United States Department of the Interior

FISH AND WILDLIFE SERVICE

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August 19, 2016

Mr. Tony Tooke
1720 Peachtree Road, NW
Atlanta, GA 30309

Attn: Mr. Duke Rankin

Re: USFWS Log No: 04EF3000-2015-F-0105
Date Consultation Initiated: April 29, 2015
Project Title: Beasley Pond Project
Location: Apalachicola Ranger District,
Apalachicola National Forest in Florida
County: Liberty

Dear Mr. Tooke:

This letter transmits the U.S. Fish and Wildlife Service's (USFWS) biological opinion (BO) based on our review of the proposed management actions located within the Apalachicola Ranger District, Apalachicola National Forest (ANF), Liberty County, Florida. The USFWS' BO is based on our review of the proposed harvesting and ecological restoration treatments located in the Beasley Pond Analysis Area in Apalachicola National Forest, Liberty County, FL, and its effects on the Florida skullcap (*Scutellaria floridana*) and the Red-cockaded woodpecker (RCW) (*Picoides borealis*). It is in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act). Your request for formal consultation was received on April 29, 2015.

Our BO is based on information provided in the USFS's Biological Assessment (BA) for the Beasley Pond Analysis Area dated March 26, 2015 and an addendum letter dated June 10, 2016 (Allen Smith, Deputy District Ranger, to Catherine Phillips, USFWS). It is based on the best available scientific and commercial data pertinent to the listed species and habitats directly or

indirectly affected by the proposed action. The sources of these data, summarized or referenced in this BO, include USFWS files, published and unpublished USFWS reports, the experience of USFWS biologists, and scientific literature. A complete administrative record is on file in the Panama City Field Office, Florida. We have assigned USFWS Federal Activity log number **04EF3000-2015-F-0105** for this consultation.

Concurrences

The USFWS reviewed the information, including the proposed Conservation Measures (CM) (Enclosure A), and provided that all proposed CM's are followed, we concur with a "not likely to adversely affect" determination for the Eastern Indigo Snake (*Drymarchon couperi*), Frosted Flatwoods Salamander (*Ambystoma cingulatum*), Godfrey's Butterwort (*Pinguicula ionantha*), and White Birds-In-A-Nest (*Macbridea alba*) (Table 1).

Table 1. Species and critical habitat evaluated for effects and those where the USFWS has concurred with a "not likely to be adversely affect" determination.

SPECIES or CRITICAL HABITAT	*PRESENT IN ACTION AREA*	*NOT LIKELY TO BE ADVERSELY AFFECTED*
Eastern Indigo Snake	Not likely, last observed in 1986 (Enge *et al.* 2013)	concur
Frosted Flatwoods salamander	yes, but impacts avoided	concur
Godfrey's Butterwort	Yes, but outside of treatment stands or flagged for avoidance	concur
White Birds-In-A-Nest	Prior report by FNAI (date unknown), but not relocated in post-2012 surveys.	concur

These species and critical habitat are not likely to be adversely affected by this action, and therefore will not be discussed in the BO. In particular, we base this concurrence on the current status of these species in the Project area. In view of this, we believe the requirements under section 7(c) of the ESA are fulfilled for these species. However, obligations under section 7 of the ESA must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

The USFWS greatly appreciates the cooperation of U.S. Forest Service personnel during this consultation. We have assigned our USFWS log number **04EF3000-2015-F-0105**

to this consultation; please refer to it in any future correspondence concerning this project. If you or your staff has any questions, please contact Patty Kelly of the Panama City Field Office at (850) 769-0552 extension 228, or via email at patricia_kelly@USFWS.gov for any other questions regarding this BO.

Sincerely,

Dr. Catherine Phillips
Project Leader

Enclosures:
Enclosure A-Conservation Measures
Biological Opinion

cc: (electronic copies)
FWC, Tallahassee, FWCConservationPlanningServices@MyFWC.com
USFWS, Atlanta, Section 7 Coordinator, Jerry Ziewitz
USFWS, RCW Recovery Lead, Will McDearman
USFS, Marcus Beard, Alan Smith, Jon Dunlap, Matt Trager

Enclosure A

Beasley Pond Project

USFS' Conservation Measures for species not addressed in the BO

Conservation measures are actions designed to benefit or promote the recovery of a listed species that are included by the federal agency as an integral part of the proposed action. These actions are binding and serve to minimize or compensate for project effects on the listed species. The USFS commits to the following avoidance and minimization measures referred to as 'Coordination Measures' in the BA (e.g. March 1, 2016 email message) and others come from informal discussions following the BA submission.

Eastern Indigo Snake

-Purchasers and contractors will be advised of the possible presence of threatened, endangered, and sensitive species and will be instructed to avoid harming any wildlife they encounter, including snakes.

Frosted Flatwoods Salamander

-There are isolated wetlands in the project area. Due to the poor conditions of the harvest area, harvest will be restricted to these areas only when dry enough to allow for minimal soil disturbance.

-There will be no timber harvest within 1,500 feet of known breeding ponds during flatwoods salamander breeding season (October 1 to May 1) unless an exception is given by the USFS District Biologist after consultation with the USFWS.

- Prior to using FR 173 for a haul road, culverts and silt fencing will be placed appropriately if used during flatwoods salamander breeding season (October 1 to May 1).

-Maintenance and hauling of FR 173-A and the non-system road in Compartment 28 Stand 6 will be scheduled outside of Flatwoods Salamanders breeding season. These roads will be brought up to grade but not ditched.

-The non-system road in Compartment 28 Stand 6 will be retired, revegetated, and closed to public access post timber harvest activities.

-To protect aquatic species, pesticide application, timber harvesting activities, and road maintenance will adhere to the standards of Florida's Silvicultural Best Management Practices (BMPs) as found in the Sivilculture BMP Manual : http://freshfromflorida.s3.amazonaws.com/silvicultural_bmp_manual.pdf

Gopher Tortoise (Federal Candidate, not addressed in the BO but addressed in EIS)

-Purchasers and contractors will be educated in Gopher Tortoise burrow identification. In potential Gopher Tortoise habitat, the USFS will prohibit log landings, designating skid trails, and parking equipment within 25 ft. of known Tortoise burrows. Heavy equipment operators will be instructed to maintain a 25 ft. distance during operations when previously unknown burrows are encountered.

All Species/Habitat Benefits

-Equipment cleaning measures will be required by contracts to prevent the introduction of non-native invasive plants.

Beasley Pond Project
Biological Opinion
Apalachicola National Forest
Liberty County, Florida

USFWS Log No: 04EF3000-2015-F-0105

to

U.S. Department of Agriculture
Forest Service

Biological Opinion
August 19, 2016

Prepared by:
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City, FL

Catherine J. Phillips
Dr. Catherine Phillips, Project Leader

19 Aug 2016
Date

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ACRONYMS

Act	Endangered Species Act
ANF	Apalachicola National Forest
ARD	Apalachicola Ranger District
BA	Biological Assessment
BO	Biological Opinion
BPM	Best Management Practices
CFR	Code of Federal Register
CMs	Conservation Measures
dbh	Diameter at Breast Height
ESA	Endangered Species Act
EO	Element of Occurrence
FNAI	Florida Natural Areas Inventory
FR	Federal Register
FSR	Forest Service Road
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geospatial Information System
GPS	Global Positioning System
IPCC	Intergovernmental Panel on Climate Change Report
ITP	Incidental Take Permit
LIDAR	Light Detection and Ranging
LRMP	Land and Resource Management Plan
MBTA	Migratory Bird Treaty Act
MSS	Managed Stability Standard
NF	National Forests
NFF	National Forests in Florida
NLAA	Not Likely to Adversely Affect
NWR	National Wildlife Refuge
PBGS	Potential Breeding Groups
Permit	Incidental Take Permit
RCW	Red-cockaded Woodpecker
RPM	Reasonable and Prudent Measures
SAV	Salvage
SLR	Sea Level Rise
TCs	Terms and Conditions
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

We, the Fish and Wildlife Service, have evaluated the impacts of the proposed harvest of approximately 3,700 acres within Beasley Pond Analysis Area to be conducted within the Apalachicola National Forest in Liberty County, Florida on the central west portion of the Apalachicola Ranger District. The USFS BA describes the primary purpose of the action to maintain, improve, and restore a healthy forest ecosystem and to continue progress towards restoration of historic wet savannas. These actions implement the direction set forth in the USFS Land and Resource Management Plan in order to achieve the desired future conditions for specific Management Areas.

The Apalachicola National Forest houses several populations of Florida skullcap, a federally protected plant limited within a 4-county range. The Red-cockaded woodpecker (RCW) is a federally protected bird species. The Apalachicola Range District within the Apalachicola National Forest is one of the 13 designated primary core populations for RCWs rangewide. It is a subset and foundation of the primary core population (Central Florida Panhandle Primary Core) that is to harbor 1000 PBGs when the species is fully recovered. While some benefits are expected long-term, from the proposed project, both species occur year-around and impacts, as proposed, are unavoidable.

The USFS intends that the forest management practices covered by this Proposed Action be executed in conjunction with a forest-wide prescribed fire program. Potential cumulative impacts to Florida skullcap include mechanical destruction of individual stems, increased soil erosion and leaching of soil nutrients if fires occur immediately after harvest; offsite movement and non-target application of herbicides; disturbance of soil by movement of large machinery; periods of smoke during prescribed burns; and a shift in vegetation in treated areas from a community dominated by pines to a more diverse community including native ground cover that historically was maintained by fire.

Removal of pine trees from savanna habitat is required to restore these ecosystems to a more natural condition. RCWs have likely benefited from the artificial expansion of pine habitat into these sensitive areas although none of the proposed actions result in reducing RCW foraging habitat below a level considered adverse to the bird. The proposed action also includes timber harvest within mature and immature longleaf and slash pine stands and pine plantations. Impacts from associated landing zones, temporary road construction, and timber harvest that provide direct and indirect impacts to RCWs are considered in this opinion.

An estimated count of 6,325 Florida skullcap flowering stems found within the Beasley Pond area may be impacted due to the proposed project. USFWS believes incidental take of RCWs is expected to be in the form of harassment due to disturbance within 17 active clusters during the breeding season from hauling, road construction, and harvest outside of the cavity tree cluster area but within foraging habitat during the nesting season. Incidental take may also occur in the form of indirect mortality, or harm, to eggs or nestlings located in up to 4 nest trees, primarily from insufficient incubation and or disruption of feeding caused by disturbance to adults during

breeding season, due to the placement of log landings, hauling trucks, road construction and timber harvest occurring within 200 ft. of active cluster zones during the breeding season.

The Conservation Measures and Reasonable and Prudent Measures, and their accompanying Terms & Conditions, will avoid and reduce the potential for injury, harm, and harassment from the proposed construction activities. The Service has determined that with the implementation of these measures, the actions will not jeopardize Florida skullcap or the RCW. Critical habitat has not been designated for either species, therefore none will be affected.

CONSULTATION HISTORY

The major milestones for this consultation are provided below.

December 12, 2013	The U.S. Forest Service (USFS) invited the USFWS staff to area site visit to introduce the project and discuss potential issues related to threatened and endangered species.
April 9, 2014	The USFS sent a draft Biological Assessment (BA) to the USFWS for an informal review of foraging analysis.
July 22, 2014	USFS staff sent to the USFWS via email a draft of the Beasley Pond Analysis Area – Plants Summary for review.
August 15, 2014	The USFWS corresponded with the USFS via email acknowledging receipt of the draft Beasley Pond Analysis Area – Plant Summary. The USFWS provided comments and two conservation measures recommended for *S. floridana* to USFS.
December 19, 2014	USFS staff met with the USFWS to discuss the coordination measures for flatwoods salamanders. The flatwoods salamander coordination measures agreed upon by the group are located in the coordination measures section of the introduction.
April 29, 2015	USFS initiated formal consultation with the USFWS for RCW and *S. floridana.* The USFWS acknowledged receipt of the biological assessment, supplemental information as well as the proposed conservation commitments.
May 4, 2015	The USFWS corresponded with the USFS via email inquiring about the comments and conservation measures for *S. floridana* provided in August 15, 2014. The USFWS provided to the USFS via email a copy of comments and conservation measures. The USFS corresponded via email to the USFWS acknowledging receipt of the May 4, 2015 message.

May 6, 2015	The USFS responded via email to the USFWS clarifying that even if the comments would have been implemented into the Biological Opinion (BO), the comments provided dealt with mitigation measures that the USFS handbook only authorized the USFS to be a partner in translocation efforts. Also, there may be some treatment areas that could be avoided (dropped).
August 26, 2015	The USFS sends USFWS an invite at USFWS's request for a field visit. The invitation was extended to FNAI and Friends of the Forest but was inadvertently cancelled due to rain on Sept. 1, 2015.
September 3, 2015	USFS requests meeting with USFWS for a time to be set after September 14. See February 11, 2016.
October 7, 2015	At the request of the USFWS, the Friends of the Forest (Fran James and Todd Engstrom) guided USFWS staff (Patty Kelly, Sean Blomquist, Harold Mitchell, Vivian Negron-Ortiz) to various places on the ANF to discuss past restoration efforts and possible ways to lesson impacts for the proposed restoration actions to occur per this consult. USFS staff (John Dunlap, Sonja Durrwachter) were also in attendance.
December 2015-Spring 2016	USFWS responds to multiple messages from USFS confirming that the BO is delayed due to other work priorities.
February 11, 2016	USFS staff (Allen Smith and John Dunlap) met with USFWS staff (Sean Blomquist, Patty Kelly, Vivian Negron-Ortiz, and Harold Mitchell) at the PCFO USFWS's office building. Concerns on some proposed actions within the BA were discussed as well as consultation delays on the part of the USFWS.
February 16, 2016	USFWS email to the USFS with attached document listing conservation recommendations for *S. floridana.*
March 1, 2016	The USFS replied to the USFWS email message. The USFS clarified the measures that they would be willing to add to the BA and the suggested language for the decision that relates to the monitoring for *S. floridana.* This included specific mitigation measures to address impacts to Florida skullcap.
May 13, 2016	Preliminary Draft BO provided to the USFS for review.

