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Biological Assessment of the Effects of the Proposed Revision of the 1996 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations”

Timothy J. Hayden

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Timothy J. Hayden
Construction Engineering Research Laboratory (CERL)
U.S. Army Engineer Research and Development Center
2902 Newmark Dr.
Champaign, IL 61824

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Under Threatened and Endangered Species Emerging Issues

Abstract: In 1996, in an effort to meet conservation obligations under the Endangered Species Act, the Army revised earlier programmatic guidance for management of Red-cockaded Woodpeckers (RCW) on Army lands. The 1996 “Management Guidelines for RCWs on Army Installations” established procedures for determining installation population goals; inventory and monitoring requirements; management and forestry practices; and protective measures for RCWs and their habitat on Army lands. In the spring of 2005, the Department of Army, Office of the Director of Environmental Programs (ODEP) determined that a revision of the 1996 Army guidelines was necessary.

This biological assessment determines the effects of implementing, through amendments to the Endangered Species Component of each installation’s Integrated Natural Resource Management Plan, the proposed revision of the 1996 Army guidelines on RCW populations and other threatened or endangered species occurring in the action areas on Army installations.

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Preface

This work was performed for Headquarters, Department of the Army, Office of the Director of Environmental Programs under Project A896, “Base Facilities Environmental Quality,” Work Unit “Threatened and Endangered Species Emerging Issues.” The technical monitor was Scott Belfit, DAIM-ED.

The work was managed and executed by the Ecological Processes Branch (CN-N), Installations Division (CN), Construction Engineering Research Laboratory (CERL). The CERL principal investigator was Dr. Timothy J. Hayden. Alan B. Anderson is Chief CN-N; Dr. John T. Bandy is Chief CN. The associated Technical Director was Dr. William D. Severinghaus, CEERD-CV-T. The Director of ERDC-CERL is Dr. Ilker R. Adiguzel.

CERL is an element of the U.S. Army Engineer Research and Development Center (ERDC), U.S. Army Corps of Engineers. The Commander and Executive Director of ERDC is COL Richard B. Jenkins, and the Director of ERDC is Dr. James R. Houston.

Unit Conversion Factors

Multiply	By	To Obtain
acres	4,046.873	square meters
hectares	1.0 E+04	square meters
miles (U.S. statute)	1,609.347	meters

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. Realistic training conducted at Army installations is a key facet of current Army doctrine. 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 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 1996, in an effort to meet conservation obligations under the ESA, the Army revised earlier programmatic guidance for management of RCWs on Army lands. The 1996 “Management Guidelines for RCWs on Army Installations” (Appendix A; hereafter referred to as the 1996 Army guidelines) established procedures for determining installation population goals, inventory and monitoring requirements, management and forestry practices, and protective measures for RCWs and their habitat on Army lands. The 1996 Army guidelines were a significant milestone in implementing state-of-the-art management practices to enhance RCW conservation on Army lands.

In spring 2005 the Department of Army, Office of the Director of Environmental Programs (ODEP) determined that a revision of the 1996 Army

guidelines was necessary. The decision by ODEP to proceed with this revision was driven by several events occurring subsequent to approval of the 1996 Army guidelines:

1. The U.S. Fish and Wildlife Service (USFWS) Recovery Plan for the RCW (hereafter referred to as the 2003 Recovery Plan) underwent a major revision in 2003 (U.S. Fish and Wildlife Service 2003). The 2003 Recovery Plan revision detailed recovery goals for RCW populations, including Army installations, and established specific criteria and recommendations for RCW conservation, management and recovery. The 1996 Army guidelines required updating to be in accordance with the 2003 Recovery Plan.
2. Research activities since 1996 have provided significant new information on the effects of military training activities on RCWs on Army installations that was not available during development of the 1996 Army guidelines.
3. Army organizational changes required updating of Army roles and responsibilities for RCW management on Army installations.
4. Army installations have been successful in promoting significant population gains, with a 53 percent increase from 595 to 903 RCW potential breeding groups (PBGs) between 1997 and 2005 on installations implementing the 1996 Army guidelines.
5. The combination of new research findings on effects of military training activity and population increases on installations, resulted in an internal Army recommendation to ODEP to propose a decrease in training restrictions associated with the 1996 Army guidelines that would be tied to demonstrated population increases on installations.

In recognition of the above factors, ODEP established an Army Working Group to draft the proposed “2006 Management Guidelines for RCWs on Army Installations” (Appendix B; hereafter referred to as the proposed revision). The Army Working Group was comprised of representatives of ODEP, Army Environmental Center (AEC), Installation Management Agency (IMA), Major Commands, installations, and the Army Corps of Engineers, Army Engineer Research and Development Center (ERDC), and the USFWS. The working group initially reviewed alternatives for revision of the 1996 Army guidelines during May through July of 2005. The alternatives considered by the Army working group are described in the Environmental Assessment of the proposed guidelines revision (Hayden 2007). Based on the working group consensus on the preferred alternative, an initial draft revision of the Army RCW management guidelines was prepared by ERDC in November 2005. Subsequent to preparation of this initial draft, the Army working group conducted several rounds of review and revision of the draft guidelines from November 2005 through August

2006. The Army provided drafts of the proposed revision to the USFWS RCW Recovery Coordinator for review and comment during the revision process. The Recovery Coordinator's comments were incorporated in subsequent drafts. The final proposed revision that is the subject of this biological assessment was approved for submission to USFWS for formal consultation in September 2006. The proposed revision, which is the subject of this Biological Assessment, represents the Army's desire to continue meeting Army mission requirements while further enhancing efforts to promote and sustain recovery of RCW populations on Army lands consistent with the latest USFWS guidance.

1.2 Objective

This biological assessment determines the effects of implementing, through amendments to the Endangered Species Component of each installation's Integrated Natural Resource Management Plan, the proposed revision of the 1996 Army guidelines on RCW populations and other threatened or endangered species occurring in the action areas on Army installations.

1.3 Scope

The Army intends to consult with the USFWS using a "tiered" approach. This BA and accompanying documentation will be programmatic in nature. As it is implemented by Army installations, each installation will consult site-specifically to determine the effects of implementing the revised management guidelines and estimate potential "take," if any, on RCWs and other listed species occurring in the action area. The action of concern in this assessment is implementation of the proposed revision of the 1996 Army guidelines. Full text of the 1996 Army guidelines is provided in Appendix A. Text of the proposed revision is provided in Appendix B.

Effects of the 1996 Army guidelines were determined in a biological assessment (Hayden 1997). This biological assessment evaluates only those programmatic actions that represent significant changes to the 1996 Army guidelines. The focus of this assessment will be on the following significant changes under the proposed revision:

- Changes to clarify actions, terms and definitions
- Changes to provide consistency with current army policy, regulations and management structure

- Changes to provide consistency with the USFWS 2003 Red-cockaded Woodpecker Recovery Plan
- Changes to reduce training restrictions in association with increasing RCW populations on Army installations.

The 1996 Army guidelines and the proposed revision are Department of Army initiatives. The scope of this biological assessment is limited to those Army installations with lands under Department of Army management authority that currently support active RCW cluster sites (Table 1; all tables and figures in this assessment are located at the end of their respective chapters). Eight Army and National Guard installations meet these criteria. In general, only those installations with significant training and operations of combat and combat support units will be affected by changes under the proposed revision.

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. However, ultimate management authority on these lands rests with the responsible land owner or agency.

1.4 Approach

To assess effects of the proposed revision, reviews were conducted of pertinent scientific literature, installation biological assessments and opinions, other installation environmental regulatory documentation, and unpublished data and anecdotal observations. Installation site descriptions and current status and trends of RCW populations and habitats were solicited from installations.

Based on the best scientific data available and expert opinions of Army biologists and trainers, an assessment was made of the effects of implementing the proposed revision of the 1996 Army guidelines on threatened or endangered species occurring on Army installations subject to the revised guidelines. This assessment represents a consensus of Army expertise on the known and anticipated effects of implementing the proposed revision.

1.5 Historical development of Army guidance for RCW management

- 1984 Army approves Policy and Management Guidelines for Red-cockaded Woodpecker on Army Installations.
- 1994 Army publishes Environmental Assessment of Army-wide Management Guidelines for the Red-cockaded Woodpecker.
- 1994 Army publishes Biological Assessment of Army-wide Management Guidelines for the Red-cockaded Woodpecker.
- 1994 Army approves the 1994 Management Guidelines for RCWs on Army Installations.
- 1996 Army publishes Biological Assessment of the Effects of the Proposed Revision of the 1994 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations.”
- 1996 Army publishes Environmental Assessment of the Effects of the Proposed Revision of the 1994 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations.”
- 1996 Army approves the 1996 Management Guidelines for the Red-cockaded Woodpecker on Army Installations.

1.6 Process

The Army is submitting this biological assessment to the USFWS in compliance with Section 7, Endangered Species Act of 1973, as amended, and its implementing regulation 50 CFR Part 402.

Table 1. Army installations subject to the proposed revision of the 1996 “Management Guidelines for RCWs on Army Installations.”

Installation	State	Population Status
Camp Blanding	Florida	RCWs present
Fort Benning	Georgia	RCWs present
Fort Bragg	North Carolina	RCWs present
Fort Gordon	Georgia	RCW present
Fort Jackson	South Carolina	RCWs present
Fort Polk	Louisiana	RCWs present
Fort Stewart	Georgia	RCWs present
Sunny Point Military Ocean Terminal	North Carolina	RCWs present

2 Description of the Proposed Action

The proposed action is a major revision of the 1996 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations.” The Army is proposing this revision for the following reasons: (1) clarification of actions, terms and definitions, (2) consistency with current Army policy and regulations, (3) consistency with the USFWS 2003 Recovery Plan, and (4) proposed reduction in training restrictions associated with increasing RCW populations on Army installations.

2.1 Ongoing activities

Detailed descriptions of ongoing military and natural resource management activities on installations subject to the proposed revision are provided in the installations’ Integrated Natural Resource Management Plans (INRMP) and the Endangered Species Management Component (ESMC) of INRMPs. Installation ESMCs are approved for implementation through consultation with USFWS. Copies of installation INRMPs and ESMCs are available to the USFWS and are included in this biological assessment by reference. Current Army programmatic guidance for RCW management is provided in the 1996 Army guidelines (Appendix A).

2.2 Proposed revision of the 1996 “Management Guidelines for RCWs on Army Installations.”

The following section describes the major aspects of proposed revisions to the 1996 Army guidelines. All paragraph references below follow paragraph headings of the proposed revision (Appendix B).

2.2.1 Paragraph I. General

Paragraph 1.A “Purpose” notes a terminology change from “Endangered Species Management Plans” to “Endangered Species Management Components.” This change reflects Army policy that installation ESMCs are an integral component of installation Integrated Natural Resource Management Plans (INRMP).

Paragraph 1.B changes applicability of the proposed revision to only those Army installations where RCWs are present. This change was made because the Army is confident that all installations with the capacity to support active RCW populations have been identified.

2.2.2 Paragraph II. Consultation

Changes and additions in this section were made for clarification of installation consultation requirements. Specifically, paragraphs were added describing requirements for informal consultation, formal consultation, incidental take, and reinitiation. These changes were made consistent with current installation ESMCs and requirements under the Endangered Species Act.

In the proposed revisions thresholds for reinitiation of consultation under Paragraph II.E “Reinitiation” are in accordance with thresholds established under the 2003 Recovery Plan. This section also explicitly recognizes that natural catastrophes affecting RCW populations and habitats may require re-evaluation of population and management goals through consultation with USFWS.

2.2.3 Paragraph III. Army policies applicable to RCW management

Paragraph III.B “Mission Requirements” adds a sentence highlighting the unique challenges of installations with small RCW populations in balancing mission requirements with RCW management.

Paragraph III.E “Staffing and Funding” clarifies the roles and responsibilities for RCW management funding on Army installations.

Paragraph III.G “Regional Conservation” provides specific examples of current programs for promoting regional conservation.

2.2.4 Paragraph IV. Definitions

Changes in terms and definitions in this section were made for clarification, consistency with terminology and definitions under the 2003 Recovery Plan, and to be consistent with changes in terminology incorporated in the proposed revision. Changes in terminology in the proposed revision are described in further detail below.

2.2.5 Paragraph V.A. Guidelines for Installation RCW ESMCs

Paragraph V.A “RCW ESMC Development Process” deletes the step to identify areas on the installation where conflicting mission requirements could be relocated to avoid RCW habitat since this is redundant with step V.A.6 of the proposed revision. Paragraph V.A also adds the step identify regional cooperators outside the installation boundaries. This step is in

support of Army policies described under Paragraph III.G of the proposed revision.

2.2.6 Paragraph V.B. Population Goals

In the 1996 Army guidelines, several levels of population goals were established for installations. Under the proposed revision, there is only one installation population goal, which is stated as the number (or estimate) of PBGs in accordance with population goals established for installations in the 2003 Recovery Plan. The proposed revision also includes descriptions of the biological significance of several population thresholds in accordance with the 2003 Recovery Plan.

For installations that have not yet achieved recovery goals, Paragraph V.B.4 specifically establishes that actions will be taken to achieve a five percent annual increase in active clusters. The 1996 Army guidelines did not establish a specific objective for annual growth rate.

Paragraph V.B.5 clarifies that all installation PBGs will be counted toward the installation's population goal as long as it meets USFWS RCW Recovery Plan criteria to determine group status, or, where PBGs are estimated, the clusters can be accessed for management. In the 1996 Army guidelines it was unclear whether clusters in impact areas could be counted toward population goals, even though these clusters may have been functioning in the population as PBGs.

2.2.7 Paragraph V.C. Training in Clusters

The proposed revision sets the conditions for location of certain listed activities (refueling points, generators, smoke generators, smoke pots, and mechanical digging) relative to RCW clusters and cavity trees. The proposed revision establishes the approval process for locations of these activities and that these activities will not be approved within 200 ft of cavity trees unless authorized through consultation with USFWS.

2.2.8 Paragraph V.C.1. Designation of Protected Clusters

The proposed revision simplifies terminology to reflect the status of clusters relative to whether training restrictions are in effect or not. The proposed revision categorizes clusters as either "protected" (subject to restrictions specified in Paragraphs V.C, V.C.4 and Paragraph V.C.5) or

“unprotected” (subject only to restrictions specified in Paragraphs V.C and V.C.5)

For installations with < 250 PBGs, the proposed revision adopts the number of protected clusters as those established under the current installation ESMC, which have been determined in consultation with USFWS.

2.2.9 Paragraph V.C.2. Removal of Training Restrictions

The 1996 Army guidelines did not specify a process for removing training restrictions from clusters as populations approached or exceeded recovery goals. The proposed revision would implement a process where installations with populations exceeding 250 PBGs would be allowed to remove training restrictions at a rate contingent on population growth. Key points of this proposed process are:

- Installations with ≤ 250 PBGs will maintain the currently negotiated number of protected and unprotected clusters.
- As populations increase above 250 PBGs, installations may reduce the number of protected clusters at rates specified in Paragraph V.C.2.b of the proposed revision (Appendix B). Removal will be implemented subject to guidelines specified in Paragraph V.C.2.e.
- Installations with population ≥ 350 PBGs will specify a schedule in the ESMC for removing training restrictions from all clusters. The schedule may be implemented after appropriate consultation with the USFWS.
- Installations will monitor and report demographic and reproductive data as specified in Paragraph V.C.2.e.(1).
- Installations with population goals ≤ 250 PBGs will maintain the number of protected clusters in accordance with levels under the current installation ESMC. Upon reaching the recovery goal, the installation may propose a schedule for removing training restrictions through consultation with USFWS.

2.2.10 Paragraph V.C.3. Marking of Clusters

There is no substantive change in the marking guidelines for protected clusters (V.C.3.a-c) and unprotected clusters (V.C.3.d) between the proposed revision and the 1996 Army guidelines. The proposed revision does specifically limit scraping of bark to minimize access limitations for predators, i.e., rat snakes.

2.2.11 Paragraph V.C.4. Training in Protected Clusters

The types of training activities allowed or not allowed in protected clusters remain unchanged between the proposed revision and the 1996 Army guidelines (Table shown in “Appendix 1” of both the revision and the 1996 Army guidelines) with the exception of that the use of incendiary devices within protected clusters is allowed under the proposed revision, and the description of “Hasty defense, light infantry” is clarified to include hand tools and excavations no deeper than 2 ft. These clarifications were required to reflect actual training activities as conducted under the 1996 Army guidelines. Distance and duration restrictions for vehicle and soldier transit remain unchanged.

2.2.12 Paragraph V.C.5. Training Activities in All Habitats

There are no substantive changes in guidance for training activities in all habitats between the proposed revision and the 1996 Army guidelines. Minor changes for clarification include changing time periods from hours (e.g., 48 hrs) to “working days” (e.g., 2 working days).

2.2.13 Paragraph V.D. Habitat Monitoring

Changes in guidance in the proposed revision for new cavity tree surveys, project surveys, and foraging habitat (Paragraphs V.D.1, 2, and 3) is in accordance with guidance provided by the 2003 Recovery Plan. The proposed revision makes no substantive changes from the 1996 Army guidelines in requirements for monitoring cluster status and condition other than minor wording changes for clarity (Paragraphs V.D.4 and 5).

