The REDHEAD

Red-headed Woodpecker Recovery

Winter 2012 A Special Committee of the Audubon Chapter of Minneapolis Vol. 6 No. 1

RHWO MAPS UPDATE

New RHWO Locations Maps

The Red-headed Woodpecker Recovery (RhWR) has published a map that contains the location of clusters of red-headed woodpeckers (to view go to our website <www.RedheadRecovery.org>). It has been the hope that the RhWR could provide more detailed maps with the locations of red-headed woodpeckers (RHWO). Now with the help of ARCGIS we will be able to do that. ARCGIS is a powerful free mapping software tool that we hope to use in our research on RHWO's. We will start by publishing the locations of RHWO's that we have found each year since 2008, when we started to collect the cluster information. We will need to work out the details, but it is hoped that there will be a link from our website to the maps (look for information in upcoming "The REDHEAD"). In the meantime, please send your sightings of RHWO's to rhwracm@comcast.net. Please include a location that is as accurate as you can be (GIS coordinates would be best, but a county with street address or crossroads location would be good). Also provide the date and a note on what it was doing (for example, at my feeder) and whether it was an adult or juvenile.

It is also hoped that a map of sightings of RHWO's on the Christmas Bird Counts for the whole country can also be provided, possibly through a link to the Christmas Bird Count website. Maps may also be linked through eBird. Along with the nesting data that we are currently collecting, we may be able to track movement of the RHWO across Minnesota during the year, but this will require all our birding friends to accurately report all the sightings of RHWO to us using the e-mail address above.

If anyone has any ideas on research topics that a map will help us with, please send your thoughts to us.

Jerry Bahls

Daniels, Susan J., and Jeffrey R. Walters. 2000. BETWEEN-YEAR BREEDING DISPERSAL IN RED-COCKADED WOODPECKERS: MULTIPLE CAUSES AND ESTIMATED COST. Ecology 81:2473–2484.

"The effect of reproductive failure on breeding dispersal changes with female age. Reproductive failure is associated with breeding dispersal in young females only (those <3 yr old). Estimated mortality rates for breeding females that attempt to disperse vs. those that do not attempt to disperse were 59% and 26%, respectively; the difference between those rates is the estimated cost of breeding dispersal in this population, an additional 33% probability of mortality. Thus, breeding females more than double their risk of mortality by dispersing."

A Note from the Chair

A Note from the Chair **January 2012**

By mid-January of last year I had already shoveled over 3000 cubic feet of snow from my driveway and sidewalk. What a difference a year makes. While the present drought is generally bad news for many, at least a mild winter bodes well for our feathered friends. Jim Howitz reports from the Christmas Bird Count that 56 red-headed woodpeckers were observed at Cedar Creek in December. It will be interesting to see how many nest cavities we locate this spring. Last year's record was 42.

Our *Red-headed Woodpecker Recovery* project will be signing another three-year contract of understanding with the folks at Cedar Creek Ecosystems Science Reserve (CCESR) from the University of Minnesota. It has been a pleasure to work with Jeff Corney and his staff at CCESR and to engage in cooperative research with them. In the next three years we will continue to monitor RHWO nests, but will also initiate some exciting research involving leg-banding birds and exploring new options for habitat enhancement. There will be another special open-house at Cedar Creek early in June. Stay tuned for specifics. In addition we are planning for more opportunities for birders to access Cedar Creek with trained filed guides.

Our recovery team members will be fully engaged in conducting surveys and serving as advocate liaisons with selected state parks, private landowners and golf courses. And "Yes!" we can always use additional folks in our advocacy work. Feel free to contact me or any project member.

Chet Meyers, Chair

Note From the Editor

I learned a new word in researching this month's topic "Do the young return to nest in the same area in which they were fledged?" The word is philopatric or philopatry.

To answer our question, our data and the literature data is a resounding "Yes!" See the feature article on page 3. Now, can we get the red-headed woodpeckers at Cedar Creek to disperse into suitable habitat near Cedar Creek? We know there is suitable habitat nearby for them to disperse into. The article on this page attempts to ask the questions about red-headed woodpeckers that need answers that will help us understand what is required to get them to disperse to those areas. Is there a social structure that must be attained before they will make the transition to a new suitable area? Or is it strictly food and space? Is burning necessary?

