SUMMARY OF RED-HEADED WOODPECKER CAVITIES MONITORED BY RICHIE SWANSON AND RICH SMITH AT TREMPEALEAU NATIONAL WILDLIFE REFUGE IN 2024.

FINAL REPORT.

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2024 BREEDING TERRITORIES

2024 marked the sixth year Richie Swanson monitored RHWO breeding activities at Trempealeau National Wildlife Refuge. Visits in 2019-2023 ceased in mid-July, documenting only early clutches. In 2024 Rich Smith and Richie Swanson monitored ten breeding territories of RHWO, visiting cavity locations for 51 mornings from April 24 to September 6. We documented second clutches.

Nine of ten cavity locations occurred in bottomland forest habitat dominated by silver maples, along the Trempealeau River for about 2500 meters or 1.5 miles. The tenth cavity occurred about 800 meters southwest of the river in a strip of black cherry, black locust and red oak trees bordered by prairie.

Six territories fledged young. Four territories yielded no proof of fledglings. Both a first and second cavity at one territory were abandoned. Second clutches occurred at four territories. One second clutch fledged young (Riverside Territory, monitored since 2020).

Nest results remained unknown at three cavities. Flooding in July prevented searches for fledglings at two locations. Parents were observed feeding chicks while nestlings poked out of cavities at both locations, then we lost practical access. Visits to the third territory with unknown results did not start early enough to determine if the cavity was active long enough to produce the fledglings seen nearby, which might have belonged to an earlier, successful cavity.

Six of the 2024 territories have been monitored in previous years: Eighth, Canary Grass Meadow, E-gate Island, Bridgeview, Dead Locust Grove and Riverside. Four cavities in 2024 existed in trees used in previous years. Field notes for territories follow in subsequent pages. Many thanks to Rich Smith who lent his excellent photographic and observation skills to the 2024 monitoring and field notes.

None of the nest reports from 2019 to 2024 reflect a population study or population trend at Trempealeau Refuge. The reports merely reflect cavities found and monitored, but no comprehensive survey or systematic population study.

UN-MONITORED, SUSPECTED TERRITORIES 2024

Two territories monitored in previous years were not monitored in 2024, one on the Great River Bike Trail (2023), the other behind the "turtle pond" at the refuge, Fork Branch Territory (2021-2023). Both territories were active in May 2024.

Seven suspected territories in total were not monitored in 2024:

- 1. 200+ m west of Marshland Dike territory: Adults flew from Marshland Dike across emergent wetlands to tree line 7-25-2024, 7-29-2024, with insects in bill 7-25.
- 2. Bike Trail #1 44.046184, -91.506181 2 RHWO present 5-12-2024. Fledged young 2023.
- 3. Bike Trail #2 250 m southeast of Bike Trail #1. 2 RHWO present at cavity 4-30-2024, 5-12-2024.
- 4. Roadside fledgling 44.047236, -91.512875. Fledgling present 8-18-2024, divebombed and chased from black cherry tree by EAKI. Also present 8-25-2024. Also present with adult 7-7-2023, 9-17-2023.
- 5. Forked Birch 44.045755, -91.510547. Pair present 5-25-2024, 5-30-2024. Territory active 2021-2023. Fledged young 2022 and 2023.
- 6. Kiep's Island, 44.03706, -91.52172*. 2 fledglings, 1 adult reported 9-13-2024. Fledgling reported in 2022.
- 7. 160 m north of Listening Point turn-off, 440246.20, 913120.78*. 8 eBird reports May-June, 2024, also reports July 25, 28, 2024.

WINTER USE OF BREEDING TERRITORIES 2023-2024

Smith and Swanson visited historical breeding sites of RHWO casually during 20 hikes from November 10, 2023 to April 4, 2024. Adult and juvenile RHWO were present throughout these dates, frequently on trees that hosted cavities during breeding seasons or within 100 meters, and sometimes clinging to the cavities themselves. RHWO were recorded at Bridgeview, E-gate Island, Canary Grass Meadow, Eighth, Bea's Bench, Forked Birch, Riverside and the Bike Trail territories.

Research partners from the University of Missouri, Illinois Natural History Survey and the Prairie Restoration Institute documented the winter and summer use of RHWO breeding cavities in Chicagoland forest reserves during summer 2023 and winter 2023-2024. They found winter use at the actual cavity at 16 of 23 cavitysites, and in the area of 19 of 23 cavity-sites.¹

RHWO DURING WINTER IN WOODS BESIDE LOWER DIVERSION DIKE

Smith and Swanson encountered 8-9 RHWO in 4-5 hectares of the interior of the red oak/black locust forest that grows between the refuge's "turtle pond" and Lower Diversion Dike on February 4, 2024. Twelve or thirteen used the same location December 16, 2024, and 11-12 on March 2, 2025, including juveniles on both days. The area is a closed-canopy forest that ranges about 350 to 480 meters from the nearest known breeding site, 44.045755, -91.510547.