2.2.14 Paragraph V.E. Population Monitoring

Guidance in the proposed revision for population monitoring requirements (Paragraphs V.E.1-3) brings the proposed revision into accordance with guidance provided by the 2003 Recovery Plan. In addition, Paragraph V.E.4 provides specific guidance for data and sample requirements for comparing status of protected and unprotected clusters to monitor population trends in response to implementing provisions of Paragraph V.C.2 of the proposed revision.

2.2.15 Paragraph V.F.1 Habitat Management

No substantive changes, other than those for clarity and consistency with the 2003 Recovery Plan, were made in the proposed revision.

2.2.16 Paragraph V.F.22 Areas Included in HMUs

No substantive changes were made in the proposed revision in criteria for HMUs, with the exception of specific guidance for determining foraging habitat in HMUs in Paragraphs V.F.2.d and e. Guidance for determining foraging habitat acres, quality, and location provided in the proposed revision is in accordance with the 2003 Recovery Plan.

2.2.17 Paragraph V.F.3 Management within Clusters

Changes in guidance for management practices within clusters under the proposed revision are in accordance with the 2003 Recovery Plan.

2.2.18 Paragraph V.F.4 Management in other Areas of HMUs.

Changes in the guidance for silvicultural practices (Paragraph V.F.4.a) were made to adopt guidance provided in the 2003 Recovery Plan. Guidance for prescribed burning remains substantively unchanged from the 1996 Army guidelines, with the exception that references to chemical and mechanical control of midstory were deleted from the proposed revision.

2.2.19 Paragraph V.F.5 Management in Impact and Direct Firing Areas.

There were no substantive changes, other than for clarity, in the proposed revision from the 1996 Army guidelines, with the exception that augmentation and translocation as a means of removing RCWs from high risk areas was removed from the proposed revision.

2.2.20 Paragraph V.G Translocation

The proposed revision establishes that translocation activities should be performed in accordance with the 2003 Recovery Plan (Paragraph V.G.1.). The proposed revision clarifies the conditions under which intra-population translocations may occur (Paragraph V.G.2). The proposed revision includes guidance that installations should support regional translocation efforts (Paragraph V.G.4).

2.2.21 Paragraph V.H Data Records, Reporting, and Coordination.

The proposed revision consolidates in this paragraph all reporting requirements and responsibilities established in the proposed revision. The proposed revision specifies reporting and coordination responsibilities in accordance with current Army policies and organization. The proposed re-

vision also establishes guidance for updating RCW maps annually or when a 20 percent change in number of active clusters occurs (Paragraph V.H.6). Under the 1996 Army guidelines, map revisions were only required every 5 yrs or when a 20 percent change occurred.

3 Current Status

3.1 Description of the Action Area

The following site descriptions provide a brief summary of the location, military activities, and physiographic features for each installation subject to the proposed revision of the 1996 Army guidelines. The action area comprises the eight Army and Army National Guard installations with RCW populations listed in Table 1 of this biological assessment. Specifically the affected areas of these installations will be those areas that currently support or are anticipated to support RCW populations and habitats. Generally, these areas are represented by upland pine and pine savannah habitats.

3.1.1 Camp Blanding

The Florida Army National Guard's primary training area is Camp Blanding located in north-central Florida. Camp Blanding is a 73,000 acre military installation near Jacksonville, FL. The training schedule continues almost year-round to meet the training needs of tens of thousands of National Guardsmen, Active Army and Reserves from all over the United States. On 15 December 1992 the 159th Weather Readiness Training Center and Weather Flight were added to the Florida Air National Guard. Located at Camp Blanding, the school billets and trains Air National Guard members as well as active duty airmen in their career field of weather predictions.

Weapons ranges include: 50 live fire ranges capable of handling all weapons systems organic to a Light Infantry Brigade to include Mortars and Artillery; five Automated Ranges for small arms and handgun qualification; a Crew Combat Range; and four Platoon/Squad Movement to Contact ranges (400 by 800 meters). Training Areas include three Major Maneuver Areas with a total of 55,000 plus acres of varied topography, including planted pine plantations, swamps, oak hammocks, and desert-like terrain, with the capability to support a Light Infantry Brigade plus one Battalion of aggressors.

3.1.2 Fort Benning

Fort Benning is an Installation Management Agency installation with significant Forces Command (FORSCOM) activities. Fort Benning is located

south of Columbus, GA with an active duty population of 34,834. Fort Benning's mission is to "provide the world's best Infantry Soldiers and trained units; to provide a power projection platform that can deploy soldiers and units anywhere in the world on short notice; and to provide the Army's premier installation and home for Soldiers, families, civilian employees, and military retirees." There are five types of infantry at Fort Benning. They are mechanized, light, airborne, air assault, and ranger.

Fort Benning was established in 1918. Known as the "Home of the Infantry," the installation spreads over 182,000 acres and is home to the U.S. Army Infantry Training Brigade, U.S. Infantry School, Ranger Training Brigade, Airborne School, and School of the Americas. Units of FORSCOM make up 50 percent of permanent party personnel on post. They are the 3rd Brigade, 3d Infantry Division, and the 36th Engineer Group. The 3d Ranger Battalion, 75th Ranger Regiment, and its Regimental Headquarters are also located at Benning.

The installation is located in the Fall Line Sandhills of the Atlantic Coastal Plain Province. A small portion of the reservation's 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, and bottomland hardwood associations occur throughout the installation

3.1.3 Fort Bragg

Fort Bragg is located just west of Fayetteville, NC. One of the largest and busiest military complexes in the world, Fort Bragg hosts America's only airborne corps and airborne division, the "Green Berets" of the Special Operations Command, and the Army's largest support command. Soldiers of the 82nd Airborne Division and others make 100,000 parachute jumps each year at Fort Bragg. Approximately 43,000 military and 8,000 civilian

personnel work at Fort Bragg. Fort Bragg occupies 161,000 acres. Included within this area are Camp MacKall (an auxiliary training complex), seven major drop zones, four impact areas, 82 ranges, 16 live fire maneuver areas, and two Army airfields.

In 1918, Congress established Camp Bragg as an Army field artillery site. An aviation landing field was added a year later. After 5 yrs, Camp Bragg became a permanent Army post renamed Fort Bragg.

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.

3.1.4 Fort Gordon

Fort Gordon is a 56,000 acre installation located just a few miles southwest of the city of Augusta, GA. The U.S. Army Signal Center and Fort Gordon, "The Home of the Signal Corps," trains more soldiers than any other branch training center of the U.S. Army. The multi-faceted mission of the U.S. Army Signal Center and Fort Gordon encompasses training, doctrine, force integration and mobilization. The Signal Center conducts specialized instruction for all Signal Corps military and Department of the Army civilian personnel, and provides doctrine and training development support of publications. Fort Gordon has a Directorate of Reserve Compo-

nents Support that provides year-round training for more than 30,000 reservists as well as to Army and Navy Reserve Officer Training Corps students.

Camp Gordon was activated for infantry and armor training during World War Two. Camp Gordon became a permanent Army installation and was redesignated Fort Gordon on 21 March 1956. Fort Gordon was redesignated the U.S. Army Signal Center and Fort Gordon on 1 October 1974 and is presently the largest communications-electronics facility in the world.

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.

3.1.5 Fort Jackson

Located in the center of the state of South Carolina, Fort Jackson is the largest and most active Initial Entry center in the U.S. Army, providing training to about 25 percent of the men and women who enter the service each year. In addition to providing Initial Entry Training, Fort Jackson has now become a significant site of professional development for soldiers. With the closure of Fort Benjamin Harrison, Indiana, Fort Jackson gained a number of professional development schools for the Soldier Support Institute (SSI), located at Hampton Parkway and Lee Road. The Institute includes the U.S. Army Adjutant General School, Finance School, Recruiting and Retention School, the Institute's Noncommissioned Officers Academy, and the Training Support Battalion. The SSI completed its move to Fort Jackson as part of the Army's restructuring mission. It is now an integral part of the Fort Jackson military community.

Also, the Army Chaplain School now is at Fort Jackson and the DOD Polygraph Institute now calls Fort Jackson home. Fort Jackson was incorporated into the City of Columbia in October 1968. The installation instructs an average of 55,000 to 65,000 soldiers each year including Basic Training, Advanced Individual Training and all professional schools. The fort encompasses more than 52,300 acres of land. Fort Jackson has nearly 15,000 military personnel and 4,000 civilian employees. The South Carolina National Guard's 218th Regiment is a training regiment located near the east end of Leesburg Road on Fort Jackson (Leesburg Training Center). The regiment's mission is to serve as a training center for Army National Guard and Army Reservists stationed in South Carolina, North Carolina, Georgia, Florida, the Virgin Islands, and Puerto Rico. The regiment operates the Leesburg Training Center (LTC) and the Clarks Hill Training Center (CHTS). LTC includes over 15,000 acres under license to the South Carolina National Guard for weekend and annual unit training.

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 4 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 6,681 acres, and wetland hardwood is the dominant wetland community.

The installation drains into watersheds of the Wateree and Congaree Rivers. There are approximately 190 miles of mostly narrow streams on the installation, and 31 named ponds or reservoirs cover approximately 427 acres.

3.1.6 Fort Polk

Fort Polk is unique in all the Army because it is the only Combat Training Center (CTC) that also has the mission to train and deploy combat and combat support units. From its start as a base for the Louisiana Maneuvers in the 1940s, to a basic training post during Vietnam, to the home of the 5th Mech Division in the 1980s, and its current dual missions as the Joint Readiness Training Center (JRTC) and home of the 2nd Armored

Cavalry Regiment and Warrior Brigade, Fort Polk has executed all of the Army's mission. Each fiscal year, JRTC conducts eight rotations and two Mission Readiness Exercises (MREs). A single rotation consists of 16 days. In addition to the approximately 3,500 troops supporting the brigade, there are also approximately 1,500 troops supporting echelons above division (EAD) units during a normal rotation. These EAD units usually include a combat hospital as well as a corps support group.

A non-MRE rotation generally has three operational phases. First is an insertion and counter-insurgency operation; second is a defense, and third is an attack into a state-of-the-art Military Operations in Urban Terrain (MOUT) complex. The MOUT complex at Fort Polk, LA is 8km x 7km box within the Joint Readiness Training Center's (JRTC) Maneuver Area consisting of a series of villages and tactical objective sites. The Joint Readiness Training Center (JRTC) is the light infantry equivalent of the Army's National Training Center, located at Fort Irwin, CA.

The post consists of two separate land areas, the main post (105,701 acres) and Peason Ridge (32,905 acres). Approximately 39,510 acres of the main post and 479 acres 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 Natural Resources 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.

3.1.7 Fort Stewart

Fort Stewart is ideally situated and resourced to support the training and deployability requirements of the 3d Infantry Division (Mechanized). The reservation's 280,000 acres provide the division's soldiers unequalled training opportunities. Stretching over six counties, Fort Stewart is the largest installation east of the Mississippi River. The reservation can accommodate training for 50,000 reserve component soldiers annually. Rapid deployability of the division is ensured by Fort Stewart's proximity to the port of Savannah and Hunter Army Airfield. Only 40 miles from Fort Stewart and 5 miles from Hunter Army Airfield, the port is easily accessed by an interstate road network and multiple rail lines leading directly to dockside.

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. Over 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.

3.1.8 Sunny Point Military Ocean Terminal

The Sunny Point facility is operated by the 597th Transportation Group, on a 16,000-acre, Army-owned site. The facility, opened in 1955, is the key ammunition shipping point on the Atlantic Coast for the Department of

Defense. The Sunny Point installation, located along NC Highway 133, was built with a large undeveloped buffer zone and huge sand berms for safety.

It provides worldwide trans-shipment of ammunition, explosives, and other dangerous cargo under the command of the 1303d Major Port Command. The terminal has a port with three docks and a temporary holding area for munitions. Population served includes 10 soldiers, 228 civilians, three U.S. Army Reserve Units, plus 42 U.S. Army Reserve Installation Management Agency personnel.

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 7,361 acres of the terminal.

Aquatic habitats are common on the terminal. Sixty-six naturally formed ponds ranging from less than one to twenty acres (106 acres total) occur on the terminal. Forested wetlands (including pocosins) and 897 acres of tidal marshes also occur. There are 6 miles of river frontage along the Cape Fear River.

3.2 Status of Red-cockaded Woodpeckers in the action area

Table 2 shows 2005 RCW population status and 2003 Recovery Plan goals for installations subject to the proposed revision. Population data for 2005 are from installation reports to USFWS presented at the February 2006 annual Army/USFWS RCW meeting. Details on population status and distribution are found in installation ESMCs and annual reports to USFWS and are included in this biological assessment by reference. Population trends on installations implementing the 1996 Army guidelines are shown in Figure 1 of this assessment.

3.3 Other proposed, threatened or endangered species in the action area

Table 3 lists proposed, threatened or endangered species other than RCWs occurring in the action area. This list was provided by the USFWS at the request of the Army initiating consultation for the proposed revision. Installations ESMCs provide information on status and management of other listed species in the action areas and are included in this biological assessment by reference.

Table 2. 2005 population status and recovery goals for installations subject to the proposed revision. Recovery goals are in accordance with 2003 Recovery Plan.

Installation	2005		Recovery Goal
	Active Clusters	PBGs	
Camp Blanding	24	21	25 ^a
Fort Benning	254	191 ¹	350 ^a
Fort Bragg	414	347 ¹	350 ^b
Camp Mackall ²	14	10	100 ^c
Fort Gordon	8	6	25 ^d
Fort Jackson	34	22	126 ^d
Fort Polk	52	43	350 ^e
Peason Ridge ³	37	31	120 ^d
Fort Stewart	283	263	350 ^a
Sunny Point Military Ocean Terminal	6	5	17 ^d
1 Estimated from sample clusters. 2 A sub-installation and under the management authority of Fort Bragg 3 A sub-installation and under the management authority of Fort Polk a 2003 Recovery Plan goal of PBGs for the property. b 2003 Recovery Plan goal of PBGs for the North Carolina Sandhills East Primary Core population that includes the properties of Fort Bragg, Calloway Tract, Carver's Creek Tract, McCain Tract, and Weymouth Woods State Nature Preserve. c 2003 Recovery Plan goal for North Carolina Sandhills West Essential Support population that includes the properties of Camp Mackall and Sandhills Game Lands. d 2003 Recovery Plan estimate of potential number of active clusters that could be supported by the property for "significant and important support populations." e 2003 Recovery Plan goal of PBGs for the Vernon/Fort Polk Primary Core population that includes the properties of Fort Polk and Vernon Unit of Kisatchie National Forest.			

Table 3. USFWS list of proposed, threatened and endangered species occurring in the action area. Gopher Tortoise is threatened in the western portion of its range.

Species Name	Common Name	Status
Mammals		
<i>Myotis grisescens</i>	Gray bat	E
Birds		
<i>Haliaeetus leucocephalus</i>	Bald eagle	T
<i>Picoides borealis</i>	Red-cockaded woodpecker	E
Reptiles		
<i>Drymarchon couperi</i>	Eastern indigo snake	T
<i>Gopherus polyphemus</i>	Gopher tortoise	T
Amphibians		
<i>Ambystoma cingulatum</i>	Flatwoods Salamander	T
Insects		
<i>Neonympha mitchellii francisci</i>	Mitchell satyr butterfly	E
Plants		
<i>Baptisia arachnifera</i>	Hairy rattleweed	E
<i>Echinacea laevigata</i>	Smooth coneflower	E
<i>Lindera melissifolia</i>	Southern spicebush	E
<i>Lysimachia asperifolia</i>	Roughleaf loosestrife	E
<i>Oxypolis canbyi</i>	Canby's cowbane	E
<i>Rhus michauxii</i>	Michaux's sumac	E
<i>Schwalbea americana</i>	American chaffseed	E
<i>Thalictrum cooleyi</i>	Cooley's meadowrue	E
<i>Xyris tennesseensis</i>	Tennessee yellow-eyed grass	E

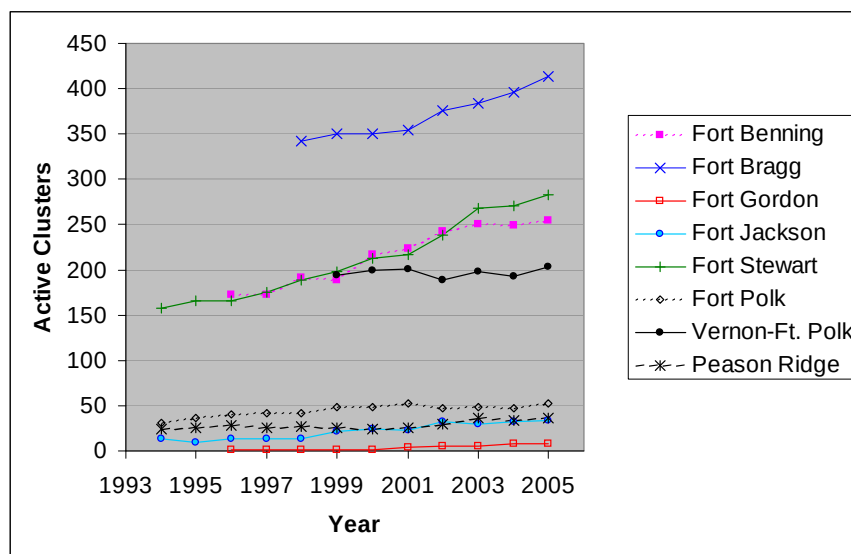


Figure 1. Active cluster trends for RCW populations or subpopulations residing, at least in part, on Army installations, excluding Military Ocean Terminal Sunny Point. From Wagner 2006. Sunny Point was excluded because it does not have an approved ESMC.

