and Monitoring Programs.

1. Installations will conduct the following surveys and monitoring programs.

a. Five-Year installation-wide RCW surveys. Effective management of the RCW requires an accurate survey of installation land for RCW cavity and cavity-start trees. The survey must document the location of RCW cavity and cavity-start trees as accurately and precisely as possible (using Global Positioning System and Geographic Information System, if

available) and the activity within all clusters. An installation-wide survey will be conducted every five years. Installations may conduct the survey over the five year period, annually surveying one-fifth of the installation.

b. Project surveys. Prior to any timber harvesting operations, construction, or other significant land-disturbing activities, excluding burning, a 100-percent survey of the affected area will be conducted by natural resources personnel trained and experienced in RCW survey techniques and supervised by a RCW biologist, if one has not occurred within the preceding year. Installations will conduct project surveys in accordance with the survey guidance in V. Henry, Guidelines for Preparation of Biological Assessments and Evaluations for the Red-cockaded Woodpecker, U.S. Fish and Wildlife Service, Southeast Region, Atlanta, Georgia (September 1989). In the case of range construction, the survey will also include the surface danger zone for the weapons to be used on that range.

c. Annual inspections. Clusters that have not been deleted from management in accordance with paragraph V.D.2.b below and recruitment stands must be inspected annually. These are prescriptive inspections, used to develop treatments and modifications of treatments to maintain suitable nesting habitat. At a minimum, installations will inspect and record data for:

- (1) density and height of hardwood encroachment;
- (2) height of RCW cavities;
- (3) condition of cavity trees and cavities;
- (4) a description of damage from training, fires (prescribed or wild), etc.; and
- (5) evidence of RCW activity for each cavity tree (includes each cavity in the tree) within the cluster. See 2a below for guidance on the maintenance of survey and monitoring records.

d. Ten-year forest survey. In addition to an RCW survey required in 1a above, installations will conduct, as required by AR 420-74, an installation-wide forest survey at least every ten years. In conducting the forest survey, data will be gathered to accurately determine the quantity and quality of available foraging and nesting habitat for the RCW. Alternately, installations may survey ten percent of the installation annually. Forest surveys will be conducted using a recognized plot sampling technique, such as the random line plot cruise, the random point sample cruise, or the line strip cruise method. Forest surveys in impact areas may be conducted using scientifically accepted, aerial photography interpretation methods.

e. Monitoring. Installations will conduct monitoring programs to scientifically determine demographic trends within the population as a whole. Sample sizes will be determined by the number of clusters and their dispersion on the installation by habitat category (e.g., longleaf pine/scrub oak,

pine flatwoods, pine mixed hardwoods) and by category of use (e.g., non-dud producing ranges, mounted and dismounted training areas, cantonment areas, bivouac areas, etc.). Sample sizes will be of sufficient size to have statistical validity and to ensure that population trends and important biological information can be determined for the entire installation. Installations with 25 clusters or less will monitor all sites. Installations with greater than 25 clusters will monitor sample sizes based on the following: 25 percent of the RCW clusters (active and inactive) located in each habitat and usage category on the installation, with a minimum of three RCW clusters per habitat type or a total of 25 clusters, whichever is greater. Monitoring activities will be done annually to acquire data to determine the number of adults and fledglings per site, sex of birds, number of breeding groups, and number of nests. Monitoring will include color banding of birds.

2. Results from surveys and monitoring will be recorded as follows:

a. Survey/monitoring records. Survey and monitoring results will be recorded and retained permanently allowing for trend analysis.

b. RCW map. Survey data will be used to generate installation RCW maps accurately depicting the location of RCW clusters, HMUs, etc. The map will be widely distributed for use by those conducting land use activities on the installation, including military training, construction projects, range maintenance, etc. Maps will be updated at least every five years to coincide with the installation-wide RCW survey or when a 20 percent change in the number of clusters occurs, whichever is sooner.

#### D. RCW Habitat Management Units.

1. Designation of habitat management units (HMUs). Installation RCW ESMPs will provide for the designation of nesting and foraging areas within HMUs sufficient to attain and sustain the installation RCW population goal. Determination of the installation population goal is a prerequisite to HMU designation. HMU delineation is an important step in the planning process because it defines the future geographic configuration of the installation RCW population. Areas designated as HMUs must be managed according to these guidelines.

#### 2. Areas included within HMUs.

a. HMUs will encompass all clusters, areas designated for recruitment and replacement, and adequate foraging areas as specified in d below.

b. After consultation with the FWS, clusters that have been documented as continuously inactive for a period of five consecutive years or more may be deleted from HMUs. Once deletion of a cluster from management is approved by the FWS, existing cavities may be covered to discourage reactivation. This will be part of a long-term plan to shift the RCW population to areas on the installation where conflicts between RCW management and critical mission requirements will be minimized.

Inactive clusters will not be deleted from HMU management unless sufficient clusters and recruitment stands exist on the installation, provisioned in accordance with these guidelines, to support the installation's RCW population goal (See 1 above).

c. In designating HMUs, fragmentation of nesting habitat will be avoided. Installations will attempt to link HMUs with HMU corridors, allowing for demographic interchange throughout the installation population.

d. Adequate foraging habitat, in size, quality, and location, must be provided within HMUs. The foraging habitat needed to support clusters will be calculated and designated according to the range-wide guidelines in V. Henry, Guidelines for Preparation of Biological Assessments and Evaluations for the Red-cockaded Woodpecker, U.S. Fish and Wildlife Service, Southeast Region, Atlanta, Georgia (September 1989) or other physiographic-specific guidelines approved by the FWS. The objective is to provide high quality habitat as close as possible to the cluster, rather than large areas of poor habitat.

3. Minimization of RCW management impacts on the installation's mission.

a. To the extent consistent with RCW biological needs, HMUs should be located where there will be a minimum impact upon current and planned installation missions/operations and should be consistent with land usage requirements in the Real Property Master Plan. This is particularly important regarding HMUs designated for recruitment/replacement purposes.

b. On installations where the RCW is present in areas where there are or potentially could be significant impacts on installation missions/operations, especially training-related operations, the RCW ESMP should provide for the following:

(1) The installation should designate additional HMUs beyond those needed to attain and sustain the installation population goal. Installations should manage these additional HMUs to promote population growth in these areas.

(2) To the extent that RCW biological and demographic needs allow, installations should locate these additional HMUs where RCW management requirements will not have a significant impact on mission/operations. This will allow for a gradual, long-term shifting of RCW sub-populations into more suitable areas through natural demographic shifting, recruitment, and, in exceptional cases, augmentation and translocation (described in paragraph V.J below). In accordance with 2 above, the movement of RCWs away from high mission-conflict areas can be further encouraged by the deletion of documented, inactive clusters from RCW management, while at the same time providing quality recruitment/replacement sites in areas with reduced mission conflicts.

4. Demographic and genetic interchange.

Installations should delineate HMUs to maximize the linkage between sub-populations on and off the installations and with populations off the installation. Where fragmentation exists, installations should develop plans to link sub-populations on the

installation by designating habitat corridors where practical.

E. HMU Management Practices. All HMU management activities and practices will be consistent with the conservation of other candidate and federally listed species.

1. Clusters and recruitment stands within HMUs.

a. Due to RCW biological needs, clusters require a higher management intensity level than other areas within HMUs. Within HMUs, maintenance priority will be given to active clusters over both inactive clusters and recruitment stands.

b. Clusters and recruitment stands will be kept clear of dense midstory. An open, park-like pine stand is optimal. All midstory within 50 feet of cavity trees will be eliminated. Beyond 50 feet, some pine midstory should be retained for regeneration and some selected hardwoods may be retained for foraging by species other than the RCW. Hardwoods should not exceed 10 percent of the area of the canopy cover nor 10 percent of the below canopy cover within the cluster or recruitment stand. Hardwood stocking should be kept below 10 square feet per acre.

c. The priority of forest management in cluster sites and recruitment stands is maintenance and production of potential cavity trees greater than 100 years of age. For this reason, no rotation age shall be set in these areas. In thinning clusters and recruitment stands, dead, dying, or inactive cavity trees will be left for use by competitor species. Thinning should occur only when pine species basal area (BA) exceeds 80 and should not exceed the removal of more than 30 BA to avoid habitat disruption (timber prescriptions within clusters should normally be on a 10 year cycle). Pine species basal areas should be kept within the range of approximately 50 to 80 square feet, maintaining average spacing of 20 to 25 feet between trees, but retaining clumps of trees.

d. Trees within HMUs affected by beetle (e.g., Ips beetle, southern pine beetle) infestation should be evaluated for treatment and treated appropriately. Treatment options will be developed in consultation with the FWS. Possible treatments include the use of pheromones or cutting and leaving, cutting and removing, or cutting and burning infected trees. Cavity trees may be cut only with the approval of the FWS. Prior to cutting an infected cavity tree, a suitable replacement cavity tree will be identified and provisioned.

e. Timber cutting, pine straw harvesting, and habitat maintenance activities, with the exception of burning activities, will not be conducted during the nesting season, occurring from April through July depending upon the installation's location. If a biologist, experienced in RCW management practices, determines that habitat maintenance activities, exclusive of timber cutting and pine straw harvesting, will have no effect on nesting activities, they may be conducted at anytime.

2. Other areas within HMUs. While not requiring the same level of intense management for clusters, and recruitment

stands, the quality of foraging and replacement stands should be maintained by a prescribed burning program sufficient to control hardwood growth and ground fuel buildup and to eliminate dense midstory. Improving the quality of foraging habitat will reduce the quantity (acreage) required to maintain the installation RCW population.

3. Midstory control. Prescribed burning is normally the most effective means of midstory control and is recommended as the best means of maintaining a healthy ecosystem. Prescribed burning will be conducted at least every three years in longleaf, loblolly, slash pine, and shortleaf pine systems. Burning must be conducted in accordance with applicable Federal, state, and local air quality laws and regulations. With the agreement of the FWS, the burn interval may be increased to no more than five years after the hardwood midstory has been brought under control. Mechanical and chemical alternatives should only be used when burning is not feasible or is insufficient to control a well advanced hardwood midstory. Application of herbicide must be consistent with applicable Federal, state, and local laws and regulations. Cavity trees will be protected from fire damage during burning. Burning should normally be conducted in the growing season since the full benefits of fire are not achieved from non-growing season burns. Winter burns may be appropriate to reduce high fuel loads. Use of fire plows in clusters will be used only in emergency situations.

4. Erosion control. Installations will control excessive erosion and sedimentation in all HMUs. Erosion control measures within clusters will be given priority over other areas within HMUs.

5. Impact/danger and direct fire areas.

a. Impact/danger areas.

(1) Impact/danger areas that contain or likely contain unexploded ordnance or other immediate hazardous materials (radiological or toxic chemicals) can pose danger to personnel. Natural resources conservation benefits to be gained by intensive management in high risk areas generally are not justified.

(2) Designation of impact/danger areas, safety restrictions on human access to impact/danger areas, range operations in impact/danger areas, and the associated effects of these actions on RCW management activities may adversely affect the RCW and other federally listed species within impact/danger areas, including the possibility of incidental take. Installations are responsible for consulting with the FWS on these potential effects.

(3) To the degree practicable, clusters and surrounding foraging area should be designated as "no fire areas" to protect clusters from projectile damage.

b. Direct fire areas.

(1) Direct fire, non-dud producing impact areas that do not contain unexploded ordnance, or other immediate

hazardous materials may be included within HMUs, subject to the guidelines set forth below.

(2) In HMUs which are not impacted upon by weapons firing, RCW management will be the same as for HMUs outside of impact areas. In HMUs where there is a significant risk of projectile damage to foraging or nesting habitat, the following guidelines apply:

(a) Range layout will be modified/shielded to protect HMUs from projectile damage, if practicable. Protective measures that will be considered include reorienting the direction of weapons fire, shifting target arrays, establishing "no fire areas" around RCW clusters or HMUs, revising maneuver lanes, constructing berms, etc.

(b) Installations should develop alternate HMUs near existing HMUs but outside the affected range complex. Augmentation and translocation should be considered as a means of removing RCWs from high risk areas.

#### F. Timber Harvesting and Management in HMUs.

1. Timber harvesting in HMUs will be permitted if consistent with the conservation of the RCW. If permitted, a harvest method will be implemented that maintains or regenerates the historical pine ecosystem. In most ecosystems inhabited by the RCW, historical conditions are characterized by old-growth longleaf pines in an uneven-age forest, with small (1/4 to 5 acres) even-age patches varying in size. Timber harvesting methods must be carefully designed to achieve and maintain historical conditions through emulation of natural processes.

2. Longleaf sites will not be regenerated to other pine species. Where other species have either replaced longleaf pine (due to fire suppression) or been artificially established on sites historically forested with longleaf, forest management will be directed toward regeneration back to longleaf by natural or artificial methods.

3. At a minimum, sufficient old-growth pine stands will be maintained by: lengthening rotations to 120 years for longleaf pine and 100 years for other species of pine; indefinitely retaining snags, six to ten relict and/or residual trees per acre when doing a clearcut, seedtree cut, or shelterwood cut; and indefinitely retaining snags, all relicts, and residuals in thinning cuts. No rotation age will be established for cluster sites or replacement stands. The above rotation ages and retention rates do not apply to off-site stands of sand pine, loblolly pine, or slash pine that will be converted back to longleaf.

G. Pine Straw Harvesting within HMUs. Sufficient pine straw must be left in HMUs to allow for effective burning and to maintain soils and herbaceous vegetation. Areas within HMUs will not be raked more than once every three to six years. Baling machinery will not be used or parked within clusters.

#### H. Restoration and Construction of Cavities.

1. Restoration. Active and inactive cavities found to be in poor condition during periodic inspections will be repaired whenever feasible to prolong their use. Cavity restrictors can be installed on enlarged RCW cavity entrance holes (greater than two inches in diameter) to optimize the availability of suitable cavities. They also may be installed to protect properly-sized cavities where suitable cavities are limited, the threat of enlargement is great, or where another species is occupying a cavity. Priorities for the installation of restrictors, in descending order, will be: (a) active single tree clusters, (b) single bird groups, (c) clusters with less than four suitable cavities, and (d) others. Restrictors will be installed according to scientific procedures accepted by the FWS. Restrictors will be closely monitored, especially in active clusters. Adjustments to the positioning of the restrictors will be made to ensure competitors are excluded and RCW access is unimpeded.

2. Construction. Artificial cavities will be constructed in areas designated for recruitment or translocation and in active clusters where the number of suitable cavities is limiting. The objective is to provide at least four suitable cavities per active cluster and two cavities plus three advanced starts for each recruitment stand. Priorities for installation of artificial cavities in descending order will be: (a) single cavity tree active clusters, (b) active clusters with insufficient cavities to support a breeding group, (c) inactive clusters designated as and managed for replacement or recruitment stands with an insufficient number of usable cavities within one mile of an active cluster, (d) new replacement/recruitment stands within one mile of an active cluster, (e) inactive clusters designated as and managed for replacement or recruitment stands within three miles of an active cluster, (f) recruitment or potential habitat within three miles of an active cluster, (g) inactive clusters and (h) replacement/recruitment stands beyond three miles of an active cluster. Cavity construction may be by either the drilling or insert techniques. Construction must be according to scientific procedures accepted by the FWS and accomplished by fully trained personnel.