May 16, 2016	Conference call to discuss USFS concerns within the draft BO occurred. One outcome of the call was the decision to request additional Take for RCWs to streamline harvesting and restoration activities.
June 8, 2016	Letter received from USFS to USFWS with requested changes to the draft BO as well as the request to finalize.
June 10, 2016	Letter received from USFS to USFWS requesting additional RCW Take for the proposed project.
August 5, 2016	Draft BO provided to USFS.
August 15, 2016	USFS provided edits to the USFWS on the Draft BO.

BIOLOGICAL OPINION

This Biological Opinion (BO) is the document that states the opinion of the Service as to whether implementation of the proposed timber harvest and restoration actions is likely to jeopardize the continued existence of Florida skullcap (*Scutellaria floridana)* or the Red-cockaded woodpecker (RCW) (*Picoides borealis*). The BO evaluates the effects of the proposed action, interrelated and interdependent actions, and cumulative effects relative to the status of the species to arrive at a determination of whether the action is or is not likely to jeopardize this species. "*Jeopardize the continued existence of*" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFE §402.02).

DESCRIPTION OF THE PROPOSED ACTION

Proposed Action

The U.S. Forest Service (USFS) proposes to harvest approximately 3,700 acres within Beasley Pond Analysis Area (Figure 1). The USFS BA (2015 with supplements) describes the primary purpose of the action to maintain, improve, and restore a healthy forest ecosystem and to continue progress towards restoration of historic wet savannas. These actions implement the direction set forth in the USFS Land and Resource Management Plan (USDA 1999) in order to achieve the desired future conditions for Management Areas 3.1, 7.1, and 7.2. Detailed descriptions of proposed treatments are as follows:

1) Thin approximately 2,068 acres of slash pine and longleaf pine stands. Stands range from 25 to 141 years old. Young slash pine and longleaf pine plantations have a basal area (BA) ranging from 70 to 173 square-feet (sq.ft.) per acre. The USFS proposes to thin these stands to an average 50 sq.ft. BA per acre in order to open the tree canopy for sunlight penetration needed for continued growth and groundcover establishment.

2) Conduct uneven-aged management cuts on 891 acres of mature longleaf pine. In areas of existing longleaf pine regeneration, trees will be removed to create openings that would encourage seedling development and growth. Openings will range from 0.25 to 2 acres in size. The overall stand will be thinned to 50 sq.ft. BA per acre.

3) Conduct wet savanna restoration treatments on approximately 811 acres of savanna sites. Girdling will be used in stands that cannot be accessed for traditional logging operations (stands 19 and 41 in compartments 26; and stands in compartment 27). All of these sites have either been over-planted with slash pine or have been encroached by woody brush and hardwood tree species. To restore these wet savanna sites a variable residual BA strategy will be implemented with ground cover conditions serving as the trigger point for thinning intensity. In portions of the stands where herbaceous groundcover is deemed sufficient, the USFS proposes to thin to a residual BA of 10-40 sq.ft. per acre of standing live timber. Sufficient groundcover is needed when thinning to a lower BA in order to continue the use of prescribed fire as a means of maintaining the open park-like structure associated with wet savannas. When groundcover conditions are deemed less than adequate to carry fire, a residual BA of 40 sq.ft. per acre will be left in order to allow needle case to serve as a primary carrier of fire across the stand.

4) Conduct foliar application of herbicide triclopyr (as needed) on 811 acres of wet savanna restoration sites for woody species control. Treatment will consist of backpack spray application only where the woody vegetation threatens re-establishment of wet savanna plant species. Savanna restoration areas that do not show evidence of woody re-sprouting after harvest will not receive chemical treatment.

5) Clearcut harvest 16 acres of slash pine plantation for borrow pit excavation in order to provide surface material for future road work.

6) Remove 6 cattle guards from a closed cattle allotment (2 on highway 379, 2 on FSR 113, and one on FSR 174 and 109).

7) Conduct connected actions necessary to facilitate the primary proposed action, including maintenance of 7.5 miles of landlines, reconstruction of approximately 12.83 miles of system roads, temporary improvement and use of approximately 4 miles of non-system roads which provide access to pine plantations, and the maintenance of approximately 14.73 miles of system roads used to haul timber products from the area.

Action Area

The **Action Area** is defined at 50 CFR 402.02 to mean "all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Therefore, the Action Area may be larger than the construction limits of the project. The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present federal, state, or private activities as well as the cumulative effects of reasonably certain future state or private activities within the Action Area. This Opinion addresses only those actions from which the USFWS believes adverse effects may result. In the BA, USFS staff

outlined those activities involved in the proposed project that would affect endangered and threatened species. This Opinion addresses whether the proposed project is likely to jeopardize the continued existence of listed species or adversely modify critical habitat designated for these species.

The project is located within the Apalachicola National Forest in Liberty County, Florida on the central west portion of the Apalachicola Ranger District (Figure 1). The Project Area includes compartments 25, 26, 27, 28 and one stand in compartment 29 within the Beasley Pond Analysis Area. The Action Area includes the portion of foraging cluster polygons outside of the Project Area but still relevant to this analysis (Figure 2).

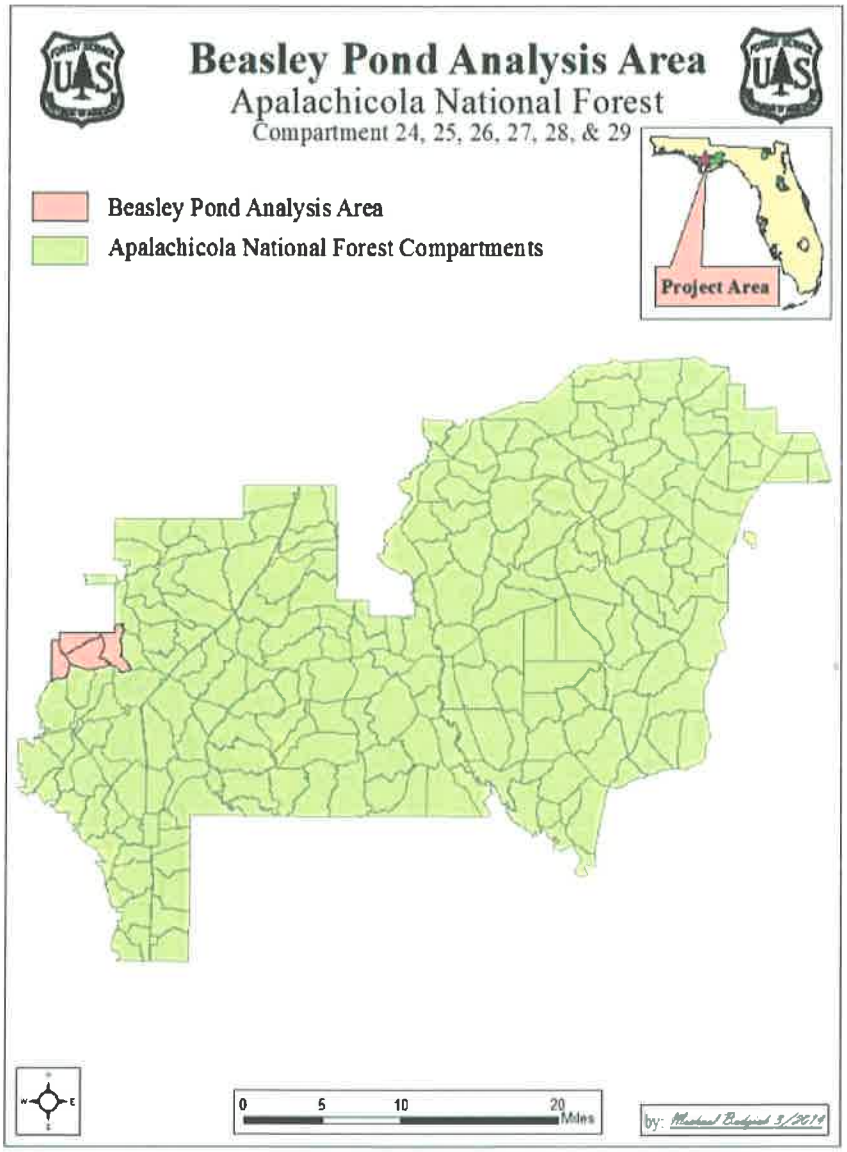

Figure 1. Project Area is (shaded pink) located within the Apalachicola District of the Apalachicola National Forest, Liberty County, Florida.

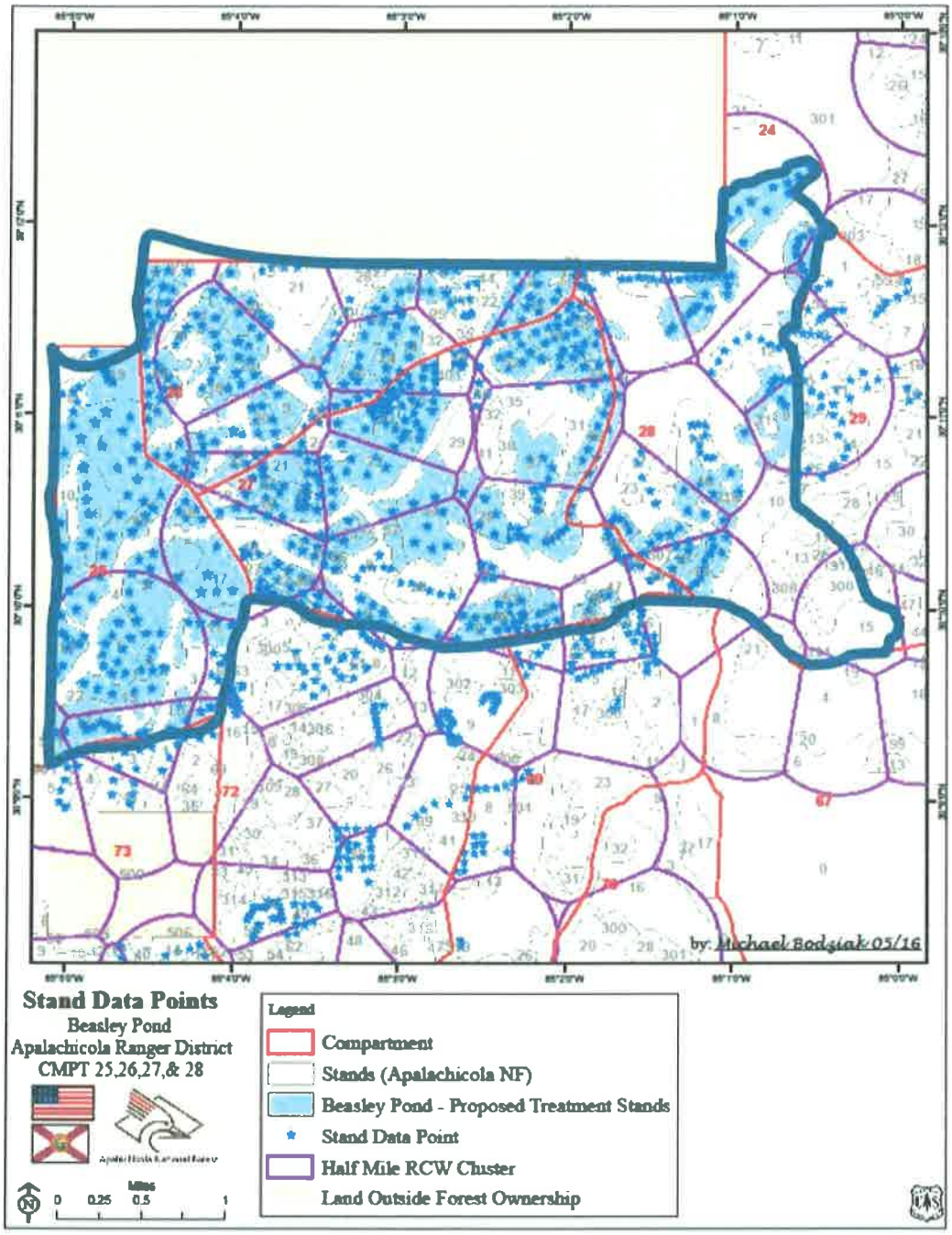

Figure 2. The Project Area within the Apalachicola Ranger District is outlined in Black. The Action Area includes the portion of the foraging polygons that overlap outside of the Project Area.

Conservation Measures

Conservation measures are actions designed to benefit or promote the recovery of a listed species that are included by the federal agency as an integral part of the proposed action. These actions will be taken by the Federal agency or applicant and serve to minimize or compensate for project effects on the listed species. The USFS commits to the following avoidance and minimization measures referred to as 'Coordination Measures' in the BA (e.g. March 1, 2016 email message) and others come from informal discussions following the BA submission. These Measures will reduce impacts to Florida Skullcap and the RCW.

Florida Skullcap

-Prepoposed Mitigation Measure to address Impacts to Florida skullcap (received via email on March 1, 2016)

-To minimize soil disturbance in areas containing federally listed plants, harvest will be restricted to only dry time periods. This will be monitored by through groundwater wells placed in the harvest units by USFS Timber Sale Administrators. Suitable conditions usually occur when the water table is 25 inches, or greater, below the surface.