4 Analysis of Effects

4.1 Ongoing activities

Installation biological assessments and environmental assessments prepared for implementation of installation ESMCs disclose the effects of implementing ongoing military and natural resource management activities and are included in this biological assessment by reference. These assessments are available to the USFWS for review. The 1996 biological assessment (Hayden 1997) for the 1996 Army guidelines discloses effects of those elements of the programmatic guidance that remain unchanged in the proposed revision and is included in this biological assessment by reference. Research and monitoring subsequent to preparation of the biological assessment for the 1996 Army guidelines have provided additional information on effects on RCWs on installations implementing the 1996 Army guidelines.

Research by Hayden et al. (2002) on Fort Stewart, GA during 1997-1999 indicated that demographic factors (e.g., group size and prior reproductive success) had more effect on RCW reproductive success than habitat and/or disturbance from human activities. Observations of human activity at RCW sites suggested that the probability of disturbance from military training activities in clusters was relatively low in the majority of RCW clusters on Fort Stewart (Figure 2). However, data from a small number of clusters in high-traffic areas on the installation suggest that disturbance exceeding certain levels of activity could be detrimental to RCW reproductive success. Population viability modeling indicated that potential disturbance effects in this small proportion of the population had negligible effect on the viability of the Fort Stewart RCW population (Figure 3). These results indicated that current Fort Stewart management practices successfully mitigated variance in reproductive parameters that might be attributed to effects of habitat. This study did not find any significant association between habitat factors and cluster occupancy or reproductive success in monitored clusters. These findings were consistent with the aggressive habitat management in practice at Fort Stewart over the past several years in accordance with Army guidance for habitat management. These results indicated that aggressive management can minimize habitat as a limiting factor on RCW populations. Continuing these management practices in accordance with guidance under the proposed revision and the 2003 Recovery plan in HMUs will continue to reduce potential limits on RCW

populations due to habitat. Demographic factors (group size and prior reproductive success) have the most discernible relationship to RCW reproductive success on Fort Stewart. Demographic limitations on populations are more difficult to ameliorate through direct management intervention than habitat management practices. However, providing the necessary conditions such as adequate cavity availability and minimizing cluster isolation in accordance with the proposed guidelines revision and the 2003 Recovery Plan will be supportive of desirable demographic profiles. During the time period of this study (1997-1999) training restrictions in effect on Fort Stewart were in accordance with the 1994 "Management Guidelines for RCWs on Army Installations." These restrictions essentially prohibited mechanized maneuver training activities within 200 ft of cavity or start trees except on maintained roads and trails. Adherence to these restrictions was reflected in observations of training activity in proximity to RCW clusters during 1997-1999. The minimal effect of maneuver training activities during this period was observed in the context of operations under these training restrictions.

Research by Delaney et al. (2002) recorded flush rates of RCWs from cavities at eight clusters during 1998–2000 at Fort Stewart. A total of 58 vehicle pass events were observed to occur within 15 m –50 m of nest trees and only two flush events were recorded. In both cases the birds returned to the nest cavity within 10 minutes after the vehicles passed. These data, though very limited, suggest that RCWs return to nest cavities relatively quickly after vehicle passage within 50 m if they leave the cavity at all.

Delaney et al. (2002) also examined flush rates and reproductive success of nesting RCW groups experimentally exposed to artillery/grenade simulators and 0.50 caliber machine gun fire at 15-244 m from nest trees at Fort Stewart during 1998–2000. Flush rate was observed to increase with reduced stimulus distance. However, the authors found that noise events did not significantly affect RCW nesting success or productivity.

Driver et al. (2002) exposed red-winged blackbirds (*Agelaius phoeniceus*), surrogates for RCWs, to a range of fog oil smoke at concentrations up to about 400 mg/m³, a worst-case exposure scenario for birds remaining in close proximity to a generating system for extended periods (up to 4 hrs). Mortality, body weight loss, clinical signs of toxicity, and behavioral abnormalities were not different between control (no exposure) and fog oil-treated birds. In addition, the amount of fog oil deposited to feathers was also below hypothermic threshold doses for petroleum oil, and no impact

of fog oil deposition on feather function (thermal insulation, water repellency, flight) and subsequent body weight and carcass condition was observed.

Driver et al. 2003 exposed house sparrow (*Passer domesticus*) eggs and nestlings to fog oil concentrations up to 450 mg/m³ for 30 minutes during sensitive periods of embryonic and nestling development. That exposure did not adversely impact hatchability of house sparrow eggs or the fledgling success and survivability of sparrow young. The authors concluded that normal military use of fog oil smoke does not appear to be hazardous to the eggs or nestlings of bird species, such as the RCW, that have young born helpless and totally dependent on parental care (i.e., altricial).

Overall, installations implementing the 1996 Army guidelines have demonstrated RCW population growth. Wagner (2006) in the biological assessment for Fort Polk's implementation of the 1996 Army guidelines performed an analysis of population growth rates for installations implementing the 1996 Army guidelines. Figure 1 (from Wagner 2006) shows the number of active clusters for the years reported by installations during their annual meeting with the USFWS in February 2006. Wagner's (2006) estimate of population growth rates over the years reported are shown in Table 4. Estimated growth rates were positive for all years reported and for the period 2004-2005. These data indicate that current activities do not negatively affect RCW populations overall on installations implementing the 1996 Army guidelines.

Based on these analyses and data, ongoing activities under the proposed revision that do not reflect changes of the 1996 Army guidelines are not likely to adversely affect RCW populations on installations implementing the proposed revision. This determination is made under the assumption that no significant changes in military mission activities or natural resource management practices, other than those identified in this assessment, will occur on subject installations. Major Federal actions on subject installations such as those potentially associated with Base Realignment and Closure recommendations likely will require installations to consult on those new activities.

4.2 Changes to clarify actions, terms and definitions

Changes under the proposed revision to clarify actions, terms and definitions were made to resolve ambiguities in interpretation of requirements under the 1996 Army guidelines and provide consistency in terms and

definitions between the proposed revision and the 2003 Recovery Plan. One significant ambiguity associated with the 1996 guidelines was whether clusters in designated impact areas could be counted toward installation population goals. These clusters function demographically within installation populations, and the proposed revision clarifies that these clusters can be counted toward recovery goals if they meet criteria for monitoring and management in accordance with the 2003 Recovery Plan and the proposed revision. These changes are not likely to adversely affect RCW populations on installations implementing the proposed revision.

4.3 Changes to provide consistency with current army policy, regulations and management structure

Changes under the proposed revision were made to bring Army guidance up-to-date with current Army policy and regulations. Changes were also made to clarify roles and responsibilities under current Army management structure and chain of command. These actions do not affect the implementation of RCW management recommendations and are not likely to adversely affect RCW populations on installations implementing the proposed revision.

4.4 Changes to provide consistency with the USFWS 2003 Red-cockaded Woodpecker recovery plan

Guidance for population and habitat surveys and monitoring, habitat management, and translocation is updated in the proposed revision to bring Army guidance in accord with guidance provided by the 2003 Recovery Plan. The 2003 Recovery Plan incorporates the input from leading experts representing multiple Federal, state, and non-governmental agencies on the “best practices” for RCW management, conservation and recovery. The 2003 Recovery Plan represents the “best scientifically and commercial data available” for management of RCW populations and habitats. Guidance in the proposed revision that is in accordance with 2003 Recovery Plan is not likely to adversely affect RCW populations on installation implementing the proposed revision and will assist in conservation, management and recovery of the RCW.

4.5 Proposed reduction in training restrictions associated with increasing RCW populations on Army installations

Under the 1996 Army guidelines recruitment clusters where training restrictions were in effect were designated “primary recruitment clusters”

(PRCs) and recruitment clusters that were not subject to training restrictions were designated “supplemental recruitment clusters” (SRCs). Under the 1996 Army guidelines transient vehicle and dismounted soldier transit and some associated training activities (e.g., weapons fire, see Appendix 1 of the 1996 Army guidelines for details) under 2 hrs duration were allowed in PRCs (“protected clusters” in the proposed revision).

In SRCs (“unprotected clusters” in the proposed revision) activities greater than 2 hrs duration were allowed. This would include all activities listed in Appendix 1 of the 1996 Army guidelines that were not allowed in PRCs. The potential effects of these activities are discussed in paragraph 4.1, above and in the 1996 biological assessment (Hayden 1997) for the 1996 guidelines. In general, the determination is that while individual clusters subject to high levels of training activity in proximity and within buffer zones may be negatively affected, the majority of clusters on the landscape are not subject to equivalent high-levels of training activity.

The apparent ability of RCWs to adapt to moderate levels of human disturbance and the non-random distribution of training activity across the landscape (Hayden 1997, Hayden et al. 2002) indicates that training activity and protection measures under the 1996 Army guidelines have not limited population growth, as indicated by RCW population growth on installations implementing the 1996 Army guidelines (Figure 1, Table 4).

Under the proposed revision training activities allowed in protected and unprotected clusters remain the same, with the exception that some activities, including refueling points, generators, smoke generators, smoke pots, and mechanical digging are excluded from all clusters in the proposed revision unless specifically authorized in consultation with USFWS.

However, under the proposed revision, for installations with ≥ 250 PBGs there would be a significant increase in the number of clusters not subject to training restrictions as specified in Appendix 1 of the proposed revision. Paragraph V.C.2.b of the proposed revision includes a table showing the potential number of clusters with training restrictions removed (in addition to currently negotiated numbers of SRCs under current installation ESMCs) at different population levels above 250 PBGs. Some clusters may be subject to increased levels of training activities greater than 2 hrs in duration and subject to the potential effects disclosed in paragraph 4.1, above and the 1996 biological assessment (Hayden 1997) for the 1996 Army guidelines. Potential adverse effects include increased behavioral distur-

bance, decreased recruitment (i.e., group size), reproduction and mate acquisition, and habitat disturbance.

Hayden et al. (2002) monitored training activity in proximity to RCW clusters during 1997-99, and found that high levels of disturbance were associated with a relatively small proportion of clusters (Figure 2). Although data analyzed by Hayden et al. (2002) indicated lower fecundity in clusters with the highest level of associated human activity, the relative small proportion of these clusters in the population (< 10 percent) did not significantly alter extinction risk at 10, 20, or 100 yrs as indicated in population viability analyses (Figure 3). Under current force structures and mission requirements it is not anticipated that overall frequency or intensity of training activity will be significantly altered with respect to RCW populations.

The distribution of military activities relative to clusters may be altered from that observed by Hayden (2002) as areas are freed under the proposed revision from access constraints related to presence of RCWs. Under such a scenario it would be anticipated that some clusters may be subject to increases in training activity from current levels, while clusters with currently high levels of training activity may have less disturbance as military training activities become more broadly distributed across the landscape. However, the distribution of training activity is likely to be driven more by factors other than RCW protected status such as proximity to facilities and ranges, available road networks, and overall troop levels and mission requirements. Based on these data, it is not anticipated that the proportion of clusters subject to high levels of training activity will significantly increase under the proposed revision.

Until recent years, installations implementing the 1996 Army guidelines have not had sufficient numbers of unprotected clusters to evaluate differences in reproduction and cluster status between protected and unprotected clusters. Fort Stewart and Fort Bragg currently have the most robust and longest-term data sets for comparing cluster status and fecundity in protected and unprotected clusters.

For this assessment, Fort Stewart data for PRCs (protected) and SRCs (unprotected) were analyzed for the years 2004-2006 to evaluate differences in demographic parameters identified in paragraph V.C.2.e.(1) of the proposed revision (Appendix B). Earlier years were not analyzed because of low sample sizes and differences in when PRCs versus SRCs were estab-

lished. Comparisons between PRCs and SRCs were made for proportion of clusters that were active, proportion of active clusters with PBGs, proportion of PBGs with nest attempts, number of adults per PBG, and number of young fledged per PBG with nesting attempts.

Table 5 summarizes frequency data for proportion of active clusters, PBGs in active clusters and nest attempts by PBGs in PRCs and SRCs. There was no significant difference in the proportion of active clusters in PRCs and SRCs when controlled by year (Mantel-Haenszel chi-square = 1.241, $p = 0.265$). For all years combined, the percentage of active clusters in SRCs (59.6%, $n = 166$) was somewhat lower than in PRCs (65.7%, $n = 216$). There was no significant difference in the proportion of PBGs in active clusters when controlled by year (Mantel-Haenszel chi-square = 0.000, $p = 0.988$). For all years combined, the percentage of PBGs in active clusters was nearly equivalent in SRCs (81.8%, $n = 99$) and PRCs (81.0%, $n = 142$). There was no significant difference in the proportion of nest attempts in clusters with PBGs when controlled by year (Mantel-Haenszel chi-square = 2.466, $p = 0.116$). For all years combined, percentage of nest attempts by PBGs in SRCs (82.7%, $n = 81$) was lower than in PRCs (91.3%, $n = 115$).

An analysis of variance was performed for the main effects and interaction of year and protected status (PRCs versus SRCs) on number of adults in clusters with PBGs. There was no significant effect of protected status ($F_{1,196} = 0.002$, $p = 0.968$; Figure 4), year ($F_{2,196} = 1.603$, $p = 0.204$), or the interaction of year and protected status ($F_{2,196} = 1.365$, $p = 0.258$) on the number of adults. Table 6 shows summary statistics for number of adults per PBG by year.

An analysis of variance was performed for the main effects and interaction of year and protected status (PRCs versus SRCs) on number of fledglings per PBG with nesting attempts. There was no significant effect of protected status ($F_{1,172} = 1.539$, $p = 0.216$; Figure 5) or the interaction of year and protected status ($F_{2,172} = 0.984$, $p = 0.376$) on the number of fledglings. There was a significant effect of year ($F_{2,172} = 7.273$, $p = 0.001$) on the number of fledglings. Table 6 shows summary statistics for number of young fledged per PBG with nest attempts by year. These results suggest that environmental and/or ecological factors were more important during these years in determining fledging rates than status of military restrictions.

On Fort Bragg for the years 2002-06, the proportion of active clusters in SRCs was higher than in PRCs in all years (Table 7) and this difference was

significant when controlled for year (Mantel-Haenszel chi-square = 9.657, $p = 0.002$). There was no significant difference in the proportion of PBGs in active clusters (Table 7) when controlled for year (Mantel-Haenszel chi-square = 0.000, $p = 0.988$). Fort Bragg biologists analyzed yearly differences (2-tail t-test assuming unequal variances with bonferroni correction) in the mean number of adults per PBG and the mean number of young fledged per first nest attempt by PBGs with nest attempts between SRCs and PRCs (Table 8). The only statistically significant difference found was for number of young fledged in 2002 ($t\text{-test}_{20,22} = 2.086$, p 2-tailed = 0.001). There was no consistent trend across years in the number of young fledged. The number of adults per PBG was consistently lower across years in SRCs versus PRCs, but there was no statistically significant difference in any year.

Distribution of protected and unprotected clusters on both Fort Stewart and Fort Bragg were not randomly allocated and were designated based on considerations of military training requirements and habitat availability and distribution, which could contribute to differences between the installations.

On Marine Corps Base Camp Lejeune, NC, Walters (2005) and Perkins (2006) compared effects of military training on RCW demography and behavior between clusters with restrictions similar to those on Army lands under the proposed revision and clusters with no training restrictions during the years 2001-2005. Military training activities on Camp Lejeune are similar to those conducted on Army installations subject to the proposed revision including training by mechanized and dismounted infantry units. Walters and Perkins implemented a research design that paired 19 control (protected) clusters with 19 treatment (unprotected) clusters, which helps control for variances that might be attributable to the non-random distribution of protected and unprotected clusters reported for Fort Stewart and Fort Bragg, above.

Walters and Perkins found no difference between protected and unprotected clusters in 13 of 15 demographic and behavioral variables. Protected clusters averaged significantly longer incubation bouts but suffered significantly higher rates of partial brood loss, which is a result that is counter to what might be predicted from potential disturbance effects in unprotected clusters. Overall, there was no evidence that lack of training restrictions affected reproductive success in clusters evaluated in studies on Camp Lejeune. A limitation of this study is that the level of training ac-

tivity in the protected and unprotected clusters was not quantified during the period of the study, so it is unknown whether levels of training were in fact different between the two experimental groups. Walters also reports a consistent increase in RCW populations on Camp Lejeune during the period 1986-2005.

