

First attempt to restore a red-cockaded woodpecker population via re-introductions to unoccupied habitat at the Avalon Plantation, Florida, USA

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Introduction

The red-cockaded woodpecker (*Picoides borealis*), is endemic to the Southeastern United States southern pine ecosystem, which historically covered approximately 90 million acres from Virginia to Texas, USA. Today, this ecosystem has been reduced by over 95% from its original extent. The red-cockaded woodpecker (RCW) is a habitat specialist, being the only woodpecker

in North America to excavate cavities in mature living pine trees and is dependent upon these cavities for roosting and nesting. The RCW is a territorial, non-migratory, cooperative breeding species with a complex social system; individuals normally live in groups with a breeding pair and up to 4 male offspring (known as helpers) from previous years. The aggregate of cavity trees is known as a cluster and the group on average, forages and defends a territory of about 200 acres. The red-cockaded woodpecker was listed as endangered in 1970 and received federal protection under the passage of the Endangered Species Act in 1973.



Red-cockaded woodpecker

Goals

- Goal 1: Restore a population of red-cockaded woodpeckers that includes 25 to 30 clusters (~100 birds) and persists with minimal management.

- Goal 2: Develop re-introduction techniques that could be used to promote recovery of the species elsewhere.
- Goal 3: Become a donor site, once the population goal is achieved.

Success Indicators

- Indicator 1: Re-introduced woodpeckers and their offspring breed and excavate their own cavities.
- Indicator 2: Re-introduction techniques developed are used to further recovery of the species elsewhere.
- Indicator 3: Red-cockaded woodpeckers are translocated to other recipient sites.

Project Summary

Feasibility: Beginning in 1998, the Turner Endangered Species Fund in cooperation with the U.S. Fish and Wildlife Service (USFWS) initiated an effort to re-introduce the red-cockaded woodpecker (RCW) to the Avalon Plantation (Avalon) in north Florida, USA. This effort was the first attempt by a private landowner, state or federal agency to re-introduce a population of RCWs where no founder population existed or into a pine forest that previously did not support the species. Although Avalon is within the historic range of the species and contains excellent RCW habitat, there is no evidence that the existing pine forest ever supported the species. As previously mentioned, there has been no other attempt to establish a population of RCWs *de novo*.

Therefore, it was difficult to generate a realistic population objective and timeframe required to achieve said objective. However, based on the characteristics of the pine forest at Avalon, we determined 25 - 30 potential breeding groups that persist with minimal management was a realistic population objective. Moreover, it seemed reasonable to expect that 10 years of active management would be required to reach this objective.

Implementation: Since RCWs never inhabited Avalon's existing forest, installation of artificial cavities and translocations of sub-adult birds from a secure donor population were essential components of this project. After careful evaluation of the two approved artificial cavity techniques, drilled cavities (Copeyon, 1990) and artificial inserts (Allen, 1991), we concluded artificial inserts were most



Banding a seven day-old chick



Red-cockaded woodpecker habitat at Avalon

suitable for our situation, because pine trees on Avalon were relatively young (60 - 70 years), vigorous growers (>8 cm sapwood), and large size (>76 cm dbh). Installation of artificial cavities began in early fall 1998 with the creation of five release clusters and five recruitment clusters. Release clusters were selected based on presence of adequate foraging habitat and its spatial relationship to other release clusters. All

release clusters were located within 0.5 km of one another (Hagan *et al.*, 2003). Because RCWs typically disperse after release, and to maximize retention of released birds, at least one additional recruitment cluster was provided within 0.4 - 1 km of each release cluster. A minimum of 4 artificial inserts was provided in each release and recruitment cluster.

We conducted translocations from 1998 - 2002 (Hagan *et al.*, 2004). The Apalachicola National Forest, Apalachicola Ranger District was used as the donor population in 1998 and 1999. Private Lands in the Red Hills region in southern Georgia was used as the donor population in 2000 - 2003. Following the USFWS translocation policy (U.S. Fish and Wildlife Service, 2003), only sub-adult males that fledged from groups with at least one helper were removed for translocation. All sub-adult female fledglings were available for translocation. Individuals selected for translocation were removed during October - November each year. During the 5 years of translocations, 10 birds (five pairs of unrelated sub-adult males and females) were trapped on the same night and transported to release clusters on Avalon. All birds were released as pairs in individual clusters simultaneously at dawn the following morning. Fifty (25 males:25 females) sub-adult RCWs were released during the project period.