-Temporary roads, log decks, and skid trails shall be located outside of areas of high density of Florida skullcap, i.e., areas with at least 500 flowering stems.

-Florida skullcap will be monitored. Monitor populations within the action area for at least one burn rotation following the timber harvest treatments in order to measure the effects of the proposed actions on Florida skullcap. Coordinate with the USFWS to develop and implement the monitoring design and protocol.

Red-cockaded Woodpecker

-Contracts will contain penalty clauses to reiterate the importance of protection measures for RCW trees (marked with white-bands) during the proposed action.

-When possible, log decks will be located no closer than 200 feet (ft.) from active RCW cavity trees. Violation measures of this are addressed further within this document.

-When feasible, timber and road contracts will prohibit harvest, hauling, and/or roadwork within active RCW clusters during the nesting season (April 1 through July 31) or until a biologist determines through direct observation that the cluster is no longer active, contains a solitary male only, or has fledged young.

-Active clusters that may be adversely affected by timber harvest activities when those activities occur during the nesting season will be monitored and reports provided to the USFWS on each cluster status and reproductive success (this CM confirmed via letter from USFS to USFWS, dated June 10, 2016, signed by Allen Smith, Deputy District Ranger).

FLORIDA SKULLCAP - STATUS OF THE SPECIES/CRITICAL HABITAT

Species/critical habitat description

Florida skullcap (*Scutellaria floridana*), a plant, is endemic to the Florida Panhandle, and occurs in Bay, Gulf, Franklin, and Liberty counties. The USFWS listed the species as threatened in 1992 (USFWS 1992) under the authority of the Endangered Species Act of 1973, as amended (Act). A recovery plan was approved on June 22, 1994 (USFWS 1994). A 5-year status review was completed in 2008. No critical habitat has been designated for this species.

Life history

Scutellaria floridana is a perennial herb with square stems and opposite leaves. The flowers are solitary, with a bell shaped calyx and lavender-blue corolla. Plants flower from mid-April to early July or December and are most prolific after a fire. Flowering can last for about two weeks. Bumblebees, megachilids and halictids are probably important pollinators (Pitts-Singer *et al.* 2002). The populations are genetically similar and there is no population structure associated with geography (Molano-Flores *et al.* 2014). This species lacks a soil seed bank (Molano-Flores *et al.* 2014). At present, there are no demographic or seedling recruitment studies for this species.

Florida skullcap occurs in wet longleaf pine flatwoods and wet prairie within the grassy seepage bog communities at the edge of forested or shrubby wetlands. It is also found in the ecotones between mesic flatwoods and swamps sites or grassy margins of wetland habitats and somewhat disturbed wetland savanna. Florida skullcap can be found growing in full sun or light shade and in low nutrient, acidic, or sandy soil (USFWS 1994, Jenkins *et al.* 2007).

Population dynamics

Scutellaria floridana is endemic to the Florida panhandle, documented in four counties (Table 1). As of 2009, 40 localities were known to occur in 29 distinct Element Occurrences (EO) (FNAI 2008). An EO is defined as an area of land and/or water in which a species or natural community is, or was, present. For species, it corresponds with the local population (portion of a population or a group of nearby populations). It is also referred to as occurrence, location, or site.

Development and dense slash pine plantations have resulted in (or potentially resulted in) extirpation of 4 EOs and has left 2 EOs highly fragmented (Negron-Ortiz 2009).

Fire is needed to maintain the natural wet longleaf pine flatwoods and wet prairie communities, habitats where this species occurs. Lack of fire, and subsequent growth of shrubs and saplings in the understory, inhibits this species emergence. In recently burned areas, however, plant emergence is prolific within one year of the fire event. The number of flowering stems can vary dramatically after different fires (Dr. Ann Johnson, Florida Natural Areas Inventory (FNAI), 2015, pers. comm.). FNAI hypothesizes that heavy rainfall after a fire may kill many of the post-fire sprouted stems. Based on herbarium specimens with roots intact and the May 3, 2016, field trip to Kennedy Creek (with FNAI staff, FWS botanist and USFS biologists) it is highly likely that this species spreads via rhizomes (Dr. Ann Johnson, FNAI, 2015, pers. comm.).

Therefore, it is difficult to distinguish how many flowering stems are produced per plant or belong to the same genet.

Status and distribution

Reason for listing

The most significant threat to *S. floridana* at the time of listing was the present or threatened destruction, modification, or curtailment of its habitat or range, a factor described in section 4(a)(1) of the Act [57 FR 19816 (May 8, 1992)]. Specifically, habitat modification due to forestry practices was considered a main threat. Forestry management included the following: shading by planted pine trees, mechanical site preparation for tree planting, and drainage improvement.

Range-wide trends

The current 29 EOs are distributed throughout this species range and were documented between 1954 and 2007, with about 10,073 to 12,742 flowering stems for 28 of these EOs (Table 1). Based on survey information, 14% of these 29 EOs appeared to have been extirpated by development, and 7% were left highly fragmented. All EOs were from Gulf County (Negrón-Ortiz 2009). This survey information indicates a decline in the number of populations. The estimated counts of flowering stems were decreased by 13%; only an estimated 11,101 flowering stems are now reported for those EOs. However, this is an estimate because some potential habitat areas have not been surveyed, while others have been extirpated by development.

Table 1. Number of *Scutellaria floridana* Element Occurences (EOs) and estimated number of flowering stems per county.

County	*Number of EOs*	*Estimated flowering stems*
Bay	1	550 - 2,000 +
Gulf	14	587-1,851+
Franklin	7	1,670-2,609 +
Liberty	7	6,816 – 7,282 +

Threats

Habitat destruction and modification

Land conversion coupled with disruption of fire regimes of the longleaf pine ecosystem is responsible for the rapid decline of the ecosystems where *S. floridana* is found. The long history of timber management (clearcutting, mechanical site preparation, and dense pine plantations), urban development, and fire management and suppression has changed the ecosystems and extirpated some populations. Use of herbicides within powerline right of ways may also have adversely affected *S. floridana* populations.

Climate change

Fish, wildlife, and plants are also threatened by climate change. According to the Intergovernmental Panel on Climate Change Report (IPCC 2013), warming of the earth's climate is "unequivocal," as is evident from observations of increases in average global air and ocean temperatures, increases in concentration of greenhouse gases, widespread melting of snow and ice, and rising sea level. Scientific evidence indicates a rapid and abrupt climate change, rather than the gradual changes that have been currently forecasted, posing a significant challenge for fish, wildlife, and plant conservation. As climate changes, the abundance and distribution of species also change. Highly specialized or endemic species such as Scutellaria are likely to be most susceptible to the stresses of changing climate. The IPCC (2013) predicts sea level rise (SLR) to be 0.26 - 0.82 m by year 2100, which will likely cover most of Florida's land mass less than 1 m in elevation (Noss 2011).

Endemic to Florida, *S. floridana* has a restricted range; therefore, it is potentially at risk. Specifically, Florida is one of the areas most vulnerable to the consequences of climate change. Using the NOAA Sea Level Rise and Coastal Flooding Impacts Viewer (https://coast.noaa.gov/digitalcoast/tools/slr), the projections indicated that coastal habitat areas in Bay, Franklin, and Gulf Counties would be largely inundated beginning at 0.305 m (one foot) of SLR. Therefore, SLR projections will most likely extirpate several populations, located in Gulf and Franklin counties.

Recovery criteria

The recovery plan includes an objective for recovery of the species as well a criterion. The recovery objective is to promote conservation of habitats for *S. floridana*. The recovery criterion is to adequately protect and manage 15 populations distributed throughout the species' range for 10 years.

FLORIDA SKULLCAP - ENVIRONMENTAL BASELINE

Status of the species within the action area

There were approximately 6,906 thriving flowering stems located within the proposed action area. Most flowering stems were found in wet prairie or flatwoods areas that would receive either the 10 – 40% BA or constant 40% BA Savanna Treatment (Figure 3 and Table 2). A few other individuals were observed in areas that would receive either of the two mechanical thinning treatments (Table 2).

According to Dr. Ann Johnson, FNAI, (2015 pers. comm.), compartments 27 and 28 comprise the northern portion of FNAI EO 37 and are within the Action Area. EO 37 extends southward in compartments 69, 70, 71, 72, and 75 and contains the majority of the *S. floridana* flowering stems in the ANF; these five compartments are not in this action area. Compartments 25 and 26 in the Action Area contain no known plants of *S. floridana*.

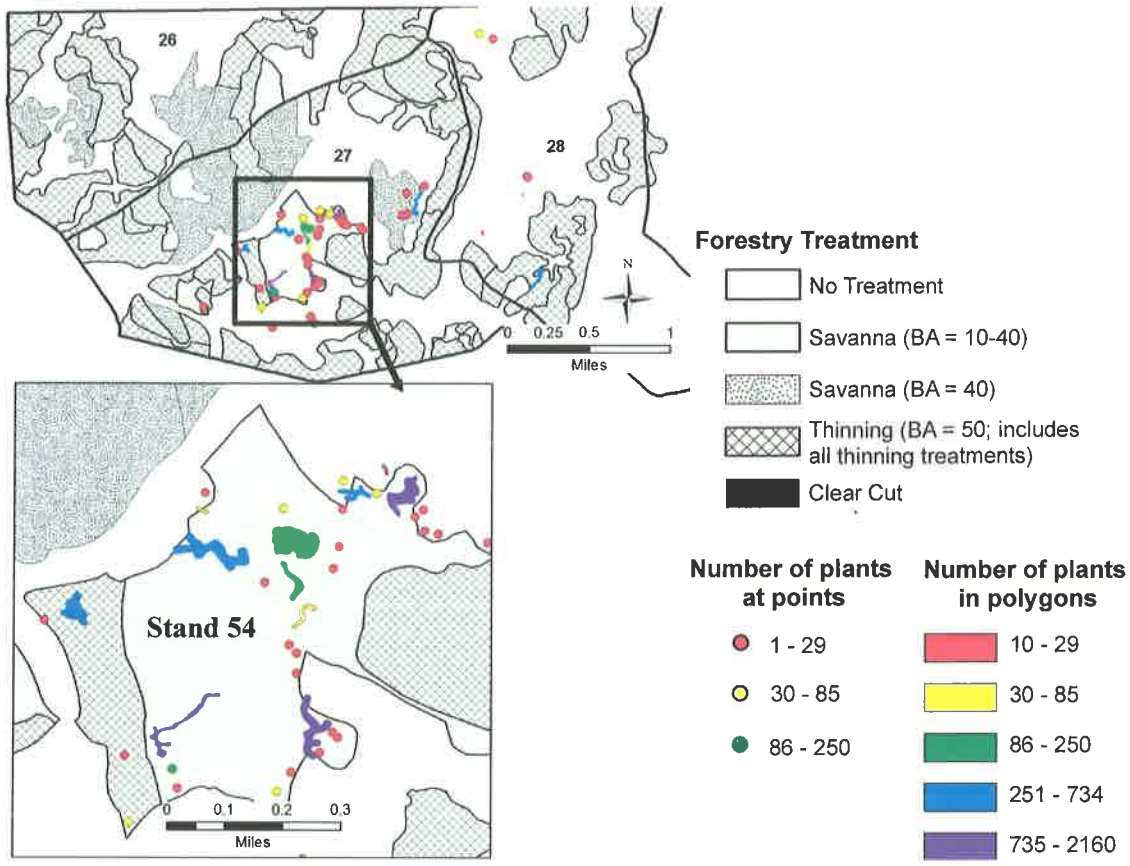

Figure 3. A portion of the action area showing forestry treatments and number of documented *Scutellaria floridana*.

Factors affecting Florida skullcap within the action area

This analysis describes factors affecting the environment of the species in the action area. The baseline includes State, local, Tribal, and private actions within the action area already affecting the species or that will occur contemporaneously with the proposed action and would affect the environment of *S. floridana*. Unrelated Federal actions affecting this species that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that benefit *S. floridana*.

The USFS intends that the forest management practices covered by this Proposed Action be executed in conjunction with a forest-wide prescribed fire program. Potential cumulative impacts include mechanical destruction of individual *S. floridana*, increased soil erosion and leaching of soil nutrients if fires occur immediately after harvest; offsite movement and non-target application of herbicides; disturbance of soil by movement of large machinery; periods of smoke during prescribed burns; and a shift in vegetation in treated areas from a community dominated by pines to a more diverse community including native ground cover that historically was maintained by fire.

FLORIDA SKULLCAP - EFFECTS OF THE ACTION

Factors to be considered

Direct Effects

An estimated count of 6,325 *S. floridana* flowering stems of (compartments 27 and 28) found within the Beasley Pond area may be impacted due to the proposed project (Table 2). Only 581 plants occur in no treatment areas and will remain undisturbed. Potential direct effects include crushing or destruction of aboveground stems by timber harvest and associated activities during logging and hauling operations as well as unintentional application of the herbicide triclopyr as part of the wet savanna restoration treatment.

Table 2. Number of *S. floridana* stems potentially impacted by each of the proposed forest management actions in each compartment.