#### I. Protection of Clusters.

1. Markings. The following uniform marking guidance for RCW clusters will supersede the marking guidance issued by the Directorate of Environmental Programs, dated 8 Jan 1993.

a. Cavity and cavity-start trees. These trees will be marked with two white bands, approximately four to six inches wide and one foot apart. The bands will be centered approximately four to six feet from the base of the tree. A uniquely numbered small metal tag will be affixed to the cavity tree for monitoring and identification purposes.

b. Clusters. Buffer trees on the outer perimeter of clusters will be marked with a one to two foot-wide white band four to six feet from the base of the tree. Warning signs (c below) will be posted at reasonable intervals facing to the outside of clusters and along roads, trails, firebreaks, and other likely entry points into clusters.

c. Warning sign. Signs posted at clusters will be constructed of durable material, ten inches square (oriented as a diamond), white or yellow in color, and of the design in Figure 1. The RCW graphic and the lettering "Endangered Species Site" and "Red-cockaded Woodpecker" will be printed in black. The lettering "Do Not Disturb" and "Restricted Activity" will be printed in red. All lettering will be 3/8 inches in height.

d. Installations will conform to the uniform markings guidelines in a through c above by 1 Jan 1997. Signs erected and markings made after the effective date of these guidelines will conform to the standards in a through c above.

e. Training on non-Army lands. Installations conducting long-term training on private, state, or other federal lands with RCW habitat will attempt to obtain agreement from the landowners on compliance with these markings guidelines. If a landowner does not agree to compliance with these guidelines, even with the installation paying the costs associated with compliance, installations will educate troops training on such lands to recognize the markings used by the landowner.

## 2. Training within RCW clusters.

a. The training guidelines in this section apply within clusters, as defined in paragraph IV above. RCW-related training restrictions do not apply to recruitment and replacement stands and foraging areas.

### b. Standard training guidelines within clusters.

(1) Military training is limited to dismounted training of a transient nature.

(2) No bivouacs.

(3) No digging or cutting of vegetation, except for hardwoods used as camouflage.

(4) Use of CS gas, smoke, flares, incendiary devices, artillery, artillery simulators, mortars, or similar devices is prohibited within clusters. Elsewhere on the installation, units will coordinate with both the installation natural resources office and range control prior to using CS gas and smoke, other than smoke grenades. Use of blanks in M16 rifles and handguns is permitted.

(5) Vehicle travel through clusters is limited to designated and maintained roads, trails, and firebreaks identified on official installation maps used for this purpose. Installations must consult with FWS prior to the establishment of new trails, roads, or firebreaks in or through RCW clusters.

(6) With FWS approval through informal consultation, off-road through-traffic by wheeled vehicles, 5 tons or less, travelling at least 100 feet away from cavity trees may be permitted on an infrequent basis for specific exercises. The effects of this off-road vehicular traffic will be monitored

and documented to determine long-term trends.

c. Expanded training guidelines within clusters.

(1) In consultation with the FWS, the installation may designate clusters, not to exceed 10 percent of the RCW clusters on the installation, that will be subject to expanded training guidelines. In these designated clusters, the standard training guidelines in 2b above apply, except that the following additional activities, with stated restrictions, are allowed:

(a) Bivouacs and battalion-level and below command posts are allowed, providing they remain at least 200 feet away from cavity trees. Digging is prohibited. These fixed activities will be limited in duration to 18 consecutive hours or less from 1 August through 31 March and to 6 consecutive hours or less from 1 April through 31 July.

(b) Use of blanks in individual and crew-served (M60 MG and below) weapons is permitted.

(c) Wheeled vehicles are permitted to travel and remain in clusters so long as soil erosion levels remain within tolerance limits for that soil series under Soil Conservation Service standards. Vehicles will remain at least 200 feet from all cavity trees at all times except as allowed under the standard training guidelines in 2b(5) above.

(2) Installations will implement a monitoring plan, approved by the FWS, to record the effects of the expanded training activities and to identify any potential adverse impacts on the RCW. In the event potential adverse impacts are identified, the installation will suspend the expanded training guidelines and implement the standard training guidelines in 2b(5) above and will consult the FWS.

d. Training guidelines will be actively enforced through installation training and natural resources enforcement programs, prescribed in chapters 1 and 11, AR 420-74, and installation range regulations.

J. Augmentation and Translocation.

1. Augmentation can be a useful tool to expand and disperse the RCW population into designated HMUs. Augmentation also provides a means to maintain genetic viability in populations with less than 250 effective breeding pairs. Installation plans will provide for the augmentation of single-bird groups. Clusters will be made suitable in accordance with the requirements/procedures outlined in paragraph V.H. above before augmentation is attempted.

2. In exceptional situations, installations may translocate RCWs from active clusters to inactive clusters or recruitment/replacement stands where cavities have been artificially constructed. For example, translocation could be used to move RCWs from live fire areas where there is a significant risk of harm to the birds. The current scientific literature indicates serious limitations in successfully

translocating adult RCWs, in particular, adult territorial males. Translocation will be accompanied by an intensive monitoring program.

3. In areas to receive RCW, habitat designation and improvement work ensuring that nesting and foraging habitat meet the standards established by these guidelines (V.E.1.b and c, V.E.2, V.D.2.d) must be completed before augmentation or translocation is attempted.

4. Neither augmentation nor translocation will be undertaken without the approval of and close coordination with the FWS. Installations must obtain an ESA section 10 permit (scientific purposes) or an incidental take statement under ESA section 7 and all applicable marking, banding, and handling permits prior to moving any RCW through augmentation or translocation.

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## **Appendix B: Biological Assessment**

### **Biological Assessment of Army-wide Management Guidelines for the Red-cockaded Woodpecker**



**US Army Corps  
of Engineers**

Construction Engineering  
Research Laboratories

USACERL Special Report EN-94/03  
10 February 1994

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# **Biological Assessment of Army-wide Management Guidelines for the Red-cockaded Woodpecker**

Prepared by:       Natural Resources Division  
                          U.S. Army Construction Engineering  
                          Research Laboratories  
                          Champaign, IL 61826

## **Foreword**

This biological assessment was conducted for the U.S. Army Center for Public Works (USACPW) under Military Interdepartmental Purchase Requests E87920542 and E87930325. The assessment was prepared to meet requirements of the Endangered Species Act of 1973, as amended.

The work was performed by the Natural Resources Division (EN), Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). Dr. J.H. Carter III (consulting biologist) and Tim Hayden (USACERL) were primary authors of this assessment. Assistance in scoping and review of drafts of this assessment was provided by MAJ Craig Teller (DAJA-EL), Phil Pierce (DAIM-EN), LTC (Ret.) Bruce Sneddon, and Dr. David Tazik (USACERL). Randy Norris and Lynn Parrish (North Carolina State University) assisted in site visits and compiling information for this assessment.

Information for installations considered in this assessment was provided by numerous installation biologists, major Army command (MACOM) representatives, and operations personnel. These individuals also provided review comments on this assessment. Without their assistance, this assessment would not have been possible.

William Severinghaus is Chief, CECER-EN, and William Goran is Chief, CECER-EL. LTC David J. Rehbein is Commander, USACERL, and Dr. L.R. Shaffer is Director.

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# Table of Contents

Forward	i
List of Tables	v
1 INTRODUCTION	1
1.1 Background	1
1.2 Objective	2
1.3 Scope	2
1.4 Approach	4
2 SITE DESCRIPTIONS	7
2.1 Fort Benning, Georgia	7
2.1.1 Mission and History (7)	
2.1.2 Physiographic and Habitat Features (7)	
2.1.3 Military Activities (8)	
2.2 Fort Bragg and Camp Mackall, North Carolina	9
2.2.1 Mission and History (9)	
2.2.2 Physiographic and Habitat Features (9)	
2.2.3 Military Activities (10)	
2.3 Fort Gordon, Georgia	12
2.3.1 Mission and History (12)	
2.3.2 Physiographic and Habitat Features (12)	
2.3.3 Military Activities (13)	
2.4 Fort Jackson, South Carolina	14
2.4.1 Mission and History (14)	
2.4.2 Physiographic and Habitat Features (14)	
2.4.3 Military Activities (15)	
2.5 Fort McClellan	16
2.5.1 Mission and History (16)	
2.5.2 Physiographic and Habitat Features (17)	
2.5.3 Military Activities (17)	
2.6 Fort Polk	19
2.6.1 Mission and History (19)	
2.6.2 Physiographic and Habitat Features (19)	
2.6.3 Military Activities (20)	
2.7 Fort Stewart, Georgia	21
2.7.1 Mission and History (21)	
2.7.2 Physiographic and Habitat Features (22)	
2.7.3 Military Activities (22)	

2.8	Military Ocean Terminal, Sunny Point, North Carolina . . . . .	24
2.8.1	Mission and History (24)	
2.8.2	Physiographic and Habitat Features (24)	
2.8.3	Military Activities (24)	
2.9	Louisiana Army Ammunition Plant, Louisiana . . . . .	25
2.9.1	Mission and History (25)	
2.9.2	Physiographic and Habitat Features (25)	
2.9.3	Military Activities (26)	
3	<b>CURRENT CONDITIONS . . . . .</b>	<b>27</b>
3.1	Status of RCW Populations and Surveys . . . . .	27
3.1.1	Fort Benning (29)	
3.1.2	Fort Bragg (30)	
3.1.3	Fort Gordon (31)	
3.1.4	Fort Jackson (31)	
3.1.5	Fort McClellan (32)	
3.1.6	Fort Polk (32)	
3.1.7	Fort Stewart (33)	
3.1.8	Louisiana Army Ammunition Plant (34)	
3.1.9	Military Ocean Terminal, Sunny Point (34)	
3.2	Forest Management . . . . .	34
3.3	Current Restrictions on Military Activities in RCW Cluster Sites . . . . .	35
4	<b>ANALYSIS OF EFFECTS . . . . .</b>	<b>41</b>
4.1	Threatened and Endangered Species Other than the RCW . . . . .	41
4.2	Red-cockaded Woodpecker . . . . .	47
4.2.1	PARAGRAPH I. General and PARAGRAPH II. Consultation (48)	
4.2.2	PARAGRAPH III. Army Policies Applicable to RCW Management (48)	
4.2.3	PARAGRAPH IV. Definitions (48)	
4.2.4	PARAGRAPH V. Guidelines for Installation RCW ESMPs (49)	
5	<b>CONCLUSION . . . . .</b>	<b>54</b>

## List of Tables

Table 1. Army installations considered in this biological assessment . . . . .	3
Table 2. Current number (1992-93) of active and inactive cluster sites known to occur on Army installations . . . . .	28
Table 3. Installations with known or potential cluster sites in off-limits danger/impact areas . . . . .	28
Table 4. Current restrictions on military activities in cluster sites in maneuver areas . . .	36
Table 5. Threatened and endangered species potentially occurring on Army installations considered in this biological assessment . . . . .	40

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# **1 INTRODUCTION**

## **1.1 Background**

The primary mission of the Army is to train and prepare troops to fight and win military conflicts anywhere in the world on terms favorable to the United States and its allies. In support of the National Military Strategy, Army installations provide the platforms from which the Army sustains and projects its forces.

The Army must maintain an adequate land base that meets current and future requirements for realistic training and operations in support of its mission. The leadership of the Department of Defense (DoD) recognizes that to fulfill long-term mission requirements, the military must achieve environmental objectives of sustainability of training lands and full compliance with conservation requirements under law. The Army is committed to a leadership role in the conservation of threatened and endangered species on Army lands.

The red-cockaded woodpecker (*Picoides borealis*, RCW) was listed as federally endangered in 1970, becoming one of the first species protected by the Endangered Species Act (ESA) of 1973. This species historically was found throughout the pine woods and savannahs of the southeastern United States, and its historical range encompasses military installations in several southeastern states. Existing RCW populations on military lands play an increasingly important role in the recovery of this species because populations have declined throughout much of its range due to fragmentation and loss of critical nesting habitat.

In 1984, in an effort to meet conservation obligations under the ESA, the Army established RCW management guidelines outlining population goals, inventory requirements, and forestry practices for RCW management on Army lands. The 1984 guidelines did not address military impacts on this species. However, continuing conflicts between the military mission and RCW conservation and non-compliance with existing Army guidelines and ESA regulatory requirements have resulted in closures of ranges, restrictions on military activities, criminal indictments, and non-attainment of RCW conservation goals on many installations.

In recognition of the need to mitigate conflicts between mission requirements and T&E species conservation on Army lands, the Deputy Chief of Staff for Operations and Plans (DCSOPS), the Assistant Chief of Engineers, and the Assistant Judge Advocate General for

Civil Law and Litigation formed the Army Endangered Species (ES) Team in May 1992. One of the primary tasks of the ES Team was to update Army-wide RCW management guidelines to effectively meet Army-wide RCW conservation requirements in compliance with the ESA. These proposed guidelines expand upon earlier guidance and are meant to provide standard RCW management guidance and baseline data requirements for Army installations.

## **1.2 Objective**

The objective of this biological assessment is to assess the effects of implementation of the proposed Army-wide RCW management guidelines on RCW populations and other threatened and endangered species on Army installations subject to the proposed guidelines.

## **1.3 Scope**

The action of concern in this assessment is implementation of Army-wide RCW management guidelines. Full text of the proposed guidelines is provided in **Appendix A**. Implementation of these guidelines would:

- Establish general Army policy goals for RCW conservation.
- Require determination of installation RCW population goals and development of installation management plans to achieve these goals.
- Establish inventory and monitoring requirements.
- Require delineation of habitat management units (HMUs).
- Prescribe management practices and marking guidelines within HMUs.
- Establish consultation requirements and management recommendations in impact/danger areas and direct live fire areas.
- Define allowable military activities within HMUs.
- Provide guidelines for augmentation and translocation of RCWs.

The proposed RCW management guidelines are a Department of Army initiative. The scope of this biological assessment is limited to those Army installations with lands under Department of Army management authority that meet the following criteria:

- Installations with currently active RCW cluster sites.
- Installations with inactive cluster sites that installations continue to manage to promote reactivation.

Nine Army installations (Table 1) meet the above criteria and are considered in this biological assessment. Active RCW cluster sites currently are known to occur on six Army installations. Three installations had RCW populations historically and are managing habitat associated with inactive cluster sites to some extent. A single, adult RCW was observed on Fort Gordon in October 1993; however, no recent activity at cavity trees has been observed.