Multiple RHWO also used this vicinity in a previous winter. Meta Griffin, Wildlife Refuge Specialist, Upper Mississippi River National Wildlife and Fish Refuge, heard multiple RHWO while flagging trees during February 2020, in black locust/red oak habitat on both sides of Lower Diversion Dike. Members of the Winona Bird Club reported at least six RHWO along the dike, April 2020. Swanson found this population dispersed, May 5, 2020.²

Winter populations in the red oak/black locust forest may be comparable to a winter population Lawrence Kilham studied at Creek Wood (area 1.25 hectares), Seneca, Maryland. Kilham followed 12 RHWO territories in a pin oak/ash/black locust woods September 1956 to May 1957. He suggested that territories that included large locusts and dead locusts that provided roost holes and hollow centers for food storage were favorable to those territories found away from the locusts. He found only one RHWO in Creek Wood by May 5. "The woodpeckers had gone elsewhere to breed," he wrote.³

Kilham found yearly fluctuations in winter populations. He reported that drought prevailed in the summer of 1957, the acorn crop of pin oaks was "minimal," and only one RHWO used Creek Wood during the 1958 winter. He also reported, "The entire pin oak acorn crop failed in 1953 and not a single Redheaded Woodpecker wintered in the Seneca area as far as I could determine."⁴

¹ Yoder, Adrianna. RHWO Research. Message to Richie Swanson. January 30, 2025. Email and poster attached.

² Swanson, Richie. Letter to Dr. Elena West. 10-21-2020.

³ Kilham, Lawrence. Woodpeckers of Eastern North America. Dover Publications 1983. P. 113-121.

⁴ Kilham, Lawrence. 1958d). Territorial behavior of wintering Red-headed Woodpeckers. Wilson Bulletin 70:347-358.

The winter population next to the Lower Diversion Dike may have at least five similarities to Kilham's reports. 1.) Oaks and acorn caches; 2.) RHWO may concentrate in larger locusts rather than smaller, younger locusts; 3.) The wintering population of 2020 appeared to breed elsewhere; 4.) RHWOs may not use the area every winter; 5) A creek ran through Creek Wood, while the Trempealeau River, Pool A and sloughs border the wintering RHWOs in the red oak/black forest.

GEOGRAPHIC COORDINATES

Stephen Winter, Certified Wildlife Biologist, recorded geographic coordinates of 34 of 35 RHWO cavities monitored 2019-2024, and also of fledgling locations that occurred where cavities were unknown, one from 2022, another from 2023. He visited the cavities on 9-17-2023, 1-27-2024 and 2-9-2025, using a Garmin Montana 700. The Montana 700 was set to use the UTM UPS position format, a NAD83 map datum, and the GRS 80 map spheroid. One cavity location from 2021 could not be found; the cavity tree blew down and has disappeared beneath mats of canary grass. This report includes Swanson's estimated coordinates from Google Earth for this 2021 cavity. It also includes Google Earth estimates for a 2022 excavation report, two fledgling reports in 2022 and a fledgling report in 2024. Google Earth estimates are marked with asterisks in this report.

Thank you very much for your generous expertise, Steve Winter!

RHWO HABITAT AT TREMPEALEAU REFUGE

Previous comments on habitat can be found in last year's report, *Updated summary* of *Red-headed Woodpecker cavities monitored by Richie Swanson at Trempealeau* National Wildlife Refuge in 2023, available upon request. Additionally, this year's report includes statements from the RHWO account at birdsoftheworld.org that reflect use at Trempealeau Refuge:

1. RHWO favor "restoration of savanna-like habitats" and "open, upland meadows...with savanna-like dispersion of large deciduous trees or groves of such trees." RHWO are attracted to "fringes of bottomland forest with numerous snags near or over water." During breeding season, individuals remain "in forests only if opened by some disturbance, such as fire, disease,

or wind damage...the birds typically prefer more woodlands and areas with tall trees with large diameters, high basal area, low density of stems in understory, and a high density of snags, dead limbs, and mast trees."⁵

The disturbances that open up the bottomland forest along the Trempealeau River's RHWO breeding sites include Reed's canary grass, buckthorn, Emerald ash borer, wind, storms and tree mortality apparently related to flooding. Mature silver maples, cottonwoods and a few river birches provide the tall trees with large diameters, high basal area etc. Silver maples dominate tree species. The disturbances (Reed's canary grass etc.) provide the open understory the RHWOs utilize for foraging.