Check out our website in a few weeks to see the new maps. They should be very interesting and informative. Also watch for our shift in emphasis on helping the recovery of the red-headed woodpecker. We expect to be decreasing the amount of data collection at Cedar Creek and expanding our monitoring to other sites, such as at Belwin, Carlos Avery and Nerstrand Woods. As well as doing some experiments at Cedar Creek.

Jerry Bahls, Editor

PAUL J. GREENWOOD, Anim. Behav., Mating Systems, Philopatry And Dispersal In Birds And Mammals, 1980, 28, 1140-1162

"Many species of birds and mammals are faithful to their natal and breeding site or group. In most of them one sex is more philopatric than the other. In birds it is usually females which disperse more than males;"

(References continued from column 2)

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Natal Dispersal

Natal dispersal must be understood when working to restore, recolonize populations or diversify the gene pool of species of concern, such as the Red-headed Woodpecker. G. D. Sutherland[1] *et al.* has published a very interesting article that models dispersion of animals and birds. The predominate hypothesis currently used to explain the benefits of dispersion are intrasexual competition for resources (mates, food and space) and inbreeding avoidance (Dobson[2] 1982, Pusey[3] 1987, Wolff[4] 1993). In birds, postfledging exploratory movements may have a function in locating future breeding sites, locating sites suitable for overwintering, or establishing a navigational target, all of which could confound interpretation of dispersal movements (Baker[5] 1993). All hypotheses assume a cost for survival and/or reproduction to the disperser. Many birds[6] are philopatric (drive to stay on or near the site of birth), however only a proportion of the population is faithful to a location. The remainder disperses voluntarily or are forced.[11] Nesting success or failure may be a factor in dispersion.[7,8]

Sutherland found "that a significant proportion of the variation in the distances dispersed by juvenile birds and mammals could be explained by differences in body mass [weak in birds] and diet type, despite known differences among species in terms of reproductive ecology and movement capability[1]." The maximum dispersion distance[1] for birds was 1.3 km for the European Magpie to 1305 km for the Great Horned Owl.

Pasinelli and Walters[9] found that in Red-cockaded Woodpeckers: "First, dispersing male fledglings were, on average, significantly lower in body mass than their philopatric siblings, indicating an influence of social dominance on dispersal. Second, individuals were more likely to disperse from territories with many male fledglings, independent of the number of adult male helpers per territory, suggesting that sibling (rather than helper–offspring) competition for future reproduction may be the underlying mechanism. Third, the probability of remaining as a helper rather than dispersing was positively associated with quality of the natal territory and with the number of high-quality territories close to the natal site." Kesler and Walters[10] generally found "that birds chose not to transit forests with greater densities of hardwood trees and young pines, and that dispersal was more likely to occur across forests with more large diameter pine trees."

Jerry Bahls

1. Sutherland, G. D., A. S. Harestad, K. Price, and K. P. Lertzman. 2000. Scaling of natal dispersal distances in terrestrial birds and mammals. Conservation Ecology **4**(1): 16. [online] URL: http://www.consecol.org/vol4/iss1/art16/
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6. Wheelwright, Nathaniel T., and Robert A. Mauck. 1998. PHILOPATRY, NATAL DISPERSAL, AND INBREEDING AVOIDANCE IN AN ISLAND

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Nest-Site Fidelity in Red-Headed and Red-Bellied Woodpeckers

