BANDING NORTHERN SAW-WHET OWLS (*Aegolius acadicus*) AT A FIELD STATION IN CENTRAL NEW YORK STATE

J. Confer*, J. (Gillis) MacCabe, M. Ulinski, B. McGuire, J. Gorges, B. Gorges, P. McNeil, T. Pfaff, G. Dodici, and Z. Casteel.

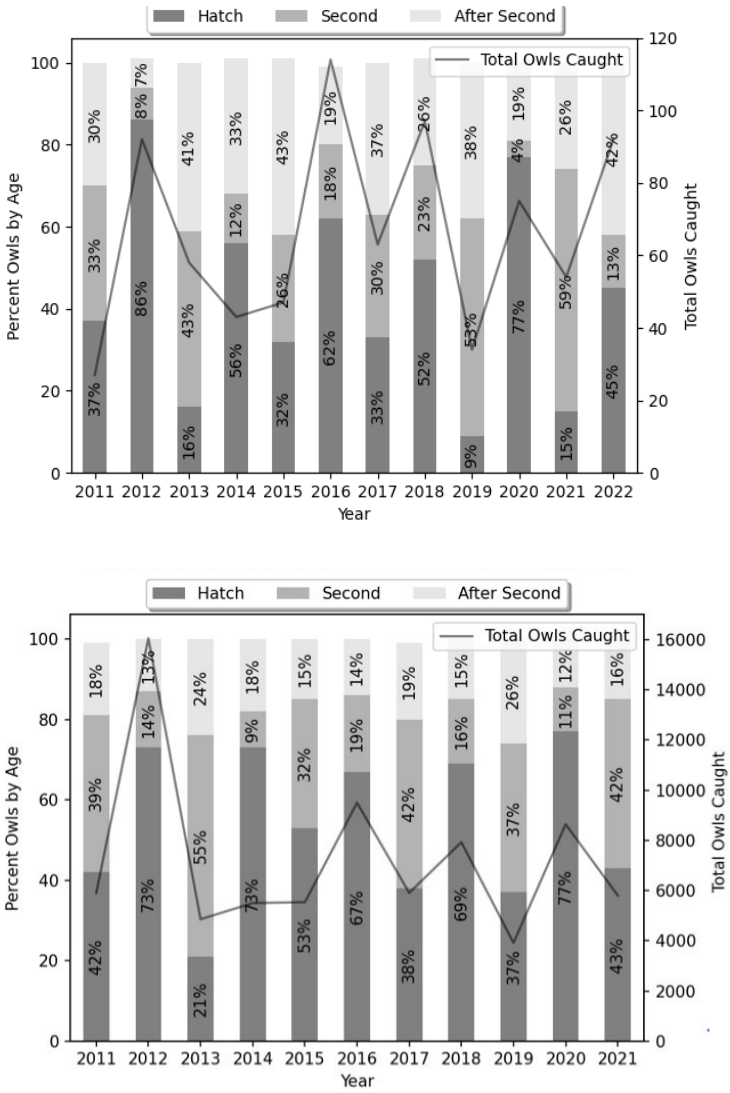
*Corresponding Author: 651 Hammond Hill Rd., Brooktondale, NY 14817

The diminutive Northern Saw-whet Owl (*Aegolius acadicus*), hereafter saw-whet, is secretive, usually silent, and rarely seen. Yet across North America about 15,000 of these owls are banded annually on their southward migration. This report describes 12 years of banding from Hammond Hill Owls (HHOwls), a small banding station in Tompkins County, about 11 miles southeast of Ithaca, NY. We compare demographic patterns for HHOwls to the total caught in North America (NA) east of longitude -87°.

The safety of our captured birds is paramount to us. We are ever aware of the living creatures in our hands. At HHOwls we also value the educational component of bird banding that equips others with the tools they need to be more aware of and proactive in aiding conservation efforts (The Uses of Marking and Recovery Data 2016; Why Band Birds? 2016). We work with people of all skill levels, and participation in the banding process, even as spectators, allows the audience to connect more deeply to the birds and their conservation (Pitkin 2006).