The Red-headed Woodpecker Recovery Project has found that the density of dead trees around a nest snag is the most important co-variant that increases the relative probability of a tree being used as a nest site at Cedar Creek Ecosystem Science Reserve.⁶ A study at Necedah National Wildlife Refuge had similar findings: "the retention of individual, scattered decadent trees may do little to increase RHWO nesting populations. Conversely, our findings indicate the retention of clusters of dead trees can result in a rapid increase in the probability of a RHWO nest occurrence."⁷ Though we have not counted or measured dead trees at Trempealeau Refuge, photos of dead trees at cavity sites are provided in Appendix B. They show clusters of dead trees at RHWO breeding sites at Trempealeau Refuge.

Territories with high densities of dead trees may enable RHWO to fail at initial cavities and establish subsequent cavities in the same territory, and save them the energy expenditure involved in conflicts with other RHWO while establishing a new territory.

At the Dead Locust Territory at Trempealeau Refuge, a cluster of dead trees around an initial cavity that failed provided a subsequent cavity that succeeded in 2022, 2023 and 2024. Appendix B has two photos of dead trees at the territory.

2022. A cavity in a dead cottonwood was found abandoned June 18, and a subsequent cavity just 38 meters away was discovered June 23.

2023. May 19, RHWOs had conflicts with European starlings in a cavity RHWOs had previously excavated in a dead maple. May 24, RHWOs excavated a new cavity in a dead limb of a half-live river birch just 26 meters away.

⁶ West, Elena Dr. Woodpeckers in Minnesota. Webinar 1-08-2025.

⁵Frei, B., K. G. Smith, J. H. Withgott, P. G. Rodewald, P. Pyle, and M. A. Patten (2020). Red-headed Woodpecker (*Melanerpes erythrocephalus*), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.rehwoo.01.

⁷King, Richard S., Brashear, Katherine E., Reiman, Mandin. Red-headed Woodpecker Nest-Habitat Thresholds in Restored Savannas. Journal of Wildlife Management 71 (1): 30-35; 2007.

2024. April 21 to May 19, RHWOs excavated and entered cavities in three different dead maples. The first involved conflicts with European starlings who nested in the same snag, and was abandoned. The second and third fell down. On June 4, RHWOs copulated on a dead cottonwood that housed the eventual successful cavity. The four cavities were within 75 meters of one another.

These events beget the question: when a RHWO pair establishes a territory with a crowded cluster of dead trees, and initial cavities fail, can it commence subsequent cavities without expending the energy of establishing a new territory, without intruding upon territories of other resident RHWO?

Oaks on the prairie 50-200 meters and farther from the Trempealeau River's cavity sites provide mast. After breeding season, Smith and Swanson observed RHWOs taking acorns from oaks on the prairie and returning to bottomland habitat to cache them October 4 and 5, 2024.

Prescribed burns of the savanna at Cedar Creek Ecosystem Science Reserve have benefited RHWOs,⁸ and the species abundance "increased dramatically following the first prescribed burn operations" in the late 1990s at Necedah National Wildlife Refuge."⁹ Sixteen territory locations (2019-2024) have been monitored at Trempealeau Refuge and a seventeenth along the Great River Bike Trail. Fourteen have been within 100 meters (a short flight) of grasslands managed by prescribed burns at Trempealeau Refuge. The remaining three territories have been 275, 325 and 500 meters from the prescribed-burn prairie. RHWOs likely benefit from prescribed burns at Trempealeau as they do at Cedar Creek and Necedah.

RHWO at the refuge forage black cherries, mulberries and locust pods as well as acorns. At the "fringes of bottomland forest," they perch on the "numerous snags near or over water" before sallying for insects in the air and "stooping" (diving down to slough-edges and other wetland habitat apparently for insects). They forage the ground vegetation of the prairie and leafy vegetation in shrub, wooded, prairie and wetland habitats.

RHWO forage trunks, limbs and tops of dead and live trees throughout the refuge, probing with their bills in typical woodpecker behavior, and flying sallies for insects. They forage the mowed and un-mowed edges of the bike trail and roads, and are apt to be chased by Eastern kingbirds during any of the above activities.

⁸ West, Ibid.

⁹ King et. al., Ibid.

A NOTE ON RHWO COPULATION BEHAVIOR

Birds of the World Online describes RHWO copulation behavior:

"Copulatory behavior...has 3 basic components: Mutual Tapping, Reverse Mounting, and copulation...In the early stages of breeding, male and female assumed sexual poses with bodies in line and pointing in one direction, then reversing to the opposite direction in almost military fashion, often after Mutual Tapping. As the breeding season progresses, female may hop or flutter on the male's back in reverse mounting...The male then moves to mount her, with behavior of the 2 being almost identical. Full copulation, with male falling to the left in establishing contact with female lasts about 7 s, often accompanied by Wing-Fluttering by male...Pair often copulates after a territorial fight with an intruder."¹⁰

During his 2019-2024 field observations, Swanson has commonly witnessed much briefer copulations that also occur without the pivots and reverse mounting, that involve a swift line-up, a mount, a flutter and separation. Frequently, the loud, liquid, raspy *churr-churr* call that happens in flight prior to the "full copulation" also precedes the "brief copulation."

