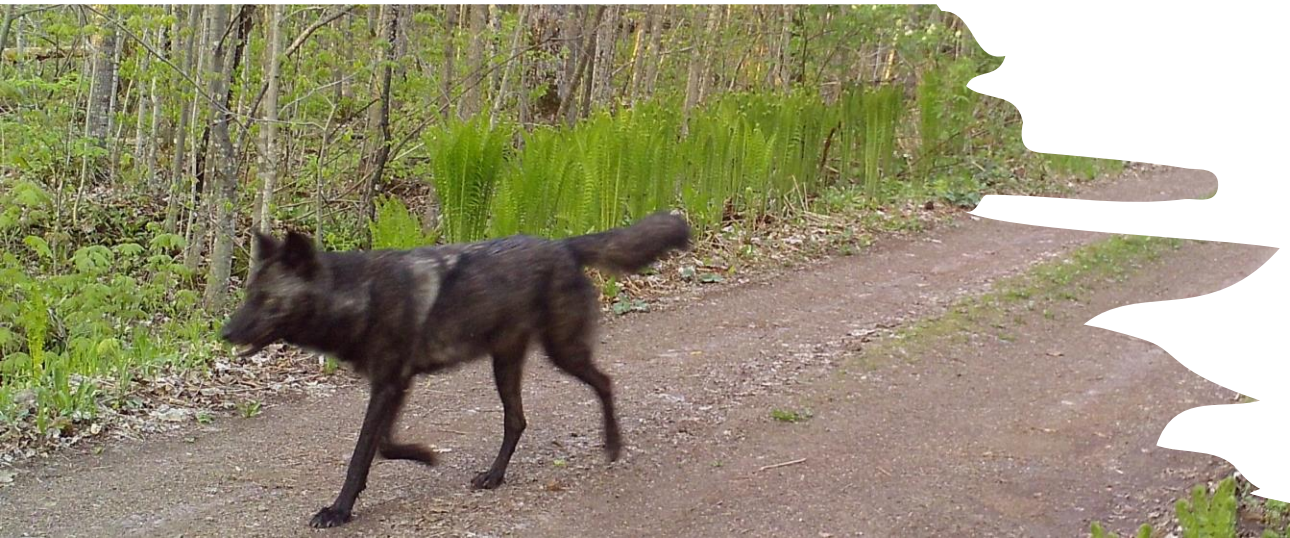


U.P. Wildlife Research Updates

Tyler Petroelje, PhD, Northern Michigan Wildlife Research Specialist,
Michigan Department of Natural Resources, Wildlife Division

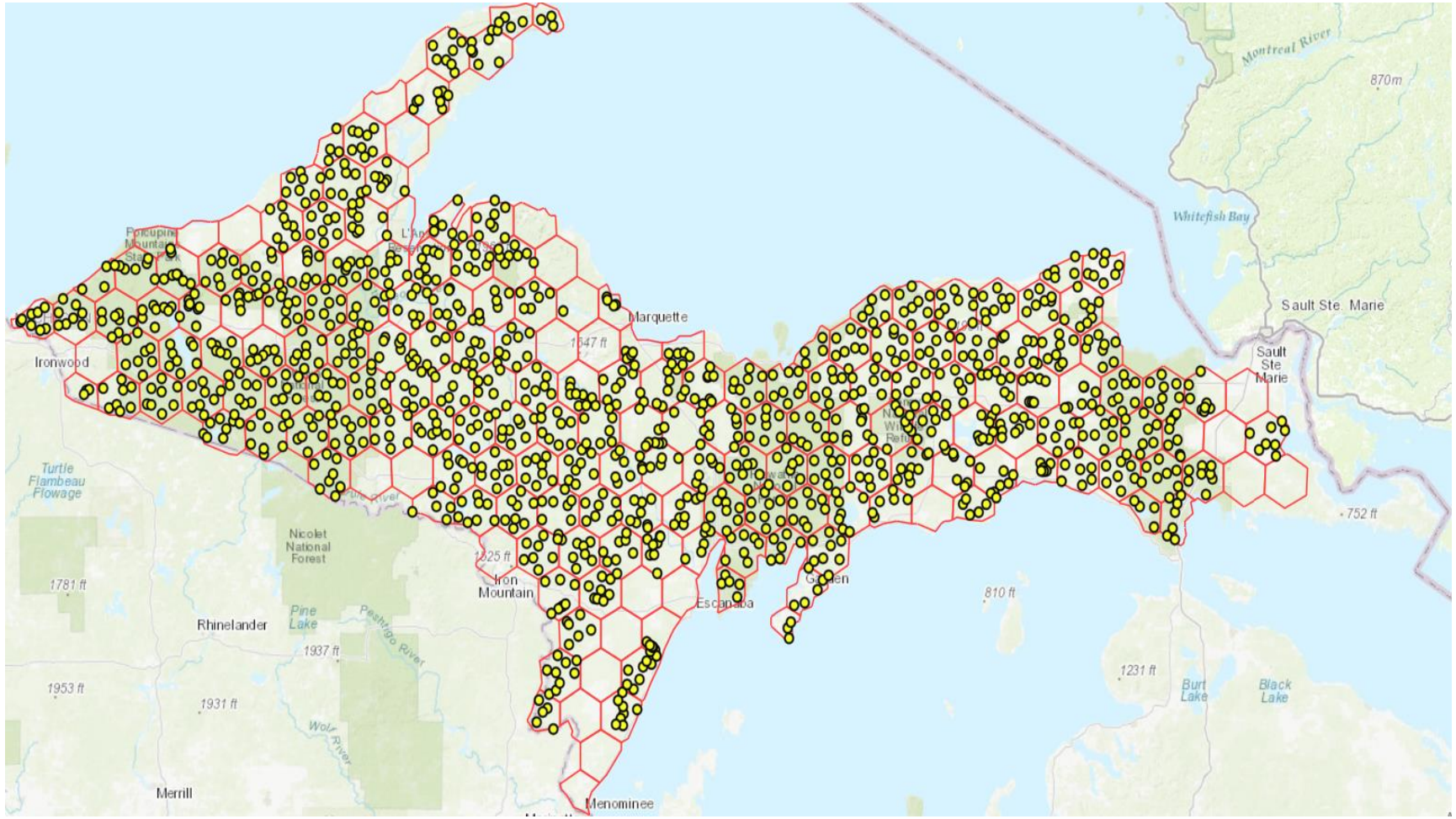
Developing a cost-effective technique to estimate wolf abundance in Michigan