**Table 1. Army installations considered in this biological assessment.**

<b>Installation</b>	<b>State</b>	<b>Population Status</b>
Fort Benning	Georgia	RCWs present
Fort Bragg	North Carolina	RCWs present
Fort Gordon	Georgia	Historical population
Fort Jackson	South Carolina	RCWs present
Fort McClellan	Alabama	Historical population
Fort Polk	Louisiana	RCWs present
Fort Stewart	Georgia	RCWs present
Louisiana Army Ammunition Plant	Louisiana	Historical population
Sunny Point Military Ocean Terminal	North Carolina	RCWs present

Fort Rucker, Alabama, an Army installation that historically had an RCW population, is not considered in this assessment. No RCWs currently occur on Fort Rucker and no management activities for RCWs are conducted on this installation according to information provided by Fort Rucker Natural Resource personnel to the Army ES Team. Fort Rucker Natural Resource personnel indicate that the probability of RCWs naturally recolonizing this installation is low because of unsuitability of current habitat and no known occurrence of RCWs on adjacent lands.

National Guard installations are not subject to the proposed guidelines and are not considered in this assessment. These lands are owned primarily by the states and/or Department of

Agriculture, U.S. Forest Service. Natural resource management on these installations is the responsibility of the States and the Forest Service, not the Department of Army.

Camp Shelby, a National Guard installation in Mississippi, initially was included for consideration in this biological assessment because Army Training and Doctrine Command (TRADOC) activities occur on this installation. About 47,234 ha of the 53,290 ha installation are owned by the U.S. Forest Service, with the remaining land ownership divided almost equally between the State of Mississippi and the Army. Army land holdings are distributed as a patchwork of small parcels throughout the northern half of the installation. Fifteen inactive RCW cavity tree clusters are known to occur on Camp Shelby, but only 3.6 ha of Army land are associated with one inactive RCW cavity tree cluster.

The Mississippi Army National Guard operates Camp Shelby under a Special Use Permit (SUP) issued by the U.S. Forest Service. Military activities and natural resource management on Forest Service lands are dictated by stipulations of the SUP. Renewal of the current SUP is currently under negotiation, and is the subject of an Environmental Impact Analysis in compliance with NEPA requirements. RCW management activities on Camp Shelby will be subject to renewal conditions of the SUP. At this time there is no plan by the National Guard to adopt the proposed Army RCW management guidelines as part of the new SUP. Camp Shelby will not be considered in this BA, because of the Army's insignificant ownership and control of RCW habitat on the installation.

Although the Army conducts activities on private, state, and federal lands that are not under the Army's direct management authority, the Army is still responsible for effects of its activities on threatened and endangered species occurring on these lands. If implementation of provisions of the proposed guidelines on these lands will help the Army in meeting its legal responsibilities and conservation objectives, then it will be in the Army's interest to pursue this option where possible.

## **1.4 Approach**

USACERL and contract personnel conducted site visits to obtain information on current RCW populations and trends and to obtain information on current and past management practices. Pertinent documents were reviewed including installation biological assessments and opinions, other installation environmental regulatory documentation, and scientific

literature. Installation site descriptions were solicited from installations. Expert review of a 17 May 1993 draft of the guidelines was solicited from 13 recognized RCW experts (**Appendix D**), five of whom provided written comments to USACERL. Based on information obtained and expert opinions, an assessment was made of the effects of implementation of the RCW management guidelines on RCW populations and other threatened and endangered species.

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## **2 SITE DESCRIPTIONS**

The objective of the following site descriptions is to provide a brief summary of the location, history, physical environment, and military activities for each installation subject to the proposed management guidelines. The information that follows is taken from interviews, summary information, and environmental compliance documents provided by each installation.

### **2.1 Fort Benning, Georgia**

#### **2.1.1 Mission and History**

The primary mission of the installation is to support the U.S. Army Infantry School (USAIS). Currently, USAIS has 30 courses for officers and NCO professional development with combined-arms oriented instruction. Fort Benning is under U.S. Army Training and Doctrine Command (TRADOC), but has significant Forces Command (FORSCOM) activities.

Fort Benning was established on 7 October 1918 for the purpose of consolidating three widely dispersed infantry schools and became a permanent military installation on 8 February 1922.

#### **2.1.2 Physiographic and Habitat Features**

Fort Benning covers 73,325 contiguous hectares in Georgia's Muscogee and Chattahoochee counties (68,438 ha) and Alabama's Russell county (4887 ha). It is bounded on the north and west by the City of Columbus, Georgia.

The installation is located in the Fall Line Sandhills of the Atlantic Coastal Plain Province. A small portion of the reservations northern edge is classified as Midland Section of the Piedmont Province. Soils range from sands to clays but are primarily sands in the Sandhill physiographic region where Fort Benning is located. As erosion dissected the area, the more resistant sands remained in place, becoming the present uplands. More erodible clay silts and finer sands were deposited in drainages.

Pine and mixed pine-hardwood are the major upland habitat associations occurring on Fort Benning. In this habitat, pines dominate (longleaf, loblolly, and shortleaf), usually occurring in mixed species associations.

The Chattahoochee River is the prominent aquatic feature on the installation, and is fed by Upatoi Creek, Uchee Creek and numerous smaller tributaries. Significant wetlands, swamps, bottomland hardwood associations occur throughout the installation.

### **2.1.3 Military Activities**

#### **2.1.3.1 Mission Activities and Force Structure:**

Total annual student input of the USAIS is 34,375 with an average daily load of 3,400. The Infantry Training Brigade conducts One Station Unit Training (OSUT) for infantry soldiers with an annual trainee load of 17,000 and an average daily load of 4,700. FORSCOM units that use maneuver areas include the 3rd Brigade, 24th Infantry Division and 36th Engineer Group. Special Operations Command (SOCOM) units also train here, including the 75th Ranger Regiment Headquarters and the 3rd Battalion, 75th Ranger Regiment. These units, coupled with the Reserve Component units and visiting armed services total a military strength of 24,000 personnel.

#### **2.1.3.2 Maneuver and Aviation:**

Squads through brigades conduct exercises including attack, defensive, retrograde and delayed maneuvers. The full range of troop and vehicle (wheeled and tracked) maneuver activities associated with these activities are conducted on Fort Benning. Units assigned helicopters conduct training which includes nap of the earth flights, night vision training, tactical airlift, and support of ranger and pathfinder classes.

#### **2.1.3.3 Weapons Live Fire:**

Weapons sustainment and qualification training for all units include small arms, machine guns, grenade launchers, hand grenades, anti-armor weapons, mortars, mines, artillery, Bradley Fighting Vehicles, tanks, helicopters, and Air Force tactical aircraft.

#### **2.1.3.4 Training Areas/Ranges:**

There are 60 ranges designed to support a diversity of requirements. Most ranges accommodate multiple weapons systems for multiple echelons of training and to satisfy requirements for qualification and sustainment training. Live-fire areas are characterized by target areas, impact areas, surface danger, and permanent dud areas. The majority of live-fire ranges are located around three major impact areas. Approximately 24,222 ha are dedicated to live-fire ranges/areas. Most of the remaining training area (approximately 44,408 ha) is available for maneuver exercises. Some areas are dedicated to specific training activities including land navigation, airborne drop zones, aircraft landing strips and individual tactical training exercises. Because most of the area is forested, maneuver training is restricted and channeled.

## **2.2 Fort Bragg and Camp Mackall, North Carolina**

### **2.2.1 Mission and History**

The primary mission of Fort Bragg is the training, logistical, and mobilization deployment support of the XVIII Airborne Corps. Fort Bragg is a FORSCOM installation. Camp Mackall is a subsidiary training facility under Fort Bragg administration and is located approximately 13 km southwest of Fort Bragg.

"Camp" Bragg was initiated as a field artillery training site in 1918, becoming a permanent Army installation, Fort Bragg, in 1922. Airborne training at Fort Bragg began in 1942, with all five World War II airborne divisions training at the installation. The 82nd Airborne Division was assigned to Fort Bragg at the end of World War II. In 1951, The XVIII Airborne Corps was organized at Fort Bragg. The Psychological Warfare Center (now John F. Kennedy Center for Military Assistance) was established in 1952, and Fort Bragg became headquarters for Special Forces soldiers. During the Vietnam War period, 1966-70, more than 200,000 soldiers took basic combat training at the installation. Camp Mackall was established in 1943 to meet World War II training requirements.

### **2.2.2 Physiographic and Habitat Features**

Fort Bragg encompasses 58,136 ha in Cumberland, Moore, Hoke, and Harnett counties,

located between the cities of Southern Pines and Fayetteville, North Carolina. Camp Mackall consists of 2641 ha in Scotland and Richmond counties, North Carolina.

Fort Bragg and Camp Mackall are located in the Sandhills Region of North Carolina's Upper Coastal Plain. The topography is gently rolling. Upland soils on Fort Bragg include Blaney loamy sand, Gilead loamy sand, Candor Sand, and Lakeland sand. These soils typically are well drained and low in fertility. Soils in drainages generally are classified as Johnston loam and are usually richer and poorly drained. Predominate soils on Camp Mackall are Lakeland sand and Gilead loamy sand.

Forests on the upper sandy ridges of Fort Bragg are dominated by longleaf pine mixed with scrub oaks and associated with wiregrass. Loblolly pine is more common near creek bottoms. Pond pine, bald cypress, and Atlantic white cedar are the dominant overstory species in creek bottoms. Overstory hardwoods in creek bottoms are typically black gum (*Nyssa biflora*) and red maple (*Acer rubrum*). A diverse midstory of broadleaf shrubs occurs in mesic sites. Vegetation on Camp Mackall is similar to that found on Fort Bragg.

Fort Bragg watersheds drain north into James Creek and Little River and south into Rockfish Creek, part of the Cape Fear River Basin. Camp Mackall watersheds drain into Drowning Creek, Big Muddy Creek, and Beaver Dam Creek as part of the Lumber River Basin.

### **2.2.3 Military Activities**

#### **2.2.3.1 Mission Activities and Force Structure:**

Fort Bragg is the most active military installation in the United States and serves as one of the Army's major troop bases and training installations. Approximately 44,000 military personnel are assigned to Fort Bragg. Tenant units include the 82nd Airborne Division and a field artillery brigade and engineering brigade attached to the XVIII Corps. Other tenant units include 10 battalions of the 1st Special Operations Command and one battalion of the JFK Special Warfare Center. Reserve units and the North Carolina and South Carolina National Guards regularly conduct training at Fort Bragg. Five battalions of the 10th Marine Regiment annually spend two 3-week periods training at Fort Bragg.

Significant training also occurs on the Sandhills Game Lands next to Camp Mackall and on

nearby National Forest Lands. However, RCW management on these lands is the responsibility of other agencies, so these lands are not considered further in this assessment. However, restrictions to military activities in RCW colonies would apply in these areas.

#### **2.2.3.2 Maneuver and Aviation:**

Maneuver/training exercises are conducted at all levels of command from platoon to brigade level to ensure combat readiness. Some exercises bring the equivalent of a division into the field. Battalion size elements are the greatest users of training areas. Unit training typically includes ground movements, air operations, weapons firing, and development of bivouac and defensive positions. Exercises are conducted to some degree almost year-round and 24 hours per day, averaging 1 3/4 million man-days per year during the last five years. Maneuver activities include troops on foot and both wheeled and tracked vehicles. Approximately 3,000-4,000 paradrops and 2,000-4,000 equipment drops are conducted annually over drop zones at Fort Bragg and Camp Mackall.

Aviation training on Fort Bragg and Camp Mackall is conducted primarily in support of the airborne mission. Aircraft sorties totaled 224,128 during fiscal year 1993. Training consists of both fixed and rotary wing aircraft conducting troop and equipment paradrops and insertions, and providing close air support for ground units.

#### **2.2.3.3 Weapons Live Fire:**

Weapons live fire training includes small arms, machine gun, all caliber artillery through 175 mm, tank guns, aircraft bombing and strafing, mortars, Vulcans, Shillelagh and TOW missiles, DRAGON, LAW, and AT-4 weapons.

#### **2.2.3.4 Training Areas/Ranges:**

Approximately 37,986 ha, including six airborne drop zones, are available for maneuver/training areas on Fort Bragg. A Special Forces support facility and an airfield used for Army rotary wing, Air Force airlift, Low Altitude Parachute Extraction System, and airmobile training are located on Camp Mackall. One drop zone is located on Camp Mackall.

There are 72 fixed ranges at Fort Bragg for practice and qualification. Manchester Impact/Danger Area is primarily a small arms impact area of 1142 ha. MacRidge Impact/Danger Area (approximately 4307 ha) is primarily a small arms impact area with moderate amounts of light artillery, demolitions, and mortar fire. Coleman Impact/Danger Area (5430 ha) is the primary impact area on the reservation supporting the entire range of weapons types used on Fort Bragg. McPherson Impact/Danger Area (2792 ha) has activities similar to the Coleman area. Over a quarter of a million soldiers used fixed firing ranges during fiscal year 1993, and over 200,000 personnel used impact areas and Observation Posts during the same period.

## **2.3 Fort Gordon, Georgia**

### **2.3.1 Mission and History**

The primary mission of Fort Gordon is to train signal personnel in specific communications skills in both tactical and fixed environments. Fort Gordon is presently under TRADOC command.

Fort Gordon was established as Camp Gordon in 1941 to train infantry and armored divisions. Although closed briefly after World War II, Camp Gordon was reopened and subsequently became a permanent Army installation in 1956, renamed as Fort Gordon.

### **2.3.2 Physiographic and Habitat Features**

Fort Gordon is located approximately 14.5 km west of the center of Augusta, Georgia, and encompasses parts of Richmond, Columbia, Jefferson, and McDuffie counties. The installation comprises 22,438 ha.

Fort Gordon is in the Fall Line Sandhills physiographic province and is characterized by deeply dissected uplands with moderate slopes. Upland soils tend to be sandy, xeric, and low in fertility. Poorly drained silty or loamy soils distinguish bottomland areas.

Naturally regenerated forests and plantations of longleaf, slash, and loblolly pine dominate the xerophytic upland acreage. Persimmon, turkey oak, and scrubby post oak may be found mixed with pine species on the most well-drained soils. Mixed hardwood stands are found

along stream bottoms and low lying areas.

Fort Gordon is located within the Savannah River watershed and is drained by numerous creeks. Wetlands are an important hydrological feature along these drainages and contribute significantly to the installation's biodiversity.

### **2.3.3 Military Activities**

#### **2.3.3.1 Mission Activities and Force Structure:**

Mission activities focus on specialized training in operation and maintenance of sophisticated electronic communications equipment. In 1991 more than 24,000 officers, enlisted soldiers, and civilians were programmed for training at the Signal Center. The 15th Signal Brigade is the principal signal training unit with a normal contingent of more than 5,000 soldiers.

Support is provided for Army Reserve units, Army National Guard units, and ROTC activities. Fort Gordon is also home to the Dwight David Eisenhower Army Medical Center providing specialized care to beneficiaries in a seven-state area.

#### **2.3.3.2 Maneuver and Aviation:**

Vehicle maneuver activity is limited to established roadways and adjoining training sites because of highly erodible soils and moderate to severe topographic relief. Field exercises typically involve deployment of tactical electronic communications equipment and associated troop bivouacs. Individual to battalion level training is conducted.