Treatment	*Compartment*			
	25	26	27	28
Clear Cut	0	0	0	0
First Thin (50)	0	0	0	0
Intermediate Cut (50)	0	0	701	625
Intermediate Cut Uneven Age (50)	0	0	0	0
SAV (10-40)	0	0	4389	0
SAV (40)	0	0	610	0
Total Plants Potentially Impacted	0	0	5700	625

Indirect Effects

The Proposed Action includes several 'Supportive Actions,' including maintenance of landlines and reconstruction, improvement and maintenance of primitive roads that would be used for timber harvest and transportation of timber products. Approximately *S. floridana* 800 stems are located within 10 m (32.8 ft) of access roads in the Beasley Pond Action Area and may be subject to indirect adverse impacts including human trampling, competition with exotic invasive species near high-disturbance road margins, contaminant impacts from potential fuel or lubricant spills and soil disturbance.

The USFS will minimize such risks by restricting timber harvest activities to periods when soils are 'dry enough to allow for minimal soil disturbance.' This restriction may prevent unintentional destruction of *S. floridana* stems and may also reduce the risk of disturbing soil drainage and other aspects of Action Area hydrology.

Analyses for effects of the action

Fire is needed to maintain the natural pine flatwoods community, habitat where this species occurs. Where frequent fire is implemented, it stimulates the emergence of *S. floridana* individuals and maintains healthy, stable populations (e.g., populations at ANF, Lathrop Bayou,

and St. Joseph State Buffer Preserve). However, outside these protected and well managed areas, the species is affected by urban and exurban development and growth, and subjected to a high degree of habitat destruction due to development.

An estimated 6,325 *S. floridana* stems and their associated habitat may be impacted by the proposed forestry treatments, as part of the Beasley Pond project in compartments 27 and 28 (Table 2), and the effects of the action may result in some direct loss of up to an estimated 6,325 stems. The majority of these impacts will occur in compartment 27, stand 54 (Figure 3).

Timber harvest and associated support activities will likely have short-term detrimental impacts on *S. floridana* in the proposed project area. The long-term impacts of the proposed actions, however, are unknown because similar, prior treatments on *S. floridana* have not been monitored. As part of the Conservation Measures described above, the USFS will monitor the effects of the proposed actions for at least one burn rotation following treatment.

Species' response to a proposed action

The proposed actions are anticipated to have detrimental short-term impacts yet likely beneficial long-term effects on *S. scutellaria* in the project area. A recent site visit to savanna restoration in the Kennedy Creek project (south of Beasley Pond) may provide some insights of the long-term benefits of timber harvest and fire on the *S. floridana* population (J. Dunlap, 2016, pers. comm.). Plants located alongside access roads and in areas in which logging would occur might be mechanically destroyed by heavy equipment, but increased suitable habitat resulting from savanna restoration is anticipated, and may contribute to recovery of the species.

RED-COCKADED WOODPECKER - STATUS OF THE SPECIES/CRITICAL HABITAT

Species/critical habitat description

The USFWS identified the red-cockaded woodpecker (RCW) as a rare and endangered species in 1968 and officially listed it as endangered in 1970 (Federal Register 35:16047). No critical habitat has been designated for the RCW. A complete discussion of the status of the species in Florida and throughout its range can be found in the USFWS's Recovery Plan (USFWS 2003). In addition, a 5-year review found no change to the status of the species (USFWS 2006). These documents are incorporated here by reference.

Species description

The RCW measures approximately 7-8 inches (in) (18-20 centimeters [cm]) in length with a wing span of 14-15 in. (35-38 cm). The RCW is distinguished by its conspicuous white cheek patches, black cap and neck, and black-and-white barred back and wings.

Historically, the RCW occupied a wide range throughout old-growth, fire-maintained pine ecosystems of the southern United States. Although still widely distributed, the range of the RCW is now limited and fragmented as a result of past and present human activities (e.g., resource extraction activities, changes in land cover, and urban development) and natural factors (e.g., hurricanes and pine beetle outbreaks). The remaining largest RCW populations exist

primarily on Federal and state lands located in the Atlantic and Gulf Coastal Plains from North Carolina to Texas, the Piedmont of Georgia and Alabama, the Sandhills of North Carolina and South Carolina, and the interior highlands of Arkansas, and Oklahoma (Costa and Walker 1995).

While no critical habitat has been designated for the RCW, the structure of foraging habitat is important to fitness (i.e., reproductive success) of RCWs as well as influencing habitat selection as described in greater detail below. Briefly, fitness increases if foraging habitat is burned regularly, has an open character and herbaceous ground cover, and contains large old trees. Selection of habitat increases with these same characteristics. This structure constitutes good quality foraging habitat for the species. Quality of foraging habitat also affects home range size as follows: as quality increases, the amount of foraging habitat used decreases.

Life history

The RCW has an advanced social system that revolves around family groups. A typical RCW group includes one pair of breeding birds, the current year's offspring (if any), and zero to four "helpers". Helpers are usually male offspring from previous breeding seasons that assist the breeding pair by incubating eggs, feeding the young, excavating cavities, and defending the territory (Ligon 1970; Lennartz and Harlow 1979; Lennartz *et al.* 1987; Walters *et al.* 1988). The RCW nesting season occurs from April to July. Incubation lasts approximately 9-10 days, and the young fledge 24- 26 days after hatching. Some juvenile males disperse from their natal territory prior to the next breeding season in an attempt to find vacant territories, or to establish their own (Hooper *et al.* 1980; USFWS 2003). Others may remain and become helpers during subsequent nesting seasons. Most juvenile females disperse after fledging, although some may remain with the group as helpers (Walters *et al.* 1988). The average dispersal distance of fledgling males and females is about three miles (Walters 1991; Letcher *et al.* 1998). RCWs exhibit relatively low adult mortality rates; annual survivorship of breeding males and females is high, ranging from 72 to 84 percent and 51 to 81 percent, respectively (Lennartz and Heckel 1987; Walters et al. 1988; DeLotelle and Epting 1992). In North Carolina, survival rates of RCWs fall to around 50% beginning at age 9 in females and age 11 in males (Walters et al. 1988).

Each group of RCWs occupies a discrete territory consisting of its cavity trees, called a "cluster", and adjacent foraging habitat (Walters 1990). The RCW requires mature (usually 60 or more years old) live pine trees to excavate its nesting and roosting cavities. The cavity trees are essential to the RCW because they provide shelter and a place to nest and raise young (Ligon 1970). A typical cluster contains 1-20 cavity trees, and the breeding male usually chooses the best, most recently excavated natural cavity as the nest tree, or selects cavity trees with higher resin yields (Conner and Rudolph 1989). Such cavity trees may enhance the survival of the nestlings by decreasing the parasite load of nestlings and incubating adults, and providing a resin barrier to reduce snake or other predation.

Once established, clusters are often utilized for many consecutive years or even decades, largely passed down from one generation to the next (Walters 1990). Hardwood encroachment into the midstory lessens the habitat quality, eventually leading to cavity abandonment when the hardwood midstory reaches cavity height (Conner and O'Halloran 1987; Costa and Escano

1989). Cluster abandonment may also occur as a result of displacement by competing cavity dwellers, or meteorological events such as hurricanes (Conner and O'Halloran 1987).

RCWs scale and probe bark on the trunks and limbs of living pine trees while foraging for insects. The amount of foraging area used by a group is dependent upon the quality of the habitat and population density. Many complex and interrelated factors, such as condition of the understory plant community, annual weather fluctuations, forest type, soils, physiographic province, season of the year, fire frequency and intensity, are important in determining foraging habitat quality. Research indicates that birds generally forage within one-half mile of the cluster (USFWS 2003). RCW home ranges may vary seasonally, and encompass 60 to 300 acres. Habitat typically consists of open pine and/or pine/hardwood forests. Although in some habitats RCWs will forage on smaller pine trees (DeLotelle *et al.* 1987), they prefer pines greater than 10 inches in diameter at breast height (dbh) (USFWS 2003). Groups may forage on pines scattered through hardwood stands, but pure hardwood stands are of little value to the RCW (Conner and O'Halloran 1987). The highest populations of the RCW occur on areas with active prescribed burning programs that control hardwoods.

The RCW is territorial and each family group defends its home range from adjacent groups (Hooper *et al.* 1982; Ligon 1970). Territories tend to be smaller in areas with few hardwoods, presumably because of higher quality habitat. Home range size is related to both habitat and demographic (e.g., group size and population density) variables (Hooper *et al.* 1982; Lennartz *et al.* 1987) and is inversely related to habitat quality (DeLotelle *et al.* 1987, 1995). Studies by Hardesty *et al.* (1997) and James *et al.* (2001) suggest that habitat structure, and not just the quantity of total resources, is an important determinant of home range size, territory quality, and reproductive success. The availability, quantity, and quality of foraging habitat affects RCW cluster status, group size, home range size, and reproductive success (Conner and Rudolph 1991; DeLotelle *et al.* 1987, 1995; Hardesty *et al.* 1997). Low-quality foraging habitat and large reductions in available foraging habitat can cause RCWs to abandon clusters, reduce fledging rates, and disrupt social interactions (Conner and Rudolph 1991; DeLotelle *et al.* 1995; Jackson and Parris 1995).

Population dynamics

The recovery of the RCW is directly linked to the viability of discrete populations within selected southeastern states (USFWS 2003). Populations required for recovery are distributed among 11 recovery units based on physiographic region to ensure the representation of broad geographic and genetic variation in the species. Viable populations within each recovery unit, to the extent allowed by habitat limitations, are essential to recovery of the species as a whole. Until the 1990s, most RCW populations were considered stable at best, or declining. However, RCW population trends since the early 1990s are improving, with an estimated 6,105 active RCW clusters range-wide (USFWS 2006). The species will be considered recovered and removed from the Endangered Species list when 5 criteria are met. The criteria establish a tier of populations within the 11 recovery units that contain sufficient suitable nesting and foraging habitat and are not dependent on the installation of artificial cavities to remain stable.

Long-term viability of an RCW population, in genetic terms, depends on the presence of an adequate number of breeding individuals for the natural processes that increase genetic

variability (e.g., mutation and recombination) to offset the natural processes that decrease genetic variability (e.g., genetic drift and inbreeding). Additionally, any prediction of a population's viability should also consider the population's ability to survive population fluctuations due to demographic and environmental fluctuations (Koenig 1988) or natural catastrophes. Reproductive rates, population density, and recolonization rates may influence RCW population variability more than mortality rates, sex ratios, and genetic viability. Therefore, dispersal of adult birds to assume breeding roles in vacant clusters is essential for population persistence (Daniels *et al.* 2000; Schiegg *et al.* 2002).

Although the relationship between RCW population variability and density is not well understood, recent studies indicate spatial distribution of territories is important in long-term population stability. Conner and Rudolph (1991) found that, in sparse populations, RCW group size and the number of active clusters decreased as fragmentation increased. Hooper and Lennartz (1995) suggested that populations with less than 4.7 active clusters within 1.25 miles on average had critically low densities that inhibited population expansion. Results from a spatially explicit simulation model of RCW population dynamics suggest that population growth rate may depend more on the number and spatial distribution of territories, than on the initial composition of the population (Letcher *et al.* 1998). Achieving a self-sustaining population required fivefold more territories when territories were randomly spaced than when they were maximally clumped, and populations with as few as 49 territories were stable when those territories were highly aggregated. Populations of more maximally aggregated groups are likely to persist over the short term (i.e., 20 years) (Crowder *et al.* 1998).

Natural population growth (i.e., without recruitment clusters) occurs at extremely low rates (one to two percent per year) in this species (Walters 1991), and the availability of cavity trees is limiting (Copeyon 1990; Allen 1991). New groups or new territories arise by two processes, pioneering and budding (Hooper 1983). Pioneering is the occupation of vacant habitat by construction of a new cavity tree cluster and is relatively rare. Budding is the splitting of a territory, and the cavity tree cluster within it, into two. Budding is more common than pioneering in RCWs, since the new territory contains cavities from the outset (USFWS 2003). Inactive clusters are important to maintaining extant populations of RCWs and may provide a short-term opportunity to enhance habitat available to RCWs, and thus increase the number of groups in populations (Doerr *et al.* 1989). After a territory is abandoned for two or more years, it is almost never reoccupied. This abandonment is typically because cavities are unsuitable due to deterioration or hardwood encroachment (Beckett 1971; Conner and Locke 1982; Copeyon *et al.* 1991).

The technology to induce new territories at desired locations exists and management for optimum territory clumping is, therefore, possible (Letcher *et al.* 1998). Artificial cavities can be installed in unoccupied habitat that is otherwise suitable (Copeyon 1990; Allen 1991), and these cavities typically become subsequently occupied by dispersing subadult birds (Carrie *et al.* 1999; Conner *et al.* 1999). Adding artificial cavities to sites already occupied increases group size (Carrie *et al.* 1999). Artificial cavities provide additional roosting opportunities for subadult males, encouraging them to remain in their natal clusters and potentially inherit the territory (Carrie et al. 1999). Females may also benefit when additional cavities are provided because

they are the most subordinate members of the RCW social group, and therefore, may not always be able to secure adequate roost cavities.

Inducing the formation of RCW groups in restored habitat with artificial cavities is an established and successful technique (Copeyon *et al.* 1991; Walters *et al.* 1992; Gaines *et al.* 1995; Watson et al. 1995). Within one year of restoring habitat and providing artificial cavities at 20 unoccupied territories in the Sandhills of North Carolina, 90 percent of the sites were occupied by RCWs (Copeyon *et al.* 1991). Translocating RCWs is another method successfully used to establish new groups (Rudolph et al. 1992; Allen *et al.* 1993; Hess and Costa 1995; Costa and Kennedy 1994; Franzreb 1999). Translocation can include augmenting a solitary-bird group or translocating a pair of subadult RCWs [i.e., unrelated male and female (Costa and Kennedy 1994)]. Franzreb (1999) found that 63.2 percent of translocated birds (including adults and juveniles) remained at the release site for at least 30 days and 51.0 percent reproduced.