The proposed revision incorporates several actions to avoid or minimize adverse effects resulting from reducing training restrictions in clusters. First, and likely most importantly, reduction of restrictions is dependent on population increase. Second, population decreases meeting criteria of the 2003 Recovery Plan and incorporated in the proposed revision will require reinitiation of consultation with USFWS. Third, annual monitoring and reporting of data for unprotected and protected clusters similar to that reported for Fort Stewart in this assessment will provide Army natural resource managers and USFWS early indication of any potential adverse effects. Finally, continued aggressive habitat management practices in accordance with guidance of the 2003 Recovery Plan and the proposed revision will help provide optimum habitat and demographic conditions for continued growth and sustainability of RCW populations on Army installations implementing the proposed revision.

The analyses provided above and the mitigating factors indicate that while reducing training restrictions is likely to result in adverse effects on individual RCWs, there likely will be negligible effect overall on RCW populations under current training patterns. If those training patterns are significantly changed, installations will consult to determine potential effects of those changes.

4.6 Effects on other proposed threatened or endangered Species

Table 3 provides a list of threatened and endangered species that USFWS has identified as occurring in the action area of the proposed revision. The proposed revision represents the Army's programmatic guidance specifically for management of the RCW. Implementation of the proposed revision does not supersede requirements of the Endangered Species Act, National Environmental Policy Act, or AR 200-3, Chapter 11 for other listed species occurring on Army Lands.

Individuals of other listed species with occurrences in RCW habitats may be adversely affected by disturbance from increased access for military training activities in unprotected RCW clusters under the proposed revision. As disclosed in the 2003 Recovery Plan and in the biological assess-

ment of the 1994 Army RCW guidelines (Hayden 1994), habitat management practices for RCW (e.g., prescribed burning and silvicultural prescriptions) generally support ecosystem management objectives and likely will have a net benefit for listed species occurring in RCW habitats. A report by Jordan et al. (1997) evaluates effects of RCW management on Army lands on other listed species and is included in this biological assessment by reference.

Installations cannot conduct any significant Federal actions or make a commitment of resources that may affect other listed species until installation ESMCs are revised in accordance with the proposed revision and approved in consultation with USFWS. Installations will be required to determine effects and avoid unauthorized “take” of other listed species in consultation with USFWS for any implementing actions of revised ESMCs that are in accordance with the programmatic guidance of the proposed revision.

4.7 Cumulative effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological assessment. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation under Section 7 of the ESA. Future state, tribal, local or private actions on installations subject to the proposed revision will be considered in installation consultations on revisions of ESMCs to incorporate this programmatic guidance.

Table 4. Trends and current size of RCW populations or subpopulations residing, at least in part, on Army installations (from Wagner 2006).

Population	ESMC Approved	# Active Clusters in 2005	Years with Data	% Change in # of Active Clusters over Data Period	% Change in # of Active Clusters over last 5 yrs (Multi-year λ)	% Change in # of Active Clusters from 2004 in 2005 (Annual λ)
Fort Benning	2002	254	1996-2005	1.051	1.047	1.020
Fort Bragg	1997	414	1998-2005	1.028	1.030	1.045
Fort Gordon	2002	8	1998-2005	1.116	1.300	1.000
Fort Jackson	2000	34	1994-2005	1.121	1.084	1.063
Fort Polk	2003	52	1994-2005	1.037	1.005	1.106
Fort Stewart	2001	283	1994-2005	1.059	1.065	1.044
Peason Ridge	2003	37	1994-2005	1.034	1.079	1.088
Sunny Point	Unknown	6	2005	ND	ND	ND
Vernon-Fort Polk Population	NA	204	1999-2005	1.002	1.002	1.057

Table 5. Frequency of active clusters, PBGs in active clusters, and nest attempts by PBGs in “Primary Recruitment Clusters” (PRCs, protected clusters) versus “Supplemental Recruitment Clusters (SRCs, unprotected clusters) on Fort Stewart, GA during 2004-06.

Year	Active Clusters				PBGs				Nest Attempts			
	PRC		SRC		PRC		SRC		PRC		SRC	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
2004	64.6	(65)	60.9	(46)	76.2	(42)	71.4	(28)	87.5	(32)	90.0	(20)
2005	69.6	(69)	55.2	(58)	91.7	(48)	87.5	(32)	90.9	(44)	82.1	(28)
2006	63.4	(82)	62.9	(62)	75.0	(52)	84.6	(39)	94.9	(39)	78.8	(33)
All Years	65.7	(216)	59.6	(166)	81.0	(142)	81.8	(99)	91.3	(115)	82.7	(81)

Table 6. Summary statistics for mean number of adults per PBG and mean number of fledglings per PBG with nest attempts on Fort Stewart, GA during 2004-06.

Year	Number of Adults						Number of Fledglings					
	PRC			SRC			PRC			SRC		
	Mean	SE	(n)	Mean	SE	(n)	Mean	SE	(n)	Mean	SE	(n)
2004	2.28	0.092	(32)	2.20	0.092	(20)	1.50	0.209	(28)	2.00	0.181	(18)
2005	2.32	0.078	(44)	2.50	0.121	(28)	1.07	0.173	(40)	1.00	0.209	(23)
2006	2.33	0.076	(39)	2.24	0.107	(33)	1.51	0.158	(37)	1.69	0.213	(26)

Table 7. Frequency of active clusters and PBGs in active clusters in “Primary Recruitment Clusters” (PRCs, protected clusters) versus “Supplemental Recruitment Clusters (SRCs, unprotected clusters) on Fort Bragg, NC during 2002-06.

Year	Active Clusters				PBGs			
	PRC		SRC		PRC		SRC	
	%	(n)	%	(n)	%	(n)	%	(n)
2002	95.2	(21)	100	(16)	75.0	(20)	62.5	(16)
2003	56.3	(48)	81.0	(21)	77.8	(27)	82.3	(17)
2004	77.5	(40)	95.7	(23)	80.6	(31)	77.3	(22)
2005	82.6	(46)	95.5	(22)	86.8	(38)	90.5	(21)
2006	82.3	(51)	95.5	(22)	92.9	(42)	90.5	(21)

Table 8. Summary statistics for mean number of adults per PBG and mean number of fledglings per PBG with nest attempts on Fort Bragg, NC during 2002-06.

Year	Number of Adults				Number of Fledglings			
	PRC		SRC		PRC		SRC	
	Mean	(n)	Mean	(n)	Mean	(n)	Mean	(n)
2002	2.57	(14)	2.22	(9)	2.23	(13)	0.56	(9)
2003	2.60	(20)	2.23	(13)	1.65	(17)	1.36	(11)
2004	2.54	(24)	2.44	(16)	1.64	(22)	1.57	(14)
2005	2.63	(32)	2.44	(18)	1.83	(23)	2.07	(15)
2006	2.68	(38)	2.67	(18)	2.00	(38)	1.44	(18)

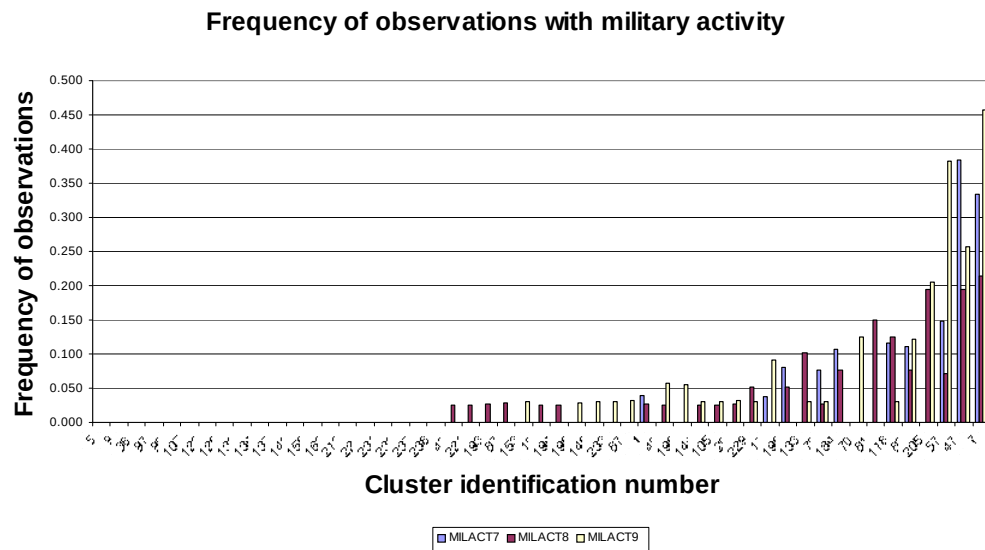
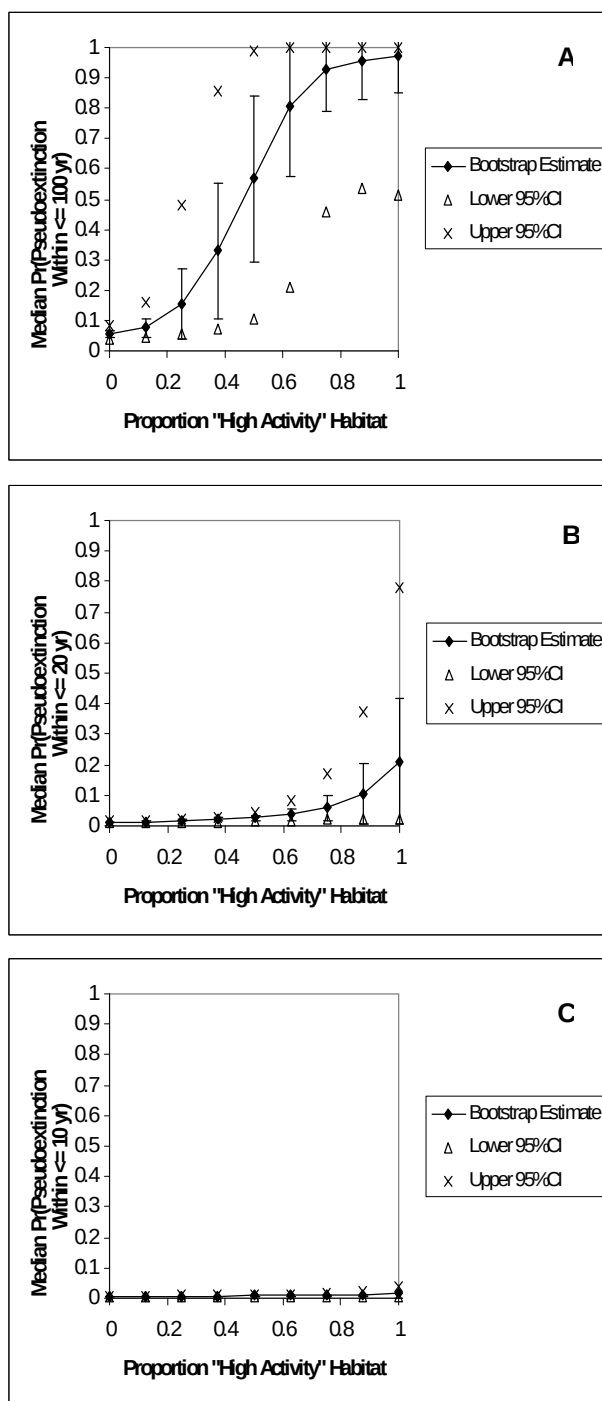


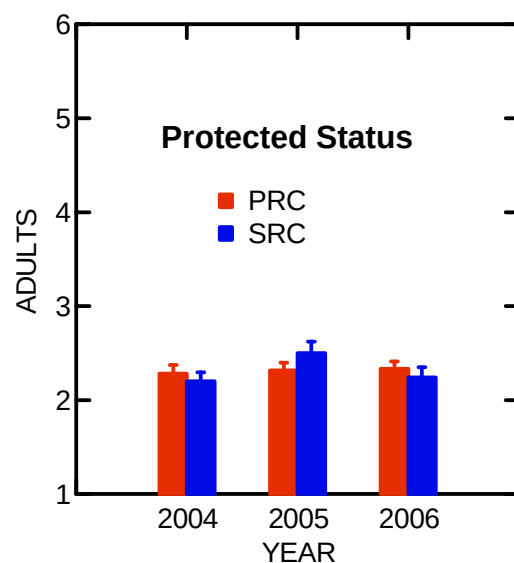
Figure 2. Proportion of observed military activity in proximity to RCW clusters during 10-minute sample observations at Fort Stewart during 1997-98 (from Hayden et al. 2002). Clusters are ordered on the x-axis by average proportion of military observations of activity over the 3-yr period.



Error bars denote 1 bootstrap standard error.

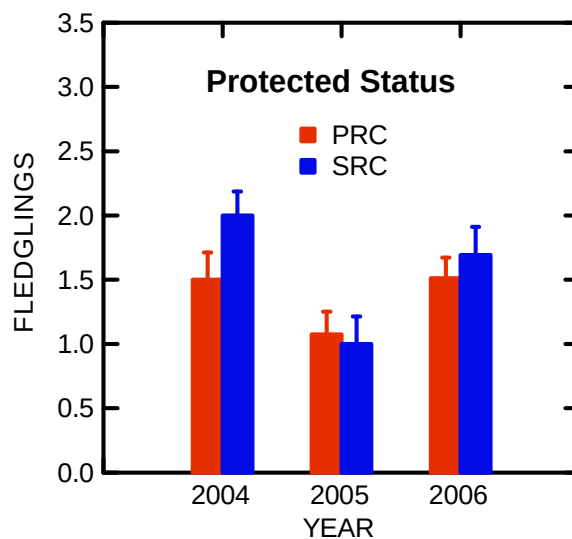
“CI” denotes bootstrap percentile confidence interval.

Figure 3. Estimated pseudoextinction probabilities for the Red-cockaded Woodpecker population on Fort Stewart within (A) 100 yrs, (B) 20 yrs, and (C) 10 yrs, when different hypothetical proportions of the habitat are assumed to be “high activity” habitat (from Hayden et al. 2002).



PRC = Primary Recruitment Clusters, which were subject to training restrictions.
SRC = Supplemental Recruitment Cluster, which were not subject to training restrictions.
Error bars are standard error.

Figure 4. Mean number of adults per potential breeding group (PBG) on Fort Stewart, GA during 2004-06.



PRC = Primary Recruitment Clusters, which were subject to training restrictions.
SRC = Supplemental Recruitment Cluster, which were not subject to training restrictions.
Error bars are standard error.

Figure 5. Mean number of fledglings per potential breeding group (PBG) with nests on Fort Stewart, GA during 2004-06.

5 Conclusion

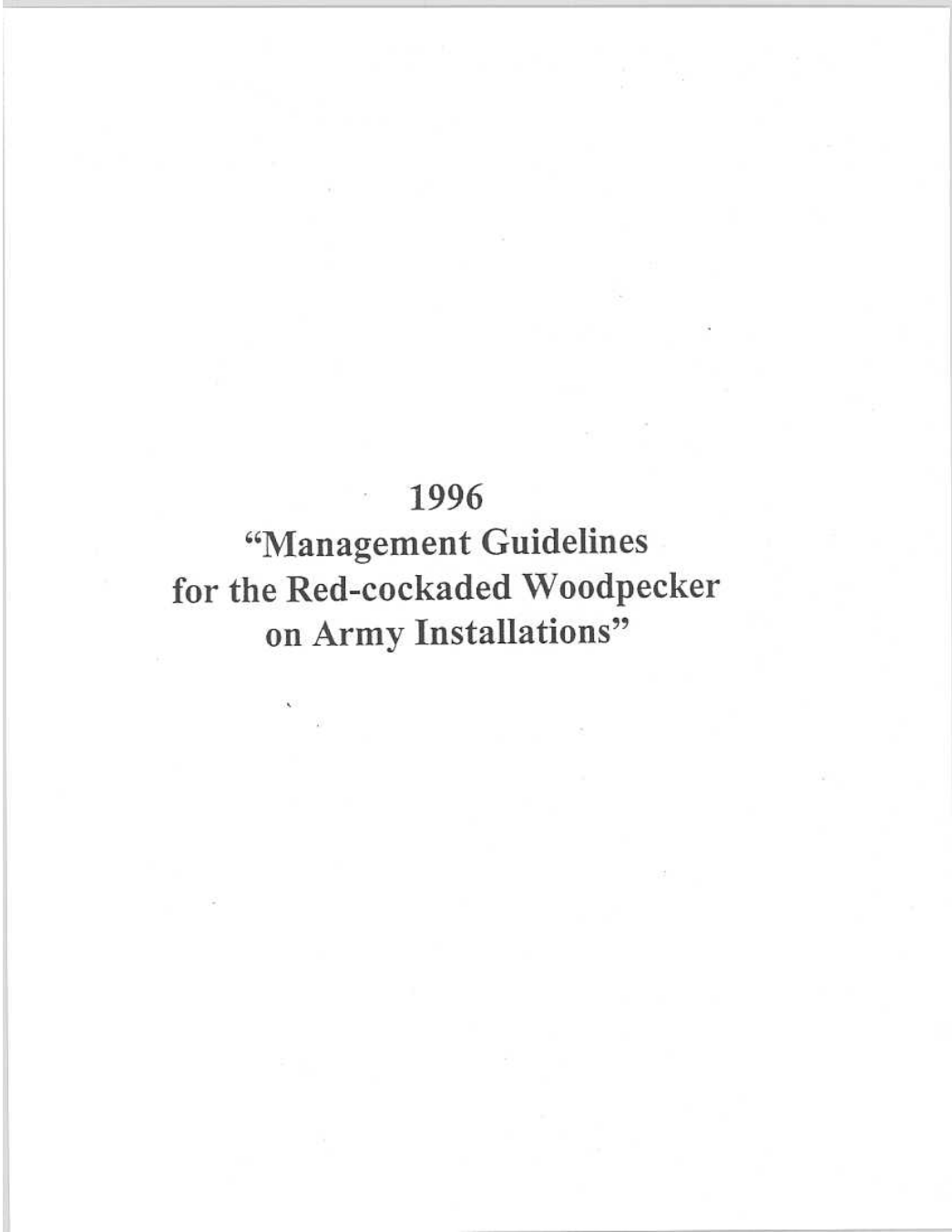
This biological assessment determines that, based on available knowledge, implementing the proposed revision to the 1996 “Management Guidelines for RCWs on Army Installations” may affect the endangered RCW. Some individual RCWs are likely to be adversely affected because of greater training activity and resulting disturbance in some RCW clusters under the proposed revision. However, at the population level, this programmatic guidance is expected to support conservation and recovery objectives for RCW populations on Army installations where this guidance is implemented. Individuals of other listed species with occurrences in RCW habitats may also be adversely affected by increased training activity in some areas under the proposed revision. However, RCW habitat management activities under the proposed revision will likely have a net benefit for other listed species occurring in RCW habitats. Installations that implement actions in accordance with this programmatic guidance will be required to address effects on listed species in consultation with USFWS. If installations determine that “take” of listed species may occur as a result of implementing actions under the proposed revision, then the potential take will require authorization through formal consultation with USFWS.

