

## Red-cockaded Woodpecker

*Picoides borealis*

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### DESCRIPTION

#### Taxonomy and Basic Description

Red-cockaded Woodpeckers were first described by the amateur naturalist Vieillot (1807) and named *Picus borealis*. In 1810, Alexander Wilson, unaware of Vieillot's previous description, described the species as *Picus querulus* because of its distinctive vocalizations (Wilson 1810). The species is now recognized as *Picoides borealis*. The common name used today, Red-cockaded Woodpecker, was given to the species by Wilson. Cockade was a common term for a ribbon or other ornament worn on a hat as a badge during Wilson's time, and refers to the small patch of red feathers on adult males, located between the black crown and white cheek patch on the head.

Red-cockaded Woodpeckers are relatively small; adults measure 20 to 23 cm (7.8 to 9 in.) and weigh 40 to 55 g (1.4 to 1.9 oz.) (Jackson 1994; Conner et al. 2001). They are smaller than other southern woodpeckers except the Downy Woodpecker (*Picoides pubescens*) and are similar in size to Yellow-bellied Sapsuckers (*Sphyrapicus varius*). Red-cockaded Woodpecker size varies geographically, with larger birds to the north (Mengel and Jackson 1977).

Red-cockaded Woodpeckers are relatively slender, long-tailed and small-billed woodpeckers. They are black and white with a coarsely barred back, white cheek patch and black crown. Their breasts and bellies are white to grayish-white with spots on the sides changing to bars on the flanks. Outer tail feathers are white with black barring and central tail feathers are black. Adult plumage is extremely similar between sexes and generally indistinguishable in the field. The only difference between adult males and females is the presence of the red cockade at the upper edge of the white auriculars, which is virtually invisible in field situations (Jackson 1994). Juveniles appear similar to adults but may be distinguished in the field by duller plumage, white flecks often present just above the bill on the forehead, and diffuse black shading in the white cheek patch. Juvenile males have a distinctive red patch on the crown and may be distinguished from juvenile females in this way (Jackson 1994).

#### Status

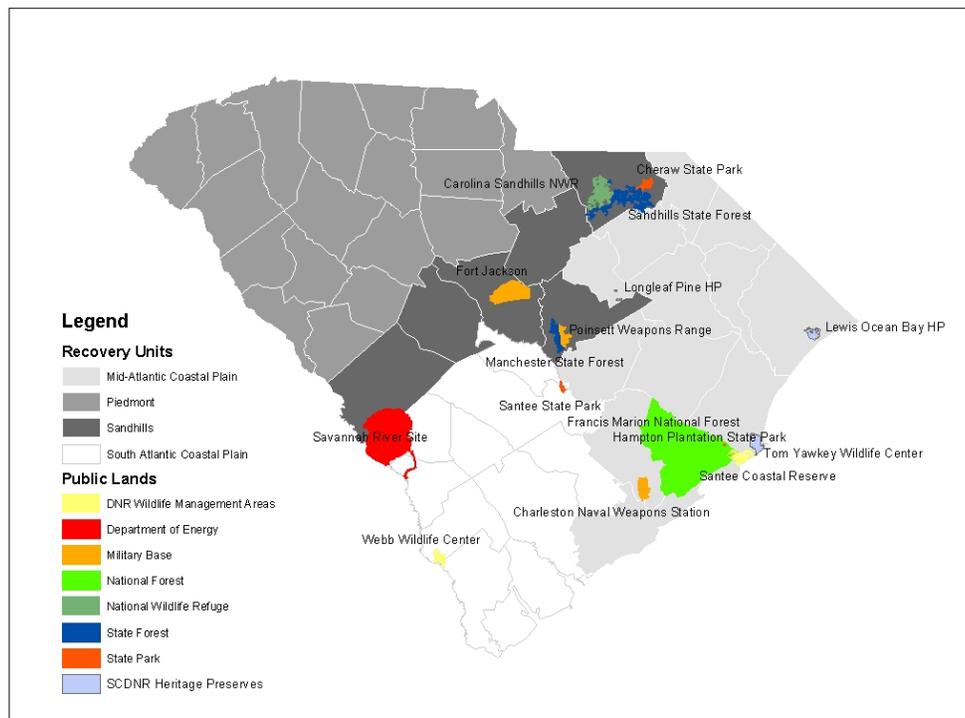
The Red-cockaded Woodpecker was among the first species to be listed as endangered in 1970 and received federal protection under the Endangered Species Act of 1973. The Red-cockaded Woodpecker was once a common bird. However, by 1970, the species had declined to fewer than 10,000 individuals in widely scattered, isolated and declining populations (Jackson 1971; Ligon et al. 1986). The Red-cockaded Woodpecker is listed with 21 other avian species as a species of



