



The REDHEAD



Red-headed Woodpecker Recovery

Spring 2015

A Special Committee of the Audubon Chapter of Minneapolis

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RHWO NEWS

The 2015 red-headed woodpecker (RHWO) monitoring program has begun. The volunteers were given different instructions this year. Our two researchers, Brittney Yo-hannes (primary researcher) and Brittany Turner, are very interested in finding active nests as early as possible so that they can determine when the first egg per nest is laid. They will then be able to follow the progress of the young through fledging. Therefore the volunteers monitoring the area will begin their observations in early May. They will hope to catch the return of the RHWO's from their wintering areas. There were only two RHWO's that over-wintered at Cedar Creek. The first returnees arrived about May 4th.

Volunteers will not need to verify a nest before it is marked this year. They have been instructed to sit and watch until a bird expresses interest in a potential nest hole. After it goes into the hole, volunteers are requested to mark it by wrapping the tree with one ring of white duct tape. They will then notify Brittney and Brittany via e-mail or by putting a note in the sign-in box with the GPS coordinates, the orientation of the active hole and which hole if there are multiple holes. Brittney and Brittany will then check the potential nest hole with the camera. If they see nesting evidence, they will continue to monitor until they confirm nesting activity. They will then wrap a second ring of duct tape around the nest tree to let the volunteers know it is a confirmed nest.

Volunteer monitoring will drop off in late June and July. By then Brittney and Brittany should have sufficient active nests to fit their research needs.

STABLE ISOTOPE ANALYSIS

Stable isotope analysis is a high tech technique that upon analysis will give information about the geographical region that a bird has been. It is based on the fact that chemical elements have different atomic weights. For example, the element hydrogen exists as two naturally occurring forms (isotopes) where the atomic weight is one (¹H) or two (²H). ²H is commonly called deuterium. The element carbon also has two naturally occurring isotopes where the atomic weight is 12 (¹²C) and 13 (¹³C). Most elements have similar naturally occurring isotopes. Since some isotopes in the environment tend to have predictable patterns over continental scales, the concentration of isotopes taken in

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A Note from the Chair

May 2015

FINALLY, spring... or so we hope. We just finished our 8th annual survey training session at Cedar Creek Ecosystem Science Reserve (CCESR) and it was a smashing success. Twenty-four folks showed up, including three CCESR staff and our two field technicians. This is a great group of individuals, with lots of survey experience. Eleven of those present have been working with our recovery project for five years and their enthusiasm never wanes.

Birdwise, we had only two male RHWO over-winter and the day of our training session, April 25, we found no additional birds. We expect them to start trickling back any time now. Our head researcher, Jim Howitz, predicts that by the second week in May we should see a big influx. In the past we have begun our surveys in June when adults are feeding young. This year we are starting as soon as the birds return, as our research focuses on clutch size, brood success and fledging and we need to get our nest camera into the nests so we can count eggs and record hatching success.

In addition to our research at CCESR there is good news from our statewide clusters where we are encouraging expanding habitat options. Belwin Conservancy had a good burn this year, which bodes well for establishing RHWO on that property. There is renewed interest and possibilities of our returning to Camp Ripley to complete a RHWO survey on their firing ranges (which the woodpeckers love). Sherburne NWR has completed its oak savanna regeneration project and we hope to find RHWO nesting there this spring. RHWO were reported over-wintering at Nerstrand Big Woods state park. It would be great to see increased numbers there. And we will continue our surveys at the Minnesota River Valley NWR and selected golf courses. So it is going to be a busy year. Keep in touch with updates on our website <redheadrecovery.org>. And do join us for our RHWO Open House at Cedar Creek on Saturday, June 20th.

Chet Meyers RhWR

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during feeding is incorporated into the body. When a bird moults the new feathers take up these isotopes. An analysis can be made that gives the ratios of these isotopes. As stated earlier the ratios of these isotopes varies over

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Note From the Editor

At our steering committee meetings, the RhWR discussed the possibility of using electronic techniques to monitor the movement of red-headed woodpeckers after they leave Cedar Creek. This seemed like a very good topic to share with our members and readers. A couple of articles explains the various technologies that are available to provide the information the RhWR would like to know. The feature article then looks in detail at what may be practical for the RhWR to do.

I would like to remind members to send us your membership dues so that we can do new research like that described above. Thanks to Chet Meyers, we have received another \$1000 grant from Patagonia. This will be used to help fund Brittany Turner's work this summer.

We look forward to this summer's work.

Jerry Bahls, Editor

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geographical regions (continental scales).

Since these ratios of isotopes is well know over most of the world, a comparison of those found in the bird parts that grew while the bird was in that geographical region will reflect the general location of the bird. Feather growth is a part of the bird's body that could reflect growth that occurs only in that region because of a bird's moult. Tail feathers are commonly moulted late in their breeding residence. So an analysis of the tail feathers will reveal the region where the bird's breeding region is located. In some bird's cheek feathers are moulted in their winter residence. So an analysis of the cheek feathers could reveal the region where the bird's wintering region is located.

