

Evaluating Young Forest Management and Landowner Participation to Aid Declining Bird Species

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My name is Anna, I'm a masters student at the University of Maine, pursuing my degree in Wildlife Ecology. For the past two years, I've been conducting research in collaboration with the Wisconsin Young Forest Partnership (WYFP). My research has three main objectives:

1. Create a citizen science program for WYFP's landowners to monitor woodcock on their managed properties, by understanding their preferences and abilities for monitoring.
2. Quantify and compare the bird communities using mature alder and aspen habitats versus managed young forest and shrubland areas on private properties, with a particular focus on American Woodcock and Golden-winged Warbler.
3. Use light-level geolocator technology to track the full annual movement, including migration and winter, of male Golden-winged Warblers breeding in Oneida County, WI.

By the Numbers

My technicians and I collected data from April to August of 2016 and 2017. Here is just some of what we accomplished.

- 6976** tree diameters measured
- 4109** individual birds counted during breeding bird surveys
- 234** breeding bird surveys completed
- 187** American Woodcock detected and counted during surveys
- 185** evening woodcock surveys conducted
- 99** species of birds detected during breeding bird surveys
- 98** habitat surveys completed
- 77** Golden-winged Warblers detected during breeding bird surveys
- 39** Geolocators deployed on male Golden-winged Warbler
- 18** interviews completed with landowners
- 13** landowners participated in woodcock surveys in 2017
- 1** car stuck in the mud, then successfully removed



Anna checking the age and fat score of a male Golden-winged Warbler. Photo taken by Phil Hauck.

What We've Learned

Objective 1: Landowner Citizen Science

Citizen science is a collaborative effort between scientists and people from the general public to collect and analyze data in order to answer a common research question or meet a common goal.

- Through interviews with landowners, we learned about the barriers, motivations, and preferences for participating in citizen science.
- We learned that Wisconsin landowners are enthusiastic about participating in woodcock monitoring on their properties.
- Things that limit landowners' interest and ability to participate in citizen science are the time they have available, and the specific commitments and demands of a given project.
- Landowners are most motivated to participate by their appreciation of science and their sense of land stewardship.
- Additionally, landowners mentioned that they were unaware of the different citizen science opportunities and that if they knew these sorts of projects existed they would be more likely to participate.



Landowner doing survey on their property. Photo taken by Anna Buckardt.

Objective 2: Mature vs. Managed

We conducted breeding bird surveys across four different treatments to look at the impact of young forest management efforts on bird communities. We compared mature alder shrublands to sheared young alder shrublands and mature aspen forest to harvested young aspen forest. Analysis is still underway, but we are finding differences in the number and variety of species using each treatment type (Figure 1).

Young forest habitat management is aimed at creating habitat for a variety of wildlife species. American Woodcock and Golden-winged Warbler are two bird species that need young forest habitat for breeding and rearing young. These two species were the focus of much of our research and we used targeted survey efforts to detect them. When we compared Woodcock and Golden-wing use of the four habitat treatments, both species were detected more frequently in managed young forest sites than comparable mature sites (Figure 2). Young harvest aspen sites had the highest average detection rate for both species.

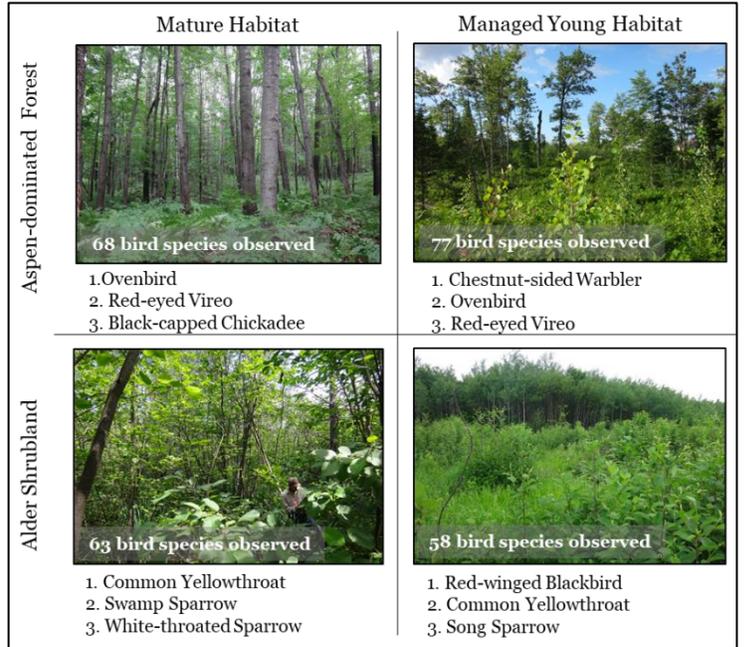


Figure 1. This figure shows the four habitat treatments in our study. We have included a list of the top three most commonly detected bird species and the total number of bird species detected in each treatment type. Photos taken by Anna Buckardt.

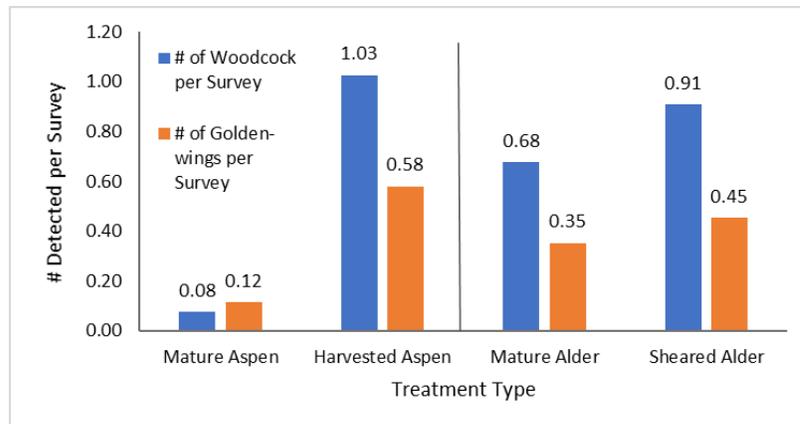


Figure 2. This figure shows the average number of American Woodcock and Golden-winged Warblers detected per survey in the four habitat treatments in our study. Both species were detected more often in young, managed sites than mature sites. Young harvested aspen habitat had the highest average detection rate per survey for both species.

Objective 3: GWWA Geolocators

The final piece of my research focuses on understanding the migration and winter periods of the annual cycle of male Golden-winged Warblers. This information will help to inform international conservation efforts for Golden-winged Warblers, which are experiencing steep population declines. We are using light-level geolocator technology to track one year of movement of individual birds breeding in Oneida County, WI.

We capture the birds using mist-nets and then attach a geolocator using a leg-loop harness (Figure 3). The bird is then released and goes about its life for a year, including traveling over 2,000 miles to its winter habitat in Central or South America.

The geolocator does not have real-time tracking capabilities and the bird must be manually relocated and recaptured the year following initial capture in order to recover the geolocator and its data. The geolocator has an internal timer, a light-level sensor, and a memory chip. When the device is on the bird it takes and records measures of light intensity every two minutes. From this stored light-level data we are able to determine the time of sunrise and sunset and the length of each day. This allows us to estimate a daily longitude and latitude for the bird, within a region of likelihood.

We deployed 28 geolocators on male Golden-winged Warblers during the 2016 breeding season and recovered 7 of them in 2017. We deployed an additional 11 geolocators in 2017 and will be returning in the 2018 breeding season in search of these 11 birds. Analysis is still underway, but we hope to share results soon!



Figure 3. A male Golden-winged Warbler sporting a geolocator. Photo taken by Phil Hauck.