#### **2.3.3.3 Weapons Live Fire:**

Live-fire training is limited primarily to small-caliber weapons up to 50 caliber machine guns. Army Reserve units intermittently use an artillery impact area.

#### **2.3.3.4 Training Areas/Ranges:**

Fourteen ranges bound a 3028+ ha small arms impact area. A 2018 ha artillery impact area is also located on the installation. In addition to these impact areas, 49 training areas

encompassing approximately 15,704 ha are available for unit training.

## **2.4 Fort Jackson, South Carolina**

### **2.4.1 Mission and History**

The primary mission at Fort Jackson is to provide entry level training for soldiers of the U.S. Army, including Basic Training (BT) and Advanced Individual Training (AIT). Fort Jackson is a designated U.S. Army Training Center under TRADOC command.

Fort Jackson was established in 1917 to train troops during World War I. The original land acquisition was 8882 ha. For most of the period between the two World Wars, the installation was under the control of the State National Guard. In 1940 an additional 12,111 ha was acquired, and the installation reverted to Federal government control for troop training during World War II, and the Korean and Vietnam conflicts.

### **2.4.2 Physiographic and Habitat Features**

Fort Jackson is located in Richland County, South Carolina, adjacent to the City of Columbia. The installation comprises 21,115 ha.

Fort Jackson is located in the northwestern edge of the Atlantic Coastal Plain Province, a region of low to moderate relief and gently rolling hills. The Fall Line Sandhills, a zone that marks the boundary between the younger, softer sediments of the Coastal Plain Province and the ancient, crystalline rocks of the Piedmont Province, lies approximately four miles west of the cantonment area. Terrain on the installation is characterized by rolling, low hills. Soils are predominantly sands and kaolin clays.

Most forest land on Fort Jackson is composed of pine-scrub oak sandhill community type. Longleaf pine is the dominant overstory species. Wetlands occupy approximately 2,705 ha, and wetland hardwood is the dominant wetland community.

The installation drains into watersheds of the Wateree and Congaree Rivers. There are approximately 306 km of mostly narrow streams on the installation, and 31 named ponds or reservoirs cover approximately 173 ha.

### **2.4.3 Military Activities**

#### **2.4.3.1 Mission Activities and Force Structure:**

Fort Jackson is the largest and most active initial entry training center in the United States. The installation provides Basic Training for approximately 50% of the enlisted men and women who enter the Army each year.

Fort Jackson also is host to several FORSCOM units, including units of the 48th Explosive Ordnance Disposal, U.S. Army Reserve, and South Carolina Army National Guard (SCARNG). In addition to these units, there are several tenant units from other Army, Navy, and DoD organizations.

The Base Realignment and Closure 1991 Implementation Plan calls for the establishment of the Soldier Support Warfighting Center at Fort Jackson (SSWFC). This action will move the Soldier Support Center and associated schools to Fort Jackson.

#### **2.4.3.2 Maneuver and Aviation:**

Maneuver activity associated with the Basic Training missions on Fort Jackson is low intensity, and consists primarily of foot traffic and wheeled vehicles limited to established roads, trails, and firebreaks. Most vehicle maneuvers are associated with troop transport to outlying bivouac and training sites.

The bulk of wheeled and tracked vehicle maneuver is associated with SCARNG, Army Reserve, and Marine Corps Reserve training activities. Except for the 224 ha Free Maneuver Area in the southeastern portion of the installation, tracked vehicles are restricted to maintained roads, tank trails, and firebreaks. Most of this training occurs at the squad or platoon level.

Helicopter aviation training is conducted primarily by the SCARNG. Occasional units from Fort Bragg conduct aviation training on Fort Jackson, but no associated live fire training is conducted.

### **2.4.3.3 Weapons Live Fire:**

Weaponry used in live fire training includes: small arms, machine guns, grenade launchers, hand grenades, anti-armor weapons, mortars (up through 4.2 inch HE), mines, artillery (up through 155 mm HE), and Bradley Fighting Vehicle and tank main armament target practice rounds (25 and 105 mm).

### **2.4.3.4 Training Areas/Ranges:**

Fort Jackson contains 21 small arms ranges around the boundary of the 1919 ha Small Arms Impact Area. Nine ranges are located along the boundary of the 2301 ha South Impact Area, which is used for machine gun and large caliber, direct-fire weapons. The South Impact Area also serves as the artillery impact area. Two smaller rifle and machine gun qualification ranges cover approximately 170 ha.

Foot maneuver activities can occur anywhere on the installation, exclusive of impact areas. Off-road vehicle maneuver is limited to the 224 ha Free Maneuver Area located in the southeast portion of the installation.

## **2.5 Fort McClellan**

### **2.5.1 Mission and History**

The mission of Fort McClellan is to administer and conduct training associated with three major organizations: U.S. Army Military Police School (USAMPS), U.S. Army Chemical School (USACMLS), and Training Center (under direction of Training Brigade). Fort McClellan is under TRADOC Command.

Military use of lands in the area of present-day Fort McClellan was initiated with the establishment of Camp Shipp before 1900. In 1917, "Camp" McClellan was established as a National Guard Camp. The camp was expanded during the 1930's and World War II. Deactivated after World War II, the installation resumed active status with the beginning of the Korean War. The Chemical Corps School and Women's Army Corps Center were established in 1954, but were both closed in the 1970s. The U.S. Army Chemical School was relocated to Fort McClellan in 1979 and the Military Police School was established in 1975.

## **2.5.2 Physiographic and Habitat Features**

Fort McClellan consists of three tracts of land located in Calhoun County, Alabama. The Main Post (7649 ha) is on the north side and adjacent to Anniston, Alabama. Pelham Range (8981 ha) is located approximately 8 km west of the Main Post. Choccolocco Corridor (1812 ha) is adjacent to the Main Post and allows movement for training exercises to National Forest lands to the east. Fort McClellan leases the corridor from the Alabama Forestry Commission. The Forestry Commission has sole responsibility for natural resource management on corridor lands.

Fort McClellan lies almost entirely in the Valley and Ridge physiographic province of the Appalachian Highlands. The Main Post is characterized by mountainous ridges on the south and east, which are known as Choccolocco Mountain. Elevations range from 213 to 629 m above sea level. The rest of the Main Post is gently rolling and contains the cantonment area. Pelham Range is characterized by moderately rolling hills with elevations ranging from 146 to 288 m. Five major soil series occur on Fort McClellan. Approximately 80 percent of the Main Post is composed of the Stony Rough Land Soil association.

The steep terrain on the eastern and southern portion of Main Post is predominated by upland hardwoods. Within this area, isolated stands of pine are mixed with hardwoods. Virginia pine is encountered along the ridges, whereas longleaf pine occurs along the lower slopes of many hills and ridges. The more gentle terrain of the western and northern portions of Main Post has been cleared for cantonment areas or training area/ranges. While upland hardwoods are also common in this area, loblolly and/or shortleaf pine often occur as prominent species. Bottomland hardwoods are restricted to narrow strips along tributary streams. A 35-year planting program has artificially established nearly 2019 ha of loblolly pine.

Fort McClellan's watershed consists of Cane and Cave creeks. Cane Creek bisects both the Main Post and Pelham Range. Cave Creek drains the northern half of Main Post.

## **2.5.3 Military Activities**

### **2.5.3.1 Mission Activities and Force Structure:**

Mission activities are related to training and operations of the three major organizations on

Fort McClellan and other subordinate commands.

In addition, the USAMPS, USACMLS, and the Training Brigade, other tenant unit commands include Health Services Command, Support Staff, and Alabama National Guard detachments. As of 1989, military personnel totaled 7889, and civilian personnel numbered approximately thirty-three hundred.

#### **2.5.3.2 Maneuver and Aviation:**

Mechanized maneuver on Fort McClellan is limited due to terrain and mission requirements. Major activities consist of small unit training, transport of troops, and activities associated with Chemical School activities, including smoke generation and Military Police training. Bivouac areas accommodate company to battalion units and are located on both the Main Post and Pelham Range. Most mechanized training occurs on Pelham Range. Aviation is limited on Fort McClellan.

#### **2.5.3.3 Weapons Live Fire:**

Weapons training includes small arms, machine gun, tank machine gun, grenade, LAW, claymore mines, mortars, and artillery including 105 mm, 155 mm, and 8" howitzer.

#### **2.5.3.4 Training Areas/Ranges:**

There are 16 training areas on the Main Post and six training areas on Pelham range. Training areas on the Main Post support Basic Training, MP School, and Chemical school activities including ranges for radiation training, decontamination, and chemical basic training. Training areas on Pelham Range include a mock POW camp and a drop zone for troop and supply drops.

Fort McClellan has 18 ranges on the Main Post and four at Pelham Range. A Large (Artillery) Impact Area and a Small Impact Area occur on Pelham Range. Two Dudded Impact Areas are located on the Main Post. Ranges on the Main Post support primarily small caliber, nonexplosive ordnance, grenade, and LAW training. Ranges on Pelham Range support mechanized machine gun training, mortar, and heavy artillery fire.

## **2.6 Fort Polk**

### **2.6.1 Mission and History**

Under Base Realignment and Closure (BRAC), the mission of Fort Polk currently is in transition. The 5th Infantry Division (Mechanized) has been relocated to Fort Hood, Texas. Fort Polk will gain the Joint Readiness Training Center (JRTC). The mission of JRTC will be to provide advanced level joint training for Army and Air Force contingency forces under tough, simulated conditions that replicate, as closely as possible, those of real low- and mid-intensity conflicts.

### **2.6.2 Physiographic and Habitat Features**

Fort Polk is located in west central Louisiana in Vernon Parish near the communities of Leesville and DeRidder. The post consists of two separate land areas, the main post (42,794 ha) and Peason Ridge (13,322 ha). Approximately 15,996 ha of the main post and 194 ha of Peason Ridge are under the administrative control of the U.S. Forest Service.

Fort Polk is located in the West Gulf Coastal Plain section of the Coastal Plain physiographic province. The topography of both main post and Peason Ridge is rolling, well-rounded hills. Soils at Fort Polk are variable, including clays, silty loams, sandy loams, sands, and silts. The Soil Conservation Service classifies Fort Polk soils as highly erodible.

Fort Polk is located in the southwest Louisiana pinelands region of the Gulf Coastal Plain. In its virgin state, the sandy uplands of this area were characterized by park-like stands of longleaf pine and an understory dominated by bluestem grasses. This upland community is a fire subclimax community dependent on frequent fires to retard hardwood encroachment. While longleaf pine is still dominant on much of Fort Polk, widespread reductions in longleaf acreage have occurred throughout the region. Loblolly and shortleaf pines are native to Fort Polk and are the dominant pines in the stiff clay soils found in the northwest and southwest portions of the installation. Loblolly is the dominant pine on poorly drained sites throughout Fort Polk.

The main post of Fort Polk is mostly within the Calcasieu River watershed, except for Bayou Zourie, which drains from part of the installation into the Sabine Basin. Peason Ridge is

primarily within the Sabine River, Red River, and Kisatchie Bayou systems, with limited drainage in the eastern portion of the Comrade Creek-Calcasieu River system.

### **2.6.3 Military Activities**

#### **2.6.3.1 Mission Activities and Force Structure:**

JRTC provides rotational units with the opportunity to conduct joint operations that emphasize contingency force missions. The major training effort of the JRTC is focused on Army light forces, which may be augmented by armor/mechanized forces, special operations forces, Navy fire support, and the Air Force.

Resident units will include the Joint Readiness Training Center and the 2nd Armored Cavalry Regiment to serve as an Opposing Force (OPFOR). Typical rotational units include elements from several infantry and airborne divisions, Ranger forces, and Special Forces Groups.

Although non-JRTC units and training may be conducted, these activities will be subordinate to JRTC operations.

#### **2.6.3.2 Maneuver and Aviation:**

JRTC operations will result in an estimated 83% reduction in tracked vehicle use compared with levels before realignment. Ten JRTC training rotations involving approximately four thousand troops each are anticipated annually. Rotation activities include dismounted ground maneuver, helicopter operations, operation of wheeled vehicles, establishment of field operating sites for logistics and aviation units, and preparation of field fortifications. All activity is characterized by extensive movement of aircraft, vehicles, and troops throughout the maneuver area and by use of blanks and pyrotechnics by all players. A tank company may be employed to support the Army task force.

#### **2.6.3.3 Weapons Live Fire:**

Live fire training will allow execution of light infantry/special operations platoon operations with the integration of all organic weapons, artillery and mortar indirect fire, and demolitions; integration of close air support will be included as specific events during most

exercises. Larger caliber weapons such as artillery and mortars will be integrated to fire on unit objectives prior, during, and after live fire exercises. Mechanized/armor live fire is planned during seven rotations annually.

#### **2.6.3.4 Training Areas/Ranges:**

The JRTC will require priority use of 18,248 ha of contiguous maneuver area for each rotation. On the main post, JRTC operations call for three large mid-intensity maneuver areas, each with an associated forward landing strip/drop zone and seven low-intensity maneuver areas. Peason will have one mid-intensity and seven low-intensity maneuver areas. The main post will be the primary area for force-on-force operations.

Two dedicated impact areas (598 ha and 2294 ha) are located on the main post. A 1525 ha impact area is located at Peason Ridge. Fort Polk supports 51 live fire ranges for all weapons types, ranging from pistol-firing ranges to automated Multipurpose Range Complexes.

## **2.7 Fort Stewart, Georgia**

### **2.7.1 Mission and History**

The primary mission of Fort Stewart is training and operational readiness of the 24th Infantry Division (Mechanized) and other non-divisional units. Fort Stewart is under Forces Command. A satellite installation, Hunter Army Airfield (HAAF), is under operational command of Fort Stewart. Future references to Fort Stewart and "the installation" are inclusive of HAAF.

Land initially was purchased in 1941 for use as the Third Army Antiaircraft Training Center, and was used for that purpose until 1947. The installation was placed on inactive status until 1950 when it was reactivated as an Antiaircraft Training Center. In 1954, tank training was added to the installation's mission. In 1956 the post was officially designated as a permanent military installation and became Fort Stewart Antiaircraft Artillery and Tank Training Center. In 1967, Fort Stewart and HAAF were designated the U.S. Army Flight Training Center, supporting an accelerated helicopter training program in response to the Vietnam War. Aviation was de-emphasized and infantry training added to the mission during the

1970's. The 24th Infantry Division was activated in 1975 and redesignated as a mechanized division in 1979.

## **2.7.2 Physiographic and Habitat Features**

Fort Stewart is 112,745 ha in size and is located in Liberty, Long, Bryan, Tattnall, and Evans counties. The cantonment area is adjacent to Hinesville, Georgia. HAAF occupies 2168 ha in south Savannah, Georgia (Chatham county).

