



The REDHEAD

Red-headed Woodpecker Recovery



Spring 2022

A Special Committee of the Audubon Chapter of Minneapolis

Vol. 16 No. 2

RHWO NEWS

Cicada Irruption Impact on Red-headed Woodpecker Populations

Dr. Jim Howitz, Red-headed Woodpecker Recovery Researcher

The long-term study of Red-headed Woodpeckers (RHWOs) at the Cedar Creek Ecosystem Science Reserve has shown that the birds feed cicadas to their young. So, how might the 2021 brood X periodical cicada irruption affect Red-headed Woodpeckers breeding in irruption areas? The birds should easily be able to stuff their young with cicadas as long as the insects lasted. Instead of the usual 1 – 3 fledglings, they might be able to fledge 4 – 6. More pairs might attempt second broods. Brood survival might also increase because potential predators will concentrate on the abundant cicadas and not bother to look for nests or try to catch fledglings. Adult survival might also increase because they do not need to work as hard to feed their young and predators may be less inclined to try to catch them. Christmas Bird Count (CBC) data from counts inside and counts outside cicada irruption areas could provide some insight on these possibilities.

Predictions

1. More RHWOs should be produced in irruption areas.
2. More RHWOs should winter in irruption areas
3. More RHWOs should be counted on CBCs in irruption areas than
 - a) in nearby control areas, where there was no cicada irruption,
 - b) expected from the long-term trend on CBCs in irruption areas,
 - c) in states where there was no cicada irruption.

Caveats

Juvenile RHWOs will disperse from their natal territories in irruption areas, possibly to non-irruption areas. CBC Circles are about 177 square miles in area. This should be large enough to include many if not most of the birds fledged there if the fledglings do not migrate.

Juvenile RHWOs that fledge from nests in irruption areas and migrate from them presumably will migrate south, and so may be counted on CBCs south of the irruption areas.

Juvenile RHWO numbers fluctuate wildly from year to year on CBCs, and so any increases due to a cicada irruption may be obscured by the normal annual variability.

The irruption year 2021 was the second year where

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A Note from the Chair

Spring 2022

First a big Thank-You to everyone who renewed membership and made contributions to Red-headed Woodpecker Recovery in the recent membership/fund drive. We achieved our goal for this research season. The research technicians are all at their first day of work at Cedar Creek today as I write this note. And that is due to the funds contributed by everyone, so thanks, again.

I expect to be out at Cedar Creek tomorrow to remove the memory cards and batteries from the eight RHWO nest cameras that have been up all winter. It will be interesting to see what happened at these nests and roosts since last October. Several of them had active RHWO activity in the fall. When we add the hours of observation time that these nest cameras have added since last fall, the cameras will have logged over 125,000 hours at RHWO nests since they were started in late 2019. The data collected so far has documented behaviors and activities at these nest cavities that is new and exciting and in extensive detail.

This will be a busy and expansive year for this research, as bioacoustic recording devices will be placed around the State to document where RHWOs are located and are nesting. And at the same time the Best Management Practices document about RHWOs will be completed and we will be helping to distribute it to land owners and managers and the public. This document will provide the first science-based direction on the habitat needs of RHWOs. We have been working to help with this goal for a number of years. Another thanks to everyone, as good science understanding takes time, patience, and a lot of work.

If anyone wants to see the RHWOs at Cedar Creek, join one of the Saturday hikes at 8:00 AM on May 7, June 4, July 2, or August 6. Or one of the Thursday evening hikes at 6:30 on May 19, June 16, July 2, or August 18. All hikes start at the Fish Lake parking area.

Siah St. Clair, Steering Committee Chair



Note From the Editor

Late last summer the Red-headed Woodpecker Recovery website migrated from its host to a new host that also hosts the Audubon Chapter of Minneapolis website. The new URL is www.minneapolisaudubon.org/rhwo2. If you are set up to use the previous URL it will still work since we own that name and have set it up so that it is automatically transferred to the new website.

We wish to apologize for the lost of most of the previous website content, but expect that the new content along with some of the old content will be up within a month. These transitions are never easy.

