

# Smith: Research shines light on rough-legged hawks, a winter visitor to Wisconsin

*Researchers are working to understand the migration and movement ecology of rough-legged hawks, a little-studied species that nests in the Arctic and winters in Wisconsin and other states.*



**Paul A. Smith**

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*Emma Raasch holds a rough-legged hawk captured, equipped with a transmitter and released Dec. 16 at White River Marsh State Wildlife Area near Berlin. The work is part of the Rough-legged Hawk Project led by Neil Paprocki of the University of Idaho and Jeff Kidd of Kidd Biological Inc. Neil Paprocki*

An icy mist hung in the air Dec. 7 over Theresa Marsh State Wildlife Area near Theresa.

The calm conditions made the open, grassy landscape appear like a still life painting.

There was, however, one notable and handsome exception: a large hawk hovered 75-feet above a section of restored prairie.

With rapid strokes of its wings, it stayed in place as ably as any helicopter, eyes riveted on the ground.

The bird was mostly beige in color but was white at the base of the tail and had dark carpels, or wrists.

Its behavior and markings left no mystery about its identity: it was a rough-legged hawk.

After 30 seconds of treading air, it plunged to the grass after some intended prey, likely a small rodent. A minute later it took to the air again and flapped northeast and out of sight over the semi-frozen marsh.

I couldn't tell if the dive was fruitful for the bird. But its presence in Wisconsin proved it had already been successful at one of its major annual events, its southerly migration.

Roughlegs breed in the high Arctic of Alaska and Canada and then make trips south to winter, mostly in the Lower 48.

Because they spend much of their lives in remote reaches of tundra comparatively little was known about this hawk species.



Rough-legged Hawk range map from the Cornell Lab of Ornithology

*Rough-legged hawks breed in the Arctic and winter in the Lower 48 states, including Wisconsin. Cornell Lab of Ornithology*

But thanks to a study started in 2014 and modern wildlife tracking technologies, researchers are adding substantially to our understanding of roughlegs, including the birds that winter in Wisconsin.

The Rough-legged Hawk Project is led by Jeff Kidd of Kidd Biological Inc. in Laguna Hills, California, and Neil Paprocki of the University of Idaho.

The work is seeking to learn more about the species' migration and movement ecology. Knowing where the birds breed, the paths they take on migrations and where they choose to winter can help preserve critical habitat and otherwise inform management of the species.

The key tools for data collection are solar-powered transmitters. The lightweight devices are attached to the birds like tiny backpacks and give out GPS locations multiple times a day. About 200 roughlegs have been tracked over the course of the project.

Paprocki, 37, of Wenatchee, Washington, said 100% of the individuals migrate every year from north of the boreal forest to more southerly areas. But there's much to be learned about why and where they end up.

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**From 2021:**Hawk study seeks to unlock secrets of redtails

**From 2021:**A snowy owl tagged in Wisconsin is a star in Project SNOWstorm and headed this way from the Arctic

"They all come south, but some migrate considerably farther than others and that's what I'm interested in," Paprocki said in a recent phone interview. "If you can determine why that is happening, it might help us understand what is likely to change in the future."

Roughlegs are named for the feathers that cover their legs all the way to their feet. The birds have relatively small beaks and small feet and are specialists at catching lemmings, mice, voles and other small prey in open landscapes.

They have a 53-inch wingspan, slightly larger than a red-tailed hawk, and weigh 2.2 pounds, according to the Sibley Guide to Birds.



*The feathered logs of a rough-legged hawk are a distinguishing feature of this species. Neil Paprocki*

Much of the early work in the roughleg project was conducted in the western U.S. But in 2021 Wisconsin started to figure into the mix.

The Badger State connection began when Suzanne Kaehler of Cedar Grove, a Cedar Grove Ornithological Research Station bander and board of directors member, learned about the Rough-legged Hawk Project and contacted Paprocki about getting some Wisconsin roughlegs "on the air."

Kaehler, Madison Audubon and Kelly Centofanti of Centofanti Law SC donated funds to pay for the transmitters. The cell phone-based devices cost about \$1,300 each and the satellite-based ones are \$3,500. NOTE: Madison Audubon paid for the transmitter.

Paprocki traveled to the state in December 2021 and fitted four roughlegs with transmitters. The birds were captured at open, grassy areas preferred by the species including at Sheboygan Marsh State Wildlife Area and the UW-Arlington Agricultural Research Station near Goose Pond Sanctuary.



Dorothy ♀

- spring
- fall
- winter
- ◇ summer



*A rough-legged hawk named Dorothy by researcher was fitted with a transmitter near Arlington in December 2021, and it returned to the same area this winter after flying north to the eastern edge of Hudson Bay last summer, Rough-legged Hawk Project*

He returned in December 2022 and fitted five more roughlegs with transmitters at various spots in Wisconsin, including White River Marsh and Buena Vista state wildlife areas. Four of the birds were of typical light brown coloration and one was a dark morph.

He was assisted in the field work by Kaehler and Emma Raasch of Madison Audubon.

The birds were trapped and then worked up on site. The work included taking blood and feather samples for DNA analysis; measuring the birds' feathers and recording their weights; checking crop fullness and looking for parasites; attaching a leg band a GPS transmitter; and photographing the bird for information on plumage color and wing area.

Already a bird fitted with a transmitter in 2021 is showing fidelity to a high-quality Wisconsin habitat.

That bird, named Dorothy by researchers, was tagged at Goose Pond Sanctuary near Arlington last winter and then migrated about 1,200 miles north to Hudson Bay for the summer.

In fall 2022 Dorothy came south again, first wowing observers Nov. 8 by making a 114-mile open water crossing of Lake Superior (unusual for a roughleg) and then within a month settling right back at Goose Pond.

"She obviously knows a good area when she sees it," Paprocki said.

Goose Pond has hundreds of acres of prairie habitat as well as adjacent open agricultural fields.



*A rough-legged hawk is photographed in front of a white board as part of the Rough-legged Hawk Project. Images of hawks in the project help document differences in plumage and color phases. Neil Paprocki*

Paprocki was thrilled about the success and support of his December trip to Wisconsin. He then traveled to New York and Vermont to add more eastern U.S. birds to the study.

At present about 50 roughlegs are fitted with active transmitters, according to Paprocki.

Depending on the transmitter and how it's programmed, they send out a GPS point every 15 minutes to every couple hours.

On average the transmitters work for two to three years, but some have lasted as long as eight, Paprocki said.

Day by day the technology is helping to fill in more blanks in our understanding of roughlegs.

A bird fitted with a transmitter last month at White River Marsh journeyed south to Illinois briefly before returning last week to the public property near Berlin. Birder and photographer Tom Schultz of Green Lake was able to capture images of the bird, a dark morph, flying and roosting.

These birds are not only wearing GPS devices, they are showing us how finely-tuned their internal location finders are and how faithful they are to high-quality habitats.

"They are such a beautiful, wild species and don't really tolerate human-developed areas well," Paprocki said. "I think it's important to learn as much as we can so we can help them survive into the future."

Keep your eyes open this winter in Wisconsin for a hovering, large hawk or one soaring with a dark splotch on the underside of each wing. It will most likely be a roughleg and it just might be wearing a transmitter as part of Paprocki's project.

Thank it for gracing us with its presence and pledge to do what you can to ensure its wintering habitat is protected in the Badger State.