highest concern on the Partners in Flight Watch List. Most populations of Red-cockaded Woodpeckers are currently stable to increasing on state and federal lands, due to advances in knowledge of Red-cockaded Woodpecker population dynamics and the use of highly effective management tools, such as artificial cavities and translocations. However, population viability is still threatened by the small, scattered and isolated nature of most Red-cockaded Woodpecker populations. Downlisting of the species is not expected until at least 2050 and delisting is not expected until 2075 given current population status and expected rates of growth (USFWS 2003). The South Carolina Department of Natural Resources Heritage Trust program describes the species as imperiled state-wide because of rarity or factor(s) making it vulnerable (S2) while globally the species is ranked as vulnerable (G3).

## POPULATION SIZE AND DISTRIBUTION

Red-cockaded Woodpeckers are monitored based on the number of groups (a breeding pair with 0 to 7 helpers or a solitary male) and the clusters on which they depend (the actual physical cavity trees and acreage surrounding those trees). In 2000, there were an estimated 14,068 red-cockaded woodpeckers living in 5,627 known active clusters across 11 states; this number represents only 3% of the estimated Red-cockaded Woodpecker abundance at the time of European settlement. In South Carolina, there were 133 groups on state-owned lands and another 524 groups on federal properties in 2000 (USFWS 2003). In addition, there were estimated to be another 400 groups on private lands in South Carolina (Cely and Ferral 1995). Based on these numbers, there were over 1,000 red-cockaded woodpecker groups in 2000 representing nearly 20% of all known Red-cockaded Woodpecker groups.



Populations of Red-cockaded Woodpeckers are distributed across the Southeastern United States and managed by distinct recovery units, across which recovery criteria must be met for the

species to be removed from the Endangered Species List. In South Carolina, there are recovery populations in 3 of the 13 recovery units. These recovery units are the Sandhills Recovery Unit, the Mid-Atlantic Coastal Plain Recovery Unit and the South Atlantic Coastal Plain Recovery Unit.

Table 1: Red-cockaded Woodpecker populations on public lands in South Carolina by recovery unit. Each population has a designated role in recovery. Also listed are the property ownership, the type of recovery population, the current status of Red-cockaded Woodpecker groups (represented as number of active clusters unless otherwise noted), and the population goal for the property. Primary core (Primary) populations are those that will have at least 350 potential breeding groups (PBGs) at recovery; secondary core (Secondary) populations are those that will have at least 250 PBGs at recovery; significant support (Significant) are those populations that have a population goal of 10 or more active clusters; and important support (Important) are those populations that have a population goal of less than 10 active groups.

Recovery Unit Population	Agency	Type	Current Status	Population Goal
<b>Mid-Atlantic Coastal Plain</b>				
Bonneau Ferry	SCDNR	--	12	20*
Francis Marion National Forest	USFS	Primary	410**	350**
Lewis Ocean Bay Heritage Preserve	SCDNR	Significant	7	10
Longleaf Pine Heritage Preserve	SCDNR	Important	4	4
Sandy Island		Significant	32	35
Santee Coastal Reserve	SCDNR	Significant	17	16
Wedge Plantation		Important	2	2
Yawkey Wildlife Center	SCDNR	Significant	11	15
<b>Sandhills</b>				
Carolina Sandhills National Wildlife Refuge	USFWS	Secondary	136**	250**^
Sand Hills State Forest	SCFC	Secondary	73**	250**^
Cheraw State Fish Hatchery	SCDNR	Important	0	1
Cheraw State Park	SCPRT	Significant	10	25
Fort Jackson	DOD	Significant	36	126
Manchester State Forest	SCFC	Important	4	3
Poinsett Weapons Range	DOD	Significant	26	30
<b>South Atlantic Coastal Plain</b>				
Savannah River Site	DOE	Secondary	51**	250**
Charleston Naval Weapons Station	DOD	Significant	0	12
Persanti Island	SC	Important	0	3
Santee State Park	SCPRT	Important	0	7
Webb Wildlife Center	SCDNR	Significant	13	30