Status and distribution

The RCW was listed as endangered due to documented declines in local populations and massive reduction in foraging and nesting habitat. The life history of RCWs is closely tied to the occurrence of fire-maintained old growth pine forests that once dominated the southeastern United States. Only 3 million acres of longleaf pine forest remain of the estimated 60 to 92 million acres once in existence (Frost 1993). The history of timber harvesting for agriculture, short timber rotations, and the suppression of fire reduced the amount and quality of RCW foraging and nesting habitat.

At the time of listing, the total number of individuals had declined to less than 10,000 in widely scattered and isolated populations (USFWS 2003). Most RCW populations, regardless of location or land ownership, were considered stable at best, but more likely declining (Costa 1995). Costa and Escano (1989) documented RCW population declines in at least 10, and perhaps as many as 17 populations on National Forests. James (1995) estimated that the number of active clusters range-wide declined 23 percent between the early 1980s and 1990. Since the early 1990s, numerous RCW populations have increased, particularly on Federal lands, as a result of management activities.

In 2003, it was estimated that 14,068 RCWs inhabited 5,627 active clusters across 11 States in the southeast United States (USFWS 2003). National Forests (NF), military installations, and National Wildlife Refuges (NWR) contain the majority of extant populations and most of the habitat that is potentially suitable for RCWs. Conservation of RCWs as a species will depend on prudent management of habitats on those Federal lands. National Forests support the majority of the core populations required for recovery of the species, and therefore, have a uniquely important role in the species' recovery. Prior to the 1980s, most populations on National Forests were declining, but management efforts during the past several decades, especially prescribed burning and cavity management, stabilized most of those populations and led to increases in some (USFWS 2003). As of January 2006, 6,105 active clusters across 11 states were reported (USFWS 2006). The USFWS is currently updating the status of the RCW throughout its range, and a final report should be available later in 2016. Recovery is progressing. Core populations are continuing to increase, and there have been substantial enrollment in the Safe Harbor

program protecting RCWs on private lands (Will McDearman, USFWS RCW coordinator, pers.comm. via email dated Feb. 2013).

Previous formal consultation

Two projects have resulted in formal consultation for RCWs in the Central Florida Panhandle Primary Core Recovery Population:

-2006 December 12: Reinitiation of Consultation of National Forests in Florida Land and Resource Management Plan, Prescribed Burning Program. Relative to this consultation, ANF Ranger District is allotted "take" of two nest trees per year. This incidental take of nest trees is expected to be in the form of destruction of eggs or injury or mortality to RCW nestlings.

-2006 August 1: Batched Consultation on the Prescribed Fire Program for National Wildlife Refuges in the Southeast (St. Marks NWR is part of the Central FL Panhandle Population)

Threats to red-cockaded woodpeckers

A complete discussion of the threats to the RCW is contained in the USFWS's Revised Recovery Plan (USFWS 2003, pages 140-161) and 5-year status review (USFWS 2006). A succinct summary from the 5-year review (USFWS 2006) states the primary threats to species viability for RCWs all have the same basic cause, lack of suitable habitat. These threats included: 1) insufficient numbers of cavities and continuing net loss of cavity trees, 2) habitat fragmentation and its effects on genetic variation, dispersal, and demography, and 3) lack of foraging habitat of adequate quality. Other associated threats to species viability for RCWs include range-wide population isolation, within population isolation (i.e., isolation of clusters), and genetic and demographic threats to viability inherent to small populations discussed above.

Climate change

The varying and dynamic elements of climate change are inherently long term, complex and interrelated. Although we may anticipate the direction of change it may not be possible to predict precise timing or magnitude. These impacts may take place gradually or episodically in major leaps.

According to the Intergovernmental Panel on Climate Change Reports (IPCC 2007, 2013), warming of the earth's climate is "unequivocal," as is now evident from observations of increases in average global air and ocean temperatures, widespread melting of snow and ice, and rising sea level. The IPCC Report (2007) describes changes in natural ecosystems with potential wide-spread effects on many organisms, including marine mammals and migratory birds. Scientific evidence indicates a rapid and abrupt climate change, rather than the gradual changes that have been currently forecasted (IPCC Report 2007), posing a significant challenge for fish, wildlife, and plant conservation. Species' abundance and distribution are dynamic, relative to a variety of factors, including climate. As climate changes, the abundance and distribution of fish and wildlife will also change. Highly specialized or endemic species are likely to be most susceptible to the stresses of changing climate. Based on these findings and other similar

studies, the USFWS will incorporate potential climate change effects as part of their long-range planning activities (USFWS 2009 a, 2009b).

Climate change at the global level drives changes in weather at the regional level, although weather is also strongly affected by season and by local effects (e.g., elevation, topography, latitude, proximity to the ocean). Temperatures are predicted to rise from 2°C to 5°C for North America by the end of this century (IPCC 2007). Other processes to be affected by this projected warming include rainfall (amount, seasonal timing, and distribution), storms (frequency and intensity), and sea level. The 2007 IPCC report found a 90 percent probability of 7 to 23 inches of sea level rise by 2100. The exact magnitude, direction, and distribution of these changes at the regional level are not well understood or easy to predict. Seasonal change and local geography make prediction of the effects of climate change at any location variable. Current models project a wide range of regional changes, but generally project the interior southeast to be drier and coastal areas to be wetter.

Florida is one of the most vulnerable areas to the consequences of climate change. Climatic changes in Florida could amplify current land management challenges involving habitat fragmentation, urbanization, invasive species, disease, parasites, and water management (Pearlstine 2008). Global warming will be a particular challenge for endangered, threatened, and other "at risk" species. It is difficult to estimate, with any degree of precision, which species will be affected by climate change or exactly how they will be affected. The USFWS will use Strategic Habitat Conservation planning, an adaptive science-driven process that begins with explicit trust resource population objectives, as the framework for adjusting our management strategies in response to climate change (2009a).

Significant threats to RCW populations that may be exacerbated by climate change are increased numbers and intensity of hurricanes (Emanuel 2005; Webster *et al.* 2005) and increased episodes and duration of drought events. Drought events can increase the likelihood of insect outbreaks (i.e. southern pine beetle). Hurricanes can significantly reduce a RCW population by impacts to cavity trees, and by damage to forest stability and structure, both important to RCWs that may require years to recover.

Recovery criteria

Recovery criteria identified as necessary to remove the RCW from ESA protection are found in the USFWS's Revised Recovery Plan (USFWS 2003, pages 140-161) and 5-year review (USFWS 2006). Pertinent to this proposed action, Criterion 1 within the RCW Recovery Plan (USFWS 2003) requires that 12 populations of RCWs each contain at least 350 PBGs, and 1 population to contain 1000 PBGs from among 13 designated primary core populations. Also, each of these 13 populations is not to be dependent on continuing installation of artificial cavities to remain at or above this population size.

Summarizing from the RCW Recovery Plan (RCW Plan) (USFWS 2003), research has expanded our understanding of the foraging ecology of RCWs considerably but not perfectly (as described above). The RCW Plan provides two sets of guidelines for the management of foraging habitat: 1) the recovery standard; and 2) the standard for managed stability (Table 3). The recovery

standard (see pages 188-189 in RCW Plan) defines "good quality foraging habitat" and is a description of the desired future condition of RCW foraging habitat on any properties involved in species recovery. Many RCW territories do not currently meet this standard. The recovery standard, when applied forest-wide, will provide the landscape that is considered necessary to achieve recovery within individual populations. The recovery standard, however, is not used to evaluate the anticipated level of incidental take related to project impacts on foraging habitat.

The managed stability standard (see pages 292-294, Appendix 5 in the RCW Plan) is to be used for instances in which a landowner cannot manage to the recovery standard and defines the minimum foraging habitat requirements considered necessary to avoid foraging habitat-related incidental take (USFWS Memo; May 2005). That is, it identifies the quantity and quality of foraging habitat necessary for a breeding group to (a) survive and (b) reproduce, based on foraging habitat alone. Wide-scale (population or property-level) implementation or application of the managed stability standard will not allow us to achieve recovery of the species because it will fail, over the long term, to: 1) ensure adequate nesting habitat or good quality foraging habitat, 2) prevent population fragmentation with subsequent problems related to demographic stochasticity and perhaps genetic variability, and 3) support a population's long-term survival or ability to achieve recovery.

Table 3. Foraging habitat standards for Red-cockaded Woodpeckers as defined by the RCW Recovery Plan.

Measure	*Recovery Standard*	*Managed Stability Standard*$_1$
Acres	120-300$_2$	minimum 75
average pine Basal Area (ft^2 per acre)	minimum 20 ≥14 in dbh	between 40 to 70 ≥10 in. dbh
Basal Area total (ft^2/ac) all pines ≥10 in dbh	minimum 40	minimum of 3,000 ≥ 10 in. dbh
average Basal Area of pines <10 in (ft^2 per acre)	< 10	< 20
Total stand basal area, including hardwoods,	no cap	less than 80 ft^2/ac
Stand age	≥ 30 yrs	≥ 30 yrs
Distance from cluster	0.5 mile	0.25 mile
Midstory height	sparse and less than 7 ft	sparse and less than 7 ft
Ground cover	>40% herb	None

> = greater than; < = less than; dbh = diameter at breast height; ft^2 = square feet; in = inch

$_1$ = considered as the standard for "incidental take".

$_2$= 200-300 acres are required in areas with low productivity.

Analysis of the species/critical habitat likely to be affected

Removal of pine trees from savanna habitat is required to restore these ecosystems to a more natural condition. RCWs have likely benefited from the artificial expansion of pine habitat into these sensitive areas although none of the proposed actions result in reducing RCW foraging habitat below a level considered adverse to the bird. The proposed action also includes timber harvest within mature and immature longleaf and slash pine stands and pine plantations. Impacts from associated landing zones, temporary road construction, and timber harvest that provide direct and indirect impacts to RCWs are considered in the remaining sections of this opinion. Critical habitat has not been designated for the RCW, therefore none will be affected.

RED-COCKADED WOODPECKER - ENVIRONMENTAL BASELINE

This section is a discussion of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem within the action area. The environmental baseline is a "snapshot" of a species' health at a specified point in time, prior to the action. It does not include the effects of the action under review in the consultation.

The Forest Plan outlines management goals for the National Forests of Florida. One of which calls for the conservation and protection of declining natural communities and uncommon biological, ecological, or geological sites (USDA 1999a, p. 2-4). The USFS has identified the Beasley Pond Analysis Area (Project Area) as containing important ecological and botanical resources, many of which have been negatively affected by past management activities. In 2011-2012, Florida Natural Areas Inventory (FNAI) biologists generated a GIS-based natural community map based on multiple years of georeferenced aerial photography, soil maps, LiDAR digital elevation models, vegetation plots, elements of occurrences of rare species, and natural communities and ground-truthed GPS points (FNAI 2012). Soil samples, plant surveys, and stand assessments support their conclusion that the stands proposed for savanna treatments were historically savannas (Figure 4). The primary purposes of the proposed action is 1) to maintain, improve, and restore healthy forests and open savanna habitats by thinning pine stands to promote herbaceous groundcover growth; 2) to restore wet savannas to improve habitat for protected species (specifically, plants and flatwoods salamander); and 3) to control the overabundance of hardwood trees and brush species to restore the herbaceous groundcover .

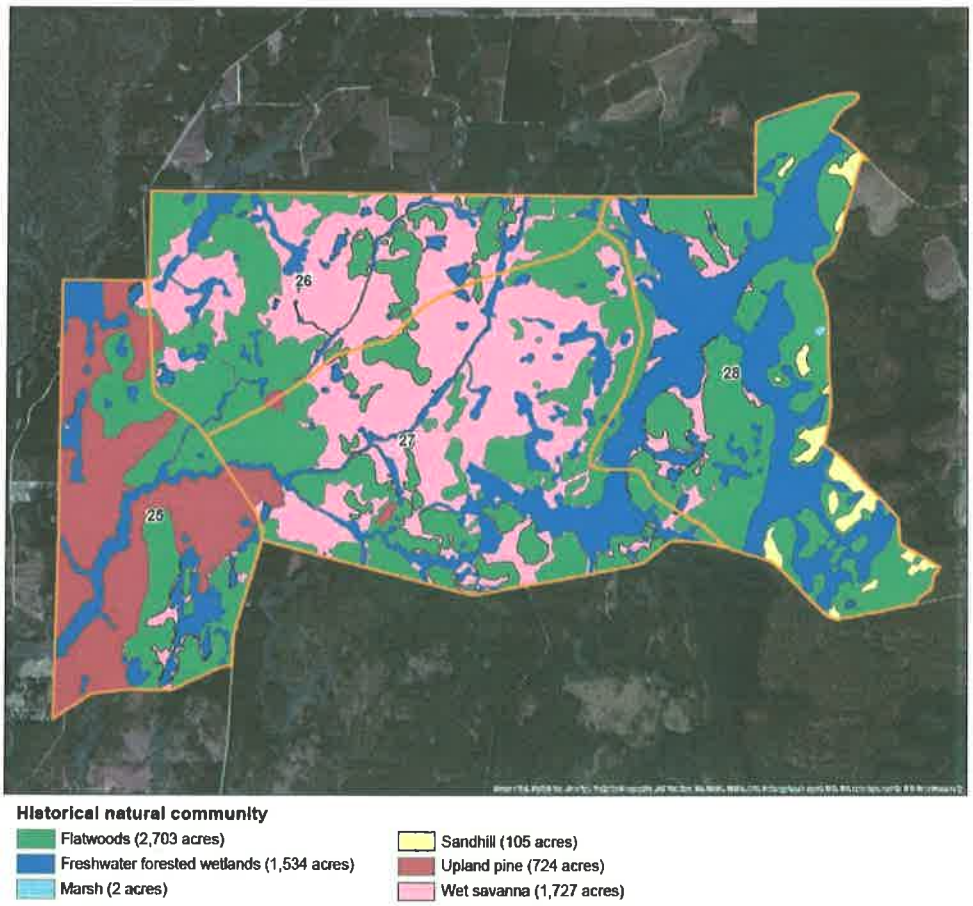

Figure 4. Spatial distribution of historical natural communities within the Beasley Pond Analysis Area.

