J. Field Ornithol., 70(3):400–403

TRANSLOCATION OF ORPHANED RED-COCKADED WOODPECKER NESTLINGS

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Abstract.—We translocated two orphaned Red-cockaded Woodpecker nestlings to unrelated Red-cockaded Woodpecker groups with young of similar age in 1996 at Noxubee National Wildlife Refuge, Mississippi. Both orphaned nestlings were accepted by foster groups and raised to fledgling stage along with the natal nestling at each nest. Translocation of young from large broods to other nests with 1–2 young could potentially increase productivity in small Red-cockaded Woodpecker populations. Additional research is needed to determine if translocating nestlings can be used to lower brood reduction without affecting survivorship of the recipient nestlings and adults, or serve as a means of genetic exchange among populations.

TRANSLOCACIÓN DE PICHONES HUÉRFANOS DE *PICOIDES BOREALIS*

Sinopsis.—Translocamos dos pichones huérfanos de *Picoides borealis* a grupos no relacionados de la misma especie con crías de edad similar en 1996 en el Refugio Nacional de Vida Silvestre Noxubee, en Mississippi. Ambos pichones fueron aceptados por grupos adoptivos y criados a la etapa de volantones con la cría natural en cada nido. La translocación de crías de camadas grandes a otros nidos con 1 a 2 pichones podría aumentar potencialmente la productividad en poblaciones pequeñas de *Picoides borealis*. Estudios adicionales se necesitan para determinar si los pichones translocados pueden servir para reducir bajones en camadas sin afectar la supervivencia de los pichones y adultos recipientes, o si sirven como una forma de intercambio genético entre poblaciones.

The Red-cockaded Woodpecker (*Picoides borealis*) is an endangered species restricted to the southern pine ecosystems of the southeastern United States. This species is dependent on living pine trees where nest and roost cavities are constructed. Since the early 1990s, management to reverse this species' decline has, in part, involved translocation of juvenile birds to facilitate pair formation and establish new occupied territories (Copeyon et al. 1991, Allen et al. 1993, Rudolph et al. 1992, Costa and Kennedy 1994). However, only two studies have involved work on the translocation of nestlings. Allen et al. (1993) moved a nesting pair and their nestlings to a new cluster. This resulted in the nestlings dying, and only the female remained at the release site. DeFazio et al. (1987) were able to cross-foster nestlings between two groups. In this instance, the

number of nestlings in both nests remained the same and the young fledged.

In this paper, we report the translocation of orphaned Red-cockaded Woodpeckers to foster Red-cockaded Woodpecker groups with nestlings and discuss the management implications of this result.

METHODS AND RESULTS

Our work was conducted at Noxubee National Wildlife Refuge in Winston and Noxubee Counties, Mississippi, 24 km west of Brooksville, Mississippi. The population of Red-cockaded Woodpeckers on the refuge consisted of 33 groups in 1996. During the past several years, an attempt was made to band most of the population, resulting in 80% of the birds being color banded with unique combinations.

On 21 May 1996, we banded two male Red-cockaded Woodpecker nestlings approximately 8 days of age from Cluster 114. The nestlings were banded with a unique U.S. Fish and Wildlife Service band and three color bands, and returned to their nest cavity. Based on earlier observations at the cluster, the group consisted of a breeding male and female without helpers.

On 22 and 23 May 1996, we observed the nest to record the color band combinations of the adults as part of ongoing management studies. However, during approximately a 1-h period of observation on each day, only the male was seen. On 24 May 1996, the nestlings were seen with their heads protruding from the cavity entrance begging but it was determined that the adults were no longer present. We decided to climb the tree and remove the young. The young were malnourished and lacked the distended stomachs typical of young Red-cockaded Woodpecker nestlings. We fed meal worms and crickets to the nestlings during the evening, and we decided to move them separately to other woodpecker groups (Clusters 13 and 112) that each had a single nestling of similar age.

At Cluster 13, which consisted of the breeding pair and two helpers, the nest tree was climbed, and the sole nestling was removed and replaced with one of the orphaned nestlings on 24 May 1996. The initial removal of the nestling, which was 2–3 d older than the foster nestling, was done to ensure that the adults would feed the foster nestling. After approximately 5 min, we observed one of the adults return to the nest cavity with food in its mouth and enter the cavity. The adult subsequently exited without the food. A second bird returned to the nest and fed the nestling. We then climbed the nest and returned the natal nestling to the cavity. After approximately 10 min, an adult returned, and after some delay, entered the cavity. During the next several minutes, other birds began feeding the young and we left the cluster.

At Cluster 112, which consisted of a breeding pair and no helpers, we climbed the nest tree and placed the other orphaned nestling into the cavity with the natal nestling on 24 May 1996. The natal nestling was approximately 2–3 d younger than the foster nestling. Within 5 min the adults began feeding the young. In the afternoon, observations of the

nests at Clusters 13 and 112 were made to insure that the nestlings were being fed. Adults were seen returning to the cavities with food and begging cries from the cavities indicated that both young in each cavity were alive.

During the next 3 days, the two nests were climbed each day and visually inspected with a drop light and mirror to insure that the young were still alive. Subsequent observations of the clusters determined that both nestlings from each nest fledged. At Cluster 13, both fledglings were observed until August 1996 when only the natal fledgling was seen. At Cluster 112, both fledglings were observed at the cluster until April 1997. In May 1997, the orphaned nestling remained at Cluster 112 as a helper feeding young. The natal fledgling established his own territory at an unoccupied cluster 1 km away and did not associate with the group at Cluster 112.

DISCUSSION

The acceptance of the orphaned Red-cockaded Woodpecker nestlings by foster groups was expected based on DeFazio et al.'s (1987) findings. However, our translocations increased brood size in the foster nests, unlike DeFazio et al. (1987). As a result of parental and helper care of their foster young, these groups enjoyed increased productivity. Walters et al. (1988) reported a positive relationship of fledging rate with adult group size and a mean fledging rate of only 1.8 young/nest. Because significant brood reduction occurs primarily 1–6 d posthatch (LaBranch and Walters 1994), the opportunity exists in situations where number of nestlings exceeds two, and the group is comprised of three or fewer adults to translocate the "extra" nestlings to groups with helpers and only 1–2 nestlings to increase productivity. Small Red-cockaded Woodpecker populations (e.g., <25 groups) might benefit from even a small increase in overall productivity.

Translocation of nestlings to increase nestling survivorship when large clutches (>3 eggs) are hatched remains untested and needs investigation. Though our results concern 11-d-old nestlings, we suggest that experiments examine if nestlings can be moved during days 1–6 posthatch, which is the period when most brood reduction occurs (LaBranch and Walters 1994). Ideally, the recipient group would have a nest consisting of 1 or 2 nestlings and be of similar age (±2 d) to prevent brood reduction associated with the larger nestlings out competing the smaller nestlings for food. Close monitoring of nests would be necessary to establish hatch date and nestling age to conduct this type of translocation. We reiterate that before translocation of nestlings is adopted as a possible management tool, research needs to answer important questions concerning if translocating nestlings can be used to lower brood reduction or serve as a means of genetic exchange among populations (Stangle et al. 1992, Haig 1993) without affecting the survivorship of the recipient nestlings or adults.

ACKNOWLEDGMENTS

This manuscript benefitted from the reviews and comments of C. R. Chandler, R. N. Conner, B. D. Leopold, L. R. Mitchell, and J. R. Walters.

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Received 15 May 1998; accepted 12 Oct. 1998.