Many laboratories are capable of performing these stable isotope analyses. The cost of these analyses is fairly inexpensive. So for a relative low cost the region where a bird winters or where it breeds can be determined, that is, if the feathers removed were newly formed in the breeding or wintering region.

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Monitoring Birds Using Electronic Devices

There are basically two types of electronic devices that can be used to monitor birds to collect important data about their movements during the breeding season and during migration and on their wintering grounds. They are radio transmitters and geolocators. Both require capture of the bird. However the radio transmitters only require one capture to place the device in order to obtain data, whereas the geolocators require a recapture to download the data.

There are two types of radio transmitters currently being used. They are the Platform Terminal Transmitters (PTT) and Global Positioning System (GPS). PTT uses a VHF antenna (like a TV antenna) to locate the subject and is accurate to about 100 meters. GPS uses satellite-based radio transmitters and is accurate to 10 meters. However both are expensive and require a much larger device for the bird to carry. Therefore only larger stronger birds are candidates for them.

Geolocators' technology is based on measuring ambient light level, solar irradiance. By using astronomical algorithms, the geographical location can then be established. To measure the light level the geocator must contain a battery, small computer, memory and an accurate clock. Usually two locations are saved per day, none at night. For various reasons, longitude is more accurately determined than latitude. Also there must be periods of night and day and there must be some variance in the length of the day otherwise there is a high degree of error. Therefore the geocator will only work between the Tropic of Cancer and the Arctic Circle and likewise for the southern hemisphere. Some models also record temperature and conductivity (helps with shorebirds). The technology has advanced greatly in the last ten years. Geolocators can now be produced that weigh less than half a gram. However, weight can come at a price in accuracy and a higher cost.

There are two main makers of geolocators – Migrate Technologies Ltd and LOTEK. Migrate Technologies is a company based near Cambridge, England and LOTEK is a company based in Market, Ontario and St. John's, Newfoundland, Canada. Migrate makes smaller devices as small as 0.45 grams and LOTEK makes products designed and tested by British Antarctic Survey.

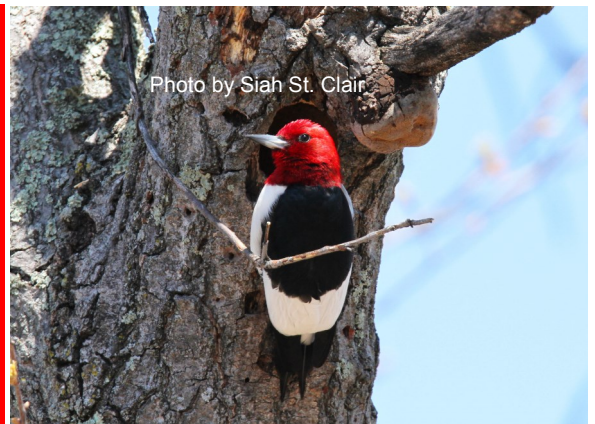


Photo by Siah St. Clair

Possible Monitoring of Red-headed Woodpeckers with Geolocators

One of the questions that is asked “Where do the red-headed woodpeckers (RHWO) go when they leave Minnesota?” The Red-headed Woodpecker Recovery (RhWR) has been banding RHWO’s for four years and we haven’t had one report of a color-banded RHWO’s found else where. A different approach needs to be made to answer the question. Since the RhWR has been very successful in banding birds, capturing several RHWO’s to place an electronic device onto the birds should be easily doable. Putting radio transmitters on is too expensive for the RhWR and they are too heavy for RHWO’s. A better fit are the geolocators. A study by Gow, Wiebe and Fox¹ used geolocators to study northern flickers during breeding, post-breeding, autumn migration, winter, spring migration and pre-breeding. They used British Antarctic Survey (BAS), Cambridge, UKM models MK12 in 2010, MK20AS in 2011 and MK10 in 2012 weighing 0.9, 1.0 and 1.6 g, respectively. These were less than 1% of the average flicker body mass ($157 \text{ g} \pm 0.2 \text{ se}$, $n = 2161$). During 2006 – 2007, Vukovitch and Kilgo² radio-tagged 23 RHWO’s, whose mean mass was 68.2 g with transmitters that averaged 3.1% of the woodpecker body mass. They used a 1.9-g transmitter (16-week battery life; Holohil Systems, Ltd., Carp, ON, Canada) attached with a backpack harness. The study’s conclusion was that the transmitter had no effect upon the behavior of the woodpeckers studied. Foraging, preening, and flying are behaviors most often affected by transmitters.