Danny J. Ingold; Wilson Bull., 103(1), 1991, pp. 118-122

Numerous studies demonstrate the propensity for birds to nest at the same location in successive years (Kendeigh 1941, Werth 1948, Austin 1949, Greenwood 1980). Such nest-site fidelity may occur in either migratory (Gauthreaux 1982) or non-migratory (Harvey et al. 1979) species. Studies that substantiate this phenomenon in woodpeckers, however, are relatively few. Jackson (1978, 1987) and Hooper et al. (1980) report that Red-cockaded Woodpeckers (Picoides borealis) commonly use the same nest cavities in consecutive years. The Hairy Woodpecker (P. villosus), a species whose investment in cavity excavation is less than that of the Red-cockaded Woodpecker, also often returns to the same nest tree (Kilham 1960). Among migratory species, the Northern Flicker (Colaptes auralus) and the Yellow-bellied Sapsucker (Sphyrapicus varius) exhibit nest-site tenacity (Lawrence 1967). The extent to which Red-headed and Red-bellied woodpeckers (Melanerpes erythrocephalus and M. carolinus) return to previous nest sites is unclear. Short (1982) suggests that resident Red-headed Woodpeckers may use previously excavated winter roost holes as nests, but mentions nothing of whether migratory individuals return to nest in previously occupied trees. Bent (1939) reports that Red-bellied Woodpeckers often excavate nests in limbs used during a previous year and occasionally nest in the same cavity. The potential effects of European Starling (Sturnus vulgaris) competition on woodpecker nest-site fidelity and the extent to which reproductively successful Red-headed and Red-bellied woodpeckers return to previous nest sites is equally ambiguous. Thus, the three objectives of this study were to determine: (1) if either Red-headed or Red-bellied woodpeckers reuse old nest cavities or nest in the same tree or immediate area during consecutive years, (2) whether nest-site fidelity is influenced by the previous reproductive success of returning individuals, and (3) whether starling competition for nest cavities influences whether or not Red-headed or Red-bellied woodpeckers return to previous nest sites.

Methods. - From mid-July 1984 through August 1987, adult and juvenile Red-headed and Red-bellied woodpeckers were captured on the Mississippi State Univ. (MSU) campus, the MSU south farm, and in the city of Starkville, in Oktibbeha County, Mississippi. Most frequently, nestlings were taken from nests with the use of a noose (cf. Jackson 1977). Adult birds were captured on nests using a pole equipped with a net-on the end. Adult and juvenile woodpeckers were captured away from the nest with the use of a mist net, recordings of woodpecker distress calls, and plastic decoys. Each captured woodpecker was fitted with a U.S. Fish and Wildlife Service aluminum band and a unique color-band combination to permit individual recognition.

To determine the extent to which Red-headed and Red-bellied woodpeckers returned to previous nest sites, I visited such locations in subsequent breeding seasons in search of active nests. If color-banded nesting woodpeckers were not detected in the same tree or immediate area (circular plot of 400 m^2; radius = 11.3 m), I thoroughly searched a circular plot of approximately one ha around the cavity tree. In addition, I explored new areas in the last three years for other nesting woodpeckers. All observations were made with either a 15-45 zoom spotting scope or 7 x 35 binoculars.

TABLE 1 NEST-SITE FIDELITYOF RED-HEADED WOODPECKER IN 1984-1987 BASED ON 15 COLOR-BANDED ADULT INDIVIDUALS. A = MALE THAT RETURNED TO A PREVIOUS NEST SITE, B = FEMALE THAT RETURNED, C = MATED PAIR THAT RETURNED, AND D = INDIVIDUAL OF UNKNOWN SEX THAT RETURNED

Number of years returned	Same cavity	Same tree	Same 400-M^2 plot	Same one-ha plot
1	A,C	A(5)[a],B	A,D	A(2),D
2	-	A (2)	-	-

[a]Two of these individuals returned to nest in the same one-ha plot in the year prior to the two-year sequence of nesting in the same tree. A third individual nested in the same one-ha plot in the year following the two-year sequence of nesting in the same tree.

Results. - Of 114 Red-headed Woodpeckers color-banded during this study, 45 were banded as adults and 69 as nestlings. No individuals banded as nestlings returned to nest in subsequent years in the same 1-ha circular plot around the cavity tree. Of the 45 adults (all of which nested in areas of starling overlap), 15 returned to nest in the same tree or immediate area (Table I). The Chi-square test revealed that significantly more Red-headed Woodpeckers returned than would have been expected assuming that individuals were not nest-site tenacious ($X2 = 50$, $P < 0.001$, $df = 3$). In two instances, banded woodpeckers returned to nest in the same cavity during consecutive years (Table 1). In six additional instances, either the male or female returned to nest in the same tree during two consecutive years, and in two cases, males returned to nest in the same tree during three consecutive years (Table I). To a lesser extent I observed adult Red-headed Woodpeckers return to nest in other trees within the same 400 m^2 or one-ha circular plot around the cavity tree in consecutive years (Table I).