\*As outlined in the Bonneau Ferry WMA Wildlife Management Plan, 2009; property was not included in the 2003 USFWS RCW Recovery Plan

\*\*Number of Potential Breeding Groups (PBGs)

^ Number represents the combined Recovery Goal for the SC Sandhills Secondary Core, which includes Carolina Sandhills National Wildlife Refuge and Sandhills State Forest.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Red-cockaded Woodpeckers depend on open, park-like mature pine woodlands and savannahs with large, old pines for nesting and foraging habitat. Large old pines are required because these birds excavate roost and nest cavities in living pine trees. The cavities are excavated completely within the heartwood; therefore, the trees must be old and large enough to have room for the cavity chamber. Additionally, old trees are more likely to have heartwood decay, which greatly facilitates cavity excavation. The cavity trees must be in open stands with little or no hardwood midstory and little or no hardwood in the canopy. Once the midstory reaches cavity height, Red-cockaded Woodpeckers typically abandon the cluster. Red-cockaded Woodpeckers will use nearly all of the southern yellow pines for cavity trees, including loblolly pine (*Pinus taeda*),

shortleaf pine (*Pinus echinata*), pond pine (*Pinus serotina*), slash pine (*Pinus elliottii*) and longleaf pine (*Pinus palustris*), but prefer longleaf pine (Jackson 1994).

Red-cockaded Woodpeckers have very large foraging territories requiring vast areas of open pine habitat. Suitable foraging habitat consists of large mature pines, little or no midstory, and abundant herbaceous ground cover including native bunchgrasses and forbs. Red-cockaded Woodpeckers require 30 to 81 contiguous hectares (75 to 200 acres) of this foraging habitat, depending on the habitat quality. Red-cockaded Woodpeckers prefer to forage on mature longleaf pine trees, but will forage on younger trees and other pine species and the occasional hardwood tree. High-quality foraging habitat that results in the highest Red-cockaded Woodpecker productivity is contiguous open stands of mature longleaf pine with an herbaceous ground cover (Jackson 1994).

Red-cockaded Woodpeckers evolved in a fire-dominated ecosystem. The history of fire in the Southeast has both natural and human components. Fires were ignited naturally due to frequent lightning strikes. Both Native Americans and European settlers used fire to clear land and improve hunting grounds. Frequent fires resulted in an open forest with large pines, little to no midstory, and diverse herbaceous ground cover; this represents the ideal habitat for Red-cockaded Woodpeckers and other species of the longleaf pine ecosystem. However, much of the currently available habitat has been subjected to fire suppression and has become unsuitable for Red-cockaded Woodpecker use due to the presence of a dense hardwood midstory and/or canopy. Fire is essential to maintaining and restoring southern pine ecosystems, particularly the longleaf pine ecosystem, and is essential to Red-cockaded Woodpecker habitat maintenance and restoration (USFWS 2003).

## CHALLENGES

Lack of suitable habitat is the underlying cause for all the primary threats to Red-cockaded Woodpecker species viability. First, there is very little of the open mature pine habitat remaining. Over 97% of the longleaf pine habitat that covered the southeast has been destroyed. Of the remaining 3%, less than 1% is thought to be in pristine condition.