In order to obtain the data recorded in the geocator the RHWO needs to be recaptured and the geocator’s data downloaded to be read by a program to translate the solar information into a geographical location. The location on the bird of the device is important to get the best data possible. For RHWO’s using a leg harness would severely shade it from the sun, since the RHWO rarely has its feet exposed to the light. A backpack harness is the best option for securing the geocator. In using the harness it needs to make sure that feathers don’t cover it to block the sun. Most are designed to lay flat on the bird and have the sensor on a stalk that projects away from the bird’s body to overcome the shading problem. For most birds this is not a problem, but with the RHWO who extensively use cavities on a daily basis, this could be a problem for the bird or for the loss of the device. Vukovitch and Kilgo² were satisfied that this was not a problem with the device they used. However it was unclear how long the transmitter was on the birds, but they observe the tagged birds for only a mean time of 558 minutes, about 10 hours. Thus this is a relatively short time compared to what would be needed to observe a migration. A better comparison would be the flicker study by Gow¹ who attached 76 flickers with BAS geolocators. The devices were attached using a leg loop backpack harness. The return rate of the flickers with geolocators was 39% of 76 birds, equal to flickers without geolocators (~42%; Fisher & Wiebe³). They concluded the geolocators did not affect the birds’ ability to use cavities.



RHWO that over-wintered in 2014-15

The effect on the birds may be a factor in using geolocators. Stutchbury⁴, et al, mounted 14 geolocators (Mk14S light level geocator [1.5 g, British Antarctic Survey] using a leg loop backpack harness made of 3/16” Teflon Ribbon [Bally Ribbon Mills, Pennsylvania]) on wood thrushes and 20 on purple martins for her ground breaking studies. They were able to retrieve only five (35%) from the wood thrushes and two (10%) from the purple martins. Based on the return rate in 2014 of 70% of RHWO’s banded in 2013, our chances of recovering the geolocators should be better than experienced by Stutchbury in her study. It is not beyond expectations to be able to recover 50 - 60% of the devices in any future RhWR studies, since RHWO’s do not travel nearly as far as thrushes or martins. This is assuming there are very few adverse affects of wearing the devices. In a study by Arlt, Low and Pärt⁵ during the two years that geocator birds ($n=37$) were studied, they displayed a lower apparent survival (30%) as compared to controls (45%, $n=164$) and further more, the “returning geocator birds ($n=12$) arrived on average 3.5 days later, started laying eggs 6.3 days later, and had lower nest success (25%) than control birds (78%). Our results suggest that geolocators affect migratory performance with carry-over effects to the timing of breeding and reproductive success in the subsequent breeding season.”⁵

The cost of the geolocators could also affect the ability of the RhWR from using them in a study. Each geocator costs between \$150 - 200, depending on how many are purchased. Assuming 20 geolocators are a valid statistical number to deploy, the total cost for them would be about \$4000. Also needed would be the harnesses that secure the geocator to the bird. In a study of aerodynamic drag on a geocator⁶, the wing harness (positions geocator between the wings) increased drag relative to the leg-loop harness (positions geocator on rump) because it placed the logger in a position that increased the bird’s frontal area. From this research the best harness would be the leg-loop harness using a 0.10 inch wide Teflon ribbon⁷. The cost of this is minimal. Finally the software and electronic hardware needed to activate and read the data may need to be purchased or an agreement made with a researcher who has the necessary equipment.

The last necessary piece of the operation would be obtaining the necessary sub permits under a master permit. The

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master permit holder needs to amend their master permit to obtain proper authorization from the Bird Banding Laboratory to band RHWO with geolocators in addition to putting on auxiliary color leg bands and the standard federal leg bands⁷.

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3. Fisher, R.J. & Wiebe, K.L. 2006. **Effects of sex and age on survival of Northern Flickers: a six-year field study**. *Condor* 108: 193–200.
4. Stutchbury et al. 2009. **Tracking Long-Distance Songbird Migration by Using Geolocators**. *Science* 323 (5916): 896.
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6. Bowlin, M. S., Heningsson, P., Muijres, F. T., Vleugels, R. H. E., Liechti, F. and Hedenström, A. (2010), **The effects of geolocator drag and weight on the flight ranges of small migrants**. *Methods in Ecology and Evolution*, 1: 398–402. doi: 10.1111/j.2041-210X.2010.00043.x
7. Dennis J. Mammenga and Paul W. Mammenga, <https://gfp.sd.gov/wildlife/funding/docs/small-grants-reports/Mammenga%202012.pdf>, 2011–2012.

Summer Issue Topics?

Send your observations and references to Jerry Bahls (rhwracm@comcast.net) by July 15th. Also send any future topics to be featured in the newsletter. Have you been experimenting trying to attract RHWO's? Let us know about your work!

Next RhWR Meeting

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 meetings will be May 20th and June 17th. All are welcome and encouraged to attend. Please encourage your friends to attend also. Check our website at www.RedheadRecovery.org for current information.

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Red-headed Woodpecker Recovery Program Membership Application

I'd like to join! Please add me as a member of the Red-headed Woodpecker Recovery (RhWR) at the rate of \$20/year! Please send my membership information to the address below.

I'd like to renew! Renew my RhWR membership for \$20/year.

Yes, I'd like to join Audubon Chapter of Minneapolis also! Please add me as a member of the Red-headed Woodpecker Recovery (\$20) and the Audubon Chapter of Minneapolis (\$12) at the rate of \$32/year. Please send my membership information and *Kingfisher* to the address below.

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