All returning banded Red-headed Woodpeckers had been successful at fledging at least one young during the previous year. Five pairs with at least one color-banded individual successfully reared two broods in one year and a single brood in the other. Five other pairs raised one brood in each of two years. However, at six locations, banded individuals that fledged at least one young did not return to nest in the same area (one-ha circular plot) the following year (at two of these locations the cavity tree was cut down between nesting seasons).

All returning banded Red-headed Woodpeckers nested in areas of starling overlap, although competition for cavities between the two species was minimal (cf. Ingold 1989). Only one pair lost its cavity to starlings. At three locations, pairs with at least one color-marked individual nested concomitantly with starlings in the same tree or pole for two consecutive years (cf. Ingold 1990). One additional pair returned to nest in a tree after having nested simultaneously with starlings in the same tree during the previous year.

Sixty-seven Red-bellied Woodpeckers were color banded during this study. Sixty-one individuals were banded as nestlings, while only six birds were banded as adults. Red-bellied Woodpeckers in this study were less aggressive than Red-headed Woodpeckers (cf. Ingold 1989) and were difficult to lure into a mist net. In addition, the height and angle of many

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Red-bellied Woodpecker cavity entrances made it difficult to capture adults on the nest. Of the 61 Red-bellied Woodpeckers banded as nestlings, I detected none that returned to nest within a 400-m^2 circular plot around the cavity tree in which they were reared. However, I located two individuals that nested in the same one-ha circular plot in which they were reared at least two years after they were banded. Of the six individuals banded as adults, five returned to nest in the same tree or immediate area (Table 2). A Chi-square test revealed that significantly more Red-bellied Woodpeckers returned than would have been expected assuming that individuals were not nest-site tenacious ($x2 = 8.67$, $P < 0.05$, $df = 3$). Two of these individuals nested in the same tree for two and three consecutive years, respectively. A third male nested within the same 400-m^2 area for three consecutive years, while two additional males nested in the same one-ha circular plot for two consecutive years (Table 2).

Four of five Red-bellied Woodpecker pairs in which color-banded males returned to the same nest sites were exposed to starling competition. Three of these pairs lost freshly excavated cavities to starlings in two consecutive years. Two of these three pairs fledged young from single nest efforts after starlings were no longer starting nests in at least one of the two years. A fourth pair, exposed to both starling and Red-headed Woodpecker harassment (cf. Ingold 1990), fledged young from at least one brood in each of two years. This particular Red-bellied Woodpecker pair nested simultaneously in the same tree with Red-headed Woodpeckers during the second year (Ingold 1990). The single Red-bellied Wood-pecker pair not exposed to starling or Red-headed Woodpecker competition successfully raised two broods in each of the first two years, but lost its brood to a gray rat snake (Elaphe obsoleta spiloides) in the third year.

TABLE 2 NEST-SITE FIDELITY OF RED-BELLIED WOODPECKERS IN 1984-1987 BASED ON FIVE COLOR-BANDED ADULT MALES (A)

Number of years returned	Same cavity	Same tree	Same 400-M^2 plot	Same one-ha plot
1	-	A[a]	-	A (2)
2	-	A	A	-

[a]This male nested in the same one-ha circular plot in the year prior to the two-year sequence of nesting in the same tree.

Discussion. - One of the selective advantages of nest-site fidelity in birds is that they undoubtedly have an increased and continuing familiarity with local conditions, thus potentially enhancing their reproductive success (Freer 1979, Gavin and Bollinger 1988). My observations of banded woodpeckers suggest that both Red-headed (migratory or semi-migratory) and Red-bellied woodpeckers (resident) often return to nest at specific locations during consecutive years. Nest-site fidelity in Red-headed Woodpeckers appears strong. Red-headed Woodpeckers returned to nest in the same tree, snag, or utility pole during consecutive years more frequently than did Red-bellied Woodpeckers. This may have been due in part to the likelihood that the availability of snags and old poles (in which Red-headed Woodpeckers tend to nest) is limited relative to the availability of dying branches in healthy trees (cf. Ingold 1989). In addition, such snags and poles in open areas are more likely to dry out faster and decay more slowly, thus making them habitable for a longer time.