This will be the first year that the main focus of our research will not be at Cedar Creek Ecosystems Science Reserve (CCESR). The main efforts this year will be in nearly all parts of Minnesota using Bioacoustics to map the locations of red-headed woodpeckers. However we will be still doing research at CCESR. Watch for announcements about it on our website and on Dr. West's blog at www.rhworesearch.org. We hope to be able to continue using volunteers to help with this research at CCESR, but that is still unknown at this time. However we still need volunteers to run the organization, such as Newsletter editors, website managers and Steering, Education & Habitat and Research Committee members.

Jerry Bahls, Editor

A Salute to the Membership

The 2022 RhWR membership renewal was very successful. Over 115 active members renewed their annual dues of \$20.00 or made an even larger donation to help RhWR outreach education and research. Our members gave over \$7,000.00, and once again demonstrated their committed to the preservation of the red-headed woodpecker and habitat. If you have not become a member, contributions can still be made any time to: Red-headed Woodpecker Recovery or RhWR, PO Box 3801, Minneapolis, MN 55403-0801 or contribute online by visiting our website.

Tom Beer, RhWR Membership

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activities such as CBCs were disrupted by Covid restrictions and precautions. Counts not held in 2021-2022 were excluded from analysis.

Methods

Map 1 shows the Brood X cicada irruption. All CBCs in Indiana, and most counts in Kentucky, Tennessee, and Maryland, and counts in southwestern Ohio and southeastern Pennsylvania within the irruption area were included. Also included were some counts in Michigan, New Jersey, North Carolina, and Virginia. All counts in Mississippi, Alabama, Georgia, and South Carolina were treated separately since they are south of irruption areas and might have migrants from the irruption areas. For states with irruption areas and areas outside irruption areas, all counts that had reported at least one RHWO since 2000-2001 were considered. Those counts outside irruption areas served as controls. All states with no irruption areas were also considered as controls.

For counts within an irruption area and for counts outside an irruption area, the number of RHWOs counted with the number predicted by the linear regression using counts from 2000-2001 through 2020-2021 was compared. Thus, the actual number of RHWOs counted in 2021-2022 with the number expected based on the previous 21 years of Christmas Counts were compared. The regression analysis began with the 2000-2001 counts because RHWO counts have been reasonably stable this century compared to the earlier years of CBCs, and most counts were established by this time. To see if the cicada irruption had effects on other species, CBCs of Blue Jays and Common Grackles in irruption areas and outside irruption areas were looked at. These birds are known to feed on irruptive cicadas.

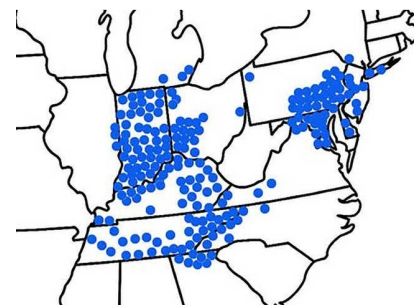
Results

Using data from the Audubon Christmas Bird Count website (<https://www.audubon.org/conservation/science/christmas-bird-count>), 163 CBCs were found within cicada irruption areas and 128 Christmas Bird Counts outside irruption areas but within states with irruption areas.

Of the nine states with irruption areas, eight had more RHWOs counted on CBCs than expected. Only one such state, Tennessee, had fewer than expected (Chart 1). Of the sixteen control states, without irruption areas, eight had more and eight had fewer RHWOS counted on CBCs than expected (Chart 2). The difference in percent change in

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Map 1



2021 Periodical Cicada Irruption
Detroit Free Press

RHWOs counted in irruption states compared to control states was statistically significant (T test, $p < 0.05$). The total RHWOs counted in states with number irruption areas was higher than the 95th percentile of the Predicted by the 21-year regression. Within states having irruption areas, those counts within irruption areas counted 8.7% more RHWOs than expected, whereas those counts outside irruption areas counted 1.1% fewer RHWOs than expected (Chart 4). These differences were not statistically significant, largely due to the large year-to-year variations in RHWOs counted (25.3% for irruption areas.) Of the nine states with cicada irruptions, only Pennsylvania and Virginia had irruption area counts above the 95th percentile of expected.

The four states immediately south of the cicada irruption areas, Mississippi, Alabama, Georgia, and South Carolina had a 13.0% increase in RHWOs counted in 2021 compared to the expected number. However, this was not statistically significant. Only a small percentage of irruption areas were due north of Mississippi and this state counted fewer RHWOs than expected. The other three states reported more than expected (Chart 3).

