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A Mobile Aviary Design to Allow the Soft Release of Cavity Nesting Birds

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Abstract

Translocation of endangered red-cockaded woodpeckers *(Picoides borea Is)* has been an important component in restoration efforts to establish new populations and enlarge small populations. These efforts-relying on a "hard release" approach whereby the bird is captured, moved, and immediately released at the new site-have met with mixed results. A mobile aviary has been designed with the expectation of improving translocation success for red-cockaded woodpeckers that also can be used for other cavity nesting birds with depleted populations. The mobile aviary allows a "soft" release, in which the bird is moved to the release site and maintained there for a given period of time prior to release. While in the aviary, the individual can become accustomed to the release area, thus increasing the likelihood that it will remain there once released. The aviary consists of a circular metal frame, approximately 5.1 meters (m) high and 4.7 m in diameter, with hardware and shade cloth on the outside. It encompasses a living pine tree with a natural or artificial cavity in the trunk, to be used by the bird for nightly roosting. It has proved to be relatively inexpensive to construct, easily moved, and durable under a range of weather conditions. An evaluation of the mobile aviary in terms of increasing translocation success for the red-cockaded woodpecker is underway at the Savannah River Site in South Carolina.

Keywords: Cavity nesters, endangered birds, mobile aviary, red-cockaded woodpecker.

Introduction

Releasing animals into the wild (translocating) is a widely accepted strategy for reestablishing extirpated wildlife populations or augmenting depleted ones. Wildlife professionals succeeded in translocating individuals of a number of species that had been propagated in captivity, including American bison *(Bison bison),* bald eagle *(Haliaeetus leucocephalus),* peregrine falcon (*Falco peregrinus),* and bean goose *(Anser fabalis)* (Beck and others 1994) as well as species captured in the wild: wild turkey *(Meleagris gallopavo),* bighorn sheep *Ovis canadensis),* and elk *(Cervus elaphus*) (Griffin and others 1989, Wolf and others 1996). Although translocation efforts have emphasized game species, some conservation strategies have entailed releasing individuals of endangered species as well, within either their historical or their current range.

Wolf and others (1996) surveyed 336 of the 4 13 known translocation programs in North America, Australia, and New Zealand. Of these, 89 involved endangered, threatened, or sensitive species and achieved an average success rate of 53 percent. Included in the survey was the endangered red-cockaded woodpecker *(Picoides borealis)* (RCW).

The RCW, a territorial species endemic to open pine woodlands of the Southeast, is nonmigratory and a cooperative breeder (Lennartz and others 1987, Walters and others 1988). These birds construct cavities in living pine trees for nightly roosting throughout the year and for nesting during the breeding season. Recovery has focused on increasing population size and reestablishing birds in abandoned habitat. Translocation has been a tool for minimizing the loss of genetic diversity in small populations and for facilitating population recovery after a catastrophic event. The results of these translocations have been mixed (Allen and others 1993, Costa and Kennedy 1994, DeFazio and others 1987, Odum 1983, Reinman 1995, Rudolph and others 1992). Of the 143 RCW translocations from 1989 to 1994, the success rate was 62 percent for females, 42 percent for males, and 33 percent for pairs (Costa and Kennedy 1994). All RCW translocations and more than two-thirds of those summarized by Wolf and others (1996) have involved "hard" releases: capturing the bird, transporting it to the release site, and then immediately releasing it.

Since 1986, the RCW population at the Savannah River Site in South Carolina has been in a recovery program (Allen

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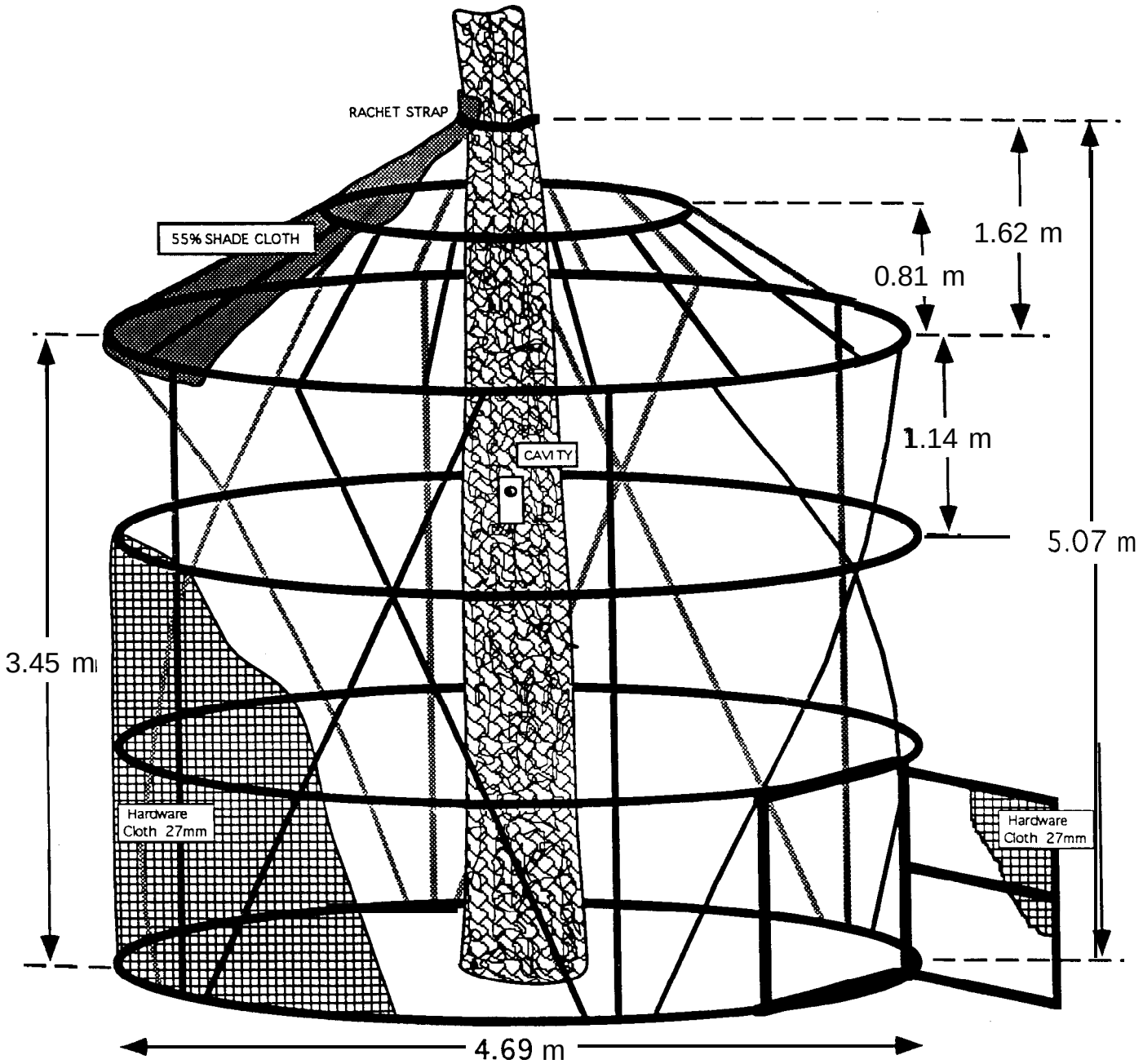

