

Warner Park Nature Center BIRD Program

1 year of MOTUS research

July 2021 report



WPNC BIRD Program: 1 year MOTUS report

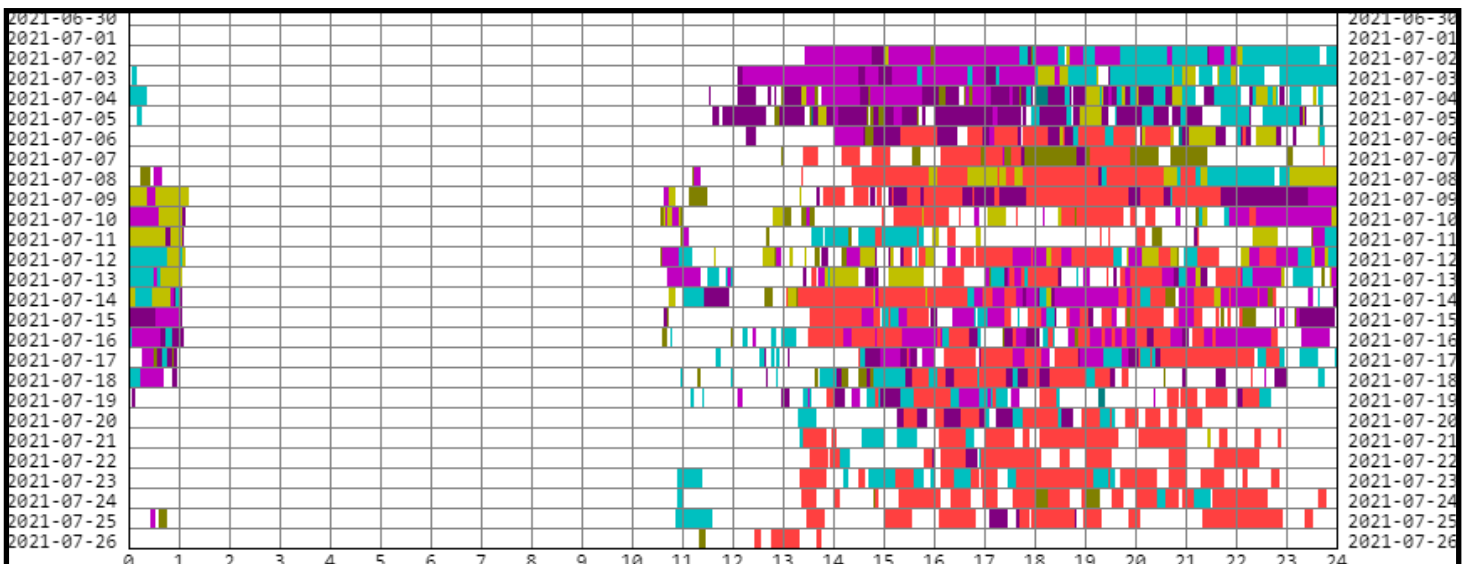
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Our first year of Motus research has been a huge success, thanks to a grant from the Barbara J. Mapp Foundation and support from Friends of Warner Parks, Nashville Metro Parks and Recreation, Warner Park Nature Center, and our many friends, volunteers and partners. We look forward to learning more about these amazing birds in the years ahead. Our goal for this research project is to illustrate how Warner Parks as a large, urban park, with relatively intact forests, offers important year-round habitat to our native birds. In one year we have learned so much already.

Receiver Stations. In July 2020, we installed the first dual-frequency receiver station in Tennessee. You can view this station in the Warner Park Nature Center parking lot. In September 2020, we had a foreign detection (not one of our radio-tagged birds) of a Tree Swallow from Iroquois National Wildlife Refuge that was radio-tagged by a researcher from Cornell University. This year we will install a second receiver station at the Harpeth Hills Golf Course. These two stations will allow us to detect radio-tagged birds moving across Warner Parks.



(Above left to right) July 13, 2020 installation day of the receiver station at WPNC! Volunteer Steve Ghertner assembles the station prior to installation. Some of the BIRD Team learning how to attach a radio-transmitter to a bird. The completed receiver station at WPNC. Below is an example of WPNC receiver station detections for Wood Thrush and Purple Martins from 30 June—26 July 2021.