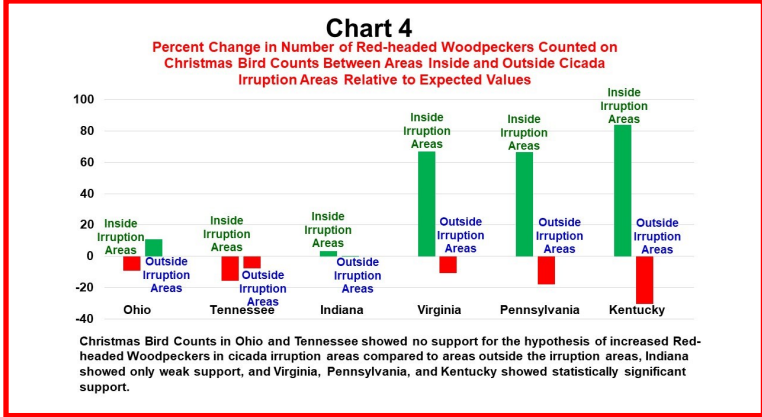
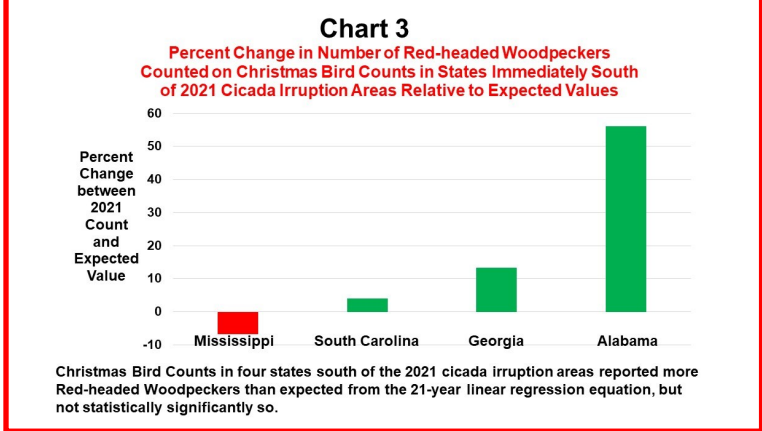
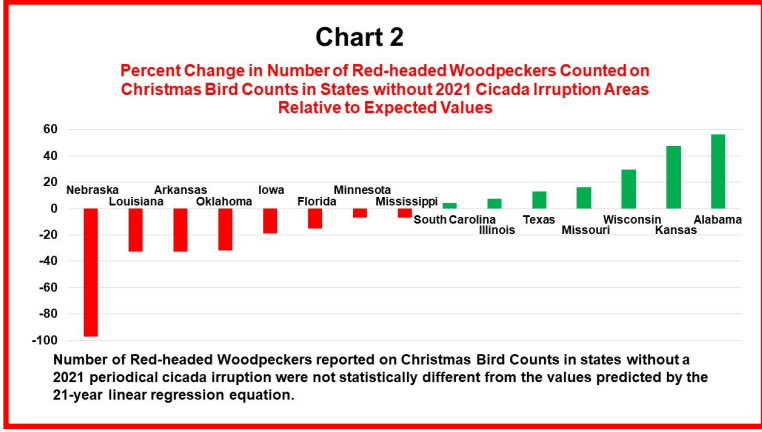
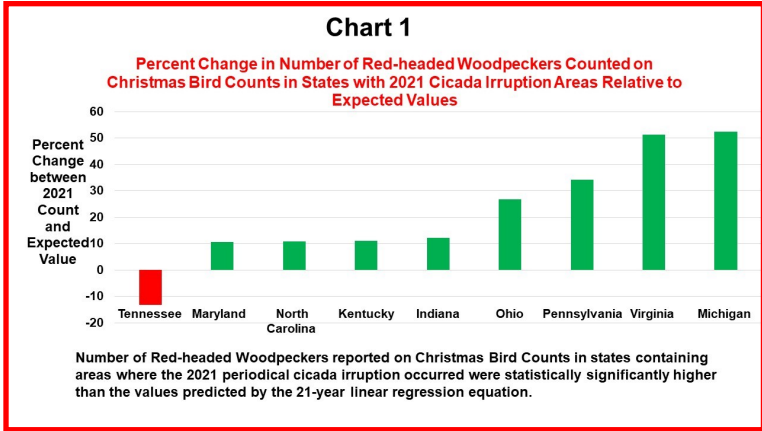
Blue Jays inside irruption areas showed a 1.73% increase between the 2020-2021 and 2021-2022 CBCs. Jays outside irruption areas showed a 16.1% decrease between these years. The year-to-year differences in the number of jays counted on 163 counts within irruption areas and 136 counts outside irruption areas were statistically different (T test, $p < 0.05$). Numbers of Blue Jays and Red-headed Woodpeckers were significantly correlated on counts inside and outside irruption areas ($p < 0.01$).

