



Abundance and Occupancy of Snowshoe Hare Predators on the Leech Lake Band of Ojibwe Reservation

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Introduction

Wabooz (snowshoe hare [*Lepus americanus*]) are a culturally significant animal and an important food and fur source for the Leech Lake Band of Ojibwe (LLBO). Snowshoe hare populations on the reservation are declining; an ongoing study found 91% of all hare mortalities were caused by predation, primarily *gidigaa-bizhiw* (bobcat [*Lynx rufus*]), *ojiig* (fisher [*Pekania pennanti*]), and *waabizheshi* (American marten [*Martes americana*]). Research using culturally appropriate techniques is crucial to the future management and conservation of sensitive predator species on tribal land, and we evaluated two non-invasive monitoring techniques for long-term use by tribal wildlife managers.

Study Area

The study area is distinguished by methodologies used to collect data: camera-trapping and snow tracking. A total of 40 camera locations and 40km of transects are located throughout habitat types representative of the LLBO Reservation.

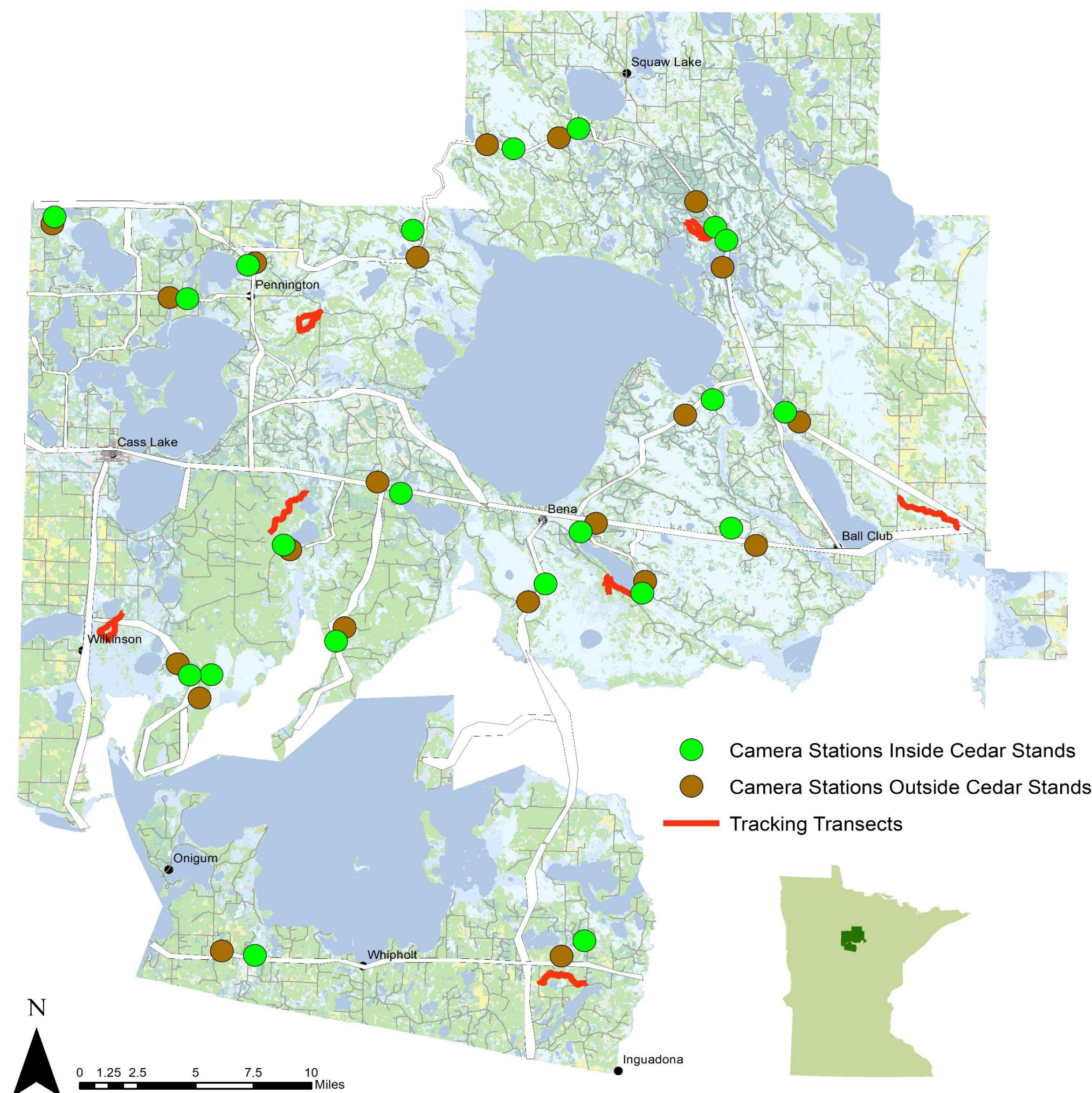


Figure 2. Locations of camera trap stations and snow tracking transects on the LLBO reservation.



Figure 1. Trail camera photos of fisher, marten, bobcat and snowshoe hare taken on the LLBO reservation.

Methods

Camera Traps

We randomly generated 40 camera locations stratified by landcover type (20 sites within white cedar cover type, 20 sites outside white cedar cover type) and ≤ 1 km from winter plowed roads. Each site included a baited platform and white-flash camera set ~ 1.5 m above ground for unique identification of fisher/marten, and one infrared camera at ground level for bobcat. Each camera site was active for 21 days between January-March 2021.

Snow Tracking

We randomly established eight 5-km transects each divided into 1-km replicates (40 total) ≥ 1 km from marked roads. Transects were surveyed once between January-March 2021.



Figure 3. Bobcat, marten and fisher track detections on snow tracking transects

Results

Camera Traps

Cameras yielded identifiable detections of 2 bobcat, 3 fisher and 0 marten, providing insufficient data for planned density estimates.

Snow Tracking

Snow-tracking yielded detections of bobcat, fisher and marten at 5%, 23% and 20% of transect replicates, respectively.

Table 1 Total detections and individually identifiable detections of target species.

Species	Total	Inside Cedar	Outside Cedar	Identifiable
Marten	2	0	2	0
Bobcat	6	6	0	2
Fisher	9	5	4	3
Hare	7	6	1	



Figure 3. Bobcat, marten and fisher track detections on snow tracking transects

Future Direction: 2021-2022 Field Season

- Prioritize snow tracking – surveying transects at least twice.
- Continue Camera Trapping despite low data yield – compare non-invasive monitoring techniques.
- Incorporate snowshoe hare collaring to monitor space use and survival.