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Fall & Spring Migration. Many birds migrate at night, and for reasons still being investigated, during migration are attracted to the lights of urban areas. Given the proximity to Nashville, we want to understand if Warner Parks is an important migratory stopover, also called a refueling site. To do this we attached solar powered radio-transmitters to two long-distance migratory thrush species (related to American Robins and Eastern Bluebirds). Swainson's Thrushes breed in dense coniferous forests of northern boreal forests in New England and Canada and winter in mature tropical forests and forest-pasture edges of Central and South America. Gray-cheeked Thrushes breed even further north in the taiga and shrub thickets from Newfoundland to Siberia and winter in northern South America. Our results to date:

- During fall migration, Swainson's Thrushes arrived earlier than Gray-cheeked Thrushes. We radio-tagged 8 Swainson's Thrushes from 09 September—02 October 2020 with the most birds captured on 22 September. They spent 1-12 days here, averaging a 6 day stopover. We also captured, 9 Gray-cheeked Thrushes from 18 September—06 October 2020 with the most birds captured on 02 October. They spent 3-23 days here, averaging an 11 day stopover.
- During spring migration, we captured 4 Swainson's Thrushes on 11-13 May 2020, and they spent 2-8 days here, averaging a 4 day stopover. We only captured 1 Gray-cheeked Thrush on 11 May 2020, but it was detected by our receiver station for 7 days.
- From our 40-year banding station data we learned we have recaptured 5 Gray-cheeked Thrushes at least 1 day after initial banding. These birds all gained weight between captures from 5.2—29% of their body weight (average of 17.32%) after spending 2-8 days here (average of 5 days). We have only recaptured 1 Swainson's Thrush - in 2012 and this bird was recaptured 4 days later and gained 16.8% of its body weight.
- These initial findings suggest that Warner Parks with shelter (trees), food (insects and fruit), and water (Vaughn Creek) may be an important migratory stopover and refueling site for these birds to build fat reserves for the journey to and from their winter homes in South America.



Gray-cheeked Thrush with a LifeTag transmitter



Swainson's Thrush with a LifeTag transmitter

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Winter in Warner. A related species, the Hermit Thrush, breeds in New England, Canada, and western states but winters here in Tennessee, southern states, and Mexico. We want to understand if Hermit Thrush spend the entire winter with us and if they have a strong fidelity to return year after year. If so, Warner Parks could be an important wintering area for these birds.

During our 40-years of banding, we have captured 32 Hermit Thrushes and recaptured only 5 of them. But we have indications of fidelity from a young hatch-year Hermit Thrush captured in November 2015 and recaptured in the fall of 2016, 2017, and 2019, and in winter 2020. To build on this and better understand fidelity and duration:

- We radio-tagged 2 Hermit Thrushes in fall 2020. A young (hatch-year) Hermit Thrush was captured on 04 November 2020 and was detected by our receiver every day for 105 days until it departed during the snow storm on 16 February 2021. The other Hermit Thrush was a bird we had first captured on 01 November 2016. We did not catch this bird again until 20 October 2020, but it spent at least 171 days with us until it departed on 07 April 2021. Will they return next winter?
- On 13 April 2021 we captured an ASY (after second year, so at least 3 years old) Hermit Thrush. It had a very low weight when we captured it and suspect it was migrating. It spent 13 days at Warner Park before it headed north to breed.



Hermit Thrush with a LifeTag transmitter



photo by
alan plummer

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Summer in Warner. The Wood Thrush breeds in eastern U.S. and winters in Central America. This thrush's population has declined by 62% in recent decades and is considered a bird of conservation concern in Tennessee. During 40 years of banding, we have captured 42 Wood Thrushes. But given the significant decline of this species, we want to understand if they return each year (fidelity) to breed and seek ways to improve habitat at Warner Parks to ensure breeding success.

- We radio-tagged 1 Wood Thrush in fall 2020. It was detected for 19 days in October. We do not know if this was a bird migrating through and using Warner Parks as a stopover, or if it had spent the summer here and then headed south.
- In May 2021, we captured a young Wood Thrush that hatched the previous spring. It was only detected for 3 days and we suspect was migrating through or moved away from our station's detection range to breed.
- A fabulous discovery has been a mated pair of Wood Thrushes. We radio-tagged the female on 04 May and the male 11 May 2021. This pair has remained together in the area just behind the banding station. As of this report, we suspect they are on their second clutch, and we hope to find their nest to document nesting success.



A banded Wood Thrush (above). A recently radio-tagged Wood Thrush is released at the WPNC Banding Station (below left). Volunteer Joseph Hallum, BIRD researcher Laura Cook, and BIRD summer intern Savannah Emery find the nest of the male and female radio-tagged Wood Thrush (below right).



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Purple Martins. These swallows breed in North America and winter in South America, some migrating over 10,000 miles each year. While dependent on human-made artificial nest sites (especially in the eastern US), populations have declined by 37% in recent decades. Since 2000, we have banded over 600 Purple Martin nestlings from gourd systems at the nature centers. This year, we received a permit from the Bird Banding Lab to attach radio transmitters to 20 day old martin nestlings (the perfect age because they are adult size but too young to leave the nest). We have 2 research questions:

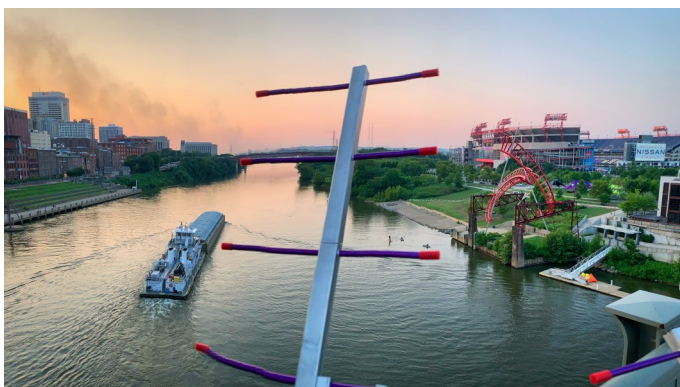
1) While it's quite rare, we occasionally see banded adult martins at the gourds. We want to understand if our nestling martins will return to Warner Parks in subsequent years to breed (natal philopatry). We will have to wait to answer our natal philopatry question until next year.

2) You may recall the 2020 Purple Martin migratory roost saga described in the NY Times article by Margaret Renkl where an estimated 150,000 Purple Martins roosted nightly at the Nashville Schermerhorn Symphony Center through early September. We wanted to understand if our martin fledglings from Warner Parks join the big Nashville migratory roost, prior to departing to South American for the winter.

- We radio-tagged 6 Purple Martin nestlings during July 2021. As of the end of July 2021, five of our 6 radio-tagged martins have been detected at the Nashville downtown roost at the symphony.
- On 31 July, one of our martins was detected at The Nature Conservancy's receiver station near Clarksville, TN—about 35 miles northwest of the symphony roost. This is the first time one of our radio-tagged birds has ever been detected at another station.
- After spending the night in Nashville with tens of thousands of other martins, our martins often come back to Warner Parks, detected by the WPNC receiver station, to forage for insects during the day.



A Purple Martin nestling about to receive its LifeTag transmitter



A hand-held receiver is used to search for radio-tagged Purple Martins in downtown Nashville



Purple Martins swarm around the symphony building before spending the night roosting in nearby trees

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Motus Working Group. The BIRD team is a founding member of the Southeast Motus Working Group, an informal team of researchers sharing lessons learned with the intention of building a coordinated network of receiver stations throughout the southern U.S.

Education & Engagement. Each time we go out with our hand-held receiver to find a radio-tagged bird, we have the opportunity to engage park visitors about our research and the importance of doing all we can to help these birds. Learn more about how you can help birds at your home and in your community at www.3billionbirds.org.

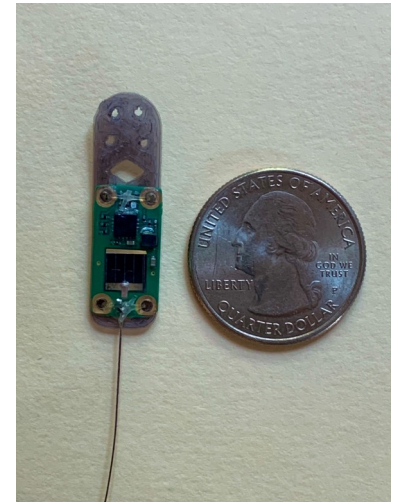
How does this all work?

What is Motus? The Motus Wildlife Tracking System is an international, collaborative research network that uses coordinated automated radio telemetry to study movements of small animals. The purpose of Motus is to facilitate landscape-scale research and education on the ecology and conservation of migratory animals. Learn more at www.motus.org.

How does Motus work? Federally permitted researchers fit small lightweight radio-transmitters on birds, and that signal can be detected by receiver stations. The data from these receivers is then centralized at the Birds Canada National Data Centre where it is filtered, analyzed, archived, and disseminated to all researchers and organizations in the network.

How do the transmitters work? We use LifeTag solar transmitters developed by Cellular Tracking Technologies. These tags are lightweight and emit a unique signature every 2 seconds. When that transmission is picked up by a receiver station, it's called a "hit" and allows us to learn where animals go, how fast they move, how long they stay in an area (stop-over ecology), and if they return to the same location (site fidelity).

Why is this considered new technology? Until recently, transmitters had short battery life & were too heavy to put on small songbirds. We now have the ability to place transmitters on small animals like birds. The network of shared receiving stations (Motus) allows researchers to learn more about the full life-cycle of animals from Canada to South America.



A solar powered LifeTag transmitter weighs less than 0.5 gram



Volunteer Ava Cassidy uses a hand-held receiver to search for the Wood Thrush pair

The BIRD Program is funded by Friends of Warner Parks, in collaboration with Warner Park Nature Center and Nashville Metro Parks and Recreation. This year marks the 40th year of the WPNC Bird Banding Station thanks to our dedicated volunteers, staff, and partners!

Please support this Motus research, our other legacy bird research, and public engagement programs with a **donation**, **become a member**, and **volunteer** with Warner Parks. #ProtectTheBirds #ProtectWarnerParks

www.warnerparks.org