The serious threats from this lack of habitat fall into 4 basic categories (USFWS 2003):

- (1) insufficient number of existing suitable cavities and the continued net loss of cavity trees in the environment (Costa and Escano 1989; James 1995; Hardesty et al. 1995);
- (2) habitat fragmentation and the resulting impacts on genetic variation, dispersal, and demography (Conner and Rudolph 1991);
- (3) lack of sufficient amounts of quality foraging habitat (Walters et al. 2000, 2002; James et al. 2001); and
- (4) risks of extinction inherent to critically small populations (Shaffer 1981, 1987).

Red-cockaded Woodpeckers depend on mature pine trees for both cavity excavation and foraging substrate. Lack of mature pine trees in suitable habitat because of past and present fire suppression and silvicultural practices resulted in a severe shortage of these trees in the landscape. Red-cockaded Woodpecker groups that lack sufficient cavities for the group have been shown to decrease reproductive output. Decreased reproductive output has also been linked

to an insufficient amount of quality foraging habitat. Habitat fragmentation reduces the ability for Red-cockaded Woodpeckers to disperse between clusters. This reduces the ability of individuals to find breeding vacancies, which influences both the genetic variation of populations and overall demographic stability. Most critically, small populations face an inherent set of risks related to the size of the population. These risks include extirpation due to random environmental, demographic, genetic, and catastrophic events (Shaffer 1981, 1987).

In South Carolina, there are two primary threats that affect the availability of habitat, and, ultimately, Red-cockaded Woodpecker recovery now and in the future. The first is a lack of prescribed fire in existing and potential habitat. It has become increasingly difficult for private landowners and government agencies to burn their properties for wildlife management because of liability issues. Until this problem is solved, more and more landowners will opt not to conduct prescribed burning activities. The ultimate result will be less suitable habitat for Red-cockaded Woodpeckers and other wildlife.

The second major threat to Red-cockaded Woodpeckers in South Carolina is the risk of natural catastrophes, specifically hurricanes. Nearly all Red-cockaded Woodpeckers in South Carolina are present in the Coastal Plain and face significant risks from hurricanes. Cavity trees are particularly susceptible from winds associated with tropical weather systems while foraging habitat can be devastated from hurricane force winds (Conner et al. 2001).

Red-cockaded Woodpecker surveys on SCDNR lands are ongoing; complete surveys should be conducted at least once every 10 years. Further, the last update to Red-cockaded Woodpecker status on private lands in South Carolina was conducted in the late 1980s to early 1990s. Private lands status should be updated periodically by field surveys and questionnaires to determine the current trend and management needs on private lands. This goal can largely be achieved by annual reports completed by Safe Harbor enrollees.

The Longleaf Pine Heritage Preserve was purchased by the SCDNR for protection of the existing Red-cockaded Woodpecker population. The current size of the property is not large enough to support a self-sustaining population of Red-cockaded Woodpeckers. The purchase of additional lands would increase the available habitat and potential population size in that area.

Currently, funding through Endangered Species Act Section 6 and other USFWS funding provide support for the Red-cockaded Woodpecker programs. However, the level of funding does not provide for habitat acquisition and major management projects as noted below (see "Conservation Recommendations").

## CONSERVATION ACCOMPLISHMENTS

Conservation accomplishments can be divided into 3 major categories. The first relates to advances in understanding population dynamics and advances in management techniques related to stabilizing and increasing populations of Red-cockaded Woodpeckers. The second category results directly from the recovery plan for Red-cockaded Woodpeckers (USFWS 2003). The third category of accomplishments relates to the successful development and implementation of the Safe Harbor program in South Carolina.