The installation lies in the lower Atlantic Coastal Plain physiographic province. Topography is generally flat with elevations ranging from 2-60 m above sea level. The soils of the area reflect their divergent origins. Relict barrier islands and lagoons retain their xeric and mesic qualities, respectively. The sandhills of the islands are well drained by a rolling topography and sandy soils. Ponds of prehistoric lagoons are poorly drained due to both topography and clay soils. The prehistoric sea floor is identified by flat topography and seasonal variation from mesic to xeric due to a porous surface closely underlain by a relatively impermeable substrate.

Fort Stewart is in a floristically diverse region of the country. Nearly one thousand species of vascular plants have been reported in the six-county region that comprises the installation. In low-lying or poorly drained soils, hydrophytic hardwood species, and conifers such as cypress and pond pine occur. Along tops of low ridges and better drained areas, pine and xeric hardwood species occur, including loblolly pine, longleaf pine, slash pine, and various oak species. HAAF also has a salt-marsh community component.

## **2.7.3 Military Activities**

### **2.7.3.1 Mission Activities and Force Structure:**

Fort Stewart is home to the 24th Infantry Division (Mechanized), 1st/75th Ranger Battalion, 92nd engineer battalion, 260th Quartermaster Battalion, and other non-divisional units. Training by Army National Guard and Reserve units also occurs on Fort Stewart.

### **2.7.3.2 Maneuver and Aviation:**

Maneuver and training exercises are conducted by units from platoon through brigade level. Maneuver exercises conducted by the 24th Infantry Division (Mechanized) and other units use several vehicle types including tanks, Bradley Infantry Fighting Vehicles, armored personnel carriers, and other wheeled vehicles. Mechanized brigades of the Georgia and South Carolina National Guards also conduct training exercises on Fort Stewart. Exercises are conducted year-round with the greatest use of mechanized units occurring on the west side of the installation. On the east side of the installation, the presence of Red Cloud Range limits use for maneuver training.

Aviation units stationed at Hunter Army Airfield support both rotary and fixed-wing airlift requirements for ground units stationed at Fort Stewart. Fixed-wing aircraft used the Artillery Impact Area for live-fire activities during 148 days in FY90.

### **2.7.3.3 Weapons Live Fire:**

Live-fire weapons training includes small arms, machine gun, grenade, all caliber artillery, tank guns, aircraft bombing and strafing, mortars, and antitank missiles including TOW.

### **2.7.3.4 Training Areas/Ranges:**

Major live-fire ranges on Fort Stewart include an Artillery Impact Area (AIA, approximately 5200 ha), Luzon Range (an approximately 650 ha aerial gunnery range), a Small Arms Impact Area (approximately 2300 ha), and the Red Cloud Multipurpose Range Complex, which is adjacent to the west boundary of the AIA. Current requirements call for installation firing ranges to support 10,724 training elements for mechanized crews. Approximately 27,000 rounds were fired into the AIA in 1989.

There are seven drop zones on the installation. Three small aerial gunnery ranges are located in the northern part of the installation. The remainder of the installation, exclusive of the cantonment area, is available for vehicle maneuver and dismounted training.

## **2.8 Military Ocean Terminal, Sunny Point, North Carolina**

### **2.8.1 Mission and History**

The mission of the Military Ocean Terminal, Sunny Point (MOTSU) is to ship military explosives destined for various parts of the world. The terminal is under the Military Traffic Management Command (MTMC).

Military Ocean Terminal, Sunny Point (MOTSU) was opened in 1953. Before opening, approximately 1/4 of the installation was under cultivation, 1/4 was heavily grazed by livestock, and the remaining 1/2 supported well-stocked stands of pine and hardwood timber.

### **2.8.2 Physiographic and Habitat Features**

The terminal encompasses 6591 ha in three parcels of land. The main terminal facility is located approximately 8 km north of Southport, North Carolina in Brunswick County. The Leland interchange yard (263 ha) is located 29 km west of the main terminal. An 854 ha parcel (Fort Fisher purchase) is located on the east bank of the Cape Fear River in New Hanover County.

The installation is located on the Coastal Plain Province and is characterized by flat to gently rolling plains with sandy soils. The dominant vegetation associations are longleaf pine-scrub oak sandhill, pine flatwoods, pond pine pocosins, and limited bald cypress swamps. Forest habitat covers approximately 2980 ha of the terminal.

Aquatic habitats are common on the terminal. Sixty-six naturally formed ponds ranging from less than one to eight hectares (43 ha total) occur on the terminal. Forested wetlands (including pocosins) and 363 ha of tidal marshes also occur. There are 9.7 km of river frontage along the Cape Fear River.

### **2.8.3 Military Activities**

Shipment of military explosives is the sole activity of the terminal. This activity can entail movement, temporary storage, and handling of munitions on the 97 miles of railroad and 50

miles of roadway throughout the installation. No training or maneuver activities are conducted on the installation. A single firing range is maintained for security personnel to qualify with their weapons. The current personnel complement is 12 military and 258 civilian employees.

## **2.9 Louisiana Army Ammunition Plant, Louisiana**

### **2.9.1 Mission and History**

The mission of the Louisiana Army Ammunition Plant (LAAP) is to manufacture ammunition metal parts, load and assemble ammunition, receive and store bulk explosives and ammunition, and demilitarization of unserviceable ammunition. LAAP is under the U.S. Army Materiel Command (AMC).

Land for LAAP was purchased in 1941, and munitions manufacturing was initiated in 1942 to meet demands of World War II. LAAP was inactive for brief periods between World War II and the Korean War and between the Korean and Vietnam wars. Reactivated in 1961, LAAP has continued production and improvement of conventional munitions to the present time. Munitions manufacture at LAAP is scheduled to be placed on layaway status effective October 1994.

### **2.9.2 Physiographic and Habitat Features**

LAAP encompasses 6045 ha in Bossier and Webster Parishes approximately 35 km east of Shreveport, Louisiana.

Most of LAAP lies in the Interior Flatwoods, a subregion of the Lower Loam Hills Region of the Hilly Coastal Plain Province. There is little topographic relief and soil drainage is typically poor. The dominant soil types of the Interior Flatwoods on LAAP are Alfisols and Ultisols.

The presettlement dominant upland vegetation on LAAP was primarily loblolly and shortleaf pines mixed with upland hardwoods, mostly oaks and hickories. Bottomlands were dominated by a variety of oak species, hickory, and sweetgum. Forest regeneration on LAAP has similar species composition to presettlement associations.

LAAP is bounded by Clark Bayou on the western boundary and Dorcheat Bayou on the east side. Dorcheat Bayou and its approaches are part of the Miscellaneous Alluvial Floodplains Region of the Alluvial Floodplain Province.

### **2.9.3 Military Activities**

Training is not a primary mission of LAAP. Army Reserve and Army National Guard units have conducted limited training exercises, primarily by medical engineering units because of restrictions on vehicle operations, smoke, and live fire. There is one small arms range on LAAP. Current force levels are two military and 1,117 contractor personnel.

### **3 CURRENT CONDITIONS**

The following section describes current trends and conditions that affect the occurrence of RCWs on subject installations. This information was obtained from installation site visits by USACERL and contract personnel and environmental documentation provided by installation natural resources personnel.

#### **3.1 Status of RCW Populations and Surveys: Installation and Impact/Danger Areas**

Knowledge of current population status (Table 2) and trends varies among installations. Comprehensive installation-wide surveys for RCWs and other threatened and endangered species are currently in progress on several installations. Current knowledge of RCW clusters and cavity tree activity was obtained from historical records, surveys of known cluster sites, and project-related surveys of available habitat. Major reasons for declines of populations on installations include:

- Habitat loss due to timber sales.
- Construction and range clearing projects.
- Midstory encroachment in cluster sites.
- Habitat fragmentation.

Five installations have impact/danger areas with known or anticipated RCW clusters sites that are considered off-limits to ground personnel due to unexploded or other hazardous materials (Table 3). These include Fort Benning, Fort Bragg, Fort Jackson, Fort Polk, and Fort Stewart. Range Division on these installations has responsibility for designation of impact/danger areas and control of access to these areas. Access to impact/danger areas typically is restricted without EOD (Explosive Ordnance Demolition) support. Fort Bragg has a comprehensive inventory of RCW cluster sites within off-limits impact areas. No comprehensive surveys of potential RCW habitat in danger/impact areas have been conducted on the other installations. RCW clusters in impact/danger areas on Fort Polk, Fort Benning, Fort Jackson, and Fort Stewart are known from incidental observations or site-specific

**Table 2. Current number (1992-93) of active and inactive cluster sites known to occur on Army installations. See text for status of surveys.**

Installation	Inactive	Active	Total
Fort Benning	85	180	265
Fort Bragg	148	288	436
Fort Gordon	30+	0	30+
Fort Jackson	32	14	46
Fort McClellan	see text	0	0
Fort Polk	34 (Army lands) 30 (Forest Service)	58 (Army lands) 90 (Forest Service)	92 (Army lands) 120 (Forest Service)
Fort Stewart	55 (estimate)	165 (estimate)	220 (estimate)
LAAP	2	0	2
Sunny Point	3	6	9

**Table 3. Installations with known or potential cluster sites in off-limits danger/impact areas. See text for status of surveys in these areas.**

Installation	Total area (ha)	Known clusters	Estimated clusters	Total clusters
Fort Benning	6091	15	30	45 <sup>1</sup>
Fort Bragg	13,320	52 (35 active)		52 (35 active)
Fort Jackson	2301	8 (7 active)		8 (7 active)
Fort Polk	1955		10-15	10-15 <sup>1</sup>
Fort Stewart	5850	4	see text	4 (see text)

<sup>1</sup> Activity status unknown.

project surveys. Estimations of RCW cluster sites in impact/danger areas on these installations are based on:

- Known cluster sites.
- Area of potential RCW habitat.
- Quality and type of available habitat.
- Occurrence of RCWs in areas surrounding impact/danger areas.
- Aerial and incidental ground observations of habitat by installation natural resources personnel.

Typically, observations indicate relatively high-quality RCW habitat occurs within portions of impact/danger areas. These areas usually are burned on a regular basis, either by accidental ignition from impacting ordnance or by prescribed burns for range maintenance and to reduce risk of wildfire. Timber harvesting in these areas has been limited or excluded due to danger to personnel and metal contamination of trees, resulting in older timber age classes.

Besides the four installations with RCW clusters in impact/danger areas, three installations (Fort Jackson, Fort Gordon, and Fort McClellan) have RCW cavity tree clusters occurring or potentially occurring within direct fire areas as described in Section V.E.5.b of the proposed management guidelines. Natural resource personnel on these installations say that ground access to these clusters is possible, although access may be limited at times due to live fire exercises.

### **3.1.1 Fort Benning**

A survey for RCWs on the installation is being conducted during 1993. As of December 1993, 180 active clusters and 85 inactive clusters are known to occur on the installation. Historical data available for Fort Benning are not sufficient to accurately determine RCW population trends on the installation in recent times. Inventory and monitoring activities currently initiated on Fort Benning will help determine whether populations are stable or declining.

Two impact/danger areas, A-20 (3889 ha) and K-15 (2202 ha), are off-limits to ground activities. A total of 15 known clusters and an estimated 30 additional clusters occur on these two impact/danger areas. Estimates of suitable RCW habitat are based on photo

interpretation and field observations. Most of A-20 is forested. Fourteen clusters (current activity status unknown) are known to occur on A-20, and an additional 23 clusters are estimated to occur on 2826 ha of unsurveyed habitat based on one cluster per 121 ha. Impact Area K-15 is a primary artillery impact area and has less forested area than A-20. One RCW cluster is known to occur on K-15, and an additional seven clusters are estimated on 807 ha of suitable RCW habitat.

### **3.1.2 Fort Bragg**

A 100% survey of Fort Bragg was completed in 1992. In 1993, RCW activity was observed at 288 cluster sites. The total of active sites includes clusters with extraterritorial roosters or transients, so the actual number of RCW groups is fewer than 288. An additional 148 clusters (including five historical sites) were inactive in 1993. Populations on Fort Bragg and Camp MacKall are considered separate subpopulations. Data presented by the U.S. Fish and Wildlife Service in a 1992 Biological Opinion for Fort Bragg suggest that in the period 1988-91, breeding pairs in the North Carolina Sandhills population declined from an estimated 404 to 371 pairs. During this period the number of estimated pairs on Fort Bragg/Camp MacKall declined from 229 to 220, which suggests that, at best, the Fort Bragg population currently is stable.

Impact/danger areas with RCW cluster sites requiring EOD support for access are located in Manchester, MacRidge, Coleman, and McPherson Impact Areas on Fort Bragg. The Fort Bragg Directorate of Plans and Training (DPT) provided information for this assessment on the extent of impact/danger areas and the number of cluster sites within identified impact/danger areas on Fort Bragg. Impact/danger areas considered off-limits by the installation DPT to ground personnel without EOD support occupy most of Coleman, MacRidge, and McPherson Impact Areas, except some peripheral areas. Total area of these three impact areas is 5300 ha, 4246 ha, and 2694 ha, respectively. Off-limits area covers approximately 50% (1080 ha) of the total area of the Manchester Impact Area.

Based on 1993 survey information, a total of 89 clusters (59 active) occurs on the four areas listed above. Of these 89 clusters, 52 clusters (35 active) occur within areas off-limits to ground personnel without EOD support. Previous U.S. Fish and Wildlife Service biological opinions for Fort Bragg have included Conservation Recommendations to monitor annually the status of clusters within impact/danger areas. Fort Bragg has been able to support these

recommendations to date.

### **3.1.3 Fort Gordon**

No activity at RCW cluster sites has been observed on the installation since 1990. In October 1993 a single RCW was observed in an area between two inactive cluster sites by a crew conducting an RCW foraging habitat survey. This bird was observed only once despite subsequent visits to the area by installation natural resource personnel. There was no indication of activity at cavity trees in the area.

A survey of potential RCW habitat was conducted during the period December 1990 to May 1992. One RCW was observed during this survey, and no activity at cavity trees was observed. A total of 128 inactive cavity trees was located on the installation, representing 30+ clusters. No surveys were conducted in the Artillery Impact Area, but little potential habitat occurs in this area. Surveys were conducted in some areas of potential habitat in the Small Arms Impact Area based on interpretation of aerial photos. A few cavity trees were located near Thomas Lake in the Small Arms Impact Area.

The small population historically known to occur on Fort Gordon has declined steadily since the 1970s. In 1979, at least seven active breeding groups were known to occur on Fort Gordon. By 1989, three active groups were known on the installation. The last known active RCW cluster site was observed in the summer of 1990 before the beginning of the installation-wide survey.

Two major direct fire and explosive ordnance impact areas occur on Fort Gordon including approximately 3028 ha in the Small Arms Impact Area and approximately 2018 ha in the Artillery Impact Area. No comprehensive RCW surveys have been conducted within these impact areas, and no active clusters are known to occur in either impact area. However, several inactive cluster sites are located on the borders of impact areas, and both impact areas contain extensive amounts of pine forest.