During the last 12 years, we usually opened nets from sunset to midnight on 14 to 17 nights yearly from late September to mid-November when weather was favorable, i.e., dry, cool but not freezing temperatures, winds with a northern component, and high barometric pressure. Banding effort was reduced in 2020 and 2021 due to Covid. Saw-whets were fitted with a USGS numbered aluminum band, weighed, measured for wing length, and aged before release. Hatch Year (HY) and Second Year (SY) birds can be recognized by their molt patterns. Older birds have a confusing mix of molt patterns and are categorized as After Second Year (ASY) birds, a multi-year group.

The number banded is highly variable from year to year (Figs. 1a, 1b). For HHOwls with similar effort each year, excepting Covid years, the average number caught in five peak years (95.2) is 2.0 times greater than the average in seven low years (46.6) (Fig. 1a). For eastern NA, the highest number caught in one year was 16,087 and the average of four peak years (10,533) is also 2.0 times greater than the average of seven low years (5349) (Fig. 1b). In these 12 years, HHOwls banded 797 Northern Saw-whet Owls, five Eastern Screech Owls (*Megascops asio*), and three Barred Owls (*Strix varia*). In addition, we captured 21 saw-whets that had already been banded at some other banding station. This provides a yearly average of 68.8 owls.



Figures 1a (top) and 1b (bottom). Owls banded at HHOwls and Eastern North America. Values within the bars depict the proportion of Hatch Year, Second Year, and After Second Year Northern Saw-whet Owls banded by year at HHOwls between 2011 and 2022 (Fig. 1a) and in eastern North America between 2011 and 2021 (Fig. 1b). The solid line depicts the total number banded.

A monographic study of Northern Saw-whet Owls (Rasmussen *et al*. 2008) reports that peak years occurred approximately every four years. In contrast, our data show that peak years for eastern NA occurred three times at a two year interval and only once at a four year interval. Peak years for HHOwls occurred four times at a two-year interval but only once at a four year interval. We also examined the BBL records for all saw-whets banded east of -87^0 latitude for 15 years prior to the start of HHOwls. Peak years occurred in succession at three-, five-, three- and three-year intervals.

The proportion of HY birds each year is highly variable for both HHOwls and for eastern NA (Figs. 1a, 1b). This is most likely due to a variation in the number of small mammals available during the nesting season because a high number of prey can lead to a high number of HY birds (Confer *et al*. 2014). A high proportion of HY birds in one year is echoed by a high proportion of SY birds the subsequent year. The average proportion of HY birds is 54% for eastern NA and is 43% for HHOwls. For both data sets the peaks in total number banded correlate with peaks in HY% birds in that year, excepting 2014. In that year both data sets had a proportion of HY birds more than 20% above the average, but neither data set showed a peak in number captured. A high total capture occurs only when there is a high proportion of HY birds, but a high proportion of HY birds alone is not sufficient.

Captures at our site showed a higher proportion of older birds than those from eastern NA as a whole in 10 of 11 years. The exception was 2012, when the proportion of HY birds was exceptionally high everywhere: HHOwls' highest and eastern NA's second-highest during the 2011-2021 study period. Further, in low years for HY birds, the values at our site were much lower than for eastern NA, with its much larger samples from a much larger area.

The recapture of banded birds reveals much about the movement and survival of these secretive creatures. At our longitude, most owls migrate along a north/south axis (Fig. 2). For example, HHOwls has exchanged five recaptures with Prince Edward Point Bird Observatory, a major banding station almost due north of us on the north shore of Lake Ontario. However, some owls show an east/west dispersal. We recaptured one owl banded along the shore of the Gulf of St. Lawrence and another owl banded along the shore of Lake Superior. These banding stations are about 800 miles apart east/west.