Status of the species within the action area

The Apalachicola Range District within the Apalachicola National Forest is one of the 13 designated primary core populations for RCW rangewide. It is a subset and foundation of the primary core population (Central Florida Panhandle Primary Core) that is to harbor 1000 PBGs when the species is fully recovered. Central Florida Panhandle Primary Core also includes the Wakulla Ranger District within ANF, Ochlockonee River State Forest, St. Mark's National Wildlife Refuge, and Tate's Hell State Forest (Table 4). This population size (1000 PBGs) may well be resistant to loss of genetic variation through genetic drift. Populations of this size are above the minimum size considered necessary to withstand threats of extirpation from demographic stochasticity, environmental stochasticity, and inbreeding depression.

Discussions and definitions of primary core, and essential support populations are provided in the Recovery Unit Section of the RCW Recovery Plan (pages 145-161). National Forests in Florida (NFF) Land and Resource Management Plan (LRMP) (revised 1999) also identifies property goals (Table 4) in terms of active RCW clusters. The property goals are consistent with those identified in the RCW Recovery Plan. The 2015 breeding season data for the Central Florida Panhandle Primary Population shows at least 804 clusters for the population, and the distribution among properties, both of which are still inadequate for recovery (Table 4).

Table 4. Summarizes the current size of RCW populations within the Central FL Panhandle Primary Core populations that are to achieve 1000 clusters to recover the species.

Property	*Size needed for Recovery*	*Current Size (year 2015)*	*Ownership Type*	*Agency*
Apalachicola Range District, ANF	500	567	Federal	US Forest Service
Wakulla Range District, ANF	506	203	Federal	US Forest Service
Ochlockonee River State Park	3	Not Available	State	Florida Park Service
St. Mark's NWR	71	Not Available	Federal	US Fish and Wildlife Service
Tate's Hell State Forest	400	37	State	Florida Div. of Forestry
Status Towards Goal:	at least 1000 needed	at least 807 as of 2015		

The ANF contains the largest extant population of RCWs and continues to grow despite regular removal of fledglings for the species' translocation program. The current population estimate of 562 active clusters (USFS 2015) exceeds the contribution of 500 active clusters from the Apalachicola Ranger District (ARD) to the Central Florida Panhandle Primary Population (USFWS 2003).

Because of different sampling and monitoring techniques conducted over time, it is not easy to make conclusions concerning population trends since 1998 on the ANF. In 2004, the ANF implemented a more intensive monitoring program to be consistent with the direction provided by the RCW Plan. Prior to 2004, a less intensive monitoring was conducted based on a random sampling. This monitoring was based on a resurvey in 1991 of 46 randomly selected compartments that were initially surveyed in 1981. These data indicate that the ARD subpopulation was stable to increasing. In 1992, in conjunction with Florida State University, 50 groups from each sub-population were chosen for long-term monitoring of population trends. The results of this monitoring are in Table 5.

Table 5. Population parameters for Red-cockaded Woodpeckers, Apalachicola Ranger District, Apalachicola National Forest, 2006.

Nesting Season	*Sample Size**	*% Clusters Inactive*	*% Single Bird Groups*	*% Groups With Helpers*	*Average Fledging Rate*
1993	46	0	0.0	48.8	
1995	46	0	0.0	44.4	
1997	46	0	2.2	55.5	
1999	46	2.2	2.2	62.8	
2001	46	4.3	0.0	50.0	
2002	46	4.3	2.2	39.1	
2003	46	2.2	0.0	37.7	
2004	46	4.3	0.0	31.8	1.42
2005	46	6.5	2.2	53.3	1.37
2006	46	4.3	2.2	50.0	

* Random clusters from Florida State University's data set

On the ARD, a 200 group random sample was selected and monitored in 1999 and again in 2004, 2005, and 2006. The data indicated no significant changes in the population. Beginning in 2014, the ANF population has a minimum sample of 100 clusters monitored and banded. The primary purpose of monitoring and banding the clusters is to support the translocation program. The remaining potentially active clusters receive a status check on a 3-year rotation schedule. Of the clusters banded each year for translocation, the percentage of clusters found to contain PBGs are extrapolated over the number of known active clusters to determine an estimate of the overall PBGs within ANF (2014 ANF RCW population monitoring protocol via John Dunlap, USFS biologist via email on May 3, 2016). Some surveys of unoccupied habitat are conducted ahead of timber sales and other projects, but no systematic surveys of the entire forest are currently implemented on the ANF.

The ARD serves as donor population for the Southern Range Translocation Cooperative, which includes Florida, Georgia, Alabama, and Mississippi, supplying sub-adult RCWs to other properties with extremely small RCW populations to aid in recovery. The basic underlying assumption with translocation is that only *surplus* birds are removed from a donor population (i.e., those within the percentage expected to suffer natural mortality or disperse from their natal population; USFWS 2003b). Since 1998, 261 individual RCWs have been translocated from the ARD (an average of 33 birds per year). Between 2004-2006, the ANF increased the number of birds moved off the ARD, averaging 40 birds per year. Currently, ANF staff in concert with USFWS, aims to remove 15 pairs of RCW yearly. Translocation actions are authorized under a Section 10(a)(1)(A) enhancement of survival permit. Effects of the translocation program were discussed and analyzed in the associated biological opinion on all *Section 10(a)(1)(A) Management, Monitoring and Research Permits Issued to all Private, State, and Federal Agencies and Individuals Involved with Management, Conservation, and Recovery of the RCW Throughout the Range of the Species* issued by the USFWS on November 13, 2003.

As of 2014 data, the Beasley Action Area contains 32 active clusters that will be considered as part of this analysis (Figure 5). Portions of 3 additional cluster foraging circles overlap within the Project Area. These will be unaffected, and, therefore, are not considered in this consultation. The project area also contains 4 inactive clusters that are not managed as recruitment clusters. These 4 clusters have been inactive for >10 years and are also not considered as part of the analysis.

Foraging Habitat within the Action Area

To evaluate potential effects of the proposed activities on RCW habitat, the USFS conducted a foraging habitat analysis following the guidelines in the RCW Recovery Plan and 2005 Memo from USFWS clarifying the analysis process and its interpretation. Thirty-two (32) active clusters will have timber removed within their allocated foraging polygons (Figure 5).

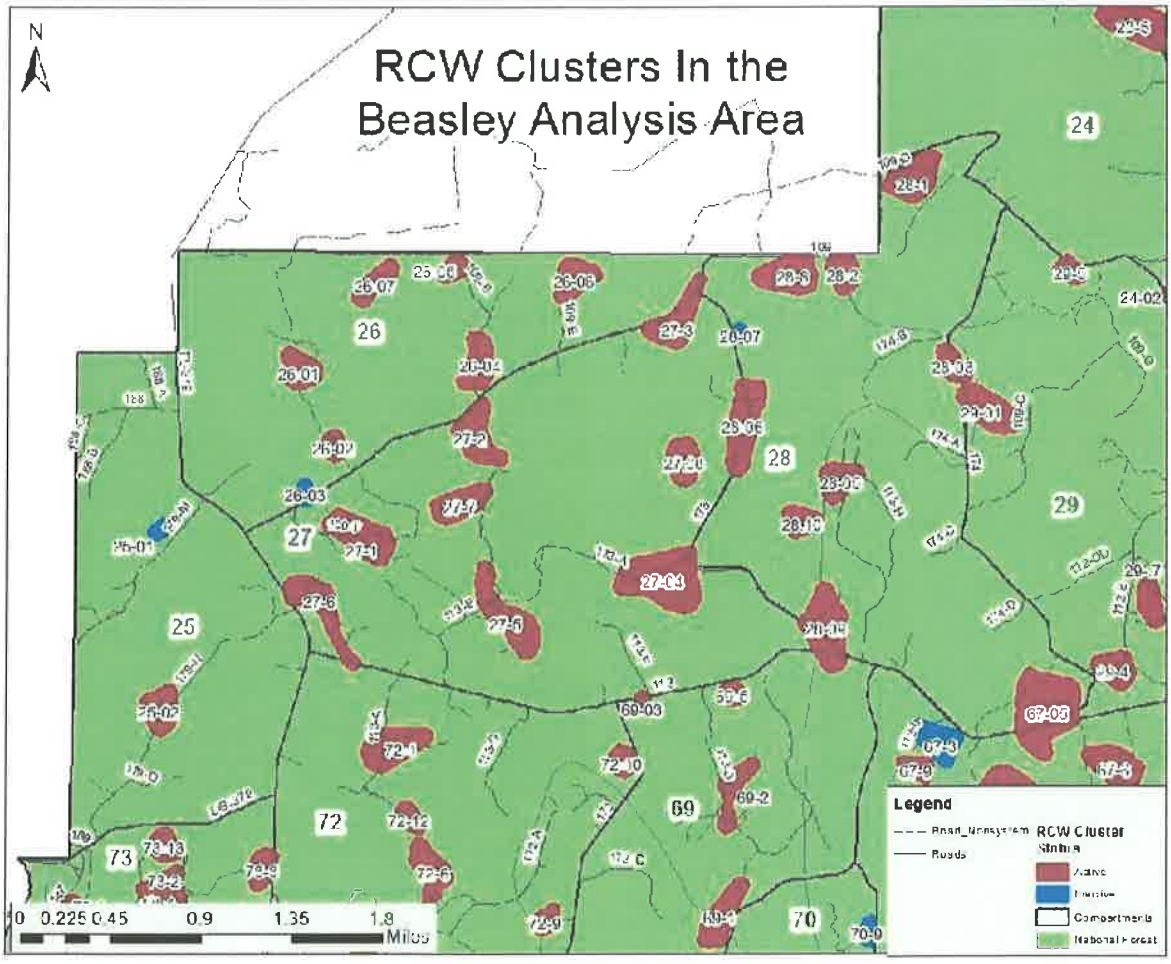

Figure 5. Two hundred foot polygons associated with each RCW cluster in the action area.

Factors affecting species environment within the action area

This section addresses all unrelated federal, state, local, tribal, and private actions within the action area that have occurred or that will occur contemporaneously with the proposed action and will affect the environment of the RCW. The entire action area is federally owned and managed

for natural resources. The USFS has identified the following risk factors for the RCW on NFF lands (USFS 2006):

- Loss of cavity trees or potential cavity trees through harvest, burning, windthrow, or infestation of southern pine beetle).
- Degradation of nesting habitat through lack of prescribed burning.
- Reduction of foraging habitat through excessive harvest or wildfire.
- Degradation of foraging habitat through lack of prescribed burning.
- Demographic isolation.
- Nesting season disturbance.

Savanna habitats also suffered from ditching for drainage for artificial pine planting. These habitat features also suffered degradation from lack of fire that allowed the encroachment and survival of a greater density of woody vegetation and pine trees into the savanna habitats.

Potential habitat loss on USFS lands may occur from infrastructure development and maintenance, development of recreational facilities and their associated use, road construction and maintenance, and incompatible timber practices. Examples of beneficial practices might include hardwood midstory control, restoration of offsite pine species primarily to longleaf pine, and prescribed burning. The threat from tropical storm, hurricane, and tornado damage to cavity trees and foraging habitat will remain a continuing threat to most RCW populations.

RED-COCKADED WOODPECKER - EFFECTS OF THE ACTION

Under section 7(a)(2) of the ESA, "effects of the action" refers to the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated or interdependent with that action. The effects of the proposed action are added to the environmental baseline to determine the future baseline that serves as the basis for the determinations in this document.

The Project proposes approximately 3,700 acres of timber thinning and associated activities. The USFS determined in the BA, provided April 29, 2015, that the proposed action may affect and is likely to adversely affect up to 12 of 32 active RCW clusters within the project area possibly during the breeding season. Initially the following impacts were expected: 8 clusters impacted due to road construction, hauling and harvest, 2 clusters from road construction, hauling, harvest, and log landings within the RCW's 200 ft. cluster area, and 2 from harvest, log landings, and log landings within the RCW's 200 ft. cluster area.

To streamline timber harvest and restoration activities, the USFS, per letter dated June 10, 2016, (signed Allen Smith, Deputy District Ranger), stated that timber harvest throughout the project area may be conducted during the RCW breeding season if soil conditions allow heavy equipment use. Therefore, impacts during the RCW's breeding season may occur within up to 21 (versus the original 12) active clusters (Table 6) and possibly 4 of the 21 during the nonbreeding season. Log landings are usually less than ½ acre in size but can get as large as 1 acre. Log trucks will remove 10-15 loads of timber per day which equates to between 19 and 29

log trucks traversing within active clusters daily for up to several weeks per stand. Additional vehicles that provide support for the timber removal operations will also be traversing daily within active clusters. Eleven additional active clusters (26.7, 28.03, 28.8, 28.1, 29.05, 69.05, 72.01, 72.1, 73.01, 73.03, 73.13) do not have active trees within stands proposed for harvest or within 200 ft. of a harvest stand or hauling route and timber removal will occur during the nonbreeding season. This change in timing of project implementation does not affect any other species considered in the BA.