### **3.1.4 Fort Jackson**

In 1993, 14 active and 32 inactive clusters were known on Fort Jackson. This is a decrease from 35 active clusters observed on the installation in 1980-81 and 19 active clusters observed in 1992. Activity status in 1993 was determined directly by monitoring groups. In

previous years, activity status was inferred from observations of cavity trees.

The primary impact area for explosive ordnance on Fort Jackson is the 2301 ha South Impact Area. In 1993, seven active RCW clusters and one inactive cluster were known to occur within the boundary of the South Impact Area. Although intensive management is not conducted within this area, RCW clusters are monitored annually. Habitat in this area is maintained by frequent burning.

The Small Arms Impact Area is primarily a complex of direct fire ranges for nonexplosive ordnance comprising 1919 ha. In 1992, one active and three inactive clusters were known within this area. All four cluster sites were inactive in 1993. Much less habitat in the Small Arms Impact Area has been burned regularly compared with the South Impact Area, but there is potential for more burning to improve RCW habitat.

### **3.1.5 Fort McClellan**

Although considered common in the area as late as the 1950s, RCW populations had declined to one breeding pair by 1968, and no live birds have been sighted since 1978-79. Surveys of potential habitat on Fort McClellan were conducted in 1992. The objective of this survey was to document the presence of live birds, not to inventory cavity trees. Although some inactive cavity trees were located (both in historical sites and previously unknown locations), no RCWs or cavity tree activity were detected.

Some potential habitat may occur within small arms ranges and the two duded impact areas on the main post. No cavity trees are known to occur in these areas; however, these areas were not searched during the 1992 RCW survey of the installation.

### **3.1.6 Fort Polk**

A total of 212 cluster sites is known on Fort Polk and Peason Ridge training areas. Of these, 120 (90 active) are located on lands under administrative control of the U.S. Forest Service. Military training occurs on these lands under agreement with the U.S. Forest Service; however, the U.S. Forest Service has management responsibility for RCWs on these lands.

Fort Polk has direct management responsibility for RCWs occurring on Army lands. On Army lands, 92 cavity tree clusters were documented in 1992, 58 of which were active. Thirty-five of the active clusters were on Fort Polk proper, and the remaining 23 clusters were located on Peason Ridge.

Off-limits impact/danger areas currently occur on the Redleg and Peason 6 Impact Areas. On the Peason 6 Impact Area there are five known RCW cluster sites and an estimated 11-16 additional clusters. This entire area is currently being surface cleared for the JTRC and will be accessible for ground activities after surface clearing is completed. No dud-producing munitions will be used on Peason 6 in the future.

The entire 1955 ha Redleg Impact Area is off-limits to ground activities. An estimated 1077 ha is suitable RCW habitat, possibly supporting an estimated 10-15 cluster sites.

### **3.1.7 Fort Stewart**

An estimated 220 cavity tree clusters occur on Fort Stewart. Of these, an estimated 165 clusters are active. As of 1992, approximately 75-80% of the installation had been surveyed. A complete installation endangered species survey currently is being conducted and is scheduled for completion in 1994. Twenty-two clusters that were active in 1980 are currently inactive. During this period two new clusters were observed in areas where it is relatively certain none had previously occurred.

Off-limit impact/danger areas with potential RCW habitat occur on the Artillery Impact Area (AIA, 5200 ha) and Luzon Range (650 ha). Dudded munitions on Luzon Range are primarily rockets and 40 mm grenades, a particularly unstable dudded munition. Use of Luzon Range has been limited since helicopter training was de-emphasized in 1971. Currently, four RCW clusters are known to occur in Luzon Range.

No RCW clusters are known in the AIA, although no systematic surveys for RCW clusters or potential habitat have been conducted. A helicopter survey of some of the AIA by an installation endangered species biologist on 14 July 1993 noted older age class pine stands with little midstory hardwood encroachment, which is typical of RCW habitat. However, no cavity trees were located.

### **3.1.8 Louisiana Army Ammunition Plant (LAAP)**

Two inactive cluster sites with a total of 13 cavity trees are known on the LAAP. Surveys conducted during the last 7-12 years by the U.S. Fish and Wildlife Service and the Louisiana Department of Fish and Wildlife have not documented any RCW activity at these sites. A few active clusters may occur on private timber company lands adjacent to the installation, but information on these possible sites was not forthcoming from the timber company.

### **3.1.9 Military Ocean Terminal, Sunny Point (Sunny Point)**

Nine cluster sites are known within the boundaries of Sunny Point, six active and three inactive. An additional four clusters occur adjacent to Sunny Point, and birds from these clusters may use foraging habitat available on the installation.

## **3.2 Forest Management**

Forestry programs on most subject installations currently are in a period of transition largely due to forest management requirements associated with RCWs. Historically, production of commercial forest products had priority over management for other values, including endangered species. Currently, due to Biological Opinions and other regulatory requirements of the Endangered Species Act, production of commercial forest products in RCW habitats is subordinate to RCW habitat management requirements.

Timber management on Army installations in the Southeast once emphasized production of pine sawtimber, pole, and pulpwood products. Silvicultural practices were typified by even-aged management using large clearcuts, seed tree, and shelterwood cuts, and short rotations of less than 80 years. Establishment of pine plantations heavily favored loblolly and slash pine over longleaf. Active fire suppression in pine habitats favored natural regeneration of loblolly and slash pine and hardwood species over longleaf. The general effect on forest composition was similar to trends in commercially managed pine forests throughout the southeastern U.S., including a decrease in longleaf acreage and forests characterized by young, even-aged stands dominated by loblolly, slash, and other off-site pine species.

The requirement of RCWs for old-growth pine for nest cavity construction and foraging habitat has shifted forestry management programs to increased rotation age in RCW habitat.

While even-aged management still dominates forest prescriptions on most installations, restrictions on cutting of large sawtimber quality trees have resulted in an increased emphasis on thinning cuts and single-tree selection. Recent installation forest plans increasingly emphasize conversion to longleaf on appropriate sites. Currently, the dominant methods for longleaf regeneration on installations are seedtree and shelterwood cuts that remove pine species other than longleaf in longleaf/mixed pine stands or thinning existing longleaf stands together with a prescribed burn program. To date, few acres have been planted in longleaf.

Prescribed burning programs are in transition for reasons similar to those affecting timber harvest. Historically, wildfires were actively suppressed and prescribed burns were limited primarily to improving downrange visibility in live-fire areas and prevention of wildfires. The result was increased fuel loads and midstory encroachment, which was an important factor in RCW population declines on some installations. In recent years, management prescriptions were developed that increased the area of prescribed burns on shortened burn rotations. Although dormant season burns still predominate, there is a trend toward increased growing season burns for improved midstory control in RCW habitat.

### **3.3 Current Restrictions on Military Activities in RCW Cluster Sites**

This section describes current restrictions on military activities due to RCWs on Army lands. The proposed Army-wide RCW management guidelines provide specific guidance on the conduct of military activities within cluster sites. Military activities addressed in the proposed guidelines include:

- Dismounted training
- Vehicle traffic and maneuver
- Bivouacs
- Habitat disturbing activities (digging and cutting of vegetation for camouflage)
- Use of CS, smokes, incendiary devices, and artillery
- Other weapons use

Current restrictions on these activities vary among Army installations and are based primarily on Biological Opinions issued by the U.S. Fish & Wildlife Service for ongoing mission activities near RCW cavity trees. **Table 4** shows restricted military activities in RCW clusters by installation.

Table 4. Current restrictions on military activities in cluster sites in maneuver areas.

	Fort Benning	Fort Bragg	Fort Gordon	Fort Jackson	Fort McClellan	Fort Polk	Fort Stewart	LAAP	Sunny Point
Biological Opinion for Ongoing Mission	None	1990	None	None	None	1980	1992	None	None
200 foot buffer (cluster site)	Yes	Yes <sup>1</sup>	Yes	Yes	No		Yes <sup>1</sup>	Yes	Yes
200 foot buffer (cavity tree)					No	Yes			
<b>Military Activities Restricted within 200 Foot Buffer</b>									
Transient dismantled	No	No	No	No	No	No	No	No	No
Transient vehicle	Yes roads & trails	Yes roads & trails	Yes roads & trails	Yes roads & trails	No	No	Yes roads & trails	Yes roads & trails	Yes roads & trails
Bivouacs	Yes	Yes	Yes	Yes	No	Yes	Yes	N/A	N/A
Digging	Yes	Yes	Yes	Yes	No	Yes	Yes	N/A	N/A
Small arms fire (blanks)	seasonal restriction	Yes	No	No	No	No	No	N/A	N/A
CS, smoke, explosives, incendiary devices	Yes	Yes	Yes	Yes	No	No	Yes	N/A	N/A

<sup>1</sup>Biological Opinions restrict activities within 200 feet of cavity trees; however installations delineate protected areas based on perimeter cavity trees of clusters sites with 200 foot buffer.

The U.S. Fish & Wildlife Service has issued Biological Opinions for ongoing mission activities for Fort Bragg (issued February 2, 1990), Fort Polk (issued March 8, 1980), and Fort Stewart (issued July 15, 1992). These opinions dictate restrictions on military activities on the referenced installations, and provide a model for other Army installations for determining allowable military activities in cluster sites. These opinions differ in the specifics of buffer zone delineation and the types of activities specifically prohibited, which has resulted in inconsistencies among installations in the extent and types of military activities allowed near RCW clusters.

The Fort Bragg Biological Opinion (1990) is the most restrictive in delineation of buffer zones as it relates to allowable military activities. The Fort Bragg opinion states:

"All military training, except transient foot travel through the protected areas and transient vehicular traffic on presently existing maintained roads and fire breaks, must be excluded from within a 200-foot radius of all red-cockaded woodpecker cavity *trees* [emphasis mine]." In addition, all vehicles > 1.5 ton "must be excluded from within all the space between the cavity trees comprising each colony site where the cavity trees are more than 400 feet apart."

In effect, all vehicle traffic > 1.5 ton is restricted from the cluster site (as defined in the proposed Army-wide guidelines) except on maintained roads, while other activities are restricted relative to a 200-foot buffer around individual cavity trees.

The Fort Stewart Biological Opinion (1992) also prohibits activities within 200 feet of cavity trees including "establishment of bivouac sites, felling of trees, excavation, and vehicle operation to include tactical maneuvers and live fire exercises (except on improved roads)." However, in variance from the Fort Bragg opinion, Fort Stewart "may designate traffic corridors in clusters where existing corridors are now present and the nearest cavity trees are greater than 400 feet apart." The Fort Stewart opinion states that the use of chemical agents such as obscurant smoke and CS must be coordinated through the office of the Chief of the Natural Resources Management Division.

The Fort Polk Biological Opinion (1980) issues no specific limitations on personnel or vehicular activity near cluster sites or cavity trees except that "cavity trees should be avoided by all vehicles." Bivouacking and digging of slit trenches is not allowed within 200 feet of

cavity trees. Fort Polk regulations regarding military activities in RCW habitat have mirrored directives of the 1980 opinion, with the exception that vehicles are not allowed within 50 feet of cavity trees.

Restricted activities on the remaining Army installations generally reflect precedents established by the biological opinions discussed above. To date, no military activities have been specifically prohibited near inactive cavity trees on Fort McClellan, although RCW habitat management units have been designated. Due to the nature of the missions of LAAP and Sunny Point, restrictions on military activities are not applicable except for limiting vehicular traffic to roads and trails.

## **4 ANALYSIS OF EFFECTS**

### **4.1 Threatened and Endangered Species Other than the RCW**

In a letter dated 15 January 1993, the U.S. Fish and Wildlife Service provided a list of threatened, endangered, and candidate species known to occur or potentially occurring on installations subject to the proposed Army-wide RCW management guidelines (Appendix A). As required by Section 7 of the Endangered Species Act, this assessment addresses effects of the proposed action on all threatened and endangered (T&E) species on the subject installations.

The list of T&E species, scientific names, listing status, and the installations on which they may occur is shown in Table 5. The list provided by the U.S. Fish and Wildlife Service also included candidate species. The Army recognizes that candidate species may be listed and subject to Section 7 requirements in the future and that it is prudent to consider the effects of current and future activities on these species. The Natural Resources Division of USACERL, through a contract with The Nature Conservancy, Southeast Region, is reviewing potential effects of RCW management on candidate, threatened, and endangered species. The contract delivery date for this work is 30 September 1994. This review will be distributed to affected installations and other interested parties when available. However, because of the number of candidate species and the geographic range involved, potential effects of the proposed action on candidate species will not be addressed in this assessment.

Proposed actions related to RCW management that may affect T&E species (other than RCW) in the action area include:

- Prescribed burns.
- Midstory hardwood control (mechanical, hand cutting, and herbicide control).
- Timber harvesting prescriptions.
- Pine straw harvesting.
- Restrictions on some military activities.

Many wildlife species listed in Table 5 are inhabitants of aquatic, beach, or estuarine habitats and are unlikely to be found in areas subject to RCW management activities. Improper use or accidental spills of herbicides related to hardwood control could result in contamination of

Table 5. Threatened and endangered species potentially occurring on Army installations considered in this biological assessment. Scientific names are in italics. (E) = endangered; (T) = threatened; (PE) = proposed endangered; (PT) = proposed threatened; (T, S/A) = threatened due to similarity of appearance.