Background/Need for Wolf Abundance Project

- Current minimum count requires significant effort to provide index of abundance
  - As wolf density has increased more time is needed to discern adjacent packs
  - Does not account for imperfect detection
  - Does not provide an abundance estimate with confidence intervals

- Proposed wolf abundance project to research alternatives to estimate wolf abundance (2022-2027)
  1. Increase precision, provide uncertainty
  2. Decrease cost
  3. Compare to minimum count survey

Peninsula-wide deployments

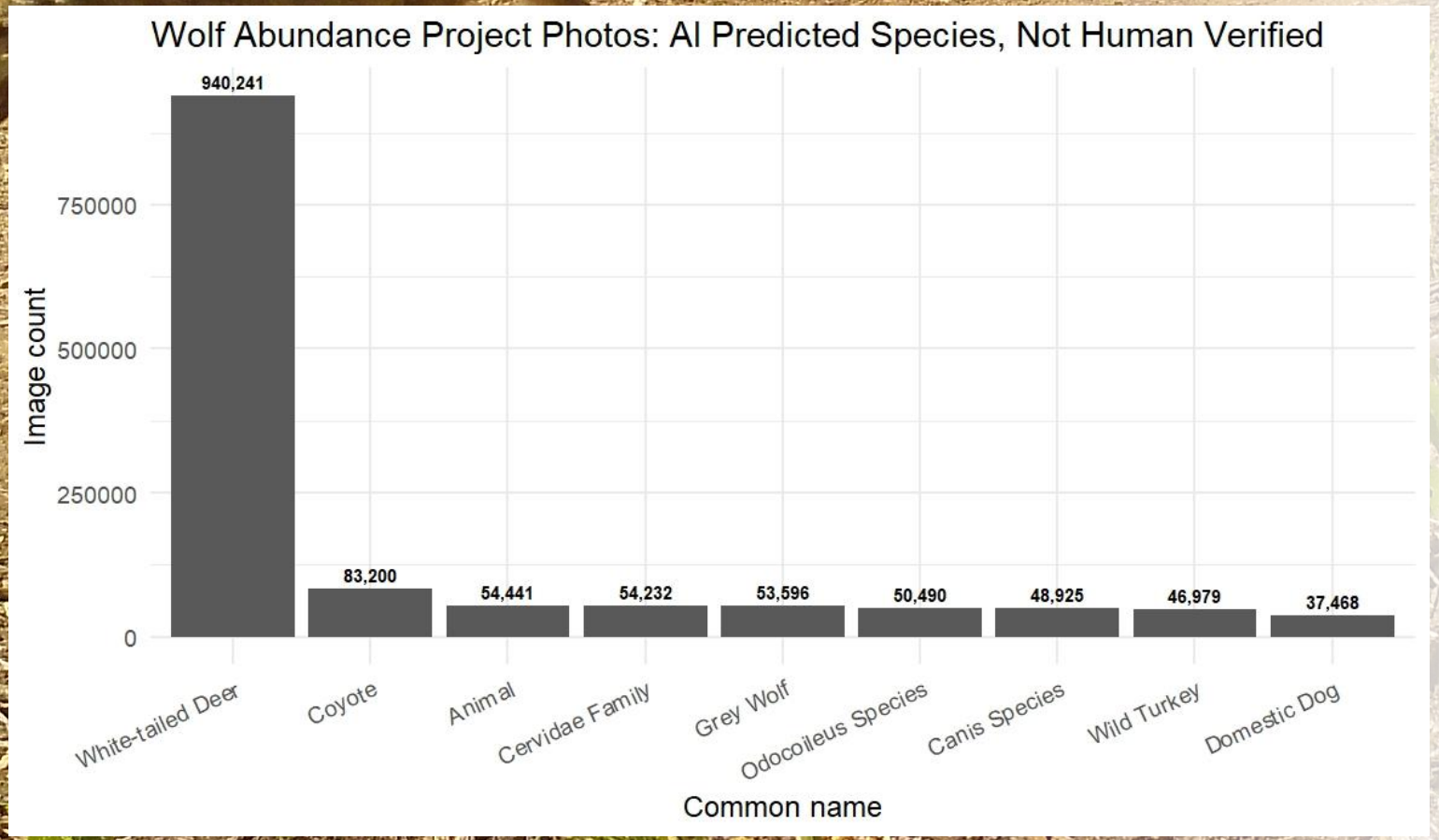


- July-October 2023 to 2024
  - 159 cells with cameras
  - 1,230 cameras deployed
- July-October 2024 to 2025
  - 177 cells with cameras
  - 1,306 cameras deployed
- Finishing data collection from 2nd annual deployment

Camera status

Camera Status	2025 Check	2024 Check
Functioning	78%	75%
Batteries Depleted	11%	7%
Misdirected	2%	3%
Stolen	4%	5%
Intentionally Misdirected	5%	5%
Malfunction	1%	4%
Damaged	1%	1%

Wolf abundance project



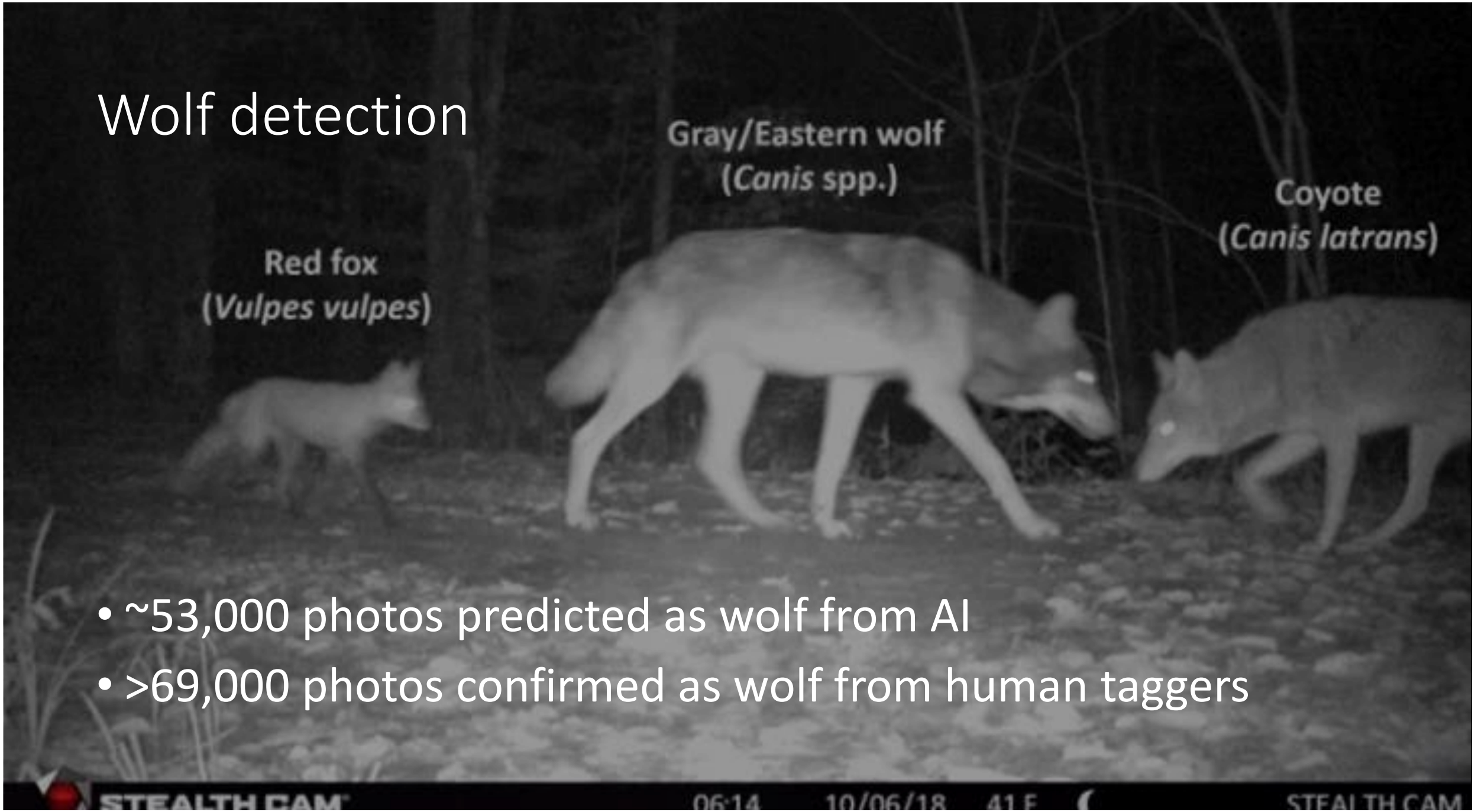
Wildlife by the numbers:

- 1,475,217 wildlife images
- Images of people and vehicles filtered out from review
- Preliminary sorting using Wildlife Insights artificial intelligence
- Actively reviewing photos with human observer to confirm species ID
- First population estimate following human photo review


STEALTH CAM
04:57
09/21/24
10 C
224 3

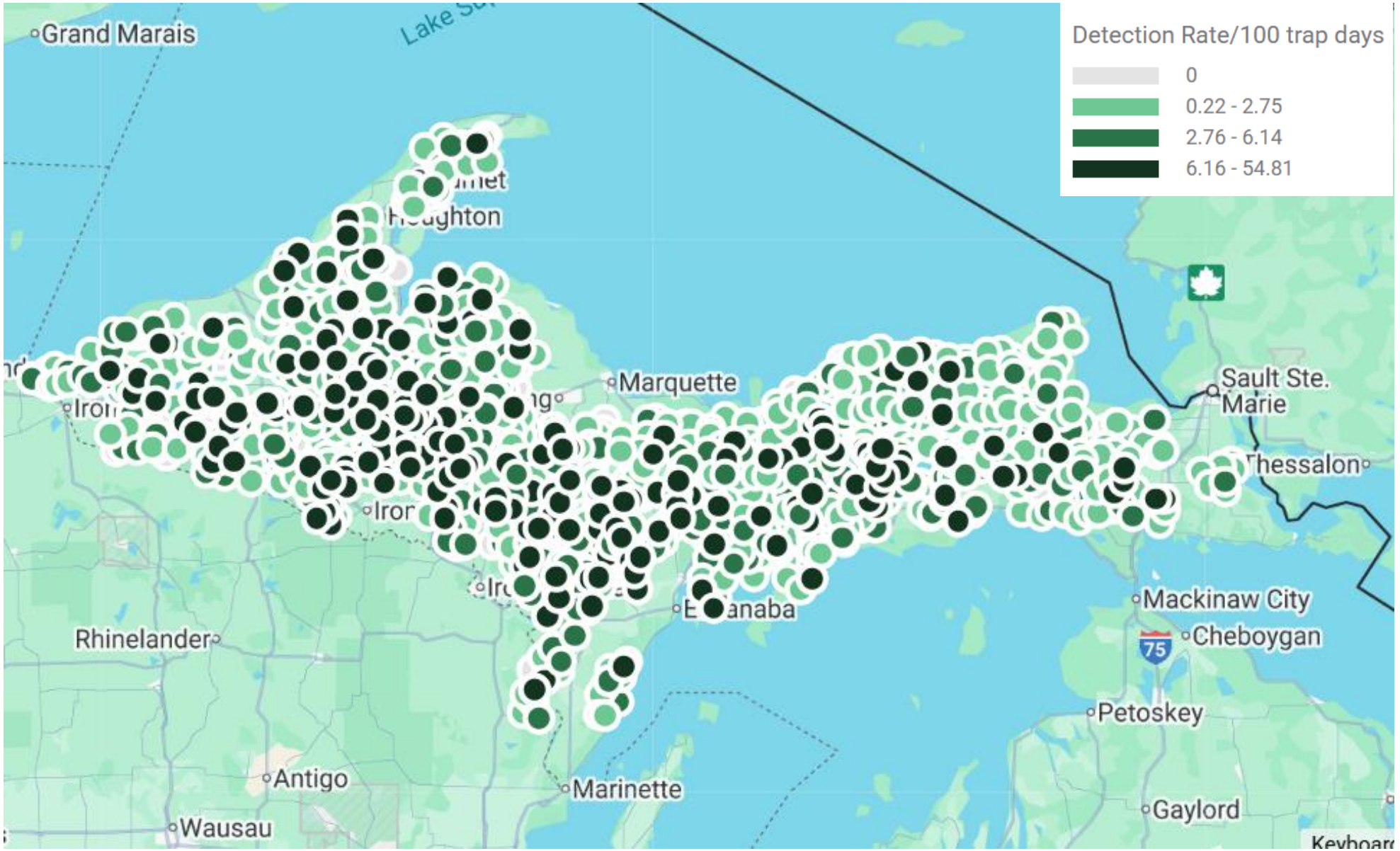

STEALTH CAM
07 : 04
08 / 27 / 24
16C
WLD CAM 134

Wolf detection



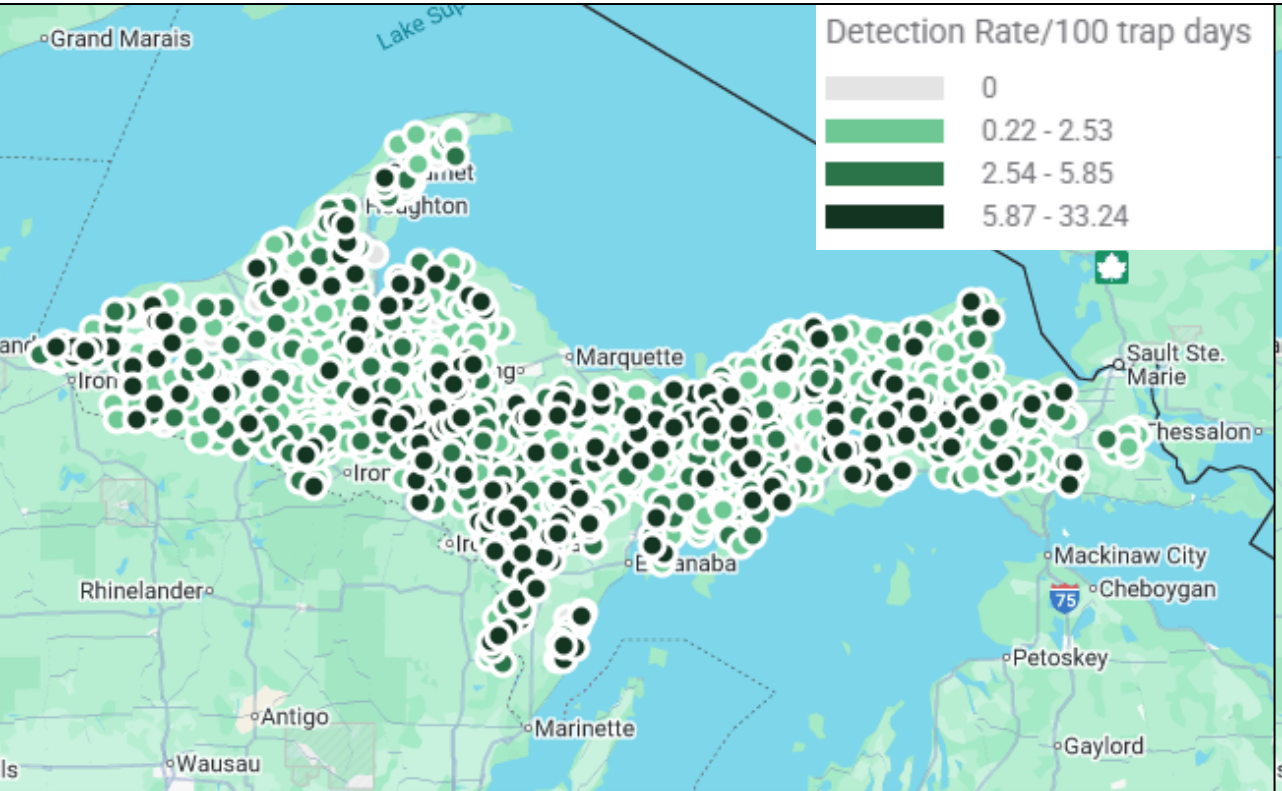
- ~53,000 photos predicted as wolf from AI
- >69,000 photos confirmed as wolf from human taggers