Table 6. Summary of the active RCW clusters likely to be adversely affected by timber harvest activities under the proposed action at Beasely Pond Analysis Area.

	Road Construction, Hauling and Harvest	*Road Construction, Hauling, Harvest, and Log Landings Within 200' ft. of cluster*	*Harvest and Log Landings and Log Landings within 200' of cluster*	*Harvest within 200 ft. of cluster only*
1.	26.01	27.02	28.09	26.06*
2.	26.02	27.04	28.06	27.06
3.	26.04			27.03
4.	26.05			28.01
5.	27.01			28.03*
6.	27.05			29.01*
7.	27.07			28.05*
8.	28.02			69.03*
9.				73.13*

*clusters with harvest within the 200 ft. cluster boundary, but no harvest will occur in the stands containing RCW trees.

All 32 active clusters will have timber, potential foraging habitat for the RCW, removed from up to ¼- or ½- mile from the center of the cluster of active cavity trees. Data is provided within the USFS's March 2015 BA and summaries of their analysis are located in Appendix B (USFS 2015). The USFS evaluated the suitability of stands in the project area for RCW foraging habitat, allocated suitable stands or partial stands to foraging partitions for each cluster, and determined the effects of the proposed activity on the availability of foraging habitat using the recovery standard and the standard for managed stability (MSS) (Table 3).

Factors to be considered

Proximity of action: Actions of hauling, harvesting, log landings, road construction and herbicide spraying will occur within and near active clusters. Direct effects to active RCW nests containing eggs, chicks or fledglings located in nest trees will likely occur. Adult birds foraging, feeding young, and incubation of eggs will also be affected. Regardless of season, direct effects from disturbance to RCWs within their cluster zones is likely.

Distribution of activities: The action area includes portions of Beasley Pond Analysis Area and includes compartments 25, 26, 27, 28 and one stand in compartment 29 (Figure 5). Tree harvest, hauling, log landing, road construction and herbicide application will be dispersed across the

action area and will at times occur within active RCW foraging and nesting habitat as well as within the 200-ft. buffer zones around active RCW trees.

Timing: RCWs are non-migratory birds, so activities within the cluster and foraging habitat during any time of the year have the potential to affect RCW behavior. Actions affecting RCWs are expected at any time, but increased impacts are expected when activities occur during their breeding season (April-July); however, when possible, and dry conditions allow, the proposed activities will be scheduled outside of the breeding season (August-March).

Nature of the effect: The proposed activities will likely result in harassment and habitat alteration, and in rare instances, harm or mortality. Noise and disturbance associated with tree harvest, truck hauling, log landing construction, and concentration of activities around log landings could cause birds to leave the trees, abandon nests, destroy or degrade foraging habitat, or result in injury and mortality.

Duration: Activities will range in duration from a few minutes to days, weeks, or months, while habitat may be subjected to permanent changes. These activities will result in a combination of pulse (i.e., short-term events near an RCW tree), and press (i.e., operations noise from construction, log landings, timber harvest). The direct effects of herbicide spraying will generally be limited to a few hours.

Disturbance frequency: Frequency of events will differ by activity. In some cases, disturbance frequency will be less than the species recovery rate from the disturbance (i.e., RCWs returning to normal activity after herbicide application activities lasting less than 2 hours); however, some activities will occur at a frequency that is likely greater than the species recovery rate (i.e., repeated tree removals for log landings and harvest within active clusters), such that the RCW would be unable to recover between disturbances.

Disturbance intensity: The intensity of disturbance will vary from low to high (i.e., sporadic noise from herbicide spraying versus concentrated activities associated with log landing zones within active clusters).

Disturbance severity: Activity type will influence disturbance severity, typically with faster recovery rates for activities resulting in harassment (herbicide spraying, road maintenance) and longer recovery rates for activities that cause habitat removal or longer lasting noise disturbances (log landings, hauling, harvest).

Analyses for the effects of the action

With Conservation Measures in place, the following described effects are expected; see page 8 for further description of Conservation Measures. These effect determinations and incidental take estimates were developed with the expectation of full implementation of Conservation Measures as an integral part of the scope of the proposed action.

Direct effects

Timber harvest activities will remove RCW foraging habitat. Surveys are required prior to any tree harvest to check for the presence of active RCW cavity trees, so that no direct physical impacts to birds are anticipated from this activity. Given the relatively small size (up to 1 acre, but usually one-half acre or less) of the log landings and proposed harvest methods, clearings are unlikely to impede dispersal or increase isolation between clusters, nor reduce available foraging habitat below threshold for take.

Indirect effects

RCWs may be harassed by noise and human presence associated with herbicide treatment, tree removal for log landing zones, timber harvesting activities from road construction, and increased trucks hauling timber on roads largely lacking in traffic. Foraging RCWs may avoid these areas. Loud noises during nesting season may affect RCW reproduction.

Species' response to a proposed action

The proposed actions considered within this consultation will have varying degrees of effects on RCWs. This biological opinion is based on impacts that are anticipated to each life stage of the RCW (adult, chicks, fledglings, eggs) as a result of: 1) foliar application of herbicide within savanna restoration areas; 2) the physical presence and noise disturbance from humans, equipment, and vehicles within foraging habitat and the cluster areas; and 3) considerations of foraging habitat removal for landing zones and timber harvest. After all avoidance and minimization measures are in place, there remains the likelihood that individuals can be harassed or harmed in the performance of some of the proposed actions.

The USFS proposes the use of foliar application of herbicide triclopyr on 811 acres of wet savanna restoration sites for woody species control on an as needed basis. Treatment will use backpack sprayers only where these is woody vegetation that threatens the re-establishment of wet savanna plant species. If the savanna restoration areas do not show evidence of woody re-sprouting after harvest, it will not receive chemical treatment. The USFWS concurs with USFS's determination that effects from herbicide are expected to be negligible as the RCW largely forages on the bark of pine trees which will not be directly sprayed. It is unlikely that an individual bird would ingest enough contaminated insects to be affected since the application is expected to be geographically dispersed and used sparingly.

The USFS prefers to conduct harvest and harvest associated activities outside of the breeding season, but the priority is to harvest when soil conditions are the driest and to remove timber as quickly as possible so prescribed fires can be initiated within these areas, post-harvest, as soon as possible. Due to the wet soil conditions throughout much of the Beasley Pond project area, the timing of timber harvest, road construction, and hauling may coincide with the RCW's breeding season (April 1 through July 31). Road construction, hauling, and timber harvest will occur through 8 active RCW clusters or within one-quarter to one-half mile foraging circles: (Clusters: 26.01, 26.02, 26.04, 26.05, 27.01, 27.05, 27.07, 28.02). Two clusters (28.09 and 28.06) will

have harvest and log-landing zones cleared within 200 feet of cavity trees within an active cluster. Truck hauling, harvest, and tree removal for log-landing zones will occur within two other active clusters (27.2 and 27.04). Timber harvest is planned within 9 additional clusters (26.06, 27.06, 27.03, 28.01, 28.03, 29.01, 28.05, 69.03, 73.13), including within the 200 ft. cluster boundary.

RCWs may be harassed by noise and human presence associated with vehicles, timber removal machinery and road construction equipment. RCW's on military lands that are routinely subjected to loud noises associated with bombing ranges seem to develop a tolerance for noise (Jackson and Parris 1995, Doresky *et al.* 2001, Pater *et al.* 1999, Pater and Delaney 2002, Delaney *et al.* 2002, Hayden *et al.* 2002, Beatty *et al.* 2003, Delaney *et al.* 2004). We expect that foraging RCWs may avoid areas of disturbances associated with the proposed actions on the ANF forest, where loud noise and vehicular disturbances are rare. Further, pioneering RCWs may not colonize or immigrate to new areas near these novel disturbances.

Timber hauling will increase the traffic of large trucks and smaller support vehicles driving through active clusters daily between 19 to 39 times, during tree removal, for the duration of the harvest (varies depending on stand size and removal efforts). RCWs within ANF are not habituated to this level of vehicular traffic within their territories. Depending on the timing, up to 21 active clusters (Table 6) may have increased levels of disturbance within a breeding season stage: pre-breeding courtship, egg stage, or chick rearing stage. Differing impacts are expected. Pairs may fail to nest or renest, and adults may be interrupted during incubation or feeding chicks as needed, when disturbed by vehicular and human presence and noises, especially disturbance within the 200 ft. buffer zone; this sort of repeated disturbance is planned within 4 active clusters (Table 6), to include road construction, hauling, harvest, and log landings. Throughout the year, adults, subadults, and older fledging's may avoid or be late flying in to roost in their preferred cavity when activities are occurring within 200 feet of their cluster zones. This subjects them to increased exposure to bad weather and to night-time avian predation.

Timber harvesting activities are also planned during the non-breeding season at eleven (n=11) additional clusters, outside of the 200 ft. cluster zone. Minimal impacts are expected from this disturbance as the birds will likely shift their foraging to areas away from the disturbance for the period of time needed to complete harvest activities, and thereby maintain needed foraging intake.

RCW monitors on other managed lands have reported adult RCWs killed by research and monitoring crew vehicles within active clusters. It is believed the birds focused on feeding chicks or trading off incubation activities (as they fly almost continuously back and forth to the nest trees) have been struck by approaching vehicles. The risk of these significant impacts to individual birds is likely low, but more likely where the nest cavity is facing towards a busy road. The risk of collision and injury will be elevated whenever feeding young requires constant roadway crossing during high vehicle use. It is unknown how many roadways will be constructed in front of the entrance to nest trees at this time. The USFS declared (conference call held between USFWS and USFS staff on May 16, 2016) that due to curvy roads and forest road conditions, all vehicles must drive at slow speeds, which the USFS believes is sufficient to give RCWs sufficient response time to avoid collisions.

Proposed timber harvests are planned throughout approximately 3,700 acres of the Beasley Pond Project Area. Acreage and stocking densities of foraging habitat and amounts necessary to support a viable breeding pair of RCWs, helpers, and young of the year is not a perfect science given the multitude of variations in tree stand structures, management actions, and site indices. We did not use the recovery standard to evaluate the anticipated level of incidental take related to project impacts on foraging habitat but rather "guidelines" on Recovery Standard metrics for forest stand structure. The managed stability standard (MSS, see pages 292-294, Appendix 5 in the Plan), used for instances in which a landowner cannot manage to the recovery standard, defines the minimum foraging habitat requirements considered necessary to avoid foraging habitat-related incidental take (USFWS Memo; May 2005). That is, it identifies the quantity and quality of foraging habitat necessary for a group to survive and reproduce based on foraging habitat alone.

Tables 2 and 3 in the BA summarize the foraging analysis performed at cluster level in order to estimate pre- and post- harvest conditions. Per USFS analysis, using MSS requirements, no clusters exceed the MSS minimum acreage requirements before the proposed project. Three clusters (28.01, 28.03, and 72.01) meet the minimum total basal area of 3,000 ft^2/acre of all pines >10 in. dbh. Following the proposed project treatments, 15 clusters (25.02, 26.01, 26.02, 26.04, 27.02, 27.03, 27.04, 27.05, 27.06, 28.01, 28.03, 69.03, 69.05, 72.01, and 73.13) will meet the minimum total basal area and the remaining clusters have increased stand acreage counting towards the MSS minimum requirements. Two of 32 clusters (27.02 and 27.06) meet the recovery standard pre- and post- project.

Since the USFS's analysis reports that each RCW cluster post-treatment either meets MSS or improves from pre-project the MSS minimums, we agree that the proposed removal of foraging habitat from the RCWs food base does not rise to the level of "take" of RCWs. This is not to be confused with the "take" associated with the disturbance that will occur while removing the timber or foraging habitat.

This comes with a caution: Wide-scale, i.e., population or property-level implementation or application of the managed stability standard could reduce the likelihood of achieving recovery of the species because it may not:

1) ensure nesting habitat or good quality foraging habitat over the long term,
2) over the long term, provide sufficient resiliency to stochastic events, and
3) support a population's long-term survival or ability to achieve recovery based on habitat standards as required within the Recovery Plan.

We address concerns with certain levels of forestry practices within the Conservation Recommendations section of this BO. These are non-binding but the USFWS believes they will help the USFS further advance their Recovery responsibilities under the 7(a)1 of the ESA.

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 Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

There are no State or private lands within the action area considered in this consultation. Consequently, the USFWS did not identify any State or private activities that are reasonably certain to occur within the action area that would constitute cumulative effects.

CONCLUSION

Florida Skullcap

The intent of the Act is to protect the ecosystems upon which endangered and threatened species depend; therefore, habitat protection is the key factor for ensuring recovery of listed species. Thus, transplanting federally listed species from project impacts areas is generally not recommended (Fahselt 2007). However, if impacts to the estimated 6,325 plants with corresponding habitat cannot be avoided, translocation of these plants to areas within compartment 27 is considered a plausible conservation approach for this threatened species. According to Peterson and Campbell (2007), the optimal propagation technique for *S. floridana* is to transplant the whole plant (stem cuttings and rhizomes are not recommended).

The USFWS has set a goal of 15 populations of *S. floridana* that are distributed throughout the species' historical range and that are adequately managed and protected before the species will be fully recovered (USFWS 1994). To date, about 14 protected populations have been secured: three populations on the St. Joseph Bay State Buffer Preserve, Gulf County; one population at Lathrop Bayou, Bay County; three populations at Tate's Hell State Forest, Franklin County, and possibly seven in ANF (Negrón-Ortiz 2009). The total number of locations of this plant is not considered a limiting factor toward recovery of the species; rather, it is the lack of adequate protection and management that is limiting the species' recovery.