Species	Known to Occur	Possible or Transient Occurrence
<b>Mammals</b>		
Gray bat <i>Myotis grisescens</i> (E)		Fort Benning, Fort McClellan
Indiana bat <i>Myotis sodalis</i> (E)		Fort Benning, Fort Gordon, Fort McClellan
West Indian manatee <i>Trichechus manatus</i> (E)		Fort Stewart, Sunny Point (may occur in waters near installations)
<b>Birds</b>		
Bald eagle <i>Haliaeetus leucocephalus</i> (E)	Fort Benning, Fort Stewart	All other installations
Red-cockaded woodpecker <i>Picoides borealis</i> (E)	See Section 3 for population status	
Wood stork <i>Mycteria americana</i> (E)		Fort Benning, Fort Gordon, Fort Stewart, Sunny Point
American peregrine falcon <i>Falco peregrinus anatum</i> (E)		All installations
Arctic peregrine falcon <i>Falco peregrinus tundrius</i> (T)		All installations
Piping plover <i>Charadrius melodus</i> (T)		Fort Stewart, Sunny Point
Kirtland's warbler <i>Dendroica kirtlandii</i> (E)		Fort Benning, Fort Bragg, Fort Gordon, Fort Jackson, Fort Stewart, Sunny Point
Bachman's warbler <i>Vermivora bachmanii</i> (E)		Fort Stewart (presumed extinct)
Roseate tern <i>Sterna dougallii dougallii</i> (E)		Sunny Point

Table 5. Continued

Species	Known to Occur	Possible or Transient Occurrence
<b>Reptiles</b>		
American alligator (T, S/A) <i>Alligator mississippiensis</i>	Fort Benning, Fort Bragg, Fort Jackson, Fort Polk, Fort Stewart, Sunny Point	Fort Gordon
Eastern indigo snake <i>Drymarchon corais couperi</i> (T)	Fort Stewart	Fort Benning
Loggerhead sea turtle <i>Caretta caretta</i> (T)		Fort Stewart, Sunny Point (may occur in waters near installations)
Kemp's ridley sea turtle <i>Lepidochelys kempii</i> (E)		Fort Stewart, Sunny Point (may occur in waters near installations)
Green sea turtle <i>Chelonia mydas</i> (T)		Fort Stewart, Sunny Point (may occur in waters near installations)
Hawksbill sea turtle <i>Eretmochelys imbricata</i> (E)		Fort Stewart, Sunny Point (may occur in waters near installations)
Leatherback sea turtle <i>Dermochelys coriacea</i> (E)		Fort Stewart, Sunny Point (may occur in waters near installations)
<b>Fishes</b>		
Blue shiner <i>Cyprinella caerulea</i> (T)		Fort McClellan (known from waters on installation leased land)
Pygmy sculpin <i>Cottus pygmaeus</i> (T)		Fort McClellan (known from waters in vicinity of installation)
Shortnose sturgeon <i>Acipenser brevirostrum</i> (E)		Fort Stewart, Sunny Point (may occur in waters on or near installation)
<b>Snails</b>		
Tulotoma snail <i>Tulotoma magnifica</i> (E)		Fort McClellan (known from waters in vicinity of installation)

Table 5. Continued

Species	Known to Occur	Possible or Transient Occurrence
<b>Clams</b>		
Fine-lined pocketbook mussel <i>Lampsilis altilis</i> (PT)		Fort McClellan (known from waters in vicinity of installation)
Southern pigtoe mussel <i>Pleurobema georgianum</i> (PE)		Fort McClellan (known from waters in vicinity of installation)
<b>Plants</b>		
Michaux's sumac <i>Rhus michauxii</i> (E)	Fort Bragg	Fort Benning, Fort Jackson, Fort Gordon
Relict trillium <i>Trillium reliquum</i> (E)	Fort Benning	Fort Gordon
Rough-leaved loosestrife <i>Lysimachia asperulaefolia</i> (E)	Fort Bragg, Fort Jackson, Sunny Point	
American chaffseed <i>Schwalbea americana</i> (E)	Fort Bragg	Fort Jackson, Fort Gordon, Fort Stewart, Fort Benning
Pondberry <i>Landers melissifolia</i> (E)		Fort Bragg, Fort Stewart, Sunny Point
Canby's dropwort <i>Oxypolis canbyi</i> (E)		Fort Bragg, Fort Stewart, Sunny Point
Smooth cone-flower <i>Echinacea laevigata</i> (E)	Fort Jackson	
Tennessee yellow-eyed grass <i>Xyris tennesseensis</i> (E)	Fort McClellan	
Mohr's Barbara's buttons <i>Marshallia mohrii</i> (T)		
Hairy rattleweed <i>Baptisia arachnifera</i> (E)		Fort Stewart
Cooley's meadowrue <i>Thalictrum cooleyi</i> (E)		Sunny Point
Seabeach amaranth <i>Amaranthus pumilus</i> (PT)		Sunny Point

aquatic environments. However, localized use of these substances in RCW habitats in compliance with management guidelines will result in minimal release into aquatic systems. Erosion control and a reduction in clear-cutting related to RCW management will help reduce sedimentation in aquatic environments. For these reasons, implementation of the proposed guidelines is not likely to adversely affect the following species: all listed sea turtle species, wood stork, piping plover, roseate tern, West Indian manatee, American alligator, fine-lined pocketbook mussel, southern pigtoe mussel, Tulotoma snail, and all listed fishes.

Several listed wildlife species are potential transients on affected installations. These include both subspecies of peregrine falcon, gray and Indiana bats, Kirtland's warbler, and bald eagle. Occurrence of these species is typically transient and of short duration. Because of their transient status and mobility, these species are not likely to be adversely affected by activities associated with RCW management. Bachman's warbler probably is extinct and historically inhabited swamps and wooded bottomlands, and so is unlikely to be affected by activities associated with RCW management.

A bald eagle nest was recorded on Fort Stewart in 1993. This nest is not located within any RCW nesting habitat. The only potential impact of RCW management is from smoke from prescribed burns during nesting. Monitoring and management of burning activities will minimize the potential for excessive smoke in the vicinity of an active nest.

Bald eagles are also known to occur on Fort Benning, and a potential nest site has been located on the installation. This site will be monitored to verify nesting activity during the 1994 nesting season. This potential nest location is located more than a mile from the nearest cluster site and would not be impacted by RCW management activities on the installation.

The gopher tortoise does not currently have listed status on any of the installations considered in this assessment, so it is not listed in Table 5. However, the tortoise is listed as threatened in the western part of its range, and several species, including the threatened eastern indigo snake, are largely dependent on the burrows created by tortoises. Both the gopher tortoise and indigo snake are found in habitats potentially subject to RCW management activities. Implementation of the proposed guidelines will not likely have an adverse effect on the gopher tortoise or indigo snake.

The gopher tortoise prefers upland pine forests with sandy soils and open forest floors with grass and forb cover. Extended timber harvest rotations as well as frequent growing season burns will promote habitat characteristics preferred by the gopher tortoise. Restrictions on military activities in RCW colony sites will reduce destruction of burrows due to vehicle traffic and digging activities.

Major threats to the indigo snake are habitat destruction and collecting. Enhancement of gopher tortoise habitat resulting from implementation of the proposed RCW management guidelines likely will have a positive benefit for indigo snakes. Prescribed burns could potentially kill individual tortoises or indigo snakes. However, most would find adequate protection in burrows, and any losses of individuals would likely be offset in improved habitat and forage conditions.

Tennessee yellow-eyed grass occurs in seepage-slopes, springy meadows, or on the banks of small streams. Threats to its existence include agriculture, siltation and degradation of water quality due to upslope timbering, and over-collecting. Implementation of the proposed guidelines would not increase any of these threats. Increased timber rotations and a reduction in large clearcuts associated with the guidelines would reduce the possibility of siltation and water-quality degradation in potential habitats.

Relict trillium is found primarily in mesic hardwood stands with limited disturbance and no evidence of recent fire. Typically, RCW management activities are not conducted in these areas. Control of prescribed burns and avoidance of indiscriminate herbicide use near mesic hardwood stands and known trillium sites will prevent any adverse impacts resulting from RCW management activities.

Habitats of several plant species are characterized by periodic disturbance, usually from fire. These plants typically are found in upland pinewoods openings, savannas, or upland/wetland ecotones. A significant threat to the existence of these species is fire exclusion and subsequent encroachment of woody species. Fire-adapted or dependent species include smooth coneflower, rough-leaved loosestrife, Michaux's sumac, American chaffseed, Mohr's Barbara's buttons, Cooley's meadowrue, and hairy rattleweed. Increased prescribed burning associated with implementation of the RCW management guidelines will likely enhance habitat conditions for these species.

Two plant species, pondberry and Canby's dropwort, are found in wetlands, around ponds and depressions in piney woods, or in wet ecotones. Individual plants occurring in wet ecotones or other mesic habitats in piney woods could be affected under certain conditions due to prescribed burning; however, control of prescribed burns near known locations of these plants, especially under drought conditions, should reduce the possibility of impacts from burning. In the case of Canby's dropwort, fire may help maintain the open canopy conditions preferred by this species.

Seabeach amaranth is found on Atlantic coast barrier island beaches. RCW management activities are not conducted in these habitats and are not likely to affect this species.

Guidelines for pine-straw harvest in HMUs likely will result in longer raking rotations in these areas on most installations. Longer periods between pine straw harvest will reduce disturbance of soils and plant communities and will reduce potential impacts on threatened or endangered plant species occurring in these areas.

Midstory hardwood control in cluster sites likely will increase under these guidelines. Prescribed burning is the preferred method for midstory hardwood control. Other methods typically will include selective cutting and/or herbicide application to targeted hardwoods. Hardwood control under these conditions would not likely affect threatened or endangered plants species. Any hardwood control involving significant earth-disturbing activities or indiscriminate herbicide application would require assessment of possible impacts on known or possible occurrences of threatened or endangered plant species in accordance with Section 7 of the Endangered Species Act.

Under the proposed guidelines, military activities may increase or decrease in some HMUs depending on installation-specific circumstances. In areas where military activity may increase, installations must meet requirements of the Endangered Species Act to avoid take of any threatened and endangered species occurring in these areas. Currently, installations considered in this assessment have restrictions on military activities near known locations of threatened and endangered plant species.

## **4.2 Red-cockaded Woodpecker**

This section discusses potential impacts on RCWs from implementation of the proposed

guidelines. The discussion that follows is organized by reference to paragraph number of the proposed guidelines. Potential impacts on RCWs are discussed in the context of programmatic implementation of the guidelines. Installation-specific effects are beyond the scope of this analysis but would be addressed during installation-specific consultations required under the proposed guidelines.

#### **4.2.1 PARAGRAPH I. General and PARAGRAPH II. Consultation.**

Paragraphs I and II outline the purpose of the RCW management guidelines and the consultation requirements under Section 7 of the Endangered Species Act (ESA), as amended, respectively. These general policy statements, if implemented, will have a positive effect on RCWs on the pertinent Army installations by providing basic and unifying guidance for progressive RCW management and protection.

**Paragraph I.E. (Existing Biological Opinions)** provides for replacing existing installation-specific U.S. Fish and Wildlife Service biological opinions with a biological opinion on the installation RCW ESMP, which will be developed within the framework of these guidelines. In some cases new ESMP's will contain less restrictive training guidelines than those in existing biological opinions. Taken as a whole, the new guidelines should have no adverse effect because of the required consultation with the U.S. Fish and Wildlife Service, monitoring of training effects on the RCW, and extensive habitat management.

#### **4.2.2 PARAGRAPH III. Army Policies Applicable to RCW Management.**

Paragraph III contains general policy statements on conservation, mission requirements, cooperation with the U.S. Fish and Wildlife Service, ecosystem management, staffing, local and regional conservation efforts, and general implementation of the RCW management strategy. These statements and prescribed actions break new ground for DA installations, particularly pertaining to endangered species conservation, ecosystem management, and local/regional conservation efforts. These policies, when implemented, will have positive effect on the RCW.

#### **4.2.3 PARAGRAPH IV. Definitions.**

Paragraph IV contains definitions of technical terms used in the guidelines that generally

follow established terminology, and will have "no effect" on the RCW.

#### **4.2.4 PARAGRAPH V. Guidelines for Installation RCW ESMPs.**

Guidelines for preparation of the installation RCW ESMPs are contained in Paragraph V.

**Paragraph V.A. (RCW ESMP Development Process)** outlines the ESMP development process, which emphasizes documentation of current and future RCW populations, current and future mission needs, conflicts between RCW conservation and mission requirements, and RCW management priorities. This process is critical to progressive RCW management, and should have a positive effect on the RCW.

**Paragraph V.B. (Population Goal)** requires installations to formally establish a RCW population goal in consultation with the U.S. Fish and Wildlife Service. The installation population goal must at least equal the current population on the installation. Because of this requirement, this guidance should have a positive effect on existing RCW populations.

**Paragraph V.C. (Survey, Inspection, and Monitoring Program)** provides for the surveys and monitoring necessary to determine the status and trends of installation RCW populations, the amounts and condition of available RCW habitat, and current data for biological assessments. The specifications herein meet or exceed existing U.S. Fish and Wildlife Service and DA guidelines and regulations for RCW surveys and monitoring. There is some potential for incidental take of nestling and adult RCWs resulting from capture and banding as specified in the mandatory monitoring program. Such losses are expected to be very small, and more than offset by increases in the RCW population resulting from the management and population recovery efforts made possible by the guidelines as a whole, and by the information on demographics provided by the monitoring in particular.

**Paragraph V.D. (Habitat Management Units)** provides for the designation and management of RCW nesting and foraging habitat, and replacement and recruitment stands. Collectively, Paragraph V.D. is expected to have "no effect" on the RCW. However, some parts of this section may raise concerns about potential impacts to the RCW. Specifically, **Paragraph V.D.2.b** allows for the deletion, with U.S. Fish and Wildlife Service approval, of inactive clusters that can be documented as continuously inactive for five or more years.

After deletion, cavities may be covered to prevent incidental reoccupation by RCWs. However, before cluster deletion, sufficient replacement clusters and replacement stands must be designated and prepared through cavity provisioning for occupation to support the installation's population goal. Since experience has shown that RCWs often readily accept artificial cavities, this activity has the potential to exchange currently unsuitable clusters for clusters with a high likelihood of RCW occupation. This ultimately could result in a net RCW population increase from current levels and a positive effect on the RCW.

**Paragraphs V.D. 3-4** provides for designation of HMU corridors between populations and subpopulations, both on and off the installation. It is the intent of this section to provide for some flexibility to shift RCW populations, where practical and over the long-term, from areas with high mission related conflicts, to areas with low conflict potential. The processes by which demographic shifting occur must be approved by the U.S. Fish and Wildlife Service during the consultation process. As a result, the concept of demographic shifting presented in this section is considered to have "no effect" on the RCW.

**Paragraph V.E. (HMU Management Practices)** addresses habitat management practices in HMUs and clusters. **Paragraphs V.E. 1-3**, describe general timber and understory management measures and goals. These prescriptions are similar to those currently being implemented by other federal agencies and approved by the U.S. Fish and Wildlife Service. An exception is the lower understory basal area (10 versus 20 sq. ft./acre), which is considered proactive. The scientific literature does not support a basal area ceiling as high as 20 sq. ft./acre. The management prescribed in these paragraphs will have a positive effect on the RCW.

**Paragraph V.E.4 (Erosion Control)** mandates erosion and sedimentation control in HMUs and clusters. On some installations, sedimentation is causing the premature death of cavity trees and the degradation of foraging habitat. Control of erosion and sedimentation will have a positive effect on the RCW.

**Paragraph V.E.5 (Impact/Danger and Direct Fire Areas)**. The complex issue of endangered species management in impact/danger areas and other live-fire ranges is discussed in this paragraph. Due to a lack of information, the exact numbers of RCWs or available habitat in impact/danger areas are unknown or incompletely documented on most installations. Clearly, however, significant numbers of RCWs occur within live-fire areas on

several installations, with the highest numbers being on Fort Bragg, Fort Benning, and Fort Polk. Fort Jackson has a disproportionate number of its active clusters on live-fire ranges, though the total number of clusters is small. Live-fire ranges present unique protection and management problems pertaining to the implementation and enforcement provisions of the ESA. Many ranges are heavily used, thus creating an access problem for management applications. Areas that contain unexploded ordnance may represent human safety hazards. Live-fire can lead to the destruction of cavity trees and foraging habitat, and in extreme circumstance, to the death of RCWs.

The exact number of RCW breeding groups in live-fire areas is unknown except on Fort Bragg, and possibly Fort Jackson. The population of RCWs in live-fire areas on Fort Bragg represents a significant percentage of the entire North Carolina Sandhills population. Available information suggests the collective RCW population on installation live-fire ranges is a significant percentage of the total range-wide RCW population.