All of the Red-headed Woodpeckers that returned to either the same tree, pole, or one-ha circular plot around such a tree or pole, and 80% of the Red-bellied Woodpeckers that returned, fledged at least one young during the previous year. The results of several studies show that reproductively successful birds (those that fledged at least one young) in a variety of altricial, migratory species tend to return to previous successful breeding locations more often than unsuccessful ones (Shields 1984, Blancher and Robertson 1985, Gavin and Bollinger 1988). Exposure to starling competition during a previous breeding season appeared to have little effect on whether or not individuals of either species returned. Red-headed Woodpeckers experienced minimal starling competition for cavities (cf. Ingold 1989), and all nest-site tenacious pairs had been successful at fledging at least one young during the previous year. However, not all reproductively successful Red-headed Woodpeckers one-ha circular plot around such a tree or pole, and 80% of the Red-bellied Woodpeckers that returned, fledged at least one young during the previous year. The results of several studies show that reproductively successful birds (those that fledged at least one young) in a variety of altricial, migratory species tend to return to previous successful breeding locations more often than unsuccessful ones (Shields 1984, Blancher and Robertson 1985, Gavin and Bollinger 1988). Exposure to starling competition during a previous breeding season appeared to have little effect on whether or not individuals of either species returned. Red-headed Woodpeckers experienced minimal starling competition for cavities (cf. Ingold 1989), and all nest-site tenacious pairs had been successful at fledging at least one young during the previous year. However, not all reproductively successful Red-headed Woodpeckers returned to old nest sites. Herein lies an inherent problem in nest-site fidelity studies most applicable to those with larger sample sizes (cf. Gavin and Bollinger 1988). How does one distinguish between winter bird mortality and an apparent lack of nest-site fidelity? Red-headeds that were successful at fledging young at given locations appeared to have been influenced by their success when deciding whether or not to return. However, it is difficult to speculate on the extent to which unsuccessful birds failed to return because they were unsuccessful. In addition, because most banded Red-headed Woodpeckers I observed were males, I could not determine the potential effects that sex may have had on Red-headed Woodpecker nest-site fidelity.

Although Red-bellied Woodpeckers observed in this study were exposed to extensive starling competition for nest sites (cf. Ingold 1989), they often returned to nest in the same tree or 400-m2 circular plot during consecutive years. Twice, male Red-bellied Woodpeckers returned to previous nest sites despite each having lost at least one nest cavity to starlings during the previous season. Although each pair was forced to forego two nesting efforts early in the season, they were both successful in fledging at least one young later in the season. These data suggest that Red-bellied Woodpeckers that are able to fledge at least one young during a given season, regardless of the intensity of starling harassment, may return to the same site the following season. Unfortunately, due to the small sample size of color-banded adult Red-bellied Woodpeckers, I was

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unable to adequately examine the extent to which unsuccessful nesters showed nest-site tenacity.

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Spring Issue Feature Topic

The Spring issue's topic will be "Do RHWO's alter their behavior after human exposure?" Send your observations and references to Jerry Bahls (rhwracm@comcast.net) by January15th. Please send observations only - no opinions! Also send any future topics to be featured in the newsletter.

Next RhWR Meetings

The RhWR usually meets on the 3rd Wednesday each month at 7:00 pm at the Lund's Store 1 block west of 50th & France in Edina. The next meeting will be in **February 22nd** and **March 21st.** All are welcome and encouraged to attend. Please encourage your friends to attend also. Check our website (www.RedheadRecovery.org) for current information.

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☐ *I'd like to join!* Please add me as a member of the Red-headed Woodpecker Recovery (RhWR) at the rate of $10/year! Please send my membership information to the address below.

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