After reviewing the current status of the Florida skullcap, the environmental baseline for the action area, the effects of the proposed and the cumulative effects, it is the USFWS's biological opinion that the harvesting and ecological restoration treatments, as proposed, *is not* likely to jeopardize the continued existence of the Florida skullcap (*Scutellaria floridana*). No critical habitat has been designated for this species; therefore, none will be affected.

Red-cockaded Woodpecker

The USFWS anticipates that some low level of harassment is likely in up to 21 active RCW clusters if the proposed actions of hauling, timbering, log landings and road construction occur during the breeding season. These actions are not likely to rise to the level of harm, except with the cumulative disturbances that may occur within 200 feet of 4 active RCW clusters (27.02,

27.04, 28.09, 28.06) during the breeding season. We expect the loss of no more than 4 nests (one per cluster affected by log landings, harvest and road construction) if the planned activities occur during the breeding season within these clusters. Overall, the ANF RCW population has exceeded the Recovery Plan goal of 500 PBGs and continues with an estimate of 562 PBG's as of 2015.

In 2006, we anticipated the "take" of two nest trees per year in association with the prescribed burning program of the ANF, as described in the *Reinitiation of Consultation of National Forests in Florida Land and Resource Management Plan, Prescribed Burning Program (USFWS 2006).* Relative to that consultation, ANF Ranger District was allotted "take" of two nest trees per year. This incidental take of nest trees is expected to be in the form of destruction of eggs or injury or mortality to RCW nestlings.

After reviewing the current status of the RCW, the environmental baseline for the action area, the effects of implementing the proposed actions, the effects of the minimization measures offered in the BA, and the cumulative effects, it is the USFWS's biological opinion that implementation of the action, as proposed, is not likely to jeopardize the continued existence of the RCW. No critical habitat has been designated for the RCW; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be a prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The terms and conditions described below are non-discretionary, and must be undertaken by ANF Ranger District's staff so that they become binding conditions of any grant or permit issued to ANF Ranger District as appropriate for the exemption in section 7(o)(2) to apply. The ANF Ranger District staff has a continuing duty to regulate the activity covered by this incidental take statement. If ANF Ranger District staff (1) fails to assume and implement the terms and conditions, or (2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permits or grant documents, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, ANF Range District Staff must report the progress of the action and its impact on the species to the USFWS as specified in the incidental take statement. [50 CFR §402.14(I) (3)]

AMOUNT OR EXTENT OF TAKE ANTICIPATED

In meeting the provisions for incidental take in Section 7(b) (4) of the Act, the USFWS has reviewed the best available information relevant to this proposed action. Based on this review, which included discussions and electronic mail exchanged with ANF Ranger District staff, the USFWS expects that implementation of the proposed actions may result in some level of incidental take.

Florida Skullcap

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed endangered plants, the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. Therefore, for this Opinion, incidental take does not apply to *S. floridana*, and an incidental take statement is not necessary.

Red-cockaded Woodpecker

Based on the findings discussed above (see RED-COCKAED WOODPECKER - **EFFECTS OF THE ACTION**), the USFWS believes incidental take is expected to be in the form of harassment due to disturbance within 17 active clusters during the breeding season from hauling, road construction, and harvest outside of the cavity tree cluster area but within foraging habitat during the nesting season. This disturbance may alter their natural movements and foraging patterns within their range, thereby increasing the amount of effort needed to find food. The reduction in normal foraging patterns is not likely to equate to the level of death of the adults, subadults, or nestlings.

Incidental take may also occur in the form of indirect mortality, or harm, to eggs or nestlings located in up to 4 nest trees, primarily from insufficient incubation and or disruption of feeding caused by disturbance to adults during breeding season, due to the placement of log landings, hauling trucks, road construction and timber harvest occurring within 200 ft. of active cluster zones during the breeding season.

Incidental take may also be in the form of harassment within these same 4 active clusters to subadults and adults year-around when log landings are placed within 200 ft. of active cavity trees from constant disturbance that may force altered foraging patterns, birds to abandon the cluster or open roost. Open roosting puts them at increased risk of predation.

The USFWS expects the incidental take of RCWs will be difficult to detect for the following reasons:

(1) RCWs have failed nesting attempts on a regular basis from natural causes, so it may be difficult to specify the role that disturbance plays in a particular nest failure without very detailed research studies,

(2) RCWs abandon active cavity trees for various reasons and assigning a cause of death of a subadult or adult from predation if pushed to open roost, is problematic.
(3) RCW home range studies to prove alterations of foraging behaviors are usually costly and time consuming, and pre- and post- project impacts would be needed.

Species	*Critical Habitat*	*Habitat Affected*	*Monitoring*
Red-cockaded Woodpecker	N/A	Habitat within 21 active clusters will have some level of physical alteration and disturbance	Standard RCW nest monitoring protocol; restrictive measures applied

Activities associated with USFS staff conducting cavity maintenance and management, translocation, and monitoring may adversely affect the RCW resulting in injury or mortality. These activities are authorized under section 10(a) (1) (A) permits under the Act. On November 13, 2003, the USFWS issued a non-jeopardy BO on the issuance of these permits and issued non-discretionary terms and conditions. Therefore, these actions will not be considered further in this BO.

EFFECT OF THE TAKE

In the accompanying biological opinion, the USFWS determined that this level of anticipated take is not likely to result in jeopardy to the RCW. Incidental take of RCWs is anticipated to occur within the proposed Beasley Project during the life of the project.

REASONABLE AND PRUDENT MEASURES

The USFWS believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize take on RCWs within the action area. The measures described below are non-discretionary, and must be undertaken by the USFS so that they become binding conditions of any contract, as appropriate, for the exemption in section 7(o)(2) to apply. The USFS has a continuing duty to regulate the activity covered by this incidental take statement.

1. Conservation Measures (page 8) included in the BA shall be implemented during the proposed project.
2. The USFS or their contractors shall reduce disturbance within the 200ft. buffer zone surrounding active RCW clusters by allowing normal use of clusters at key time periods.
3. The USFS or their contractors shall reduce RCW habitat fragmentation by replanting key locations with native pine species.
4. The USFS shall reduce the likelihood of impacting RCW cavity trees by conducting pre-timber removal surveys.
5. The USFS or their contractors shall protect recruitment cavity trees during forest management activities as described within this BO.
6. The USFS or their contractors shall monitor the level of take associated with forest management activities as described within this BO.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the ANF Ranger District personnel shall ensure that the staff and contractors comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1) USFS staff and their contractors shall not enter active RCW clusters during breeding season until 45 minutes post-sunrise nor 45 minutes prior to sun-set within the 4 clusters (27.02, 27.04, 28.09, 28.06) where log landing zones will occur within the 200 ft. cluster zones.

2) USFS staff or contractors shall replant with appropriate native pine species the 4 log landing zones that are located within active RCW cluster zones (200 ft. buffer zones during) during the nonbreeding season and using the same time constraints as noted in RCW Terms and Conditions #1.

3) Within 6 months prior to timber harvesting within the proposed Project Area, USFS staff experienced with RCW surveys shall survey, identify, and mark any unmarked or unknown cavity trees or start trees.

4) During timber marking within savanna restoration areas, emphasis shall be placed on identification of mature (65 plus years old) and flat-top form pine trees as potential cavity and primary foraging trees. These trees shall not be removed or damaged, and shall be kept as part of the proposed 10-40 basal area that remain standing.

5) Beginning April 1, USFS staff shall mark, and remark as needed, temporary boundaries surrounding each nest tree for the life of the project to inform contractors to avoid loitering or parking within 100 feet from active nest trees.

6) Prior to project implementation within RCW habitat, USFS staff shall provide its personnel and contractors with RCW restrictions, either in verbal or written form, and incorporate information into maps when necessary. These restrictions include: 1) no parking of vehicles within the 200 ft. buffer zones surrounding RCW clusters except as explicitly addressed within this BO; and 2) stay outside marked boundaries while working within the 200 ft. buffer zones.

7) USFS staff shall conduct spot checks at least once weekly in construction areas to identify potential impacts and to ensure contract personnel comply with RCW-related requirements and restrictions.

8) The USFS, or qualified contractors, shall monitor the RCW breeding productivity (with use of peeper scope until pre-fledgling success*) at the active RCW clusters impacted by primary hauling roads, roads requiring construction during nesting season,

and clusters impacted by log landings within the 200 ft. buffer zones. These clusters shall be monitored during the first breeding season of project implementation and each year that a cluster has direct or indirect impacts. A post-project report shall be submitted to USFWS to: (1) summarize the timing of impacts from the proposed project that occurred near or within each active cluster(s); (2) describe the productivity of each cluster, and; (3) describe relationship of impacts from the proposed project if possible. Comparisons of productivity with impacted clusters with the clusters monitored for translocation might prove valuable.
*USFS, in their June 8, 2016 comments provided to the USFWS on the draft BO, state that color-banding is too costly and extensive an effort that might extend into several years of effort while waiting for drying periods to implement harvest actions.

Reporting

1. A report shall be submitted to the USFWS's Panama City Florida Field Office by January 15 of the year after completing the proposed work describing the actions taken to implement the terms and conditions of this incidental take statement.

2) Upon locating a dead, injured or sick RCW harmed or destroyed as a direct or indirect result of the project, the USFS shall immediately notify the Panama City Field Office at 850-769-0552. Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best possible condition for later analysis of cause of death or injury.

The Migratory Bird Treaty Act (MBTA)

The Fish and Wildlife Service will not refer the incidental take of RCWs for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712), if such take is in compliance with the terms and conditions specified herein.

CONSERVATION RECOMMENDATIONS

Section 7(a) (1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here relate to the proposed action only and do not necessarily represent complete fulfillment of the agency's Section 7(a) (1) responsibility for the species.

FLORIDA SKULLCAP

We would like to **recommend** the following conservation measures to minimize or avoid adverse effects of the proposed action:

1. Minimize impacts in compartment 27, stand 54. This stand contains most of *S. floridana* stems. We encourage habitat management with prescribed fire.

2. If Recommendation 1 is not possible, then:
   - Maintain a detailed map (shapefiles and number of individuals) of *S. floridana* stems prior to and after the proposed activities.
   - Prior to treatments, install protective barriers (e.g., plastic orange protective fence) and avoid impacting *S. floridana.*
   - Protect large and dense areas of S. floridana (Figure 3) from skidding logs or repated compaction (skid trial) by heavy equipment. Only non-mechanical treatments are recommended in these most concentrated areas.
   - Expand the commitment of the USFS's Conservation Measure to monitor impacts to Florida skullcap, the USFS, with input from USFWS and Florida Natural Areas Inventory, should jointly develop and establish a monitoring plan. Specifically, discussions should center on monitoring the effect of thinning (pre- and post- timber harvest) and prescribed and wild fires for three consecutive years during peak-flowering season. Several plots should be established within the proposed areas representing each treatment condition, including control plots. Density, and growth and reproductive parameters will be monitored. Monitoring the long-term population dynamics at the ramet level is also encouraged. An annual report should be provided to the USFWS. This information will provide baseline data to relate survival of these plants to the proposed activities, and will help streamline the Section 7 consultation of projects of similar scope and scale.
   - Transplanting federally-listed plant species from project impacts areas is generally not recommended (Fahselt 2007). While some native plants are amenable to transplant, others, including Florida Skullcap, may be difficult to re-establish in new locations. It is unknown how Florida Skullcap will respond to transplantation. However, if impacts to the plants with corresponding habitat cannot be avoided, transplantation of *S. floridana* to areas within the same compartment may be considered a plausible conservation approach for this threatened species. A transplantation plan, along with a post-transplanting monitoring plan, should be developed. A knowledgeable botanist should be employed to advise the USFS and any contractors or other responsible groups on how and when to transplant Florida Skullcap plants.

Other recommendations

- Collect and plant seeds, when available, into a suitable habitat within the ANF, and monitor germination and seedling survival. An annual report should be provided to the USFWS.
- Collect voucher specimens (e.g., herbarium specimens, samples for DNA analyses, preserve material and seeds) from areas proposed to be impacted and distribute to herbaria, botanical gardens i.e., Bok Tower Garden, and interested scientists.
- Develop a comprehensive management plan for federally-listed and other rare plant species occurring in ANF. The plan should addresses cumulative impacts to the species, and issues such as protection, monitoring and management.

RED-COCKADED WOODPECKER

1. With the RCW Recovery Coordinator, initiate further assessments of uneven-aged longleaf pine management and regulation systems to attain and sustain good quality foraging habitat, including interpretation of the Recovery Plan guidelines for good quality foraging habitat, stocking and ecological criteria to determine conditions requiring regeneration, systems of uneven-aged regeneration, timber marking criteria, and the possibilities or needs to develop a modified objective for good quality foraging habitat under certain conditions in Apalachicola National Forest. We encourage the USFS to investigate a method that informs when canopy closure is or is not sufficient to stimulate appropriate ground cover, depending on site, soil type, vegetative community, and other management objectives.

2. The USFWS strongly encourages the USFS to reconsider the necessity of the proposed harvests within the higher quality, uneven-aged longleaf stands with old-growth characteristics (specifically compartment stands: 25.17, 25.18, 28.05, 28.07, 28.22, 26.24, 27.23, and 27.34), at least until RCW Conservation Recommendation #1 is implemented.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the proposed action. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary USFS involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species not considered in this Opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action.

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