Post-release monitoring: An intensive and extensive monitoring program was implemented to document the results of the re-introductions. Following release, birds were left unmonitored for the first week to allow them some time to adjust to new surroundings without human interaction. After the adjustment period, each release and recruitment cluster was monitored daily for signs of cavity tree activity. We conducted daily visits for 1 month post-release, at which time weekly visits were initiated. All released individuals underwent an adjustment period in which we observed considerable movement and exploration of adjacent clusters. Of the 50 birds released, 36 (21 males:15 females) established residency on the property. We experienced a 50% retention rate after the first year of release, a

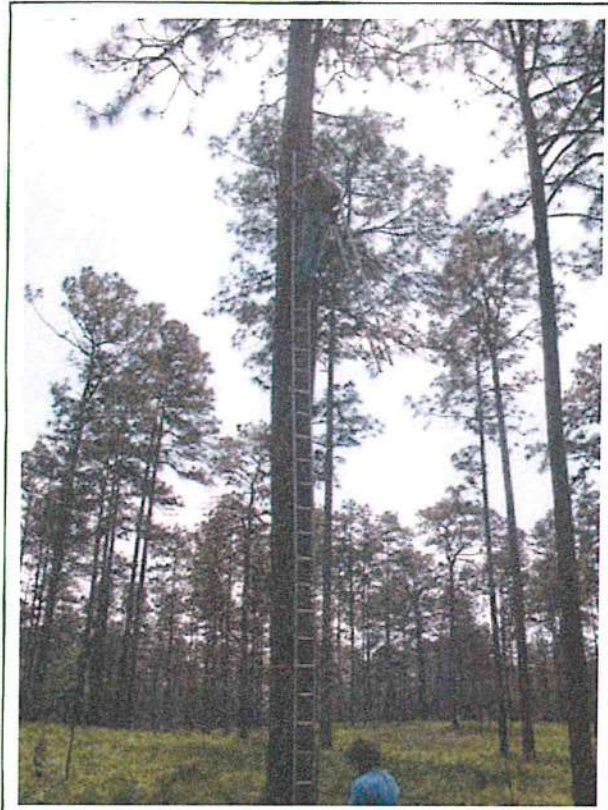
70% retention rate after the second year, and a 80% retention rate in years 3 - 5. Breeding success was documented in 1999, the first breeding season after re-introductions. Moreover, in all the following years, breeding success was also documented from birds released the prior fall. Currently, the Avalon Plantation supports 15 active clusters of RCWs that include 15 potential breeding pairs.

Major difficulties faced

- Locating, capturing, and translocating 10 individuals on a single night.
- Maintaining sufficient funding for adequate monitoring after the first few years of the project.

Major lessons learned

- Released individuals were wide -ranging. Not a single re-introduced bird was retained within its release cluster.
- We underestimated the number of years required to establish a population of 25 - 30 potential breeding pairs.
- While the groups on Avalon were prolific breeders, offspring were reluctant to disperse into unoccupied territory. This created very large groups, with up to four helpers. As a result, we began to only provide enough cavities for a breeding pair and two helpers (maximum of four usable cavities).



Cavity installation on tree

Success of project

Highly Successful	Successful	Partially Successful	Failure
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Reason(s) for success/failure:

- The importance of releasing individuals into high quality habitat.
- Releasing numerous birds (5 pairs) simultaneously into the population over multiple years.
- Releasing multiple pairs in close proximity to one another apparently provided the necessary social interaction with other individuals to reduce post-release movements and facilitate establishment of breeding groups.

- Establishing recruitment clusters within 0.4 - 1 km of release clusters. Such an array allowed wide-ranging birds an opportunity to discover other clusters as well as interact with other birds.

References

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