### **Population Dynamics/Management**

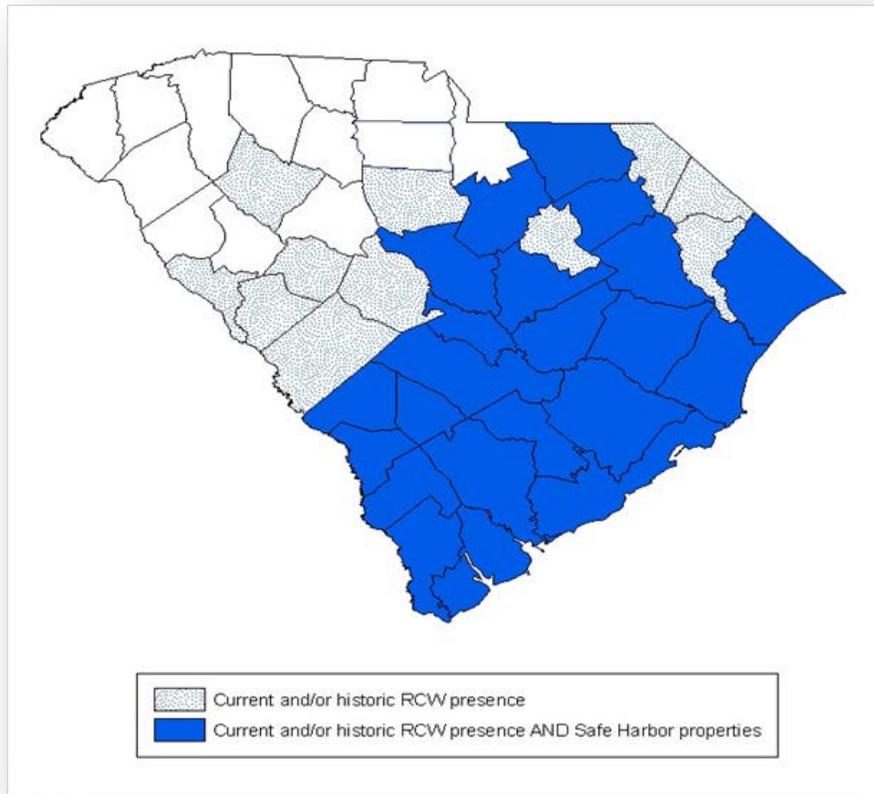
- Increased knowledge of population dynamics due to extensive research in South Carolina and across the Southeast has led to better translocation procedures which facilitates Red-cockaded Woodpecker population growth range-wide.
- Cavity creation technology has advanced, allowing the unprecedented growth of existing populations and the creation of new populations through a combination of cavity creation and translocations.
- Due to these practices, most populations of Red-cockaded Woodpeckers on public lands were stabilized to increasing by the mid 1990s. Prior to these advances, all populations, with the exception of one, were declining.

### **Red-cockaded Woodpecker Recovery Plan**

- Drafts of the Red-cockaded Woodpecker Recovery Plan established required population goals for all federal properties and for one state property, Sandhills State Forest, and suggested goals for all other public properties in South Carolina. These established goals have resulted in population growth across all federal properties and most state properties.
- Recovery Plan guidelines established standard practices for management and reporting, resulting in a consistent recovery effort range-wide, including South Carolina.
- Recovery Plan guidelines call for annual average growth rates of 5% on all recovery populations. These goals have been met on most properties, resulting in overall growth on public lands in South Carolina.
- Translocation, intensive habitat management, and creation of recruitment clusters have yielded marked increases in many populations in recent years.

### **Safe Harbor Program**

Since its introduction in 1998, the Red-cockaded Woodpecker (RCW) Safe Harbor Program has grown to include 140 enrollees and 299 RCW groups, with enrolled properties stretching from Jasper County all the way up to Horry County on the coast and inland from Barnwell County up to Chesterfield County. The Program's success stems from flexibility the Endangered Species Act (ESA) offers: in exchange for voluntary habitat maintenance and enhancement, landowners are exempted from ESA restrictions for any RCW groups that move onto their property in the future as a result of those habitat improvements.



As the Program has grown, so have the acres managed to benefit RCWs; acres prescribed burned was 2.5 times greater on average each year from 2005-2010 than from 1999-2004, and acres thinned and acres of hardwood midstory mechanically or chemically treated increased as well.

Table 2: Program activity impacts on habitat for RCWs.