Wolf detection

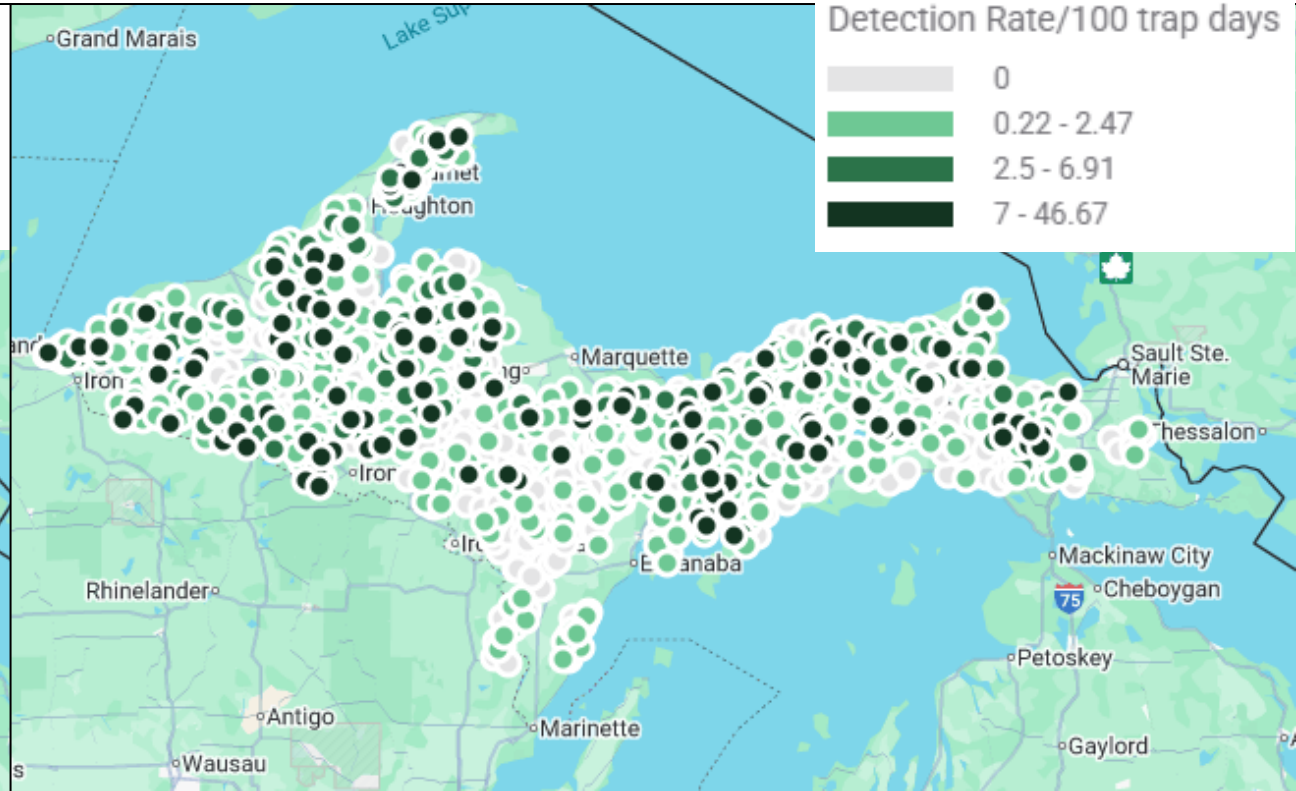


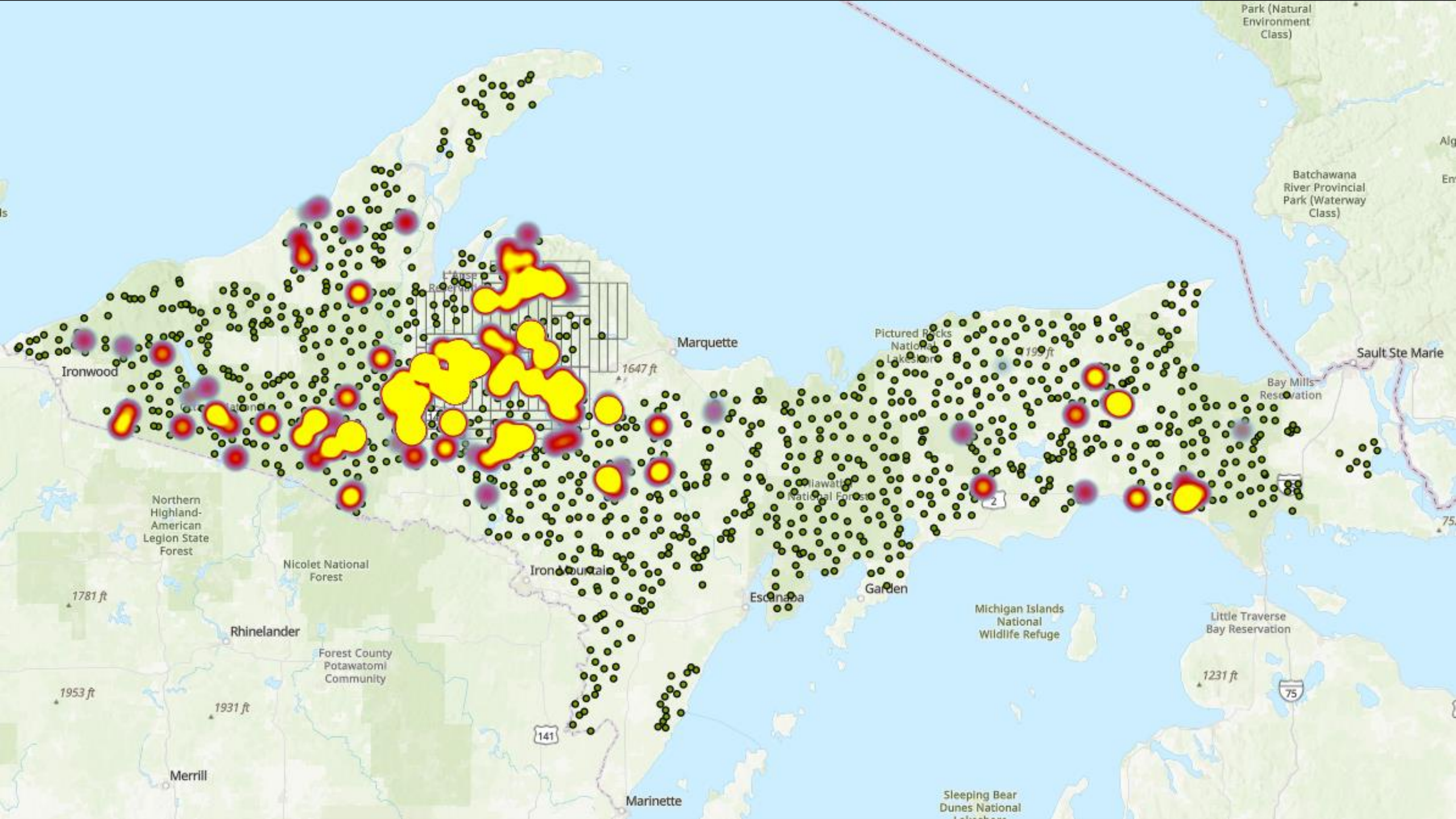
Additional confirmed canid species detection

