Post-release monitoring of hand-reared songbirds

Halley D. Buckanoff and Lynn J. Moseley

Blue jay *(Cyanocitta cristata)*.

ABSTRACT: The Valerie H. Schindler Wildlife Rehabilitation Center at the North Carolina Zoo (VHS WRC) initiated a post-release survival study of commonly rehabilitated backyard songbirds in 2010. By the end of 2014, 183 hand-reared songbirds had been color-banded and released. Eleven individuals have been re-sighted, including two northern cardinals *(Cardinalis cardinalis)* observed for more than five months post-release, and one Carolina wren *(Thryothorus ludovicianus)* one year post-release. All re-sighted birds demonstrated normal wild behavior and were distinguishable from their wild counterparts only by their study bands.

KEYWORDS: banding, post-release, songbirds, survival, wildlife rehabilitation

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Introduction

The Valerie H. Schindler Wildlife Rehabilitation Center (VHS WRC) at the North Carolina Zoo, in partnership with faculty emeritus at Guilford College, has been conducting a post-release survival study of commonly rehabilitated backyard, non-migratory songbirds for five years. A search of the literature revealed few studies on post-release survival and/or behavior of hand-reared and rehabilitated songbirds.[1-3] Anecdotal comments suggest that the behavior of hand-reared wild birds is sometimes distinguishable from that of their parent-reared counterparts as they act inappropriately for their sex or species, are unafraid of humans, and/or continue to come to humans for food. We hypothesized that hand-reared songbirds reared in an appropriate, controlled environment using hands-off techniques and limited contact with humans would exhibit appropriate species-specific behaviors post-release to appropriate habitat.

Seven species of birds were chosen for the study based on the frequency of admission numbers, determined by annual data, at the VHS WRC, and the potential for released birds to be easily re-sighted near feeders or around homes. All have non-migratory populations in North Carolina. We intentionally included species with differing dietary needs, size, and niche use as much as possible within the confines of availability based on numbers admitted into care at the VHS WRC so that our study would represent species of varying ecology. The species chosen were American robins (*Turdus migratorius*,

AMRO), blue jays (*Cyanocitta cristata*, BLJA), Carolina wrens (*Thryothorus ludovicianus*, CARW), eastern bluebirds (*Sialia sialis*, EABL), mourning doves (*Zenaida macroura*, MODO), northern cardinals (*Cardinalis cardinalis*, NOCA), and red-bellied woodpeckers (*Melanerpes carolinus*, RBWO). Additional limiting factors for species selected for this study included approval by the United States Geologic Survey (Bird Banding Laboratory (USGS BBL)) for species that were not currently being color-banded by other researchers in the area.

Study Area

The geographic study sites were within a 50-mile radius of the North Carolina Zoo in Asheboro, North Carolina (35° 38′ 37N by 079° 46′ 4″W).

Methods

All study birds were admitted to the VHS WRC in their hatch year at fledgling stage or younger, and were hand-raised within the guidelines of the Center by trained staff, volunteers, and interns. Standard protocols included initial assessment for injury or illness at admission time with follow-up by veterinary staff as needed, taking daily weights until birds were eating on their own and gaining weight for at least three days, no talking to or around releasable wildlife, handling only as needed and as little as possible, providing housing for each developmental stage (including pre-release conditioning) that meets or exceeds International Wildlife Rehabilitation Council and National Wildlife Rehabilitators' Association's Minimum Standards, providing natural sounds and species-specific songs with local dialects of the birds within care during daylight hours, using timed lighting to mimic natural conditions, and providing nutritionally-complete diets during all stages of growth and development.

FIGURE 1. Each study subject was given a unique set of metal and colored bands pre-release.

Housing of birds within the VHS WRC Avian Nursery is arranged taxonomically (i.e., mimids are housed next to other species of mimids). In addition, smaller species of birds are never housed next to large species in order to reduce stress. Every effort is made to raise juvenile songbirds with conspecifics regardless of life stage as long as individuals are old enough to thermoregulate outside of the incubator environment. Heating pads are provided on an exterior portion of enclosures. Older hand-reared songbirds have assisted in the rearing/feeding of younger birds while in captive care and presumably help younger birds develop species-specific recognition, vocalizations, and behaviors.

Prior to release, birds were banded with a numbered aluminum band and three colored bands in a unique combination for specific identification of individuals (Fig. 1). Bird banding is regulated by the USGS BBL and requires a federal permit. Both authors possess appropriate permits for this project.