The conclusions of this biological assessment are dependent on full implementation of all provisions of the proposed revision including habitat management prescriptions, monitoring requirements, and mitigation prescriptions. Significant changes in mission requirements or staffing from the baseline presented in this biological assessment would require additional consultation by installations. Fully implemented, it is anticipated the proposed revision will meet conservation objectives for the RCW, assist species recovery, fulfill regulatory requirements of the ESA, and alleviate current restrictions on military training.

References

- Delaney, D. K., L. Pater, R. Dooling, B. Lohr, B. Brittan-Powell, L. Swindell, T. Beaty, L. Carlile, E. Spadgenske, B. MacAllister, and R. Melton. 2002. Assessment training noise impacts on the red-cockaded woodpecker: 1998-2000. ERDC/CERL Technical Report 02/32, Champaign, IL: Construction Engineering Research Laboratory (CERL).
- Driver, C., M. Ligothe, H. Galloway-Gorby, G. Dennis, K. Reinbold, and H. Balbach. 2002. Acute inhalation toxicity of fog oil smoke in the red-winged black-bird, a size-specific inhalation surrogate for the red-cockaded woodpecker. ERDC/CERL TR-02-6, Champaign, IL: CERL.
- Driver, C., J. Ollero, Y. Fong Su, R. Fulton, G. Dennis, B. Tiller, H. Balbach, and K. Reinbold. 2003. Effects of fog oil smoke on the hatchability and fledgling survival of the house sparrow, a nestling surrogate for the red-cockaded woodpecker. ERDC/CERL TR-02-34, Champaign, IL: CERL.
- Hayden, T. J. 1994. Biological assessment of Army-wide management guidelines for the red-cockaded woodpecker. USACERL Special Report EN-94/03, Champaign, IL: CERL.
- Hayden, T. J. 1997. Biological assessment of the effects of the proposed revision of the 1994 "Management guidelines for the red-cockaded woodpecker on Army installations." USACERL Special Report 97/48, Champaign, IL: CERL.
- Hayden, T. J., R. H. Melton, B. Willis, L. B. Martin III, and T. Beaty. 2002. Assessment of effects of maneuver training activities on red-cockaded woodpecker populations on Fort Stewart, Georgia. ERDC/CERL Technical Report TR-02-17, Champaign, IL: CERL.
- Jordan, R. A., K. S. Wheaton, W. M. Weiher, and T. J. Hayden. 1997. Integrated endangered species management recommendations for Army installations in the southeastern United States. USACERL Special Report 97/94. Champaign, IL: CERL.
- Perkins, J. L. 2006. Effects of military training activity on red-cockaded woodpecker demography and behavior. Masters Thesis, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- U.S. Fish and Wildlife Service. 2003. Recovery Plan for the red-cockaded woodpecker (*Picoides borealis*): 2d rev. U.S. Fish and Wildlife Service, Atlanta, GA.
- Wagner, R. O. 2006. EA-biological evaluation/biological assessment for environmental assessment for the implementation of the 1996 red-cockaded woodpecker Army guidelines on the USDA Forest Service Calcasieu Ranger District and Fort Polk, Louisiana. Submitted to Fort Polk Environmental and Natural Resources Division and Kisatchie National Forest by Quantitative Ecological Services, Inc.
- Walters, J. R. 2005. An experimental study of the impacts of military training activities on red-cockaded woodpeckers on Marine Base Camp Lejeune: 2005 update. Contractor Report submitted to Fish and Wildlife Division, Camp Lejeune, NC.

Appendix A: 1996 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations”



1996
“Management Guidelines
for the Red-cockaded Woodpecker
on Army Installations”

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

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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 200-3, Natural Resources - 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. Goal. The Army's goal is to implement management guidelines which will allow the Army 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 200-3 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 200-3.

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

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is not required. Issue resolution through informal consultation is the preferred method of consultation.

C. When 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. Mission considerations are necessary in determining the installation management and recovery goals. 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 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.

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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 a portion of the other is located on adjacent or nearby non-Army land. The FWS and 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. The FWS and 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 installation RCW population goals 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 goals. The goals will also dictate the required management intensity level. Next, installations must develop an ESMP to attain and sustain the installation RCW population goals in accordance with chapter 11, AR 200-3. Fourth, 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 female, from one active cluster to another active cluster.

Basal area (BA) - The cross-sectional area (in 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.

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Buffer zone - The zone extending outward 200 feet from a cavity tree or cavity start tree in an active or primary recruitment 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 - (formerly called "colony") - The aggregate area encompassing cavity trees occupied or formerly occupied by an RCW group plus a 200 foot buffer area.

Effective breeding pairs - Groups that successfully fledge young.

Group - (formerly called "clan") - A social unit of one or more RCWs that inhabits a cluster. 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 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.

Population goals - A desired RCW population. For purposes of these guidelines, terms for three types of population goals may be relevant to developing an installation's ESMP:

1. Recovery population goal - The number of groups required in a physiographic region to ensure recovery of the RCW in that region.

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2. Installation Regional Recovery Goal - The number of groups which FWS identifies as the installation's potential contribution toward meeting the recovery population goal.

3. Installation Mission Compatible Goal - The number of training-restricted clusters which the installation identifies as currently compatible with the installation's on-going operations, suitable habitat, and missions considering its conservation responsibilities.

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.

Recruitment cluster - A cluster site designated and managed for the purpose of attracting a new breeding group to that habitat. Installations may have two types of recruitment clusters:

1. Primary recruitment cluster - A recruitment cluster managed for the purpose of attracting the growth of additional RCW groups toward meeting the Installation Mission Compatible Goal; generally applicable training restrictions will apply to recruitment clusters.

2. Supplemental recruitment cluster - A recruitment cluster managed for the purpose of attracting the growth of additional RCW groups over and above the mission compatible goal needed for the installation to reach the Installation Regional Recovery Goal; training restrictions will never apply to supplemental recruitment clusters.

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.

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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.

Suitable acreage - installation acreage determined to be currently suitable for occupation by RCWs based upon vegetation and dominant land uses and acreage potentially suitable for occupation by RCWs through reasonable and practicable management practices - for example, acreage with severe mid-story encroachment would be considered as potentially suitable acreage and therefore suitable acreage; however, urban-type areas, the cantonment, impact areas, or areas free of vegetation, such as drop-zones, field landing strips, or gun positions, would not be considered suitable or potentially suitable acreage.

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. Installations will update ESMPs every five years or when circumstances dictate.

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 currently and potentially suitable for RCW nesting and foraging habitat.
3. Establish the installation RCW population goal(s) with the FWS according to the guidance in B below.

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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 on the installation where conflicting mission requirements could be relocated to avoid RCW habitat.
7. Identify critical mission areas where activities cannot reasonably be relocated.
8. Identify areas which could support RCW augmentation or translocation.
9. Identify areas suitable for RCW habitat and free of conflicting present and projected mission activities. These are prime areas for designation as recruitment stands.
10. Analyze the information developed above using the guidance contained in these guidelines.
11. Prepare the RCW ESMP to implement the best combination of options, consistent with meeting the established RCW population goals, while minimizing adverse impacts to training readiness and other mission requirements.

B. RCW Population Goals.

1. The first step in RCW management is to determine the Installation Regional Recovery Goal and Installation Mission Compatible Goal in accordance with paragraph V.B.2 below. Once the goals are established, they will be used to designate the amount of land needed for RCW HMUs and the appropriate level of management intensity. Goals should be considered long-term but are subject to change, through consultation with the FWS, based upon changing circumstances, changing missions, or new scientific information. In conjunction with the 5 year review of ESMPs, installations will reexamine population goals to reflect changing conditions.
2. ESMPs must clearly state the installation RCW population goals. The goals will be established through informal or formal consultation with FWS using the following methodology:
 - a. Installation Regional Recovery Goal. Through consultation with FWS determine the installation "share" of the recovery population goal.

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- (1) Determine the number of active clusters required in the population to achieve recovery.
- (2) Count RCW groups on other federal, state or private lands that are demographically functioning as part of the regional population as contributing to the overall regional recovery goal.
- (3) Determine the installation's carrying capacity to support RCWs based upon suitable acreage and known ecosystem attributes..
- (4) Any deficit between steps (1) and (2), considering the limitations of step (3), will be considered the installation's potential contribution toward the overall recovery goal and will be termed, for ESMP purposes, the Installation Regional Recovery Goal.

b. Installation Mission Compatible Goal. The installation will determine its known capacity to integrate RCW management with on-going and planned mission requirements and dominant land uses. During this process, the installation will seek input from FWS.

- (1) Determine suitable acreage.
- (2) Determine the installation carrying capacity to support RCWs , the calculation of suitable acreage, known ecosystem attributes, and acreage required as exempt for critical and essential mission requirements. Installations may only exempt acreage as essential for mission requirements when, considering their conservation responsibilities under the Endangered Species Act, they determine that imposing generally applicable training restrictions upon such certain specific lands would unacceptably hinder mission accomplishment. The mission compatible goal should be carefully calculated considering the current and future installation and tenant unit missions, the amount and distribution of suitable habitat on the installation, the quality of the habitat, the distribution of clusters, the configuration of sub-populations, the recovery potential and the RCW Recovery Plan objectives, etc. The Installation Mission Compatible Goal should strike a reasonable balance between the present and future installation and tenant unit missions and the installation's duty to conserve the endangered species.

c. ESMP goals. If the Installation Regional Recovery Goal is less than the Installation Mission Compatible Goal, then the installation will use the Installation Regional Recovery Goal as the ESMP Goal. If the Installation Regional Recovery Goal is greater than the Installation Mission Compatible Goal, then the installation will use both goals in the ESMP. The installation ESMP will include maps for planning and future reference which show the configuration of all active clusters and primary recruitment clusters required to reach the Installation Regional Recovery Goal. These maps will also show the supplemental recruitment

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clusters scheduled for management in the 5-year planning period. These maps will be updated during the 5-year revision process. If the number of recruitment sites identified in the initial 5-year plan falls short of the Installation Regional Recovery Goal, the installation will also identify the additional habitat management areas where supplemental recruitment clusters will be added to meet this goal. Installations will identify and manage a minimum of 200 acres of suitable habitat for each identified recruitment cluster.

d. Maintenance of ESMP goals. A population that has achieved the installation regional recovery goal need only be maintained at that level; however, installations should continue to encourage population growth where feasible and compatible with the military mission. A maintenance strategy is also appropriate for populations which have attained the maximum population that can be supported by available suitable habitat, irrespective of population size. Maintenance activities will, however, also vary according to the population size. For example, smaller, nonviable populations may require occasional augmentation, predator control, etc.

3. The population goal established for an installation will dictate the required RCW management intensity level. An installation which has not achieved its population goals requires an active recruitment/augmentation strategy. Annually, the installation will determine the number of recruitment clusters to provision with artificial cavities, cavity restrictors, etc., and concurrently manage those recruitment clusters using the following methodology:

a. Primary recruitment clusters. The installation will annually add recruitment clusters within the limitations of available nesting and foraging habitat of at least the optimum rate of growth of the RCW. The optimum rate of growth of an installation's RCW population will be determined by the installation's population size and population distribution and will be detailed in the installation's ESMP.

b. Supplemental recruitment clusters. If the installation recovery goal is greater than the Installation Mission Compatible Goal, the installation will annually add supplemental recruitment clusters within the limitations of available nesting and foraging habitat. These supplemental will be added over and above the recruitment clusters described in paragraph V.B.3.a above, at the rate of at least one-half of the rate of growth to attain the installation regional recovery goal. The installation will identify and subsequently manage these supplemental recruitment clusters in areas not already selected by the installation as a recruitment cluster in paragraph V.B.3.a above. Installations will manage these supplemental clusters concurrently and in addition to recruitment clusters managed for the purpose of meeting the Installation Mission Compatible Goal.

(1) Management of these supplemental recruitment clusters will be closely coordinated with FWS. FWS will provide incidental take provisions for supplemental recruitment clusters occupied as part of the authorized program to exceed the mission compatible

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goal in order to reach the installation regional recovery goal. Training or other land use restrictions will never apply to recruitment clusters managed under this approach; however, this does not authorize installations to engage in non-training related construction activities in occupied supplemental recruitment clusters absent consultation with FWS.

(2) The installation will separately manage and track the supplemental recruitment clusters as contributing to the installation regional recovery goal. As with other recruitment clusters, the supplemental recruitment clusters will be provisioned and managed in woodpecker-suitable habitat. The installation will give priority to adding supplemental recruitment clusters in training area acreage previously exempted from consideration as RCW habitat because of critical or essential mission requirements under paragraph V.B.2.b. Installations may elect to count as either supplemental recruitment clusters or primary recruitment clusters, those clusters where RCWs voluntarily move into a stand which has not been designated previously as a recruitment cluster.

c. During the development of the installation's ESMP, and at the 5-year review, if a cluster or recruitment cluster identified previously as active has no RCW activity for a period of five consecutive years, the installation may cease actively managing that cluster.

C. Surveys, Inspections, Monitoring and Reporting 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 such survey 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). When conducting project assessments, installations may, through informal consultation with FWS, reduce the forage habitat requirements from the Henry guidelines by one-third, or as specified in paragraph V.D.2.d below. In the case of range

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construction, the survey will also include the surface danger zone for the weapons to be used on that range except for new ranges which use existing dedicated impact areas.

c. Inspections. Active clusters that have not been deleted from management in accordance with paragraph V.D.2.b below must be inspected annually. Recruitment clusters must be inspected twice per year (fall and pre-breeding dispersal periods) to document RCWs occupancy; once occupied, use monitoring criteria in paragraph V.C.1.e. 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 (to include: damage to cavity and cavity start trees requiring remedial measures if any, soil disturbance adjacent to cavity and cavity start trees requiring remedial measures if any, and general condition of the forage habitat of the cluster being monitored if impacted by training activities), 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 the RCW survey required in 1a above, installations will conduct, as required by AR 200-3, an installation-wide forest survey at least every ten years. In conducting the forest survey, data will be gathered to determine accurately the quantity and quality of available foraging and nesting habitat for the RCW. Alternately, installations may survey over the 10 year period, e.g., 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

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to ensure that population trends and important biological information can be determined for the entire installation. 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, number of nests, and number of cavity trees. Monitoring will include color banding of birds. Installations will coordinate with FWS to determine if additional monitoring, in other than impact areas, may be required to address installation specific issues, e.g., fragmented populations or on-going translocation programs.

(1) Active Clusters. Installations with 25 active clusters or fewer will monitor all sites annually. Installations with more than 25 active clusters will annually monitor sample sizes based on the following: 25 percent of the RCW active clusters 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.

(2) Recruitment Clusters. Installations with recruitment clusters designed to attain either the mission compatible goal or the installation regional recovery goal will conduct additional monitoring and reporting of monitoring results. Installations will monitor all recruitment clusters for at least five years after occupation. In addition to the monitoring in paragraph V.C.1.e, installations with supplemental recruitment clusters will monitor and record the following information of military training and activities occurring within all training areas containing recruitment clusters: a) type of training that took place, b) duration of training, c) date of training, d) units and approximate numbers of soldiers involved in the training, e) approximate number and types of vehicles and equipment involved in the training, and f) other relevant information that would contribute to an understanding of the effects of military training upon RCW habitat.