<b>Activity</b>	<b>Average Acres Impacted 1999-2004</b>	<b>Average Acres Impacted 2005-2010</b>
Prescribed burning	24,600	63,700
Thinning	2,600	8,100
Mechanical midstory removal	1,400	1,800
Chemical midstory removal	800	3,000

Key conservation accomplishments related to this program include the following:

- This program has ensured habitat maintenance and enhancement for nearly 300 groups of Red-cockaded Woodpeckers on private lands.
- As of 2010, 48 above-baseline groups were reported on Safe Harbor properties. This means that several Safe Harbor properties are not just maintaining clusters present at the time of enrollment, they are providing habitat for additional clusters as well. By 2012, there were 151 Safe Harbor Agreements in SC which is a net gain of 37 groups on these properties.

- This program has helped facilitate widespread reintroduction of fire to the landscape, thus maintaining and restoring critically imperiled longleaf pine habitat.
- This program has improved relationships between the private sector and government organizations, producing a cooperative effort toward conservation.
- Several thousand acres of forest that were previously planted with off-site species—such as loblolly pine—have been restored to longleaf. Longleaf restoration is often included as part of a landowner’s agreed-upon management activities in a Safe Harbor Agreement.

## CONSERVATION RECOMMENDATIONS

- Consider the purchase of properties adjacent to Longleaf Pine Heritage Preserve as they become available.
- Continue administration of the Safe Harbor Program by enrolling properties with Red-cockaded Woodpecker populations and/or longleaf pine habitat and offering technical/management support to landowners.
- Manage Red-cockaded Woodpecker habitat by adhering to the management objectives of the Recovery Plan for this species prepared by the USFWS (2003) including:
  - Application of frequent fire to foraging and cluster habitat.
  - Protection and development of large mature pines throughout the landscape.
  - Protection of existing cavities and provisioning of artificial cavities as necessary to facilitate population growth or to stabilize existing populations.
  - Creation of recruitment clusters to promote population growth.
  - Restoration of sufficient habitat quality and quantity to support species recovery.
- When possible, provision artificial cavities in existing Red-cockaded Woodpecker populations on SCDNR land to stabilize and increase numbers of this species with the eventual objective of reaching the recovery goal for that population.
- Monitor size and trend of populations on all state-owned properties on an annual basis including:
  - Number of active cavities
  - Number of potential breeding groups
- Monitor recovery population on Sandhills State Forest and Cheraw State Park more intensively including:
  - Number of active cavity trees
  - Number of potential breeding groups
  - Number of actual nests including clutch size, number of chicks, number successfully fledged, and sex of all individuals
- Monitor any birds translocated to or from state-owned properties to determine translocation success.
- Monitor any populations on state-owned properties donating birds for translocation to determine the effect on the donor population.
- Provide technical support to private landowners and other public land managers on issues of Red-cockaded Woodpecker management and recovery in cooperation with representatives of the USFWS.
- Conduct a workshop on Red-cockaded Woodpeckers for forestry and environmental consultants working in South Carolina. Topics covered should include survey and

management techniques, the Safe Harbor application process, and federal and state regulations as they relate to Red-cockaded Woodpeckers.

- Develop and maintain a Red-cockaded Woodpecker and Safe Harbor web site for SCDNR.
- Produce annual informational RCW Safe Harbor updates for distribution to Safe Harbor participants, foresters and environmental consultants.
- Purchase metal signs to mark cavity trees on Safe Harbor properties where needed.
- Obtain funds to provision artificial cavities on select Safe Harbor properties to encourage expansion of the population.

## MEASURES OF SUCCESS

If management recommendations are followed, we should expect to see the following:

- Enrollment and maintenance of at least 300 groups of Red-cockaded Woodpeckers in the Safe Harbor Program.
- No net loss of Red-cockaded Woodpecker groups on private properties enrolled in the Safe Harbor Program.
- Recovery goals for Red-cockaded Woodpeckers will be met on all state-owned lands by the time of de-listing.
- Adequate monitoring and surveys will result in an accurate measure of Red-cockaded Woodpecker status and trends on public and private lands facilitating management decisions to make recovery goals.
- Outreach efforts will educate the public about issues relating to Red-cockaded Woodpecker management and legal responsibilities.

The overall result of these efforts will be that the Red-cockaded Woodpecker will meet recovery criteria in South Carolina, thus facilitating the removal of the species from the Endangered Species list.

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