

Using Light to Locate: Geolocation of Wisconsin Wood Ducks by Brilyn Brecka

Many waterfowl hunters have had the good fortune to harvest a bird with a band on its leg. Birds are banded and tracked for many reasons, and Andrew Greenawalt is banding wood ducks (*Aix sponsa*) and fitting them with special light-detecting geolocator tags for his graduate research. He needs the help of hunters to report any harvested banded birds for the success of this unique project. If you have harvested a banded bird, report it to the [United States Geological Service \(USGS\) Bird Banding Lab](#), and read on for more information!



Andrew Greenawalt is a graduate student at UW - Stevens Point, studying wood ducks.

Andrew Greenawalt is a graduate student working on his master's degree at UW – Stevens Point (UWSP). Growing up in New York, Andrew's first experiences in the wildlife field occurred in early high school and was most influenced by his eighth-grade science teacher, Scott Jordan. Jordan, a former fisheries biologist in Alaska, took Andrew under his wing and instilled in him a love for wildlife and paved the way for him to pursue his dreams to become a waterfowl biologist.

After graduating from the State University of New York at Cobleskill with a bachelor's degree in Wildlife Management in 2013, Andrew spent time in Alaska, Wyoming, Missouri, New York, and Canada, working with ferruginous hawks, snow geese, Pacific black brant, and wild turkeys. Many of these jobs focused on movement patterns, population monitoring, and habitat management. Andrew met Ben Sedinger Ph.D., Kennedy-Grohne Chair in Waterfowl and Wetlands Conservation at UW-Stevens Point, when he volunteered on Ben's Ph.D. project researching connections between bag limits and water availability and wood duck survival in Nevada. This connection was crucial to the next chapter of Andrew's wildlife career. Once Sedinger was settled in his new position at UWSP, he was looking for a grad student and knew Andrew would be a great fit.



Ben Sedinger (left) and Andrew with a female wood duck.



Wood ducks are of particular interest because they are a focal species in Wisconsin and have historically nested in the state.

Andrew's master's project focuses on wood duck population trends, harvest, and survival, as well as winter migration patterns. Historically, four focal waterfowl species nest in Wisconsin: mallard, blue-winged teal, ring-necked ducks, and wood ducks. Wood ducks are of particular interest because there is a gap in knowledge about their winter survivorship, population abundance, and migration patterns. He is collecting data within the Upper Mississippi River – Great Lakes region. The area is managed by the Upper Mississippi River – Great Lakes Joint Venture, an organization focused on bird conservation through regionally based, biologically driven, landscape-oriented partnerships. Andrew hypothesizes that winter severity has a negative effect on harvest and survival, and there is a direct relationship between population abundance and harvest numbers.

Working in central Wisconsin at the George W. Mead Wildlife Area, Andrew captured and banded wood ducks throughout the spring and summer of 2020, using baited swim-in traps and a modified form of rocket netting. Birds are fitted with metal leg bands and geolocators. So far, he has banded over 500 individuals: 336 wood ducks, 157 blue-winged teal, 3 hooded mergansers, 4 American green-winged teal, and 4 mallards. Andrew is also collecting his own data and analyzing 59 years' worth (1961-2020) of band recovery data from the USGS Bird Banding Lab to examine how harvest and survival is impacted by abundance and harvest regulations.



Trapping and banding of waterfowl is an important step in managing their populations. Data gathered can influence management decisions such as bag limits.

The second component of his project involves determining the winter chronology, or the progression of winter migration, for wood ducks, and he will use data from geolocators on 147 wood ducks to do so. The geolocators have a light sensor, an internal clock, and a computer which

stores measurements of the amount of light the sensor is exposed to. The sensor collects ambient light levels every minute to determine daylight levels, and in turn, Andrew can predict latitude and longitude locations of the birds using sunrise and sunset times. He can look at the birds' annual cycle, determine if and where they are moving, determine nesting and molting locations, and identify stopover areas for fall and spring migration.



Geolocators are attached to color bands. If you harvest a bird with one of these bands, please call the number listed on the band.

Eleven of the 147 tagged wood ducks have been harvested by hunters thus far. The most surprising find Andrew observed is from a male wood duck that migrated to South Dakota to molt, only to return to central Wisconsin and be harvested by a lucky hunter 300 yards from where he was banded. Andrew stresses the importance of hunters reporting banded birds to the USGS and sending the geolocators back to him: “The reason why it is so important for hunters to report their bands is because it can give us ways to estimate these survival rates which could in return help the conservation of wood ducks... another reason it is very important to report these bands is because these geolocators are archival, so they do not send data in real time. We need to be able to get these geolocators back to download the data. We will allow hunters to keep the band and geolocator, but we need to download the data from these small instruments.”

This spring and summer, Andrew welcomes volunteers on his project – a great way to get banding experience! He can be contacted by email at agreenaw@uwsp.edu or by phone at (716) 307-3073. Successful hunters who harvest birds with geolocators are highly encouraged to contact Andrew to make arrangements to download data and report metal band numbers to the USGS Bird Banding Lab at www.reportband.gov.

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