

Introduction

- The Golden-winged warbler (*Chrysoptera vermivora*) is one of the most critically threatened birds in North America.
- The global population is estimated at only 400,000 individuals of which 50% nest in Minnesota.
- They rely on young, regenerating forests and shrubby wetland habitat for breeding activities, however, there is a scarcity of knowledge associated with differences in quality provided by these two distinct habitats.
- Predation is the main cause of nest failure for open-cup nesting birds, like the Golden-winged Warbler, yet little is known about how habitat characteristics and landscape features affect nest predation.
- The first few weeks after a young bird leaves the nest – the post-fledging period – is a time of high mortality.
- There is limited knowledge of survival and habitat use of Golden-winged Warbler fledglings.

Study Goals

- Understand associations between landscape and habitat features, predator abundance, and nest predations.
- Document habitat use and survival of post-fledging Golden-winged Warblers.
- Provide detailed management recommendations for Golden-winged Warbler breeding and post-fledging habitat.

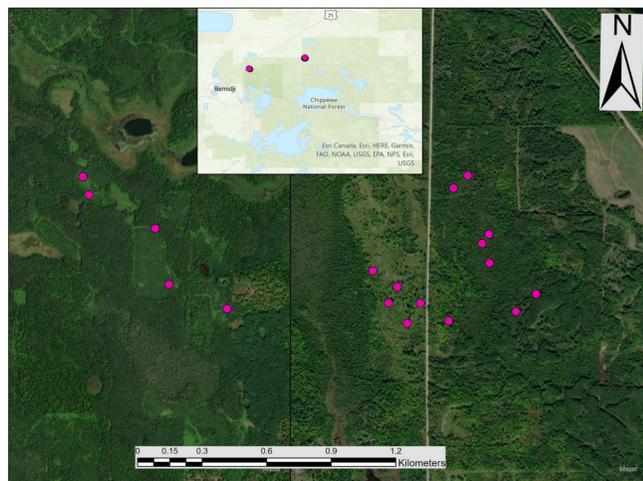
Study Area and Sites



Shrubby Wetland



Regenerating Forest



Top-Left: Shrubby Wetland site. Top-Right: Upland Early Successional Habitat. Bottom: Study area and locations of 2021 GWWA nest.

Nest Predation Methods

- Predator surveys will be conducted in order to compare predator abundance between sites.
- Camera trap arrays will document mammalian predators.
- Coverboard arrays will be placed at each site to measure relative abundance of snakes.
- Motion triggered cameras will be placed at each nest to monitor success and document predation events.
- Vegetation surveys will be conducted at nest locations to measure habitat characteristics.

Nest Searching and Telemetry

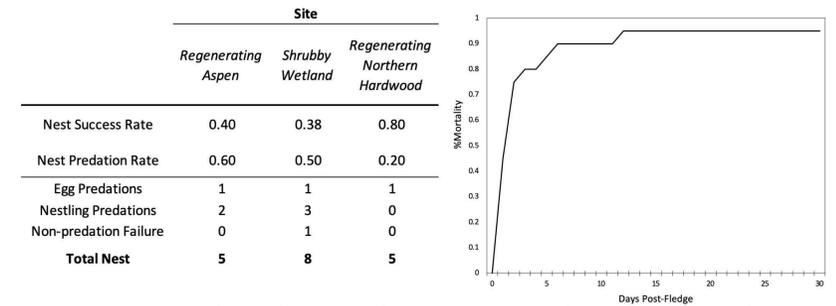
- Golden-winged Warbler nests will be located using behavioral cues from parents and systematic nest searching methods.
- Nests will be monitored to ascertain nest success (at least one nestling fledging the nest).
- Nestlings will be banded and fitted with radio telemetry tags on pin-break (approx. day 7).
- Fledgling Golden-winged Warblers will be tracked via radio telemetry to determine habitat use and survival during this vulnerable period.
- Vegetation surveys will be conducted at tracked bird locations as well as paired random locations in the sites.



Clockwise from Top-Left: GWWA nest during incubation. Two-day-old GWWA nestlings. Predated GWWA fledgling by Common Garter Snake (*Thamnophis sirtalis*). Seven-day-old GWWA nestling tagged with radio transmitter.

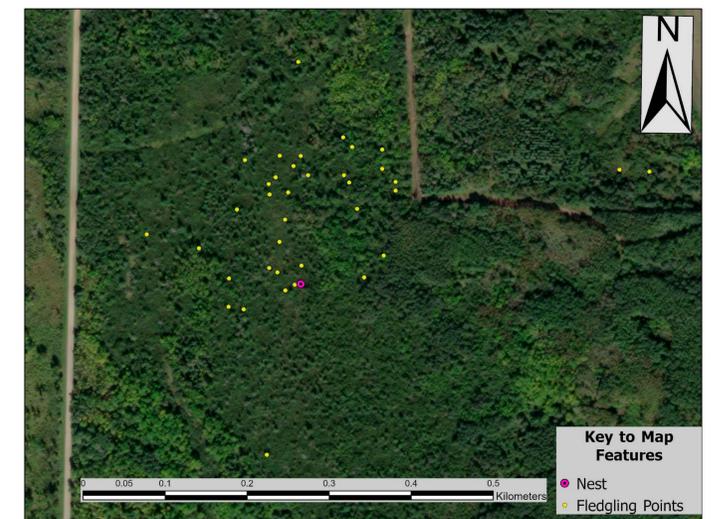
Preliminary Results: Nest and Fledgling Predation

- 18 Golden-winged Warbler nests were monitored during the summer of 2021.
- We assessed the movement and survival of 25 fledglings of which 6 survived to independence (25 days post-fledge).
- Fledgling mortality is greatest within the 5 days post-fledging.



Left: Nest success and predations of GWWA nests during 2021 at three study sites in the Chippewa National Forest. Right: Percent of fledgling mortalities (n=19) GWWA fledglings across three sites during 2021.

Preliminary Results: Telemetry



Post-fledging movements (yellow dots) of a GWWA brood over 30 days in the summer of 2021. The pink dot indicates the nest location.

- Golden-winged Warblers use a variety of cover types and age classes, including shrubby wetland, upland deciduous, and young regenerating forests and require a large area (much larger than their parent's breeding territory) during the vulnerable post-fledging period.

Acknowledgements

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