All post-release data were compiled through periodic observations of banded birds. If a released bird was re-sighted, we recorded behavioral data according to the following categories: feeding (F), preening/bathing (P/B), carrying nesting material (CNM), resting (R), other comments (O). If feeding was observed, we noted whether it occurred at an established feeder. We also recorded whether the bird was with other banded or unbanded birds. We used this information to help determine whether a released bird demonstrated appropriate species-specific affiliations.

During 2010, the study's first year, we attempted to engage the public to be "citizen scientists" and participate in the study. Whenever possible, birds were released by the person who had rescued the bird and brought it to the VHS WRC. Birds were transported to their original capture site in vented paper bags and hard-released. A total of 43 birds were banded with metal and color bands and released (Table 1). However, no members of the public who released the birds reported any data and, upon inquiry, the participants stated that they had not looked vigilantly for the banded birds.

The following year, in 2011, volunteers and interns at the VSH WRC conducted releases. Birds were again transported in vented paper bags to

TABLE 1. SPECIES OF BIRDS AND NUMBERS OF INDIVIDUALS OF EACH SPECIES REHABILITATED, BANDED, RELEASED, AND RE-SIGHTED IN EACH YEAR OF THIS STUDY.

YEAR	AMRO	BLJA	CARW	EABL	MODO	NOCA	RBWO	TOTALS	# BIRDS RESIGHTED
2010	18	3	3	13	1	2	3	43	0
2011	8	4	14	6	6	0	4	42	0
2012	12	1	5	2	1	5	2	28	1 NOCA
2013	15	6	13	7	0	1	3	45	5 CARW
2014	6	0	7	1	5	4	2	25	1 CARW 2 NOCA 2 MODO
TOTALS	59	14	42	29	13	12	14	183	11

appropriate habitats and hard- released. A total of 42 birds were aluminum- and color-banded and released (Table 1). Once again, no data were acquired due to lack of searching for released birds.

In 2012, study birds were released and monitored by the two authors alone and only at two locations because of the lack of re-sight data from previous years. Sites chosen offered suitable habitat for study birds (those species had been observed routinely at each site) and could be easily monitored. Feeders and landscaping were maintained at both locations to provide easy viewing of banded birds. In the first half of the season (mid-June to mid-July), birds were transported in vented paper bags and hard released; during the second half of the season (mid-July to mid-September) birds were transported in Exo Terra Explorariums® soft-sided hanging enclosures (Fig. 2). The enclosures were hung in visual distance of a feeder and left, depending on time of day, several hours to overnight. The door to the enclosure was then unzipped and the birds were allowed to leave at will. We referred to this release type as pseudo-soft release. The change in release type was made to reduce the presumed stress of a hard-release into an unfamiliar location rather than to test the validity of either release method. These methods were continued during 2013 and 2014.

Results

Years 2010 and 2011 yielded no re-sightings (Table 1). In 2012, one hard-released NOCA and one pseudo-soft-released NOCA were the only birds re-sighted of the 28 banded and released birds; the hard-released NOCA was re-sighted up to five months after release (Fig. 3). The ethogram results suggest that both exhibited appropriate behaviors for a normal, wild bird.

In 2013, five Carolina wrens (CARW) were repeatedly sighted post-release, one of which continued to be observed for over a year (Table 1; Fig. 4). Four of the re-sighted CARW were released on 20 June 2013 (Group 1). The fifth re-sighted CARW was from Group 2, released on 11 Sep 13 (Fig. 3); this individual was re-sighted almost daily for approximately one month. The activity log for all five re-sighted CARW included reports of interactions with non-banded CAWR, feeding at feeders, foraging in brush, bathing/preening, and alarm calls when observers approached. Ethogram comments for the single re-sighted CARW from Group 2 also included molting; during this period, it was caught by a dog and killed.

In 2014, 25 individuals were banded and released at the two sites used in 2013. Two NOCA, two MODO, and another CARW released during the 2013 season were re-sighted (Table 1), all of which exhibited species-specific behaviors. As of the end of 2014, the two NOCA were still being observed occasionally (Fig. 3).

Since 2010, 183 hand-reared songbirds have been color-banded and released from the VHS WRC as part of this study. Eleven individuals have been re-sighted, including two NOCA observed for more than five months post-release and one CARW that returned to its release site one year after release. All demonstrated wild behaviors and were distinguishable from their wild counterparts only by their bands.