Figure l-Diagram of mobile aviary designed for the red-cockaded woodpecker and other cavity nesting birds.

and others 1993, Franzreb 1997). Increasing the probability of successfully moving these birds would have a beneficial effect on their recovery. With the expectation of improving translocation success, an aviary was designed for RCW that provides access to a cavity while allowing confinement to the release site for a specified period of time. During this time the captive bird receives food, water, shelter, and careful monitoring. This method is known as a "soft" release. Keeping the bird in captivity at the release site may strengthen its potential to develop an affinity for the site and may increase its inclination to remain at the site after release. To be effective the aviary had to be mobile, simple to take down and reassemble, relatively inexpensive to construct, and able to withstand normal weather conditions.

This study consists of three phases: (1) designing, constructing, and testing the aviary for durability; (2) testing the aviary to determine whether an RCW could be successfully maintained in it; and (3) determining whether the aviary can instill in the bird an attachment for its release site so that relocation efforts are more productive. This paper reports on phase 1 results.

Materials and Methods

Study Area

The aviaries were tested at two South Carolina locations; one near Clemson University and the other at the Savannah River Site, a U.S. Department of Energy nuclear production facility near Aiken, SC.

Mobile Aviary Design

The mobile aviary consists of four circular aluminum hoops, each bolted together and connected to the others with aluminum braces (fig. 1). The four hoops form a structure measuring approximately 3.5 m in height and are covered with a 0.27-m mesh hardware cloth. A smaller hoop is bolted to the structure with connecting braces, forming an upper section. Shade cloth covers this upper section; it is tightly affixed to the tree trunk with a rachet strap. The lowest hoop has a small door to allow access to the inside of the aviary. When all sections are in place, the overall height is approximately 5.1 m. The aluminum frame is erected from the ground upward around a living pine tree that contains an artificial (Allen 199 1) or natural RCW cavity about 4 m or less from the ground. The site must be relatively flat and the tree relatively straight, with dead limbs removed to prevent subsequent damage to the aviary from falling branches.

To assess the aviary's durability under various weather conditions, five field tests were carried out between October 1993 and March 1995, each lasting at least 2 weeks. The materials to construct the aviary, including the frame and shade cloth, cost about $1,000. Its components fit into a standard-sized pickup truck or small trailer. Two people can assemble the aviary at the release site in about l-2 days, allowing it to be used repeatedly.

Results and Discussion

During the field tests, the aviary withstood high winds and heavy rain and required no repairs after the testing periods. Based on durability, ease of assembly, and cost of construction, the aviary is considered to be an effective tool for confining RCW's at the release site.

One of the major goals of the RCW recovery effort is to restore depleted populations, including the reintroduction of bird pairs. The mobile aviary has the potential to increase the success of translocations into populations that are critically small, and to restore populations in areas where the species has been extirpated. For it to be a viable management tool, the aviary must be used in relocation sites that provide suitable, good-quality habitat. Ensuring good habitat quality may require installing artificial cavities, controlling hardwood midstory vegetation in clusters of trees that contain the cavities, minimizing cavity use by competitors, and providing quality foraging.

The mobile aviary has proven itself in terms of its design and its serviceability in the field. The next phase entails maintaining the birds in the aviary and determining whether 2 to 4 weeks of confinement will increase the probability that they will remain at the site once released. Field tests are underway to determine whether the mobile aviary increases the effectiveness of relocation efforts. If these prove successful, the consequences to the recovery of RCW's and other endangered or threatened avian species could be far-reaching.

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