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

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

b. Research on compatibility of military training with RCWs. ODEP will ensure that monitoring of population data gathered from all installations with primary recruitment clusters and supplemental recruitment clusters is evaluated for trend analysis and will share this analysis with FWS. Research data will be analyzed at least once every five years for population trends. In consultation with FWS, trend analysis from paragraphs a and b above, and other outside 5 year research programs, will dictate the revision, continuation, or cancellation of military training restrictions for all clusters considered part of the mission compatible goal. Trend analysis will not effect supplemental recruitment clusters.

c. Annual Reporting. Installations will annually report RCW population data to FWS. Along with the population data, installations will report all actions taken to recruit

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RCWs or improve RCW habitat (see Appendix 2 for content and format of report). A copy of this report will be furnished through command channels to ODEP. The Army will host an annual meeting with FWS and the installations to discuss installation RCW population data. During these meetings, if it becomes clear that an installation is accomplishing less than 50% of its ESMP growth goals over a period of several years, then the installation will informally consult with the FWS to determine if reinitiating formal consultation is desirable.

d. Notification. The installation will immediately notify FWS and their MACOM in the event of incidental take. The installation will notify FWS and their MACOM, and reinitiate consultation with FWS, within 30 days of discovering a 5% population decrease. MACOMs will report either of these occurrences to ODEP. In the event of an incidental take, the installation will also comply with AR 200-3, paragraph 11-9. Upon discovery of a 5% population decrease, the installation will continue to abide by these guidelines and will conduct a systematic review of available data including regional trends to determine the cause of the decrease within 90 days. If the cause is training related, within 150 days the installation in consultation with FWS will develop and implement a plan to prevent further population decline.

e. RCW maps. Survey data will be used to generate installation RCW maps accurately depicting the location of RCW clusters, RCW-related training restricted areas, HMUs, cavity trees, etc. A copy of these maps will be included in the ESMP. The initial ESMP produced according to these guidelines will identify the clusters where the area subject to training restrictions have changed as a result of implementation of these guidelines as opposed to the 21 June 1994 guidelines. Relevant maps 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 goals. Determination of the installation's population goals 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 for all active and recruitment clusters 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.

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b. During the development of the installation's ESMP, and at the 5-year review, in 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. Designated recruitment clusters that have not been occupied for a period of five consecutive years may also be deleted from HMUs. Once deletion of a cluster from management is approved by the FWS, existing cavities may be covered to discourage reactivation.

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 active 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. While the Henry guidelines are used to establish minimum forage acreage requirements, some installations may have data to support forage habitat minima below the Henry standard. If installations can provide data to support forage habitat requirements different from the Henry guidelines, the installation, in consultation with FWS, may establish installation specific forage minima for recruitment sites, project assessments, and habitat management. These forage requirements will apply to all active sites and recruitment sites identified for management in the ESMP. Recruitment sites identified to meet long-term population goals will be evaluated with the same criteria used in the goal setting procedure. A minimum of 200 acres of potential/suitable habitat will be identified and managed for recruitment sites to meet the Installation Mission Compatible Goal and the Installation Regional Recovery Goal. The underlying strategy is to identify and actively manage RCW habitat in the short to mid-term with the long-term population goal always in sight. Adhering strictly to the Henry guidelines, or applying forage habitat requirements to areas presently lacking RCW groups, may preclude long-term habitat management. This could increase the time required to reach installation RCW population goals.

3. Minimization of RCW management impacts on the installation's mission. To the extent consistent with RCW biological opinions, 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.

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.

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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 will be retained for regeneration and some selected hardwoods may be retained for foraging by species other than the RCW. Hardwoods will 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 will be kept below 10 square feet per acre.

c. The priority of forest management in cluster sites and recruitment stands is to maintain and produce 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 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 in active sites 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.

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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 and direct fire areas.

a. Impact areas.

(1) Impact 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. Certain installations may have impact areas or other areas that have been contaminated with improved conventional munitions or submunitions where entry by personnel is forbidden.

(2) Designation of impact areas, safety restrictions on human access to impact areas, range operations in impact areas, and the associated effects of these actions on RCW management activities may adversely affect the RCW and other federally listed species within impact areas. These actions may lead to the possibility and necessity of incidental take. FWS will provide incidental take provisions for impact areas where it is not feasible or economical to either relocate or protect the RCW.

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(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 where practical and economically feasible to protect HMUs from projectile damage. 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 2 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 should 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 seedtree cut, or shelterwood cut; and indefinitely retaining snags, all relicts, and residuals in thinning cuts.

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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, and (g) 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.* Installations will implement the following marking guidance by 1 Jan 1998.

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a. Cavity and cavity-start trees in active and primary recruitment clusters. 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. Warning signs (e below) may be posted on or immediately adjacent to the cavity and cavity start trees. A uniquely numbered small metal tag will be affixed to the cavity tree for monitoring and identification purposes.

b. Cavity and cavity-start trees in supplemental recruitment clusters. These trees may be marked with one white band approximately one inch wide. The band will be centered approximately four to six feet from the base of the tree. Warning signs (e below) will not normally be posted. A uniquely numbered small metal tag will be affixed to the cavity tree for monitoring and identification purposes.

c. Buffer zone for cavity and cavity start trees within active clusters and primary recruitment clusters. Warning signs (e below) will be posted at reasonable intervals along the 200 foot perimeter of cavity trees facing to the outside of the buffer zone and along roads, trails, firebreaks, and other likely entry points into the buffer zone.

d. The installation will mark all cavity and cavity start trees in a managed cluster in accordance with paragraph V.I.1.a and b, above. At a minimum, four suitable cavity or cavity start trees will be marked and protected within each cluster (see paragraph V.H.2). Based on the installation biologist's determination, if more than four cavity trees are required to support the cluster, the required number of trees will be protected.

e. Warning sign. Signs will be posted and 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.

f. 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 comply with these guidelines, even with the installation paying the costs associated with compliance, installations will educate troops training on such lands to help them recognize the markings used by the landowner.

2. Training within RCW clusters.

a. RCW and RCW habitat will be managed biologically by clusters. Training restrictions will apply to marked buffer zones around cavity trees.

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b. The training restrictions in this section apply to buffer zones within marked active clusters and primary recruitment clusters. RCW-related training restrictions do not apply to supplemental recruitment clusters, inactive clusters and foraging areas.

c. Standard training guidelines within active clusters and primary recruitment clusters:

(1) Military training within marked cavity tree buffer zones is limited to military activities of a transient nature (less than 2 hours occupation). A list of prohibited and permitted training activities within buffer zones is contained at Appendix 1.

(2) Military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road, trail, or firebreak.

3. Training throughout the installation. Installations will give priority to maintaining and improving the habitat of RCW clusters; however, in addition to the HMU management practices at para. V.E, installations will observe the following measures to maintain and improve potentially suitable habitat for the RCW throughout the installation

a. Military personnel are prohibited from cutting down or intentionally destroying pine trees unless the activity is approved previously by the installation biologist and/or forester and is authorized for tree removal. Hardwoods may be cut and used for camouflage or other military purposes.

b. Units will immediately report to range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters.

c. The installation will immediately (within 48 hours) reprovise a cavity tree if one is destroyed.

d. Installations will as soon as practicable (normally within 72 hours) repair damage to training land within a cluster to prevent degradation of habitat.

e. All digging for military training activities in suitable acreage will be filled within a reasonable time after the completion of training

f. Training guidelines will be actively enforced through installation training and natural resources enforcement programs, prescribed in chapters 1 and 11, AR 200-3, and installation range regulations.

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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 fewer 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.

APPENDIX 1

TRAINING ACTIVITY WITHIN MARKED BUFFER ZONES	
MANEUVER AND BIVOUAC:	
HASTY DEFENSE, LIGHT INFANTRY, HAND DIGGING ONLY, 2 HOURS MAX	YES
HASTY DEFENSE, MECHANIZED INFANTRY/ARMOR 24 HOURS	NO
DELIBERATE DEFENSE, LIGHT INFANTRY 48 HOURS	NO
DELIBERATE DEFENSE, MECHANIZED INFANTRY/ARMOR	NO
ESTABLISH COMMAND POST, LIGHT INFANTRY 36 HOURS	NO
ESTABLISH COMMAND POST, MECHANIZED INFANTRY/ARMOR 36 HOURS	NO
ASSEMBLY AREA OPERATIONS, LIGHT INFANTRY/MECH INFANTRY/ARMOR	NO
ESTABLISH CS/CSS SITES	NO
ESTABLISH SIGNAL SITES	NO
FOOT TRANSIT THRU THE COLONY	YES
WHEELED VEHICLE TRANSIT THRU THE COLONY (1)	YES
ARMORED VEHICLE TRANSIT THRU THE COLONY (1)	YES
CUTTING NATURAL CAMOUFLAGE, HARD WOOD ONLY	YES
ESTABLISH CAMOUFLAGE NETTING	NO
VEHICLE MAINTENANCE FOR NO MORE THAN 2 HOURS	YES
WEAPONS FIRING:	
7.62mm AND BELOW BLANK FIRING	YES
.50 CAL BLANK FIRING	YES
ARTILLERY FIRING POINT/POSITION	NO
MLRS FIRING POSITION	NO
ALL OTHERS	NO
NOISE:	
GENERATORS	NO
ARTILLERY/HAND GRENADE SIMULATORS	YES
HOFFMAN TYPE DEVICES	YES
PYROTECHNICS/SMOKE:	
CS/RIOT AGENTS	NO
SMOKE, HAZE OPERATIONS ONLY, GENERATORS OR POTS (2)	YES
SMOKE GRENADES	YES
INCENDIARY DEVICES TO INCLUDE TRIP FLARES	NO
STAR CLUSTERS/PARACHUTE FLARES	YES
HC SMOKE OF ANY TYPE	NO
DIGGING:	
TANK DITCHES	NO
HASTY INDIVIDUAL FIGHTING POSITIONS, HAND DIGGING ONLY, FILLED AFTER USE	YES
DELIBERATE INDIVIDUAL FIGHTING POSITIONS	NO

CREW-SERVED WEAPONS FIGHTING POSITIONS	NO
VEHICLE FIGHTING POSITIONS	NO
OTHER SURVIVABILITY/FORCE PROTECTION POSITIONS	NO
VEHICLE SURVIVABILITY POSITIONS	NO
NOTE:	
YES means that activity may be conducted within 200 feet of a marked cavity tree	
NO means the activity may not be conducted within 200 feet of a marked cavity tree	
NOTE:	
1. Vehicles will not get any closer than 50 feet of a marked cavity tree unless on existing roads, trails or firebreaks.	
2. Smoke generators and smoke pots will not be set up within 200 feet of a marked cavity tree, but the smoke may drift thru the 200 feet circle around a cavity tree.	
NOTE: The above training restrictions apply to RCW cavity trees in training areas but not to cavity trees located in dedicated impact areas.	

Appendix B: Proposed 2006 “Management Guidelines for the Red-cockaded Woodpecker on Army Installations”

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Management Guidelines For the Red-cockaded Woodpecker On Army Installations

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1. General

A. *Purpose.* The purpose of these guidelines is to provide standard Red cockaded Woodpecker (RCW) management guidance to Army installations for developing endangered species management components (ESMCs) for the RCW as part of an installation's integrated natural resource management plan (INRMP). Terminology has been revised from endangered species manager "plans" to "components" to reflect that endangered species management on installations is an integral component of natural resource management activities on Army installations. Installation RCW ESMCs will be prepared according to these guidelines and chapter 11, AR 200-3, Natural Resources – Land, Forest, and Wildlife Management and subsequent policies and guidance published by the Army¹. These guidelines establish the baseline standards for Army installations in managing the RCW and its habitat. Installation RCW ESMCs will supplement these guidelines with detailed measures to meet installation-specific RCW conservation needs and unique military mission needs. The requirements in RCW ESMCs will apply to all activities on the installation.

B. *Applicability.* The guidelines are applicable to Army installations where the RCW is present. These guidelines replace 1996 Management Guidelines for the Red-cockaded Woodpecker on Army Installations, 30 October 1996.

C. *Revision.* These guidelines will be revised as necessary to be consistent with the 2003 U.S. Fish and Wildlife Service (USFWS) RCW Recovery Plan and to incorporate the latest and best scientific data available. These guidelines are the third major revision. Previous guidelines were dated 30 October 1996, 21 June 1994 and 1986.

D. *Goal.* The Army's goal is to implement management guidelines which will allow the Army to accomplish military readiness missions while concurrently developing and implementing methods to assist in the conservation, downlisting and recovery of the RCW.

E. *Existing Biological Opinions (BOs).* Installations will continue to comply with the requirements of existing BOs until RCW ESMCs are prepared in accordance with these management guidelines and are approved through consultation with USFWS. To the extent practicable RCW ESMCs should be drafted to incorporate the requirements of existing BOs, as modified to conform to these management guidelines through consultation with the USFWS.

II. Consultation

A. *Consultation Requirement.* In preparing RCW ESMCs and taking action that may affect the RCW, installations will comply with the consultation

¹ The Army will be replacing AR 200-3 with AR 200-1, Environmental Protection and Enhancement and Natural Resource Implementation Guidance for Active Installations.

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requirements of section 7 of the Endangered Species Act (ESA); the implementing USFWS regulations at 50 CFR part 402; chapter 11, AR 200-3, and subsequent policies and guidance published by the Army.

B. *Informal Consultation.* Early entry into informal consultation with the USFWS is critical to resolving potential problems and establishing the foundation to address issues in a proactive and positive manner. If, through informal consultation (which may include preparation of a biological assessment or evaluation), the USFWS concurs in writing that proposed actions are 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. *Formal Consultation.* If development and implementation of an installation ESMC is likely to result in adverse effects and, particularly incidental take beyond existing authorization in an installation's BO, the installation must initiate formal section 7 consultation in accordance with the procedures in 50 CFR 402.14 and Army Regulation 200-3, Chapter 11. The purpose of formal section 7 consultation is to obtain a Non-Jeopardy BO with authorization for incidental take sufficient to implement the ESMC. When consulting with the USFWS on RCW ESMCs and other actions that are likely to adversely affect the RCW, the BOs of the USFWS are expected to be consistent with these guidelines. Installations will make every effort to resolve potential inconsistencies during consultation. Installations will report USFWS guidance that is not consistent with these guidelines, through command channels, to the Office of the Director of Environmental Programs (ODEP), Headquarters, Department of the Army. ODEP will expeditiously review these reports and determine if HQDA-level action is necessary. Installations should report any inconsistencies for action by ODEP prior to USFWS issuing the final BO.

D. *Incidental Take.* Military training activities and other land use activities may affect RCWs resulting in "take" as defined under section 9 of the ESA. As part of the consultation process for revision of ESMCs, installations will estimate the potential level of take associated with military mission and prescribed burning on the installation based on historical records, long-term monitoring results, and research data. If the estimated level of take does not restrict population growth and maintenance of population goals, the USFWS normally will provide an incidental take statement allowing the conduct of military mission and prescribed burning. Potential incidental take that is not identified within the ESMC consultation will require additional project-level formal consultation. The installation will immediately notify USFWS in the event of incidental take that exceeds authorization or meets other criteria established in the consultation process.

E. *Reinitiation.* After receiving a Non-Jeopardy BO, an installation is required to re-initiate consultation if: (i) new information arises concerning effects

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to the RCW not previously considered; (ii) the ESMC is modified resulting in effects on the RCW that were not considered in the BO; or (iii) implementation of the ESMC exceeds the amount or extent of take specified in the incidental take statement. The installation will notify USFWS and reinitiate consultation within 30 days of discovering a 10 percent decline in active clusters from the previous year or a 10 percent decline in active clusters over a five-year period. Upon discovery of a 10 percent decline, the installation will conduct a systematic review of available data to evaluate the potential causes of the observed decline, e.g. declines due to forest senescence, and present the results of this review to the USFWS. Consultation with USFWS will determine actions required to prevent further population decline. Unpredictable catastrophes such as significant hurricane damage may present conditions that cannot be anticipated under these guidelines. In the event of catastrophic impacts on RCW habitats and populations, installations will reevaluate population goals and management requirements in consultation with USFWS.

III. Army Policies Applicable to RCW Management.

A. *Conservation.* Implementation of RCW ESMCs, prepared in accordance with these guidelines, supports 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 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. Mission considerations are necessary in determining the installation management and recovery goals. 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 USFWS, installations will preserve the ability to maintain training readiness, while meeting ESA conservation requirements. Small installations with small populations should be especially sensitive to developing innovative strategies to maintain this balance.

C. *Cooperation with U.S. Fish and Wildlife Service.* The Army will work closely and cooperatively with the USFWS on RCW conservation. Installations should routinely engage in informal consultation with the USFWS to ensure that proposed actions are consistent with 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 ESMCs should promote ecosystem integrity. Maintenance of ecosystem integrity and health also benefit the Army by

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preserving and restoring training lands for long-term use.

E. *Staffing and Funding.* Garrison commanders are responsible for ensuring that adequate professional personnel and funds are provided for the conservation measures prescribed by these guidelines and RCW ESMCs. RCW conservation projects are critical requirements of the Army Environmental Conservation program element of Base Support.