Swanson has seen the brief copulation or "brief mount" during the excavation, incubation, feeding stages and during territorial conflicts.

Excavation: a RHWO excavated five minutes, a second bird landed on a branch in front of the cavity, one bird hopped on another, fluttered, and the pair separated.

Incubation: after a RHWO arrived at a cavity, a second bird emerged from inside, and before the first bird entered the cavity, the pair mounted briefly. In other words, the brief copulation occurred during an incubation exchange. During another incident, one RHWO was inside a cavity, apparently incubating, and a second bird approached, sounding the *churr-churr* call. The first bird emerged, and the two mounted briefly, and one of the birds entered the cavity.

Brief mounts have also occurred after RHWO have tipped into a cavity, and after it quickly entered and exited a cavity.

¹⁰ Frei, B., et. al. Ibid.

Feeding stage: one RHWO tipped into the cavity 7-8 times, entered it, popped out, and a second RHWO arrived at a branch in front the cavity, and a mount occurred.

Territorial fights with one, two or more RHWO: a pair lined up during a chase, and mounted, and was disrupted by the dive-bomb of a third bird. The dive-bombing disruption repeated itself as the chase and territorial fight continued. This has happened during multiple chases and territorial fights.¹¹

The brief copulations raise the questions: Are full copulations, those that involve the pivots and reverse-mounting, more apt to occur early in the breeding cycle, than later? Do full copulations strengthen the pair bond? Are they essential to producing eggs? Do the full and brief copulations have different biological functions? Do brief copulations save energy? Do they reduce the risk of exposure and predation? Does insemination occur during the brief as well as full copulations?

¹¹ Swanson, Richie. 2023, 2024 Field Notes.

Photo copyrights by Rich Smith

10-4-2024. In black locust/red oak forest, RHWO brought acorns to dead snags, stashed them in bark crevasses, hammered out hackberry-sized or smaller pieces, flew to separate snags and cached the pieces behind bark.



10-5-2024. Multiple RHWO brought acorns to Trempealeau River dike.



2019-2024 BREEDING TERRITORIES

Appendix A in this report lists the results and coordinates of all territories cavities monitored 2019-2024.

Thirty-five cavities have been monitored in six years: 18 fledged young (51.4%), 11 failed (35.4%), eight had unknown results (17.4%).

Twenty-nine territories have been monitored in six years: 18 fledged young (62%), seven failed (24.1%), four had unknown results (7.25%).

Cavities have been counted as inside the same territory when a first cavity failed and a subsequent cavity commenced within 120 meters of the first. Cavities have been counted only after observation indicated that incubation commenced.

2024 TERRITORY MAP, FIELD NOTES AND PHOTOS APRIL 11-SEPT. 6



Figure 1. Cavity locations, ten RHWO territories monitored in 2024.

2024 TERRITORIES

- 1. Marshland Dike, fledged young.
- 2. Eighth Territory, 1st clutch fledged young, 2nd failed.
- 3. Canary Grass Meadow, results unknown.
- 4. Dead Crown Island, failed.
- 5. E-gate Island, 1st clutch unknown results, 2nd failed.
- 6. Cross Branch #1, failed.
- 7. Cross Branch #2, failed.
- 8. Bridgeview, fledged young.
- 9. Black Cherry, fledged young.
- 10. Dead Locust Grove, fledged young.
- 11. Riverside, 1st clutch unknown results, 2nd fledged young.

Territories are named for features at cavity locations, marked in Google Earth Pro from GPS coordinates provided by Steve Winter. Thanks to Rich Smith for wonderful photos in field notes!

MARSHLAND DIKE TERRITORY 44.060349, -91.537781

902.4 meters from Eighth Territory

Fledged young. Cavity tree a dead silver maple in strip of bottomland forest 50 m wide, between Marshland Road (Dike) and Trempealeau River. 1-2 extra adults foraged in the territory and carried insects >200 m west across emergent wetland to wooded habitat, 7-25-2024. Marshland Dike unsearched in previous years. 2024 the first year reported.

Photo copyrights by Rich Smith.



RHWO at nest cavity 7-27-2024



Fledgling 25 m from cavity 8-10-2024

2024 Field Notes

- 7-1, RHWO flycatching from dead tree, sallying above river about 85 m from cavity.
- 7-25, Rattle calls, chases, screes etc. with 3-4 RH. Adults with insects in bills.
- 7-27, Nestling pokes out cavity. Fed four times 6:26 to 7:02 AM.
- 7-31, Adult feeds fledgling in dead ash 25 m from cavity tree.

