A MOBILE AVIARY TO ENHANCE TRANSLOCATION SUCCESS OF RED-COCKADED WOODPECKERS

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Because translocations of male red-cockaded woodpeckers have been less successful (Costa and Kennedy 1994) and because translocations of females are dependent on the availability of established males, a technique to increase the success of translocations would be an important contribution to conservation efforts. Researchers from the U.S. Forest Service Southern Research Station hypothesized that by maintaining red-cockaded woodpeckers in an aviary prior to release the birds would develop an affinity for, and possibly imprint (Scott and Carpenter 1987) on their surroundings, and that this would increase their likelihood of remaining in the cluster upon their release (M. Lennartz, U.S. Forest Service, personal communication; Laves 1992).

To test this hypothesis, an experimental mobile aviary was designed (Edwards et al. 1999) and tested by the Southern Research Station in cooperation with the Savannah River Institute. Our objective was to conduct experimental translocations to evaluate the potential of the mobile aviary for enhancing the translocation success of juvenile male red-cockaded woodpeckers.

STUDY AREA

We conducted the study on the Fort Stewart Military Reservation in cooperation with the Department of Defense and the U.S. Forest Service Southern Research Station. Fort Stewart is 113,021 ha and is located near Savannah, Georgia. Fort Stewart has 175 active red-cockaded woodpecker clusters, and an estimated carrying capacity of 712 groups (1998 data; T. Beaty, DPW Fish and Wildlife Branch, Fort Stewart, personal communication).

METHODS

Each mobile aviary consisted of a poly-vinyl chloride (PVC) plastic pipe frame that was covered with shade cloth and designed to enclose a portion of the bole of a living pine tree in which an artificial cavity had been installed (Edwards et al. 1999). We erected aviaries in selected recruitment clusters provisioned with 2-3 artificial cavities.

We trapped male red-cockaded woodpeckers (subadults) from their resident cluster in the morning, weighed and placed them in a holding cage, transported them to the recruitment cluster, and released them into the aviary. We recorded the following information regarding each translocation: date, band ID, capture location, and release location.

We maintained red-cockaded woodpeckers inside the aviary for 10-14 days. Each was provided a combination of mealworms and crickets, and water *ad lib.* We monitored feeding, drinking, cavity use, and general behavior inside the aviary by observing birds with a spotting scope. At the end of the captive period, we released individuals by removing a portion of the shade cloth before the bird exited the artificial cavity in the morning. After the red-cockaded woodpecker left the aviary, we disassembled and removed the aviary structure. We conducted evening roost checks during the first 7 days following the release and twice per week thereafter for 1 month.

We conducted 6 mobile-aviary translocations between November and February 1997-1999. Each aviary translocation was paired with a concurrent non-aviary translocation. This paired-comparison design allowed the effect of captivity in an aviary on translocation success to be compared to a non-aviary control (standard translocation procedures). We measured success as the bird remaining in the release cluster ≥1 month. Selection of similar recruitment stands and the use of only subadult males minimized possible confounding effects (e.g., age, sex). We measured roost tree characteristics, overstory pine composition, mean diameter at breast height, and basal area of aviary and control clusters as possible metrics related to translocation success.

RESULTS AND DISCUSSION

Although our initial trials (1-3) suggested that confinement in the aviary may increase translocation success (i.e., remain at the release cluster ≥30 days), subsequent trials (4-6) failed to support this conclusion (Table 1). With the exception of trial 1, all birds moved to control clusters departed in ≤5 days (Table 1).

Habitat conditions and roost tree characteristics within and between aviary and control clusters did not explain differences in observed residence times (Tables 2 and 3). Overstory basal area was the most varied characteristic measured; however, there was no apparent relation between it and residence time. Our findings offer little support for our hypothesis that confinement in an aviary will increase red-cockaded woodpecker translocation success.

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Table 1. Success of red-cockaded woodpecker translocations in aviary and control clusters on Fort Stewart, Georgia, 1997-1999.

	Aviary		Control	
Trial	Release date	Days in residence	Release date	Days in residence
1	12-19-97	19	12-19-97	256+
2	1-27-98	31	1-27-98	0
3	2-19-98	29	2-19-98	0
4	12-22-98	1	12-22-98	0
5	1-20-99	2	1-20-99	0
6	1-21-99	0	1-21-99	5

Table 2. Characteristics of cavity trees used to release translocated red-cockaded woodpeckers on Fort Stewart, Georgia, 1997-1999.

	Aviary			Control		
Trial	Species	DBH[a]	Cavity Height[b]	Species	DBH	Cavity Height
1	Longleaf pine	41.7	3.7	Longleaf pine	52.3	6.7
2	Longleaf pine	55.1	4.3	Longleaf pine	50.8	7.0
3	Longleaf pine	40.6	7.0	Slash pine	43.7	6.7
4	Slash pine	45.2	3.7	Longleaf pine	51.8	5.5
5	Longleaf pine	44.5	3.7	Slash pine	43.7	6.7
6	Longleaf pine	43.2	3.7	Longleaf pine	61.0	7.3

[a]Diameter at breast height in centimeters.
[b]Meters.

Table 3. Overstory characteristics of aviary and control red-cockaded woodpecker clusters on Fort Stewart, Georgia, 1997-1999.

	Aviary			Control		
Trial	Mean DBH[a]	BA m^2/ha[b]	%Pine	Mean DBH	BA m^2/ha	%Pine
1	33.0	11.0	100	33.2	9.1	100
2	33.0	7.7	100	39.4	11.9	100
3	31.0	15.2	100	33.3	13.5	100
4	32.2	9.1	100	34.9	7.0	100
5	33.7	17.2	100	35.6	8.4	100
6	36.1	17.2	100	36.6	9.2	100

[a]Diameter breast height in centimeters
[b]Basal area