Common Grackle numbers fluctuated so wildly among counts and even on the same count in different years that any effect of the cicada irruption was not evident.

Discussion

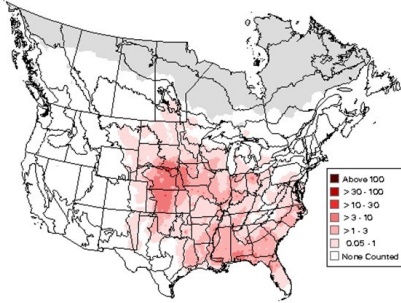
Christmas Bird Count data suggest that the 2021 periodical cicada irruption had a positive effect on certain RHWO populations. States with irruptions counted more RHWOs relative to expected numbers compared to states without cicada irruptions. Counts within irruption areas did not count statistically more RHWOs than expected. So, Predictions 1 and 2 received partial confirmation. Counts in states immediately south of irruption areas found more RHWOs than the expected number, but not statistically significantly more.

The 2021 periodical cicada irruptions largely did not occur in the areas of highest RHWO breeding density (Map 2, back page). This diminished any possible effect on the wintering RHWO populations. The annual variation in number of RHWOs counted on Christmas Bird Counts may have masked population changes due to the cicada irruption. Blue Jay populations also seemed to increase in response to the cicada irruption, supporting the hypothesis that RHWOs did likewise. Increased reports of birds on CBCs after a cicada irruption cannot definitively be attributed to the increased food availability during the irruption. Cicada irruptions occur in different years in different areas and may affect RHWO populations. Christmas Bird Count data suggest that some Red-headed Woodpecker populations increased due to the 2021 periodical cicada irruption.



Map 2

Red-headed Woodpecker Breeding Density on Breeding Bird Surveys



Red-headed Woodpecker breeding density is high in the Deep South and Midwest, with peak numbers in in Nebraska, Kansas, and western Iowa. The 2021 periodical cicada irruption missed most of these areas.

https://www.mbr-pwrc.usgs.gov/bbs/ra2015/ra2015_red_v3.shtml

Next RhWR Steering Committee

The RhWR Steering Committee usually meets on the 3rd Wednesday of the month at 7:00 pm. The next *virtual* meeting will be on May 18, 2022 at 7:00 pm. If you would like to participate, please contact Siah St. Clair to be added to the call list. All are welcome and encouraged to attend. Please encourage friends to attend also.

Important Dates

Steering Committee Meeting	Mar 18, 2022
ACM Board Meeting	May 23, 2022
Research Team Meeting	TBA 2022

ALL meetings are *virtual* until further notice.

RhWR Volunteer Opportunities

The Red-headed Woodpecker Recovery (RhWR) continues to have an increasing need for many volunteers now and through 2022. Contact us to volunteer!!

Red-headed Woodpecker Recovery
Audubon Chapter of Minneapolis
PO Box 3801
Minneapolis MN 55403-0801

Save that Snag!

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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 (\$50 is suggested rate)! Please send my membership information to the address at right.

I'd like to renew! Renew my RhWR membership for \$20/year (\$50 is suggested rate).

Yes, I'd like to join Audubon Chapter of Minneapolis also! Please add me as a member of the Red-headed Woodpecker Recovery (\$20, \$50 suggested) and the Audubon Chapter of Minneapolis (\$20) at the rate of \$40/year. Please send my membership information to the address at right.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

E-MAIL _____

Send this application and make check payable to:

Audubon Chapter of Minneapolis - RhWR
PO Box 3801
Minneapolis, MN 55403-0801