FIGURE 2. From the second half of 2012 through 2014, birds were transported in soft-sided hanging enclosures for a pseudo-soft release (Explorarium®, Exo Terra, Rolf C. Hagen (U.S.A.) Corporation, Mansfield, Massachusetts 02048).

Discussion and Conclusions

According to the the USGS BBL, approximately 33 million songbirds have been banded to date,[4] with a re-sight/recapture rate of approximately 1%. Our re-sighting frequency of 12%, if the data is excluded from 2010 and 2011 when no released birds were observed, thus greatly exceeds the usual odds of encountering banded birds after release, and supports the success of our methodology of hand-rearing and release.

This study is still in its early stages, as we continue to increase our sample size, locations, and participation in the study. The next phase will involve pseudo-soft release at the VHS WRC where students, volunteers, and interns can become trained observers at a public location with adequate habitat, landscaping, and feeders. With the participation of trained and interested "citizen scientists," we hope re-sighting will increase and will provide enough data for statistical analysis in the future. We will soon begin using telemetry on selected species at the VHS WRC to improve our post-release monitoring. We acknowledge that re-sighting frequency can vary according to the tendency of different species to visit feeders or residentially landscaped areas consistently.

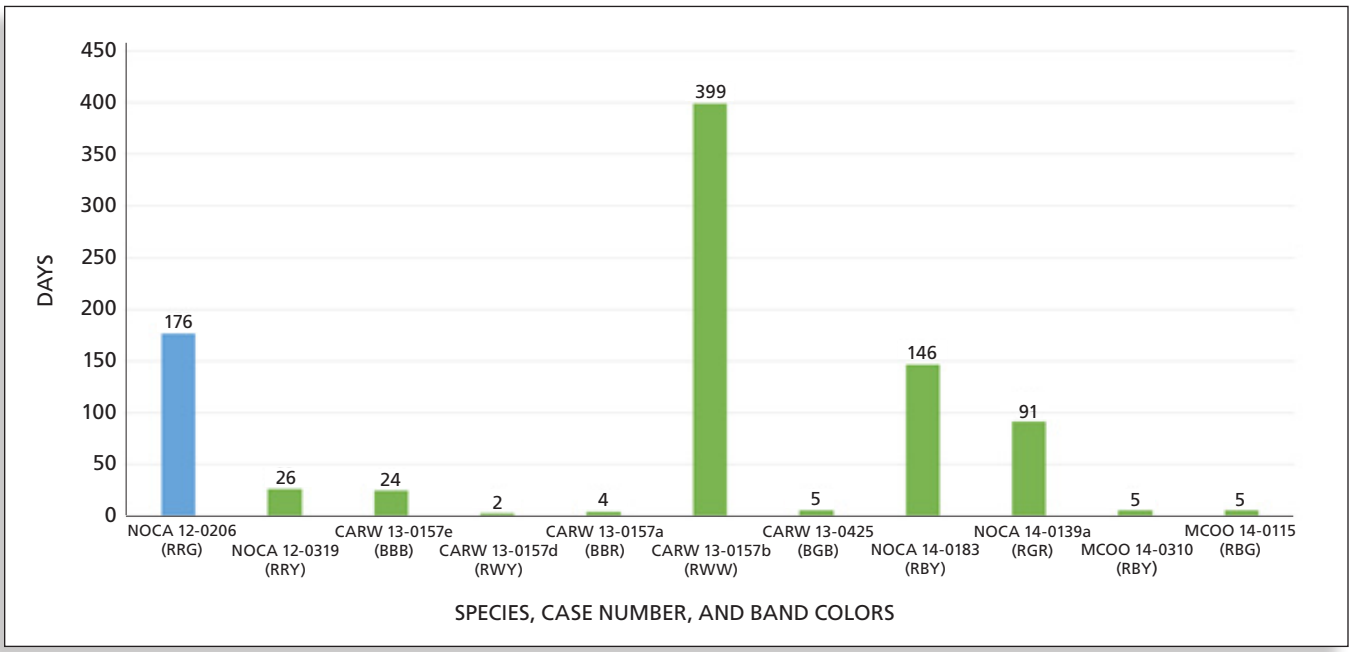

FIGURE 3. Period between release and last sighting (2012-2014).

FIGURE 4. One of the four Carolina wrens (CARW) observed repeatedly post-release.

We believe that understanding the impacts of hand-rearing songbirds on their post-release survival will provide critical information for wildlife rehabilitators, and may serve to test the effectiveness of different techniques for successfully raising songbirds for survival in the wild.

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