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 a portion of the other is located on adjacent or nearby non-Army land. The USFWS and installations should initiate cooperative management efforts with adjacent landowners, if such efforts would complement 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. The USFWS and installations should participate in promoting cooperative RCW conservation plans, solutions, and efforts with other federal, state, and private organizations and landowners in the region. Examples of such programs include, but are not limited to, Safe Harbor agreements, the Army Compatible Use Buffer Program, and regional translocation cooperation.

H. *Management Strategy.* These guidelines require installations to adopt a long-term approach to RCW management consistent with the military mission and the ESA. First, installations are required to establish installation RCW population goals in consultation with the USFWS using the methodology described in paragraph V.B, below. Once established, the installation must designate sufficient nesting and foraging habitat to attain and sustain the goals. The goals will also dictate the required management intensity level. Next, installations must implement an ESMC to attain and sustain the installation RCW population goals in accordance with Chapter 11, AR 200-3. Fourth, 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 ESMC.

IV. Definitions

Active Cavity - A completed cavity or start exhibiting fresh pine resin associated with cavity maintenance, cavity construction, or resin well excavation by RCWs.

Active Cavity Tree - Any tree containing one or more active cavities.

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Active Cluster - A cluster containing one or more active cavity trees.

Buffer zone - The zone extending outward 200 feet from a marked cavity tree or cavity start tree in clusters with training restrictions.

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 aggregation of cavity trees previously or currently used and defended by a group of RCWs and a 200 foot wide buffer of continuous forest.

Deleted cluster - a cluster that has not been active in the last 5 years, including recruitment clusters that were established more than 5 years ago and have never activated. Deleted clusters may also include inactive clusters that have not been active and not been managed for several years and are proposed for removal from long-term management.

Group - A social unit of one or more RCWs that inhabits a cluster. A group may include a solitary territorial male or female, 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 population maintenance and recruitment.

Impact 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.

Inactive cluster - a cluster that is suitable* for RCW occupancy, has been active in the last 5 years, but has no active cavities during the breeding season of the reporting year (*suitable means midstory in cluster and foraging habitat is controlled (i.e., less than 7 feet tall) and suitable cavities are available).

Population - An aggregate of groups that function as a closed population,

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demographically. Limited genetic interchange may occur between populations. Population delineations should be made irrespective of land ownership.

Potential Breeding Group (PBG) - An adult female and adult male that occupy the same cluster, with or without one or more helpers, whether or not they attempt to nest or successfully fledge young.

Population goal - A desired RCW population size. On installations the population goal will be the number of RCW PBGs that are in accordance with population goals established in the RCW Recovery Plan.

Protected Clusters - Clusters subject to training restrictions identified in Appendix 1 and paragraph V.C.5, and guidance for certain activities identified in paragraph V.C.

Recruitment cluster - A cluster designated and managed for the purpose of attracting a PBG to that territory.

Stochasticity - Random events.

Training Area - A distinct unit of land on an installation that is scheduled for training events by specific units on specific dates.

Translocation - The relocation of one or more RCWs from an active cluster to a recruitment cluster that contains both suitable cavities and foraging habitat, or the relocation of an individual to stabilize a group, e.g. a female to a solitary male cluster.

Unprotected clusters - Clusters not subject to training restrictions identified in Appendix 1 of these guidelines. These clusters are still subject to guidance for certain activities under paragraphs V.C. and V.C.5 of these guidelines, unless otherwise authorized through consultation with USFWS (preferably through the ESMC process).

V. Guidelines for Installation RCW ESMCs.

Installations will prepare RCW ESMCs and manage RCW populations according to the following guidelines. Installations will update ESMCs in conjunction with the INRMP as required by the Sikes Act and Army guidance or sooner if circumstances dictate.

A. RCW ESMC Development Process.

Preparation of installation RCW ESMCs 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

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be identified. Detailed analysis of these factors and their interrelated impacts are required as a first step in the development of an ESMC. 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 currently and potentially suitable for RCW nesting and foraging habitat.
3. Establish the installation RCW population goal with the USFWS according to the guidance in B. below.
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 critical mission areas where activities cannot reasonably be relocated.
7. Identify areas which could support RCW recruitment clusters.
8. Identify areas suitable for RCW habitat and limited conflict with present and projected mission activities. These are prime areas for designation as recruitment clusters.
9. Analyze the information developed above using the guidance contained in these guidelines.
10. Identify important RCW populations, habitats, cooperators, and partnership opportunities outside the installation boundaries.
11. Prepare the RCW ESMC to implement the best combination of options, consistent with meeting the established RCW population goals, while minimizing adverse impacts to training readiness and other mission requirements.

B. RCW Population Goals.

1. The USFWS 2003 RCW Recovery Plan establishes Recovery Units and population goals for federal, state, and private lands within those recovery units. Installation population goals (measured as the number of "potential breeding groups"; see V.B.3, below) established under the ESMC will be in accordance with goals established under the RCW Recovery Plan. The

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installation population goal should be considered long-term but is subject to change, through consultation with the USFWS, based upon changing circumstances, changing missions, or new scientific information. In conjunction with the 1-year and 5-year reviews of ESMCs, installations will reexamine population goals to reflect changing conditions. The biological significance of different population thresholds are described in paragraphs a-e, below.

a. A population size of 350 PBGs is considered highly robust to threats from environmental stochasticity as well as inbreeding and demographic stochasticity. It is the lowest current estimate of the minimum size necessary to offset losses of genetic variation through genetic drift.

b. A population size of 250 PBGs is the minimum size considered robust to environmental stochasticity, and is well above the size necessary to withstand inbreeding and demographic stochasticity.

c. A population size of 100 PBGs is considered sufficient to withstand threats from demographic stochasticity and inbreeding depression.

d. A population size of 70 PBGs is midway in estimates of sizes necessary to withstand threats from inbreeding depression and is considered robust to demographic stochasticity if territories are moderately aggregated in space.

e. A population size of 40 PBGs is at the lower end of estimates of sizes necessary to withstand inbreeding depression and is considered robust to demographic stochasticity if territories are highly aggregated in space.

2. ESMCs must clearly state the installation RCW population goal. If this goal is not provided in the RCW Recovery Plan, it will be determined by availability of suitable habitat, ecosystem attributes, and current and future mission requirements. Installations should not stop establishing recruitment clusters or conducting other proactive management actions once the population goal is reached, but should continue to manage to achieve habitat carrying capacity consistent with mission requirements.

3. Installation population goals will be established as the number of PBGs in accordance with population goal definitions of the RCW Recovery Plan. PBGs may be estimated as a percent of active clusters, using criteria established in the RCW Recovery Plan.

4. Installations that have not yet achieved their population goals will implement actions to achieve a five percent annual increase in active clusters. To achieve recommended rates of increase installations will provide a constant supply of unoccupied recruitment clusters equal to 10 percent of the current number of active clusters. Installations that do not meet this target will informally

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consult with USFWS to determine whether actions are necessary to achieve this population growth rate.

5. All clusters on installations that support PBGs will count toward the installation population goal. This will include clusters where training restrictions are implemented, clusters where training restrictions are not implemented, and clusters in impact areas as long as they can be monitored in accordance with Recovery Plan criteria to determine group status (i.e., solitary bird or PBG). If the installation's estimate of population size (number of PBGs) is based on the percentage of active clusters in a sample set that support a PBG, then the number of active clusters from which the number of PBGs is estimated will only include clusters that can be accessed for management (installation of artificial cavities, midstory control, augmentation, etc.). This will help ensure validity of the assumption that the percentage of clusters that support a PBG is applicable to all active clusters from which population size is estimated. In clusters where management access is limited, PBGs may be included in the population estimate only if their presence in a specific cluster in a specific year is determined by direct observation. In addition to installation groups, clusters on state and private lands that are functioning demographically with the installation's population and are secured by an enduring covenant and are not counted as part of another agency's clusters may be counted toward the installation population goal.

C. Training in Clusters.

The purpose of training restrictions associated with RCW clusters is to avoid or minimize the potential for "take" as defined under section 9 under the ESA. Implementation of training restrictions on Army installations will balance support of RCW population growth to achieve installation population goals and flexibility to achieve training mission requirements. ESMCs, with appropriate consultation, may contain provisions to remove or add restrictions in HMUs.

Certain activities (refueling points, generators, smoke generators, smoke pots, and mechanical digging) are by their nature likely to disrupt the ability of RCWs to roost or nest (or conduct nesting activities; e.g., incubating, brooding, feeding) if conducted in proximity to cavity trees, or have potential for significant habitat damage. These activities will be conducted only at locations approved by Directorates of Plans, Training, and Mobilization (DPTMs) either IAW provisions of the Installation Range Regulation or by case-by-case evaluation. DPTMs must consult with the installation biologist to ensure that such activities are avoided in buffer zones and minimized elsewhere in RCW HMUs. These activities will not be approved within buffer zones of protected clusters or within 200 feet of unprotected cavity trees unless authorized through consultation with USFWS (preferably done during the ESMC process).

1. Designation of Protected Clusters.

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a. Installation ESMCs currently identify the current and projected number of clusters that are subject to training restrictions. The number of these protected clusters has been established in installation-specific consultations with the USFWS and includes active clusters (solitary birds and PBGs) and currently inactive recruitment clusters. Installations will modify the current number of protected clusters in accordance with criteria established in paragraph V.C.2., below.

b. Locations of protected clusters will be determined by installation natural resources management personnel in coordination with the installation Director of Training and the Senior Mission Commander or a designee. Locations of protected clusters will be based on biologically sound principles to reduce risk of disturbance, demographic isolation, and habitat fragmentation, while minimizing effects on training operations.

2. Removal of Training Restrictions.

a. Installations with a population of ≤ 250 PBGs will maintain the currently negotiated number of protected clusters for both active clusters and recruitment clusters.

b. Installations with populations > 250 PBG may remove training restrictions from clusters according to the following schedule:

Total PBGs	Restrictions Removed*	Cumulative Total**
251-275	25 (1:1)	25
276-300	50 (2:1)	75
301-350	150 (3:1)	225
>350	Restrictions removed on all clusters***	

* Installations with 250-275 PBGs may remove restrictions from one protected cluster for each PBG over 250. Installations with 276 or more PBGs may remove restrictions from 25 protected clusters, plus two additional clusters for each PBG over 275. Installations with 301-350 PBGs may remove restrictions from 75 protected clusters plus 3 clusters for each PBG over 300. Restrictions will continue to be removed annually based on the documented growth in the installation's RCW population. For example, if the population increases from 255 to 260 PBGs, training restrictions will be removed from 5 clusters. If it increases from 275 to 285, training restrictions will be removed from 20 clusters, etc.

**These are in addition to the current and/or projected number of clusters that do not have training restrictions in populations under current installation ESMCs.

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***Installations will specify in their ESMCs a schedule for removing training restrictions from all clusters upon reaching ≥ 350 PBGs. This schedule will be implemented after appropriate consultation with USFWS.

c. The number of clusters eligible for removal of training restrictions is dependent on the number of PBGs; however, clusters selected for removal of restrictions may include unoccupied recruitment clusters, solitary bird clusters, or clusters with PBGs. Removal of training restrictions according to the above schedule is dependent on growth of installation RCW populations. Restrictions will be removed incrementally. Depending on population size; 1, 2, or 3 clusters may be unprotected for each additional new PBG. If installation RCW PBGs fail to increase, the proportion of clusters without training restrictions cannot be increased. For populations >350 PBGs or populations exceeding the installation population goal, all new clusters (natural or recruitment clusters) may be unprotected, based on the best judgment of the biologists and DPTM.

d. For installations where the current population goal does not exceed 250 PBGs, the number of clusters with and without training restrictions will remain in accordance with levels under the current installation ESMC. Typically, reduction of training restrictions on installations with population goals ≤ 250 PBGs will occur when recovery goals are reached. However, prior to achieving their population goal, reduction of some restrictions may be possible as data become available from installations where training restrictions have been decreased or removed in entirety and critical population benchmarks are met. These benchmarks, in part, would be tied to population sizes (e.g., 100 PBGs) that are sufficient to withstand threats from such factors as demographic stochasticity and inbreeding depression. Determining whether training restrictions could be reduced prior to reaching population goals would be evaluated by considering factors such as the training mission, population aggregation (e.g., dispersed or highly aggregated), and results (based on monitoring and/or research) of training impacts on unprotected clusters from the subject and other installations. Installations may specify in their ESMCs a schedule for removing training restrictions upon attaining or exceeding the population goal or other population benchmarks. Removal of training restrictions is dependent on growth or maintenance of installation RCW populations. Schedules for removing training restrictions will be implemented after appropriate consultation with USFWS.

e. Once the installation has reached its population goal (or 350 PBGs, whichever is less), any and all training restrictions may be removed subject to the following guidelines and precautions.

(1) Installation staff will continue to identify clusters where training restrictions are warranted (and conversely where they are not warranted)

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as described in paragraph V.C.1.b. Deliberations will weigh the risks and benefits to RCWs, habitat, and training. Data and observations of training impacts (or lack of same) during the population's growth from 250-350 PBGs will also be considered in assessing the risk of impacts from training. The installation will report annually to the USFWS the results of monitoring conducted IAW paragraph V.E.4. for protected and unprotected clusters as shown below.

	Protected Clusters	Unprotected Clusters
# Active Clusters		
# PBGs		
# Nests		
# of adult RCWs per PBG		
# of fledgling RCWs per PBG		

(2) Installation staff and USFWS staff will evaluate these data jointly to identify any trends that might indicate a need for modifications to the installation's application of training restrictions. Data from annual inspections of RCW clusters collected IAW paragraph V.D.5. will also be evaluated to assess habitat condition and trends. Factors such as adequacy of environmental awareness training should also be assessed. The goal will be to make any necessary adjustments and avoid population levels falling below 350 PBGs (or the installation population goal, whichever is less). If populations fall below this threshold for reasons that may be training related (i.e. not explained by habitat conditions, hurricane damage, disease, etc.), training restrictions will be re-implemented IAW Appendix 1 for all training areas containing inactive or single-bird clusters that supported a PBG at the time restrictions were removed, and formal consultation with the USFWS will be reinitiated. In this way, installations will be free to remove restrictions based on their determination of risk, but they will also bear the consequences of their decisions.

(3) Installations should use caution and discretion before reducing training restrictions as soon as 350 PBGs are met because falling back below 350 will require reinstitution of restrictions (see C.2.e.(2) above). Therefore, it is recommended that prior to implementing restriction reductions, installations should provide a reasonable number of "buffer" PBGs (e.g., 10 percent beyond the goal) to ensure that if some losses occur, restrictions do not

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have to be re-implemented.

(4) In cases where continued protection is deemed appropriate even though the population exceeds 350 PBGs or the Installation Goal, protected cavity trees will be marked by two white bands. No military maneuver is authorized within 50 feet of marked cavity trees except for foot traffic and vehicles traveling on existing roads and trails. Additional "Off-Limits" areas may be marked with Seibert Stakes or by other means IAW the installation's established practices for protection of sensitive/hazardous areas.

(5) Once restrictions are removed, incrementally or in total at a later date, it is imperative that installations maintain both: (1) the level of habitat management required, particularly prescribe burning, to sustain recovery standard foraging habitat, and (2) an adequate level of monitoring (negotiated via consultation with the USFWS) to document that the population remains stable, or indeed, increases to a higher level.

3. Marking of Clusters

a. Cavity and cavity start trees in protected clusters will be marked for easy recognition. Trees will be marked with two white bands no more than four inches wide and no more than eight inches between them. Bark will only be scraped lightly to remove loose bark or not scraped at all. 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.²

b. In protected clusters, buffers for all suitable cavity or cavity start trees will be marked. Warning signs will be posted and will be constructed of durable material, ten inches square (oriented as a diamond), white or yellow in color. 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. Warning signs will be posted at reasonable intervals along the 200 foot perimeter of cavity trees facing to the outside of the buffer zone and along roads, maintained trails and firebreaks, and other likely entry points into the buffer zone.

c. 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 marking guidelines. If a landowner does not agree to comply with these guidelines, even with the installation paying the costs associated with compliance, installations will educate troops training on

² Studies in community ecology are showing that rat snakes predate kleptoparasites and usually cannot overcome the resin barriers on active RCW trees. Thus rat snakes provide a net benefit to RCWs. Impediments which prevent rat snakes from climbing cavity trees (especially inactive trees) should be avoided.

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such lands to help them recognize the markings used by the landowner.

d. Cavity and cavity start trees in unprotected clusters may be marked for management and monitoring purposes at the installation's discretion. Warning signs will not be posted. A uniquely numbered small metal tag will be affixed to the cavity tree for identification purposes. Marking will be distinctively different than that used for protected clusters.

4. Training in Protected Clusters

a. The training restrictions in this section apply to buffer zones within protected clusters. RCW-related training restrictions do not apply to foraging areas or unprotected clusters as designated in the first two paragraphs under V.C.

b. Standard training guidelines in protected clusters are:

(1) Military training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than two hours occupation). Appendix 1 provides a list of prohibited and permitted training activities within buffer zones.