EIGHTH TERRITORY 44.054853, -91.529377

485 meters to Canary Grass Meadow Territory

First brood in 2024 produced young. Second brood attempted in same tree and same cavity and failed. Nest tree a dead river birch beside Wildlife Drive at the edge of prairie, a sink of wetland vegetation, and a strip of dead and live trees that extends to Canary Grass Meadow Territory. Named for the order in which I found it in 2023. 2023 cavity failed.

Photo copyrights by Rich Smith.





Fledgling 7-6-2024

2024 Field Notes

1st clutch: 4-21, Excavating eventual cavity.

5-22, Apparently incubating, in cavity 31 minutes. 6-2, Incubation switches.

6-6, Feeding chicks. 7-3, Fledgling seen begging in dead ash 20 m from cavity.

 2^{nd} clutch: 8-6, Incubation switch. 8-23, Feeding chicks? 3 visits to cavity 6:31 to 7:54.

8-28, Cavity abandoned. 2 adults divebomb 2 red squirrels (*Tamiasciurus hudsonicus*) while they approached cavity in adjacent tree to nest tree. (A red squirrel poked out from failed cavity here in 2023.)

CANARY GRASS MEADOW TERRITORY 44.05308, -91.524158

359 m to E-gate Island cavity.

2024 results unknown. Flooding hindered fledgling searches. Chicks fed in cavity at least 24 days. Nestling poked out before access grew difficult. 2 fledglings seen 80 m from nest tree, 26 days after adults stopped feeding chicks in cavity. Cavity tree a dead cottonwood of multiple trunks at the edge of the Trempealeau River dike, amid live and dead trees on the dike. Fledged young here in 2023. Nest tree bordered by a slough and a 75-meter swath of canary grass to the south, and the river and emergent wetlands to the north. Adults and fledglings forage prairie 100 m to the south.



2024 Field Notes

- 4-30, Two copulations in cavity tree.
- 5-22, 5-24, continuous conflicts with COGRs in cavity tree.
- 5-29, Incubation switches. 6-7, Feeding chicks. Minimal conflicts with COGRs.
- 6-26, Flooding complicates access, closing refuge's main entrance & Wildlife Drive.
- 6-30, Nestling pokes out cavity. 7-1, Still feeding chicks.
- 7-3, Cavity inactive, access difficult. 7-29, Two fledglings in dead ashes 80 m from cavity tree.
- 8-30, 9-3, Three fledglings in trees 80 m from cavity tree.

E-GATE ISLAND TERRITORY 44.051301, -91.520451

73 m to Dead Crown Island, 172 m & 275 m to Cross Branch cavities.

2 clutches attempted in 2024. 1st clutch: unknown results. 2nd clutch: failed. Nest cavity in a dead cottonwood in canary grass on Trempealeau River dike about 125 m from refuge's electronic gate, 73 m from "Dead Crown Island," where another RHWO cavity was found abandoned 6-30-24, also where 2 fledglings seen 7-27-2024. E-gate Ter. fledged young in 2023.

Blue dot marks cavity 2023 & 2024.



2024 Field Notes
4-15 to 5-30, EUSTs in, out of cavity. *Ist clutch:*6-9, 2 RHWO use cavity tree during conflict/chases with nearby pair.
6-26, RHWO enters cavity.
7-1, apparently incubating. In 11 mins.
7-6, incubation switch.
7-12, 7-16, apparently feeding chicks.
7-18, RHWO enters, exits cavity, divebombs, chases 2nd RHWO.
7-23, RHWO tips into cavity during 2 visits, 58 min. Entered and exited cavity 5 times, 58 minutes.

7-27, 2 fledglings 50 m from cavity tree. But nestlings were never seen poking out cavity, and I didn't monitor the site enough in June

to know if the cavity was active long enough to produce young, or if fledglings were from another territory.

 2^{nd} clutch: 8-6, Incubation switch. 8-10, Incubation switch. In 15+ mins.

8-17, EUST @ RHWO cavity 4 times and on nest stub or adjacent branch 5 times, 7:00-7:51 AM. RHWO displaced EUST 17 times, 6:48-7:51 AM. The second time EUST clung to cavity, RHWO displaced it, entered cavity and exited with an orange/pink object (hatchling?) in its bill. Flew 40 m to dead tree, appeared to hold object in its talon. Pecked branch or item 5-6 times. RHWO called, a fledgling landed in same tree, adult chased it.

8-18, 2 RHWO on nest stub, no EUST present. 8-23, cavity abandoned.