Coyote



Red fox




Park (Natural Environment Class)
Batchawana River Provincial Park (Waterway Class)
Marquette
Ironwood
1647 ft
Pictured Rocks National Lakeshore
199 ft
Sault Ste Marie
Bay Mills Reservation
Hiawatha National Forest
Northern Highland-American Legion State Forest
Nicolet National Forest
Iron Mountain
Escanaba
Garden
Michigan Islands National Wildlife Refuge
Little Traverse Bay Reservation
1781 ft
Rhinelander
Forest County Potawatomi Community
1953 ft
1931 ft
1231 ft
141
75
Merrill
Marinette
Sleeping Bear Dunes National

Factors limiting moose population growth in the western Upper Peninsula of Michigan

Collaborative Research Objectives

1. Moose capture and GPS collaring
   - Capture adult (bull, cow) and calf moose in January/February 2025, 2026

2. Estimate moose vital rates
   - Survival and cause-specific mortality
   - Pregnancy rates and calf production of adult female moose
   - Emigration and dispersal rates

3. Calf survival monitoring
   - Monthly drone flights

Monitoring: Survival

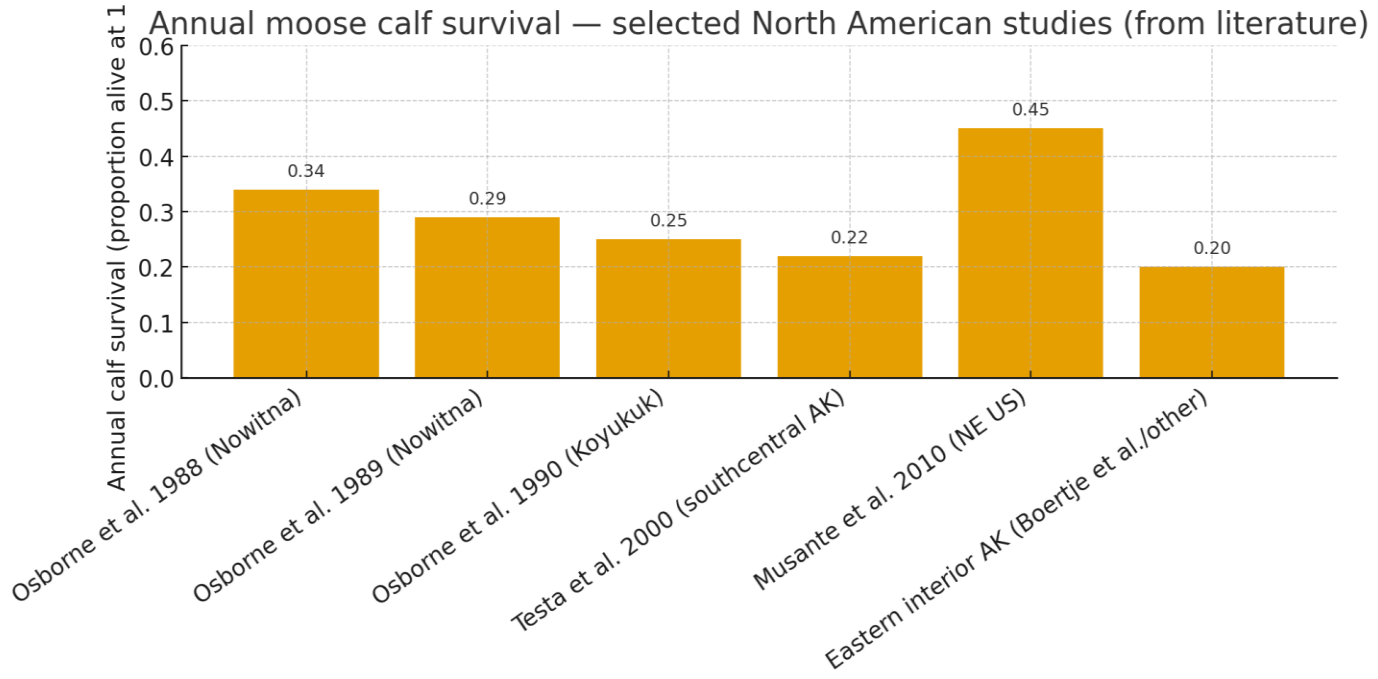
Survival through September:

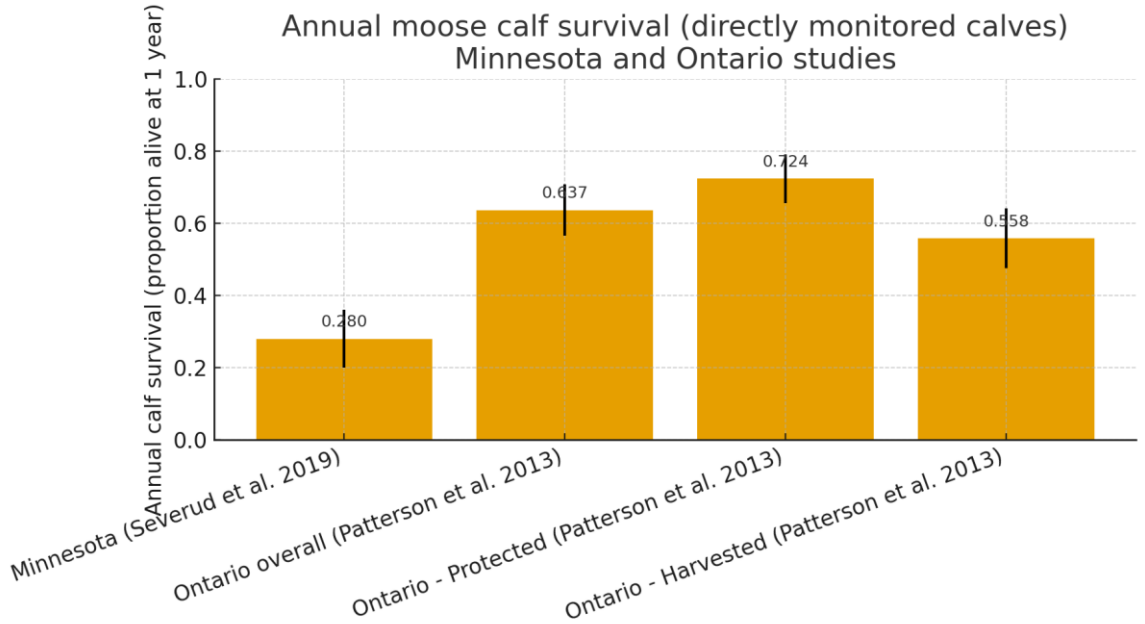
- Monthly drone flights for newborn calves
  - 8 of 11 newborn calves alive
- Daily updates on movements and survival of yearling & adult collared moose
  - 3 of 5 yearling moose (calves collared this winter) alive
  - 9 of 10 adult female moose alive
  - 5 of 5 adult male moose alive

Monitoring: Survival

Early results:

- High calf survival through first 4 months (73% survival)
- Other NA studies:
    - 30-day survival ~61%
    - 1-year survival ~33%.
- Exception:
    - Protected populations in Ontario
- Preliminary data! Be cautious due to small sample size and single year





Next steps

- Continue monthly survival flights for calves of the year
- Drone flights for bulls to estimate age class by antler class
- Preparations for winter captures in February 2026 to capture and collar 40 moose
  - 10 bulls
  - 10 calves (short-yearlings)
  - 20 cows

Quarterly Research Updates

https://www.michigan.gov/dnr/education/michigan-species/mammals/moose/research-updates

Thank you