(2) Military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road or maintained trail or firebreak.

5. Training Activities in All Habitats. In addition to training restrictions associated specifically with RCW clusters, the installation will implement the following guidelines for habitats throughout the installation to maintain and improve potentially suitable habitat for the RCW. These guidelines will remain in effect even if restrictions under paragraph V.C.4. above are discontinued upon reaching 350 PBGs or the installation population goal, whichever is less.

a. Military personnel are prohibited from cutting down or intentionally destroying pine trees unless the activity is approved previously by the installation biologist and is authorized for tree removal. Hardwoods may be cut and used for camouflage or other military purposes. If removal of hardwoods would damage a cavity tree, approval from the installation biologist would be required.

b. Units will immediately report to range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters. Range control will notify installation biologists immediately.

c. The installation will immediately (within 2 working days of

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notification) re-provision a cavity tree if one is destroyed due to training activity.

d. Installations will as soon as practicable (normally within 3 working days of notification) repair damage to training land within a cluster to prevent degradation of habitat.

e. All digging for military training activities in RCW habitat management units (HMU; see V.F.1., below) will be filled and inspected upon completion of training.

f. Training guidelines will be actively enforced through installation training and natural resources enforcement programs, prescribed in chapters 1 and 11, AR 200-3, and installation range regulations.

D. Habitat Monitoring

1. Surveys for New Cavity Trees and Clusters. Comprehensive surveys for new cavity trees and clusters have already been conducted on Army lands that may support RCWs. Normally, detection of previously unknown cavity trees or clusters will occur coincident to annual inspections of known clusters and adjacent habitat areas. Foresters and biologists will report any new activity observed during the routine process of other work. Surveys in previously unoccupied habitats should also be conducted by qualified biologists following protocols of the RCW Recovery Plan if the land has not been previously surveyed, or if the installation biologist determines that changing habitat conditions or changes in the distribution of known populations increases the likelihood of RCW occurrence.

2. Project Surveys. The installation will conduct surveys prior to timber harvesting operations, construction, or other significant land-disturbing activities, excluding prescribed fire, in accordance with recommendations of Chapter 8.I. of the RCW Recovery Plan. These surveys will be conducted by natural resources personnel trained and experienced in RCW biology, and must be conducted within a year of project initiation. The guiding principle of these surveys, as noted in the RCW Recovery Plan, is that, if the installation can demonstrate reasonable progress toward and support of installation population goals, most projects can be implemented.

3. Foraging Habitat. Installations will assess quality and quantity of installation-wide foraging habitat using the USFWS Matrix tool at a minimum of once every 10 years and midstory at a minimum frequency of once every five years in RCW HMUs. Foraging habitat will be assessed for all foraging elements identified in the RCW Recovery Plan under paragraph 8.I. The desired future condition of foraging habitat for RCW territories counted toward an installation's recovery goal is to meet criteria of the RCW Recovery Plan's foraging habitat "recovery standard". Foraging habitat data collected will be appropriate to the

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forestry management practice (e.g. uneven versus even-aged management).

4. Prescribed and Wildfires. Installations will keep accurate records of the timing and extent of all prescribed and wild fires in RCW HMUs.

5. Cluster Status and Condition. Active and recruitment clusters that have not been deleted from management in accordance with paragraph V.F.2.b. below 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:

a. Density and height of hardwood encroachment (using Matrix standards).

b. Height of RCW cavities.

c. Condition of cavity trees and cavities.

d. A description of damage from training including: damage to cavity and cavity start trees requiring remedial measures if any, soil disturbance adjacent to cavity and cavity start trees requiring remedial measures if any, and general condition of the forage habitat of the cluster being monitored if impacted by training activities.

e. Effects of fire (prescribed or wild) on midstory and cavity trees.

f. Evidence of RCW activity for each cavity tree (includes each cavity and cavity start in the tree) within the cluster.

E. Population Monitoring

1. Installations will conduct monitoring programs to determine scientifically demographic trends within the population as a whole. At a minimum, installations will follow standards established in the RCW Recovery Plan for sampling schemes, sample sizes, frequency of monitoring and data parameters to be collected. To annually monitor population trend and size, the RCW Recovery Plan requires monitoring of cluster activity status and the presence/absence of PBGs. The RCW Recovery Plan recommends the following sample sizes for monitoring number of active clusters (ACT) and PBGs in red-cockaded woodpecker populations, by population size.

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Parameter	Population Size (PBG)				
	<30	30-99	100-249	250-349	>349 or at approved property goal
ACT	100% of potentially active clusters per year	100% annually	100% annually	100% annually	Consult with USFWS
PBG	100% of potentially active clusters per year	100% annually	50% annually	33% annually	Consult with USFWS

2. To track population size relative to status of training restrictions in clusters, installations conducting < 100 percent survey of PBGs will allocate sample clusters proportional to the ratio of the number of clusters with training restrictions and the number of clusters without training restrictions. Sampling design and allocation of sample clusters will be established in consultation with USFWS.

3. All recruitment clusters, regardless of status of training restrictions, must be inspected annually for five consecutive years to document RCW occupancy. Once recruitment clusters are occupied, use monitoring criteria for active clusters.

4. To track effects of reducing training restrictions and other land use activities, installations will compare fecundity of active clusters, recruitment rates, and demographic stability between protected clusters and unprotected clusters. Input from a qualified wildlife statistician is expected at appropriate organizational levels to assure the best comparisons possible. All sampling and statistical comparisons will follow the guidance of the RCW Recovery Plan where it is applicable and will include USFWS input, especially when the RCW Recovery Plan does not provide sufficient guidance.

a. To compare fecundity between protected and unprotected clusters, installations with 30 or fewer active clusters will monitor all clusters to determine number of adults, nesting status, and number of fledglings per group. This monitoring will require color banding of birds. Installations with >30 active clusters will annually monitor these parameters in a random sample of all clusters in excess of 30, stratified by protected and unprotected clusters. Sample size in each stratum will be the greater of 25 percent of the number of clusters in the stratum, or 30 clusters. The sample should not include clusters that have been active for fewer than 3 years. Typically, recruitment clusters have a disproportionately high incidence of being occupied by a single RCW and/or low

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productivity due to lack of breeder experience in their first 2 years of occupancy. Excluding recently activated clusters from the sample will help make comparisons between protected and unprotected clusters more meaningful.

b. To compare recruitment rates and demographic stability between protected clusters and unprotected clusters, installations will use monitoring data collected in accordance with paragraph V.E.1.

5. The monitoring standards established in the preceding paragraphs are the minimum requirement. Any time RCWs are banded, the RCW Recovery Plan sets the minimum data collection standards. Installations may implement additional monitoring activities or programs in support of other management and research objectives as necessary, e.g. translocations.

F. Habitat Management

1. Installation RCW ESMCs will identify nesting and foraging areas sufficient to attain and sustain installation RCW population goals. These areas will be designated RCW HMUs. 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 for all active and recruitment clusters, regardless of training restriction status, must be managed according to these guidelines. HMUs should be large enough to enable the installation to meet or exceed its recovery goal as identified in the Recovery Plan.

2. Areas Included in HMUs

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

b. Clusters that have been documented as continuously inactive for a period of five consecutive years or more may be deleted from RCW management requirements. Designated recruitment clusters that have not been occupied for a period of five consecutive years may also be deleted from HMUs. Once deletion of a cluster from management is approved by the USFWS, existing cavities may be covered to discourage reactivation.

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

d. Adequate foraging habitat in acres, quality, and location must be provided with HMUs. Installations will determine availability of and manage for foraging habitat in accordance with guidelines established in Chapter 8.I. of the RCW Recovery Plan, i.e., the recovery standard.

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e. Installations may formulate population-specific foraging guidelines in consultation with the USFWS. Population-specific guidelines must be based on site-specific study consisting of multi-year (typically 3-5 years) data on RCW group and population health and their relationships to quantity and quality of foraging habitat. Chapter 8.I.4. of the RCW Recovery Plan provides guidelines for determining population-specific foraging guidelines.

f. HMUs should be located where there will be a minimum impact upon current and planned installation missions/operations and should be consistent with land use requirements in the Real Property Master Plan.

g. Installations should delineate HMUs to maximize demographic linkage among groups on and off the installations. Where fragmentation exists, installations should develop plans to link groups on the installation by designating habitat corridors where practical.

3. Management Within Clusters.

a. Due to RCW biological needs, clusters, including the area within 200 feet of cavity trees, require a higher management intensity level than other areas within HMUs. Within HMUs, maintenance priority will be given to active clusters over both inactive and recruitment clusters (see definitions).

b. Installations will manage habitat within active and recruitment clusters in accordance with guidelines established in the RCW Recovery Plan. In general, recommended management practices in the RCW Recovery Plan include:

(1) Protection of existing cavity trees from damage due to fire, human disturbance (including erosion and sedimentation and logging activities), southern pine beetle infestations, and damage from high winds.

(2) Maintain sufficient large and old pines to serve as cavity trees.

(3) Control hardwood and pine midstory.

(4) Encourage restoration and maintenance of native grasses and forbs by using prescribed burning, minimizing soil disturbance, and implementing appropriate timber management to promote adequate light at ground level.

(5) Reduce excessive overstory hardwoods within the cluster

(6) Establish recruitment clusters in upland sites whenever

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possible, consistent with demographic and habitat considerations.

(7) Retain dead and dying cavity trees and all other snags, unless they present a safety hazard.

c. 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 cavities or where threat of cavity enlargement of properly-sized cavities is probable. Restrictors will be installed according to guidelines of the RCW Recovery Plan with the following priority: (a) active single tree clusters, (b) solitary bird groups, (c) clusters with less than four suitable cavities, and (d) others.

d. Artificial cavities and cavity starts will be constructed in areas designated for recruitment or translocation and in active clusters where the number of suitable cavities is limiting. Construction must be accomplished by fully trained and permitted personnel. Artificial cavities and cavity starts will be constructed using the following priorities: (a) active single tree clusters, (b) solitary bird groups, (c) clusters with less than four suitable cavities, and (d) others.

e. Avoid timber harvesting, pine straw harvesting, and habitat maintenance activities, with the exception of burning activities, during the nesting season. If a biologist, experienced in RCW management practices, determines that habitat maintenance activities are not likely to adversely affect nesting activities, they may be conducted after coordination with USFWS. Consultation on these activities may be accomplished through a programmatic consultation or on a case-by-case basis, and will typically be "informal consultation".

4. Management in Other Areas of HMUs

a. Silviculture. Forest management and timber harvest on installations will be consistent with achieving and maintaining installation RCW population goals. In general, silvicultural practices in HMUs will have the objectives of ecosystem management including maintaining adequate old-growth pine, reducing midstory encroachment, and meeting recovery standard foraging habitat requirements. Silviculture in HMUs will include: (a) maintenance of sufficient large and old pines to serve as cavity trees; (b) control of hardwood and pine midstory, encouragement of restoration and maintenance of native grasses and forbs by using prescribed burning, minimizing soil disturbance, and implementing appropriate timber management to promote adequate light at ground level; (c) reducing excessive overstory hardwoods; and (d) retaining dead and dying trees and all other snags, unless they present a safety hazard. Installations will follow guidelines for silvicultural methods and objectives that are established in Chapters 8.J. and 8.I. of the RCW Recovery Plan.

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b. Prescribed Burning. 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 USFWS, the burn interval may be increased to no more than five years after the hardwood midstory has been brought under control. Cavity trees will be protected from fire damage during burning. Burning should normally be conducted in the growing season because 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.

5. Management in Impact and Direct Firing Areas.

a. Impact Areas

(1) Impact 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. Certain installations may have impact areas or other areas that have been contaminated with improved conventional munitions or submunitions where entry by personnel is forbidden.

(2) Designation of impact areas and the associated effects of these actions on RCW management activities may affect the RCW and other federally listed species within impact areas. These actions may lead to the possibility and necessity of incidental take.

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

b. Direct Firing 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 below.

(2) In HMUs in direct fire areas that are not directly impacted 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 should be modified/shielded where

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practical and economically feasible to protect HMUs from projectile damage. Protective measures that will be considered include reorienting the direction of weapons fire, shifting target arrays, establishing "no firing areas" around RCW clusters or HMUs, revising maneuver lanes, constructing berms, etc.

G. Translocation

1. Translocation can be a useful tool to expand and disperse RCW groups into unoccupied areas of designated HMUs. Translocation also provides a means to maintain genetic viability in populations with fewer than 350 PBGs. Installation plans will provide for translocation to augment solitary bird groups, where appropriate. Installations participating in translocation activities will follow guidelines established in chapter 8.H. of the RCW Recovery Plan.

2. Installations may translocate RCWs from active clusters to recruitment clusters that meet standards for translocation for strategic recruitment. This will only include translocation of subadult birds from their natal territories. Within-population translocations that do not meet these criteria must be approved on a case-by-case basis through consultation with the RCW Recovery Coordinator.

3. In areas to receive RCWs, habitat inspection and improvement work must be completed before translocation is attempted to ensure that nesting and foraging habitat meets the standards established by these guidelines.

4. Installations should support regional translocation efforts by supplying or receiving donor birds provided the installation meets criteria established in the RCW Recovery Plan for donor or recipient populations.

5. Translocation will not be undertaken without the approval of, and close coordination with, the USFWS. 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 translocation.

H. Data Records, Reporting, and Coordination.

1. Installations will record and retain permanently all survey, inspection and monitoring data for RCW populations and habitats for trend analysis.

2. Installation biologists and foresters will maintain close coordination and, at a minimum, will conduct an internal RCW installation progress review twice a year.

3. Installation Management Agency (IMA) Southeast Region will serve as integrator and facilitator for Army RCW management throughout all installations with RCW. IMA Southeast Region will host an annual RCW meeting for RCW

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installations, USFWS, ODEP, United States Army Environmental Center, National Guard Bureau, and other organizations.

4. ODEP will provide RCW oversight. ODEP will ensure that data collected in accordance with paragraph V.E. above for protected and unprotected clusters will be evaluated for trend analysis. These data will be analyzed at least every five years, and the results will be presented to USFWS for review. Results of this trend analysis will be used to determine revision, continuation, or cancellation of military training restrictions in consultation with USFWS.

5. Installations annually will report results of RCW inventory and monitoring programs to USFWS, IMA Southeast Region, and ODEP through command channels. These data will be reported in formats agreed upon between the Army and USFWS. These data will include measures of population status and actions taken to recruit RCWs and improve habitat. These data will normally be presented to USFWS at the annual meeting hosted by IMA Southeast Region. All installations will report at the meeting in a standard format agreed upon by the USFWS and IMA Southeast Region.

6. RCW maps will be included in the ESMC using survey data to accurately depict the location of RCW clusters, RCW-related training restricted areas, HMUs, and cavity trees. Maps will be updated at least annually or when 20 percent change in the number of active clusters occurs, whichever is sooner. Maps used internally will be tailored to the users, e.g. trainers, foresters, etc. and will be widely distributed for use by those conducting land use activities on the installation, including military training, forest management, construction projects, and range maintenance.

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Appendix 1

TRAINING ACTIVITY WITHIN BUFFER ZONES (1)	
MANEUVER AND BIVOUAC:	ALLOWED
Hasty defense, light infantry, hands and hand tool digging only, no deeper than 2 feet, 2 hours MAX	Yes
Hasty defense, mechanized infantry/armor	No
Deliberate defense, light infantry	No
Deliberate Defense, mechanized infantry/armor	No
Establish command post, light infantry	No
Establish command post, mechanized infantry/armor	No
Assembly area operations, light infantry/mech infantry/armor	No
Establish CS/CSS sites	No
Establish signal sites	No
Foot transit thru the cluster	Yes
Wheeled vehicle transit thru the cluster (2)	Yes
Armored vehicle transit thru the cluster (2)	Yes
Cutting natural camouflage, hardwood only	Yes
Establish camouflage netting	No
Vehicle maintenance for no more than 2 hours	Yes
WEAPONS FIRING	
7.62mm and below blank firing	Yes
.50 cal blank firing	Yes
Artillery firing point/position	No
MLRS firing position	No
All others	No
NOISE:	
Generators	No
Artillery/hand grenade simulators	Yes
Hoffman type devices	Yes
PYROTECHNICS/SMOKE	
CS/riot agents	No
Smoke, haze operations only, generators or pots, fog oil and/or graphite flakes (3)	Yes
Smoke grenades	Yes
Incendiary devices to include trip flares	Yes
Star clusters/parachute flares	Yes
HC smoke of any type	No

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Appendix 1 (continued)

DIGGING	ALLOWED
Tank ditches	No
Deliberate individual fighting positions	No
Crew-served weapons fighting positions	No
Vehicle fighting positions	No
Other survivability/force protection positions	No
Vehicle survivability positions	No
NOTES:	
(1) These training restrictions apply to RCW cavity trees in training areas but not to cavity trees located in dedicated impact areas.	
(2) Vehicles will not get any closer than 50 feet of a marked cavity tree unless on existing roads, trails or firebreaks.	
(3) Smoke generators and smoke pots will not be set up within 200 feet of a marked cavity tree, but the smoke may drift thru the 200 feet circle around a cavity tree.	

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