DEAD CROWN ISLAND 44.051752, -91.519753

73 m to E-gate, 110 m to Bridgeview, 160 m & 212 m to Cross Branch cavities.

Cavity failed. Cavity tree a dead silver maple on an island of live/dead maples with a preponderance of "dead crowns." Cavity may have failed a few days before E-gate Territory commenced a first clutch 50 m away.

Photo copyrights by Rich Smith

RHWO @ cavity 6-12-2024

Fledgling on Dead Crown Island 7-27-24





2024 Field Notes

- 6-2, RHWO clings to new excavation.
- 6-4, Incubation switches. In cavity 12, 15, 9 mins.
- 6-7, Incubation. In 14 & 11 mins.
- 6-14, RHWO enters cavity 7 times, 52 mins.
- 6-20, Brooding or incubation. RHWO in cavity 13 mins. Exits, replaced by 2nd RHWO.
- 6-30, cavity abandoned.
- 7-28, 2 adults, 2 fledglings forage around Virginia creeper at top of a dead-tree crown.

BRIDGEVIEW TERRITORY 44.051281, -91.518431

171 m downriver from E-gate Island cavity, 80 m & 201 m from Cross Branch cavities, 110 m to Dead Crown Island cavity.

Fledged young in 2023 & 2024. 2023 nest tree fell during winter. 2024 nest tree a dead silver maple 41 m from 2023 nest tree. 2024 nest tree standing in canary grass and arrowhead amid other dead and live trees near bridge over the Trempealeau River.

Photo copyright by Rich Smith. RHWO feeds chick at nest cavity 7-1-2024



2024 Field Notes

5-1, excavation.

5-17, Incubation.

6-9, 6-14, feeding chicks.

6-20, feeding chicks, removing fecal sacs.

7-1, nestling poking out cavity.

7-6, fledgling seen twice 20-30 m from nest tree.

Photo copyright by Rich Smith. Nestling pokes out 6-30-2024.



CROSS BRANCH TERRITORY

1st cavity 44.050166, -91.519853, 2nd Cavity 44.050009, -91.51807

1st cavity 183 m, 2nd cavity 75 m from Dead Locust cavity

2 cavities in dead silver maples failed. 1st cavity in bottomland forest habitat, bordering a slough, 60 m from Wildlife Drive & prairie. 2nd cavity on Trempealeau River dike in bottomland forest habitat, 103 m across a slough from 1st cavity. 2nd cavity 70 m from Refuge Road, 110 m from prairie. The day the 1st cavity revealed failure (no feeding trips, 55 mins.), 2 RHWO displaced a pine squirrel (*Tamiasciurus hudsonicus*) that climbed toward the cavity. Territory named for a snag that hung across the view of the 1st cavity.

Photo copyright by Rich Smith.

RHWO @ 1st cavity 6-1-2024.



2024 Field Notes *1st Cavity:*5-6, excavation.
5-22, 5-29, incubation.

6-2, 6-4, 6-6, incubation.

6-9, feeding chicks. Intense conflicts with RHWO, rattle-calls, rasps. Chases to E-gate, Bridgeview, Dead Crown, Dead Locust territories.

6-12, cavity abandoned. Pine squirrel (*Tamiasciurus hudsonicus*) climbs nest stub toward cavity, dive-bombed by 2 RHWO.

2nd cavity:

6-15, constant calls from new nest tree.

6-19, copulation on new nest tree. RHWOs enter, exit cavity.

6-30, incubation.

7-6, incubation.

7-12, RHWO present @ second cavity tree, but no feeding trips observed 5:46-7:07 AM
7-19, 2nd cavity abandoned.

BLACK CHERRY TERRITORY 44.046656, -91.52891

830 m from nearest known territory, 1st cavity at Cross Branch Territory

Fledged young. Nest tree a leaning black cherry tree (50% dead) in a strip of mature black cherry, black locust and red oak trees roughly 400 m long, 50 m wide. Nest tree is 27 m from Refuge Road where 10+ school buses park when bringing children to refuge. Prairie surrounds the strip of trees. 2024 is the first year the territory was documented, but RHWO have been present at the location in previous years.

Photo copyright by Rich Smith.

RHWO brings mulberry to young 6-20-24



2024 Field Notes6-7, feeding chicks.6-12, feeding chicks.

6-14, 9 feeding visits in 31 mins.

6-19, feeding chicks.

6-26, adult feeds fledgling <30 m from cavity, also delivers food to cavity.

6-30, adult feeds fledgling in oak adjacent to cavity tree.

7-25, 2 fledglings forage in black cherry 180 m south of cavity tree. Displaced by EAKI, forage floodplain forest habitat 200 m south of cavity.