Of all the owls that were recaptured: seven were recaptured in the year they were banded, 13 owls were recaptured one year after being banded, six owls two years later, three owls three years later, and two owls four years later. Only one owl was caught five years after being banded and none at a greater interval. The decline in number captured over time reflects the survival rate of saw-whets. Owls caught one or more years after being banded probably had completed one or more round trips to a breeding location north of us. The movements of owls captured at our site are illustrated in an interactive map at:

https://sustainabilitymath.org/Owl5/Saw-Whet5.html

Between 1960 and 7 July, 2022, 375,057 saw-whet owls were banded in NA (Bird Banding Laboratory data base, or BBL). Of these banded owls, 8,939 have been recaptured once. BBL data show that more owls were banded in the range of -75° to -80° longitude, which includes HHOwls at -76° longitude, than in any other 5° increment across NA. Two-thirds of the owls banded in this range and recovered anywhere were recovered within this interval (Fig. 3). Only 30% were recaptured to the east or west, showing a prevailing north/south movement. An interactive graphic of such movements for NA can be reviewed at:

https://sustainabilitymath.org/Owl4/Saw-Whet4.html

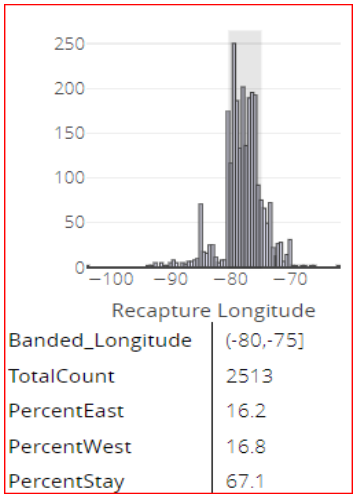


Figure 2 (left). HHOwls dispersal. The original banding location for owls subsequently encountered at HHOwls (squares) and for owls banded at HHOwls and subsequently encountered elsewhere (circles).

Figure 3 (right). Encounters of Northern Saw-whet Owls banded between longitude -75° and -80° longitude. The gray bar indicates the longitude range within which the sample was originally banded.

Over more than a decade of banding, HHOwls has experienced several extraordinary events. On one night we recaptured two owls we had banded. These simultaneous recaptures are by themselves unusual. But what is astounding is that both had been banded on the same night two years earlier. On another night, a Cornell student from Indiana was present when we recaptured an owl that had been banded in Indiana at a station he had visited. In 2022 on a night of major migration we had only four assistants on hand. On one net check, we found a Barred Owl in the net. Julia removed it and held it with both hands, while we

removed the saw-whets. Eventually one assistant had one saw-whet and two had two saw-whets each. As we removed the owls, three more owls flew into the nets. We turned off the audio lure and hurried up to the banding shed to get the carrying case, better-late-than-never. On another night, Julia was removing a bird when another owl hit the taut net next to her and trampolined out before landing on a branch. As she turned around to see the bird, her headlight temporarily blinded the owl, which she plucked off the branch. We are delighted to share our stories and our data on population dynamics with you. Hoot, hoot to you from HHOwls.

LITERATURE CITED

Confer, J. L., L. L. Kanda, and I. Li. 2014. Northern Saw-whet Owl: regional patterns for fall migration and demographics revealed by banding data. *Wilson Journal of Ornithology*. 126: 305-320.

Pitkin, M. 2006. Mist-netting with the public: A guide for communicating science through
bird banding. *Point Blue*. Accessed 2023:
http://www.prbo.org/cms/docs/edu/MPitkinMNWithThePublic.pdf.

Rasmussen, J. L., S. G. Sealy, and R. J. Cannings (text update 2008, reformatted 2020). Northern Saw-whet Owl (*Aegolius acadicus*), version 1.0. In *Birds of the World* (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.nswowl.01

U.S. Geological Service. 2016. *Why Band Birds?* Accessed 2023:
https://www.pwrc.usgs.gov/BBL/homepage/whyband.cfm.

U.S. Geological Survey Bird Banding Laboratory Data Base.
https://www.usgs.gov/labs/bird-banding-laboratory Accessed 2023.

U.S. Geological Survey. 2016. *The Uses of Marking and Recovering Data in Migratory Bird Conservation, Research, and Management*. Accessed Jan 2023: https://www.pwrc.usgs.gov/BBL/homepage/gswhy.cfm.