Absolute knowledge of duded area boundaries, specific human/RCW hazard zones, and RCW population/habitat distribution is lacking on most installations. Further, the definitions pertaining to classification of impact/danger areas do not appear to be consistent among installations, and the opinion of the degree of real or perceived hazards in a specific area varies.

Fort Bragg has consultations in progress under Section 7, ESA for operation of three of its four live fire ranges and has completed a consultation for operation of the fourth live fire range (Coleman Danger/Impact Area). Since incidental take can occur by numerous pathways on live-fire ranges (direct "take" of RCWs, loss of cavity trees, loss of foraging habitat, lack of management, etc.), and because the available data on many critical aspects of range conditions and operations are sketchy, these guidelines direct the individual installations to consult with the U.S. Fish and Wildlife Service on each impact/danger area or range complex. Paragraph V.E.5.a.(2) acknowledges the potential for incidental take from range operations. Implementation of these guidelines will address the ongoing issue of incidental take on live-fire ranges and as a result of the consultation process will have "no effect" on the RCW.

Paragraph V.E.5.b outlines management of direct fire, non-duded ranges, and is consistent with range management as currently approved by the U.S. Fish and Wildlife

Service (Coleman Biological Opinion, Fort Bragg). Implementation of this portion of the guidelines is expected to have "no effect" on the RCW.

**Paragraph V.F. (Timber Harvesting and Management in HMUs) and Paragraph V.G. (Pine Straw Harvesting within HMUS)** provide prescriptions that follow accepted management practices employed on other federal lands, particularly those of the U.S. Forest Service. Thus, these parts of the guidelines are consistent with approved U.S. Fish and Wildlife Service policy and potentially could have a positive effect on the RCW.

**Paragraph V.H. (Restoration and Construction of Cavities)** details procedures for installation of cavity restrictors and the construction of artificial cavities. These procedures are consistent with existing U.S. Fish and Wildlife Service policy on the subjects, and as such, should have a positive effect on the RCW.

**Paragraph V.I. (Protection of HMUs)** establishes guidelines for military activities in the vicinity of cluster sites and establishes standard marking guidelines. The objective of this section of the guidelines is to protect RCWs and habitat in cluster sites while allowing the Army sufficient flexibility to accomplish its mission requirements. Subparagraphs of **Paragraph V.I.** are discussed below.

**Paragraph V.I.1 (Markings)** directs consistent Army-side markings to identify and protect RCW clusters (painted trees and signs). This unified approach to RCW protection will have a positive effect on the RCW.

**Paragraph V.I.1.e. (Training on Non-Army Lands)** addresses training on other private, state and federal lands. The installation will pay the costs for the appropriate RCW habitat markings. If no agreement can be reached, the installation will educate its troops to recognize whatever marking scheme is used by the landowner. This paragraph will have "no effect" on the RCW.

**Paragraph V.I.2 (Training within RCW Clusters)** sets forth unified training guidelines that will apply in non-impact/danger areas.

**Paragraph V.I.2.(b)** specifies training restrictions that usually follow guidance in existing biological opinions. However, since the biological opinions on different installations

differ in their training restrictions, the guidelines may be more or less restrictive compared with a specific biological opinion. According to these guidelines, training within RCW clusters (active and inactive) is limited to dismounted training of a transient nature. Bivouacking, digging, and cutting of vegetation (except hardwoods) are prohibited. Use of CS gas, smoke, flares, incendiary devices, artillery, artillery simulators, mortars, and similar devices are not permitted. Vehicle travel through clusters is limited to designated maintained roads, trails, and firebreaks illustrated on installation maps, with the exception that vehicles weighing five tons or less may travel within clusters during specific exercises, if the vehicles stay at least 100 feet from all cavity trees, and the U.S. Fish and Wildlife Service concurs with each specific exception. If such exceptions are granted, the installation will monitor affected sites to determine the effects of such use on the RCW and its habitat. Collectively, these training guidelines should have "no effect" on the RCW.

**Paragraph V.I.2.c (Expanded Training Guidelines within Clusters)** allows for reduced training restrictions for five to 10 percent of the RCW clusters on an installation. The guidelines include this management option in order to allow installations to partially free crucial areas of RCW habitat from standard RCW training restrictions to better meet mission requirements.

Bivouacs and battalion-level (and below) command posts are allowed within clusters if they remain at least 200 feet away from cavity trees. Digging is prohibited. Fixed activities will be limited to 18 consecutive hours or less from 1 August through 31 March, and six consecutive hours or less from 1 April through 31 July (nesting season). Use of blanks in individual and crew-served (M-60 machine guns and below) weapons is permitted in clusters. Wheeled vehicles are allowed in clusters if soil erosion tolerance limits are not exceeded and vehicles remain at least 200 feet away from cavity trees (but see paragraph V.I.2.b.(5) above).

Increased RCW and habitat monitoring is required in such sites, and if adverse impacts are documented, the affected cluster reverts to the Standard Training Guidelines. The Expanded Training Guidelines could conceivably result in adverse impacts to the RCW. However, the affected clusters can only be designated in consultation with the U.S. Fish and Wildlife Service, and a U.S. Fish and Wildlife Service-approved monitoring plan must be implemented. Documentation of potential adverse impacts to the RCW and its habitat will result in reversion to the Standard Training Guidelines. These provisions should result in

"no effect" on the RCW.

**Paragraph V.J. (Augmentation and Translocation)** outlines general policy statements concerning augmentation and translocation. Augmentation is to be used to place young females in single-male groups in clusters where the habitat has been improved as outlined in Paragraph V.H. This will have a positive effect on the RCW.

Translocation involves the moving of entire or partial RCW groups from an active cluster to an inactive cluster or recruitment/replacement stand where artificial cavities have been constructed. Translocation is to be used only under exceptional circumstances, and then only with the approval of the U.S. Fish and Wildlife Service under Section 7 or Section 10 of the ESA. This procedure should have "no effect" on the RCW if implemented as prescribed in the guidelines.

## **5 CONCLUSION**

Overall, these guidelines will not "adversely affect" the RCW or other Federally listed threatened or endangered species. The guidelines, as described here, should result in RCW population stabilization and expansion on most installations. Exceptions could be those installations with very small RCW populations, or those populations subject to genetic, biotic, or habitat constraints beyond the scope of these guidelines (severe population fragmentation, disease, or minimal existing or potential habitat).

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## **Appendix C: Public Review**

**List of public individuals/organizations receiving copy of 17  
May 1993 draft guidelines for review and comment.**

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## Appendix D: List of Experts

List of experts solicited for review of 17 May 1993 draft of proposed RCW management guidelines. Respondents are noted with an asterisk.

\*Dr. John Blake  
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\*Dr. Richard Conner  
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Dr. Phillip D. Doerr  
North Carolina State University

Dr. Ronald Escano  
US Forest Service

\*Dr. Kathleen Franzreb  
USFS S.E. Forest Experiment Station

Dr. Jeffrey Hardesty  
University of Florida

Dr. Robert Hooper  
US Forest Service

Dr. Jerome Jackson  
Mississippi State University

\*Dr. Frances C. James  
Florida State University

Dr. Michael Collopy  
Cooperative Research Center  
Forest Sciences Lab

Dr. Melinda LaBranche  
SUNY at Fredonia

Dr. Michael R. Lennartz  
Forest Environment Research  
USDA, Forest Service

\*Dr. Jeffrey R. Walters  
North Carolina State University

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## **Appendix E: 1984 Army Guidelines**

### **Policy and Management Guidelines for Red-cockaded Woodpecker on Army Installations (1984)**

POLICY AND MANAGEMENT GUIDELINES  
FOR RED-COCKADED WOODPECKER ON ARMY INSTALLATIONS

SECTION A

POLICY

All active and potentially active red-cockaded woodpecker (RCW) colonies on U.S. Army military lands will be managed in accordance with Section B. Proposed deviations from these guidelines will be submitted for consultation in accordance with Section 7 of the Endangered Species Act. The RCW management guides in Section B take precedence over all other existing natural resource management guides and will be annotated to existing natural resource plans, being fully incorporated within the next major revision.

1. Management Goal. To maintain (1) present populations or (2) a viable population of 250 colonies at a density of one clan per 200 to 400 acres of suitable habitat (pine and pine-hardwood) on lands available for forest management. Proposed actions, such as proposed thinning or construction, that may reduce existing populations below current levels are "may affect" actions that will require formal consultation on an individual basis. Populations less than one colony per 1,000 acres will be managed to promote recruitment to achieve a minimum population of one colony per 1,000 acres. Recruitment will be promoted by providing stands over 60 years of age in areas where colonies currently do not exist. (See Section B 4.) Assistance will be requested from the U.S. Fish and Wildlife Service (FWS).
2. RCW Land Categories. All active or potentially active colonies will be designated for management in accordance with Section B. Habitat suitable for RCW and with no colonies may be designated as recruitment areas if, based upon master planning needs, there are no foreseeable serious conflicts with the military mission. Habitat with no colonies, where mission activities would be seriously affected, will be designated as nonrecruitment areas. Should new colonies become established on any area, they shall be managed in accordance with Section B, or new consultation shall be entered for final determination.
3. RCW Inventory:
  - a. To maintain the population and monitor the effects of management, it is necessary to keep a continuous inventory of RCW colonies. All potential RCW habitat will be surveyed for cavity and cavity-start trees. Each colony position will be placed on a map of sufficient scale to provide for easy relocation. A written record tally of individually numbered cavity and cavity-start trees will be kept for each colony. Coding shall be as follows:

- AC - Apparently Active Cavity (add N if known nesting cavity)
- IC - Apparently Inactive Cavity
- AS - Apparently Active Start
- IS - Apparently Inactive Start
- NR - Non-RCW Cavity

Since more than one cavity may occur in a single tree, follow each code by the number. If unsure of the status, follow the number with a question mark (?). For example: A tree with five cavities may be coded as, "Tree #7-AC3N-IC1,1?". This tree has three active cavities of which one is a known nest cavity and two inactive cavities, one of which may be doubtful.

- b. Until such time that a recognized sampling system is accepted for RCW inventory, a 100 percent survey of RCW habitat will be accomplished on each forest management unit prior to prescribing treatments for that unit. Subsequent prescriptions for each forest management unit will be preceded by a new 100 percent survey and an analysis made in relationship to the previous inventory. Records shall be kept permanently for overall trend analysis.

## SECTION 8

### MANAGEMENT GUIDELINES

1. Cavity and cavity-start trees. Cavity and cavity-start trees will be kept clear of dense understory that may screen cavities and cause abandonment by the clan. If burning is used for understory control, pitch-covered cavity trees will be protected from fire damage. Removal of ground fuel for a 3-meter distance around a glazed tree base will be accomplished to the extent resources permit. Cavity trees may be sprayed below the cavity if insecticides used are not toxic (including secondary effects) to birds, and it has been determined that spraying is necessary for the survival of the colony. Dead, dying, or inactive cavity trees will be retained for use by other species to reduce competition with the RCW.
2. Colony Sites. Colony site includes the area with a 200-foot buffer zone around the aggregate of cavity trees. An aggregate of cavity trees is all cavity trees within a 1,500-foot circle.
  - a. No established rotation age is set for colony sites. Site permitting, the pine species most used by the occupying clan will be featured in management. Timber harvesting will be limited to individual stems or small group selection to perpetuate trees suitable for new cavities. Basal areas (BA) in the colony site should be kept within the range of approximately 50 to 80 square feet per acre, maintaining a spacing of 20 to 25 feet between trees, with the goal of attaining and keeping sufficient large mature pine trees to serve as cavity replacement trees and minimizing the probability of bark beetle infestation and spread.
  - b. Colony sites shall be kept free of dense understory that may screen potential cavity trees by burning or otherwise treating them. Hardwood stocking in colony sites should be kept below 20 square feet of basal area per acre and all hardwood stems 1 inch and larger within 50 feet of cavity trees should be removed. Pine and hardwood with cavities suitable for other animal species shall be retained to reduce competition with the RCW. If a serious infestation of southern pine beetle occurs, affected stems (except cavity trees) may be cut and removed, burned, or treated with registered pesticides nontoxic (including secondary effects) to birds if it is determined spraying is necessary for survival of the colony. Contact the FWS for further guidance on insect infestations if problems with unclear solutions arise.
  - c. Logging and cultural treatments will be limited to periods other than the nesting start to fledgling season which usually occurs between 1 March and 31 July.

- d. Colony sites will be managed as stands rather than as individual trees to minimize mortality from lightning, windthrow, and rising water tables and will not be isolated from adjacent forest cover and foraging habitat.
3. Foraging Stands. At least 200 acres of contiguous pine or pine hardwood stands of which 180 acres is 20 years and older will be retained within a 1,000-meter radius of a colony. At least 125 acres of this must be 30 years of age or older and 40 percent, or 50 acres, must be 60 years of age or older and must be provided within a 1/2 mile of colony sites and adjacent to, and contiguous with, all active colonies. Older stands provide higher quality foraging habitat, thus reducing the acreage of foraging habitat needed. Stands under 30 years of age are used less in proportion to their availability. These foraging stands will be linked to at least 1/3 of the perimeter of the colony site. Rotations of the species featured in management will not be set below the culmination of a mean annual increment for sawtimber. Management within the 1,000-meter radius will be directed toward attaining a variety of age classes, maintaining the integrity of RCW foraging needs.
4. Recruitment Areas. Should recruitment areas be designated, the oldest 25-acre stand, or multiple stands 10 to 25 acres in size, of pine or pine hardwood (preferably species most utilized by RCW), at least 1/4 to 3/4 mile from any existing clan, shall be set aside. This stand shall be managed in the same manner as an active colony site. At least 125 acres of foraging habitat 30 years of age or older with 40 percent, or 50 acres, of the 125 acres 60 years of age or older must be provided within a 1/2 mile of the recruitment stands and adjacent to, and contiguous with, all recruitment stands.

## DEFINITIONS

**Cavity:** An excavation used by red-cockaded woodpeckers (RCW) for roosting or nesting at some time during the life of the colony.

**Cavity-Start:** The beginning of a cavity - may never be finished, but if completed, excavation is usually over a period of several months.

**Cavity Tree:** A tree containing one or more RCW cavities.

**Clan:** All the RCW's that inhabit a colony at a given point in time.

**Colony:** The area prescribed by an aggregation of cavity and cavity-start trees habitually used by a clan of RCW's.

**Colony site:** The colony plus a 200-foot buffer zone around the cavity and cavity-start trees.

**Nest Cavity:** A cavity being used by a pair of RCW to raise their young.

**Potential Cavity Tree:** A longleaf pine 95 years old or older or a loblolly or other pine 75 years old or older.

**Recruitment Stand:** A stand of pine or pine-hardwood managed specifically for the recruitment of a new clan.

**Replacement Tree:** A tree, with the colony site, whose species, location, juxtaposition, size, and condition are suitable for it to become a cavity-start tree.