8-6, 2 fledglings 100-200 m from cavity tree in oak/cherry/locust grove.

8-11, 2 fledglings 100-200 m from cavity tree in oak/cherry/locust grove.

DEAD LOCUST GROVE TERRITORY 44.049382, -91.517772

183 m & 75 m downriver from Cross Branch, 508 m upriver from Riverside

Fledged young. Cavity tree a stained dead cottonwood in canary grass amid live & dead trees, beside a slough, 60 m from prairie. Adults entered and exited an upper and lower cavity in the nest stub. 2024 cavity tree 25 m from successful 2023 cavity, < 50 m from successful 2022 cavity. 4 cavities were briefly used in 2024 before the final cavity that produced young.

Photo copyright by Rich Smith 2024 cavity stub



2024 Field Notes:

4-21, Excavation in dangling limb in dead maple <30 m from successful 2023 cavity, in same tree where early cavity was abandoned in 2023. EUST have active cavity in this tree.

4-25, RHWO pokes out cavity in dead maple next to dangling limb.

5-17, RHWO clings to excavation scar in a different

dead maple adjacent to dangling limb.

5-19, RHWO enters cavity that evolved from scar.

5-22, Cavity tree from 5-19 on ground, probably due to 5-21 storm.

5-29, Copulations in dead cottonwood where cavity failed in 2022.

6-4, Copulations on eventual cavity tree, a stained dead cottonwood <50 m from cavities used on 4-21, 4-25 and 5-19.

6-6, RHWOs enter, exit, poke out, call from cavity in stained dead cottonwood.

6-14, Apparently incubating. In cavity 27 mins.

6-26, Incubation switches.

6-30, Adult tips into cavity 3x, 42 mins.

7-6, Entered cavity once in 60 mins. In 11 mins.

7-8, 7-12, 7-18, 7-20, Feeding chicks.

7-23, fledgling heard begging multiple times and seen 44.048883, -91.517524, <50 m from final cavity tree, 44.049382, -91.517772.

RIVERSIDE TERRITORY

1st cavity 44.047475, -91.511896, 2nd cavity 44.047416, -91.512011

1st clutch: unknown results. 2nd clutch: fledged young. Cavity tree of 2nd clutch in a dead silver maple 25 m from a dead American elm that housed the cavity of 1st clutch in 2024, also cavities in 2021, 2023. Nestling poked out 1st cavity 6-19-24. Flooding foiled access until 8-18, when adults chased 2 fledglings in trees adjacent to 1st cavity's location, and also fed young in 2nd cavity. The 1st cavity tree, dead American elm, was noted as fallen on 7-29-2024. Cavity trees 2021, 2022, 2023, 2024 have all been within 50 m of one another. 508 m from Dead Locust.

Photo from 2023, Cavity tree of 1st clutch in 2024. Results unknown.



Photo copyright by Rich Smith. Adult and nestling 9-3-2024.



1st clutch:
5-19, incubation.
6-6, feeding chicks.
6-19, nestling pokes out.
6-22, flooding prevents access.
7-29, cavity tree no longer standing.

2024 Field Notes:

 2^{nd} clutch:

8-18, feeding young. Chase 2 fledglings from adjacent trees.

8-23, feeding young. Displaces fledglings.

8-30, feeding young. Conflicts with 3rd & 4th adult.

9-6, 3 fledglings present, not chased.

APPENDIX A

RESULTS OF RHWO CAVITIES AND TERRITORIES MONITORED AT TREMPEALEAU NATIONAL WILDLIFE REFUGE AND THE GREAT RIVER STATE TRAIL, 2019-2024

2019-2024

Cavities monitored = 35.

Unknown results at cavities = 6.

Cavity failed = 11.

Cavity fledged young = 18.

Percent of cavities producing young = 51.4 %.

2019-2024

Territories monitored = 29

Unknown results at territory = 4.

Territory failed = 7.

Territory fledged young = 18.

Percent of territories producing young = 62%.

Subsequent cavities found after first cavity failed = 3 locations.

Note: cavities were considered in the same territory when a cavity failed and a second cavity commenced after the failure within 120 m of the first. Cavities were counted only after observation indicated that incubation commenced.

CAVITES MONITORED		
COORDINATES	RESULTS	TERRITORY NAME
2019		
44.050841, -91.539058	Results unknown	Bea's Bench

44.050878, -91.538779

Failed, abandoned

Bea's Bench

44.045438, -91.536311	Results unknown	Headquarters
44.045534, -91.512856	Failed, abandoned	Siberian Elm
44.047475, -91.511896	3 fledglings observed	Riverside
44.04483, -91.50983*	Failed, tree blew down	Forked Birch

44.049139, -91.517202	Failed, abandoned	Dead Locust
44.04926, -91.517657	Fledged young	Dead Locust
44.047568, -91.511719	Results unknown	Riverside
44.045232, -91.510465	Fledged young	Forked Birch
44.045886, -91.508257	Fledged young	Prothonotary View

44.054853, -91.529377	Failed, abandoned	Eighth
44.05375, -91.52763	Failed, abandoned	Dangling Limb
44.05308, -91.524158	Fledged young	Canary Grass Meadow
44.051301, -91.520451	Fledged young	E-gate Island
44.051135, -91.517784	Fledged young	Bridgeview
44.049388, -91.517726	Failed, abandoned	Dead Locust
44.049201, -91.517564	Fledged young	Dead Locust
44.047475, -91.511896	Fledged young	Riverside
44.045755, -91.510547	Fledged young	Forked Birch
44.046184, -91.506181	Fledged young	Bike Trail

2024

10 territories (14 active cavities) were monitored.

6 territories and 6 cavities fledged young.

3 territories results were unknown.

4 territories showed no proof of producing young.

5 cavities (2 second clutches) showed no proof of producing young.

1 of 4 second clutches fledged young.

44.060349, -91.537781	Fledged young	Marshland Dike
44.054853, -91.529377	Fledged young	Eighth
44.054853, -91.529377	Failed, abandoned	Eighth, 2 nd clutch
44.05308, -91.524158	Results unknown	Canary Grass
44.051301, -91.520451	Results unknown	E-gate Island
44.051301, -91.520451	Failed, abandoned	E-gate Island, 2 nd clutch
44.051752, -91.519753	Failed, abandoned	Dead Crown Island
44.050166, -91.519853	Failed, abandoned	Cross Branch
44.050009, -91.51807	Failed, abandoned	Cross Branch, 2 nd clutch
44.051135, -91.517784	Fledged young	Bridgeview
44. 248.68, -91.31342	Fledged young	Black Cherry
44.049382, -91.517772	Fledged young	Dead Locust
44.047475, -91.511896	Results unknown	Riverside
44.047416, -91.512011	Fledged young	Riverside, 2 nd clutch

INFO FROM UNMONITORED CAVITIES

2022

44.050359, -91.5203

Fledgling

44.03706, -91.52172*	Fledgling report	Kiep's Island
44.02293, -91.48906*	Excavation report	Black Oak Island
2023		
44.047236, -91.512875	2 adults, 1 fledgling	Roadside Fledgling
2024		
44.03706, -91.52172*	Fledgling report 9-13	Kiep's Island
44.046184, -91.506181	Pair present 5-12	Bike Trail #1
250 m SE of Bike Trail #1	Pair present 5-12	Bike Trail #2
44.047236, -91.512875	Fledgling 8-18, 8-25	Roadside Fledgling
200 m W of M-land Dike	Insects in bill 7-25	Tree Line

SUBSEQENT CAVITIES FOUND AFTER FIRST CAVITY FAILED

2021 Siberian Elm and Forked Birch Territories

44.045534, -91.512856	Failure detected 5-30-21	Siberian Elm
44.04483, -91.50983*	New cavity detected 6-3-21	Forked Birch
Distance between first and su	ubsequent cavities: 258.7 m	

2022 Dead Locust Grove Territory

44.049139, -91.517202	Failure detected 6-18-22	Dead Locust
44.04926, -91.517657	New cavity detected 6-24-22	Dead Locust
Distance between first and su	bsequent cavities: 37.9 m	

2023 Dead Locust Grove Territory

44.049388, -91.517726	Failure detected 5-24-23	Dead Locust
44.049201, -91.517564	New cavity detected 5-28-23	Dead Locust

Distance between first and subsequent cavities: 26.4 m

2024 Cross Branch Territory

44.050166, -91.519853	Failure detected 6-12-24	Cross Branch 1
44.050009, -91.51807	New cavity detected 6-19-24	Cross Branch 2
Distance between first and subsequent cavities: 103 m.		

* GPS coordinates estimated by Swanson from Google Earth. Otherwise, Stephen Winter, Certified Wildlife Biologist, recorded geographic coordinates, using a Garmin Montana 700 set to use the UTM UPS position format, a NAD83 map datum, and the GRS 80 map spheroid.

APPENDIX B

PHOTOS OF DEAD TREE DENSITY AT CAVITY SITES

Dead Locust Grove Territory 2022. Deads trees around initial cavity that failed.

44.049139, -91.517202



Dead Locust Territory 2022. Dead trees around second cavity that fledged young. 44.04926, -91.517657, 38 meters from initial cavity.



Red dot and RHWO poking out of cavity in center of photo.

Dead trees at E-gate Island Territory. Fledged young 2023. Results unknown 2024. 44.051301, -91.520451



Blue dot designates nest cavity.