

Phoenix Rising from the Ashes - Monitoring a new population of the endangered Kirtland’s Warbler in the Parry Sound 033 fire footprint

GEI

Consultants

Peter S. Burke (GEI Consultants), James T. Leslie (GEI Consultants), Dylan Panamick (GEI Consultants)

BACKGROUND

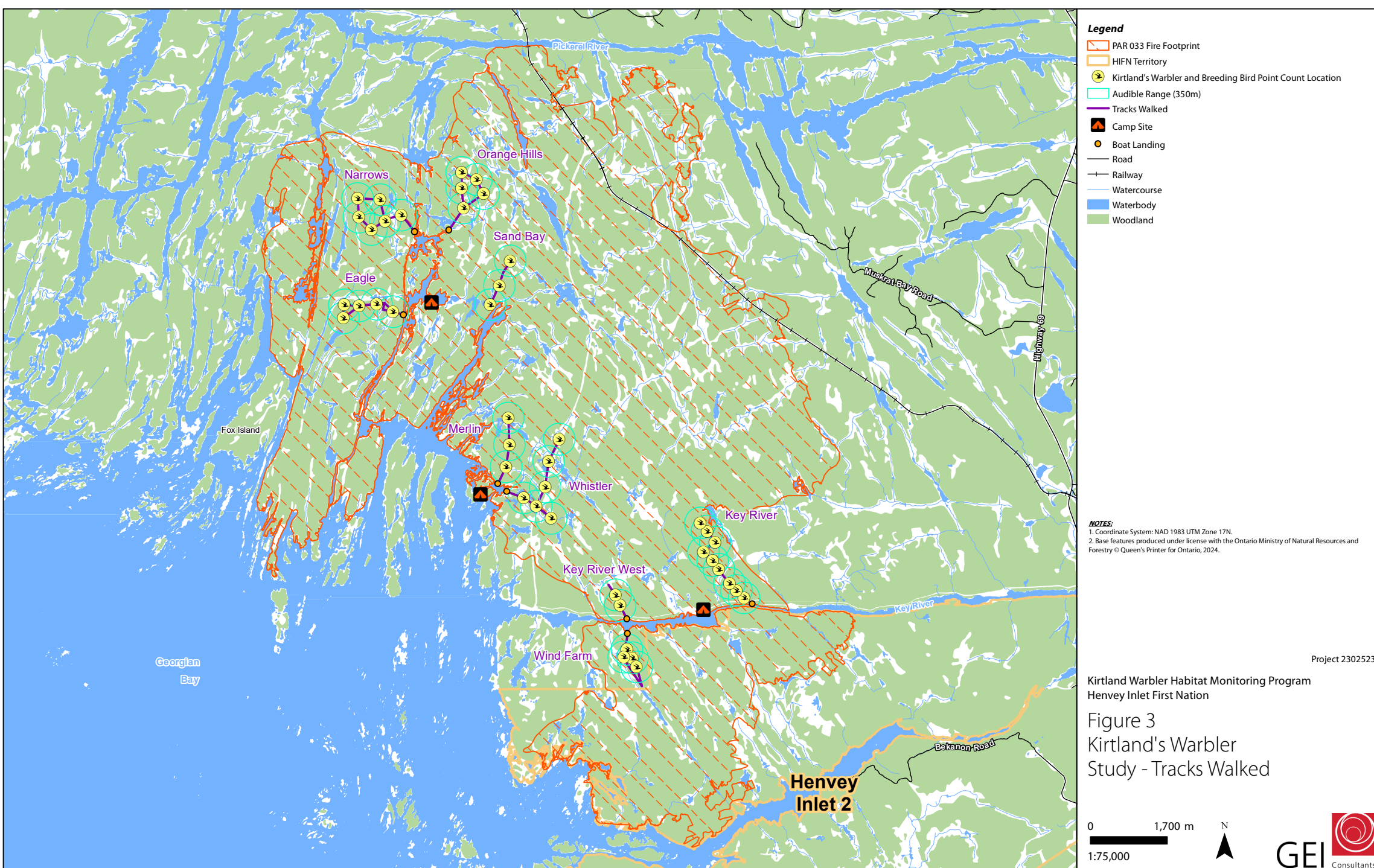
The Parry Sound 033 fire footprint is a 112 km² area straddling Parry Sound and Sudbury districts that was created in July of 2018. The dominant tree species of the rock barrens ecosystem, Jack Pine (*Pinus banksiana*), is reliant on fire to replace itself due to its dependence on heat to open its cones.

SPECIES FOCUS

The Kirtland’s Warbler (*Setophaga kirtlandii*) is a globally endangered songbird tied to large areas of dense, young Jack Pine between 5 and 25 years of age. Only 4000 birds remain, mostly nesting in Michigan, and only two small breeding populations are known from Canada.

SPECIES FOCUS

The map depicts the burn footprint (red) and nine transects surveyed (purple) in 2023 and 2024.



The rock barrens landscape is characterized by the Pre-burn Ecological Land Classification analysis as:

- 94% rock barren
- 21.7% swamp/fen
- 1.9% apen aquatic



We plan to employ machine learning to the combined data of ground measurements and drone imagery and will learn more about what features the warbler is most attracted to in the burn and predict where other likely areas, even if remote, will occur. This will inform future management here and other areas.



OBJECTIVE

Monitoring the burn for the possible colonization of Kirtland’s Warbler and if discovered, assessing its habitat characteristics.



DATA COLLECTION

Point count bird surveys, (marked on the map along the transects).

Vegetation surveys; 1 x 1m (structural diversity); 10 m² plots (opening size, tree height, tree density/ha, species diversity; 15 m² plot (standing snag density/ha).



TECHNOLOGY INTEGRATION

Hyper-spectral analysis; a drone is flown using Light Detection and Ranging (Lidar) pulsing laser light. The Lidar sends the pulse, where it reflects and bounces back to a sensor, interpreting that speed, and informing us about vegetation structure, maturity, and height of the forest and landscape.



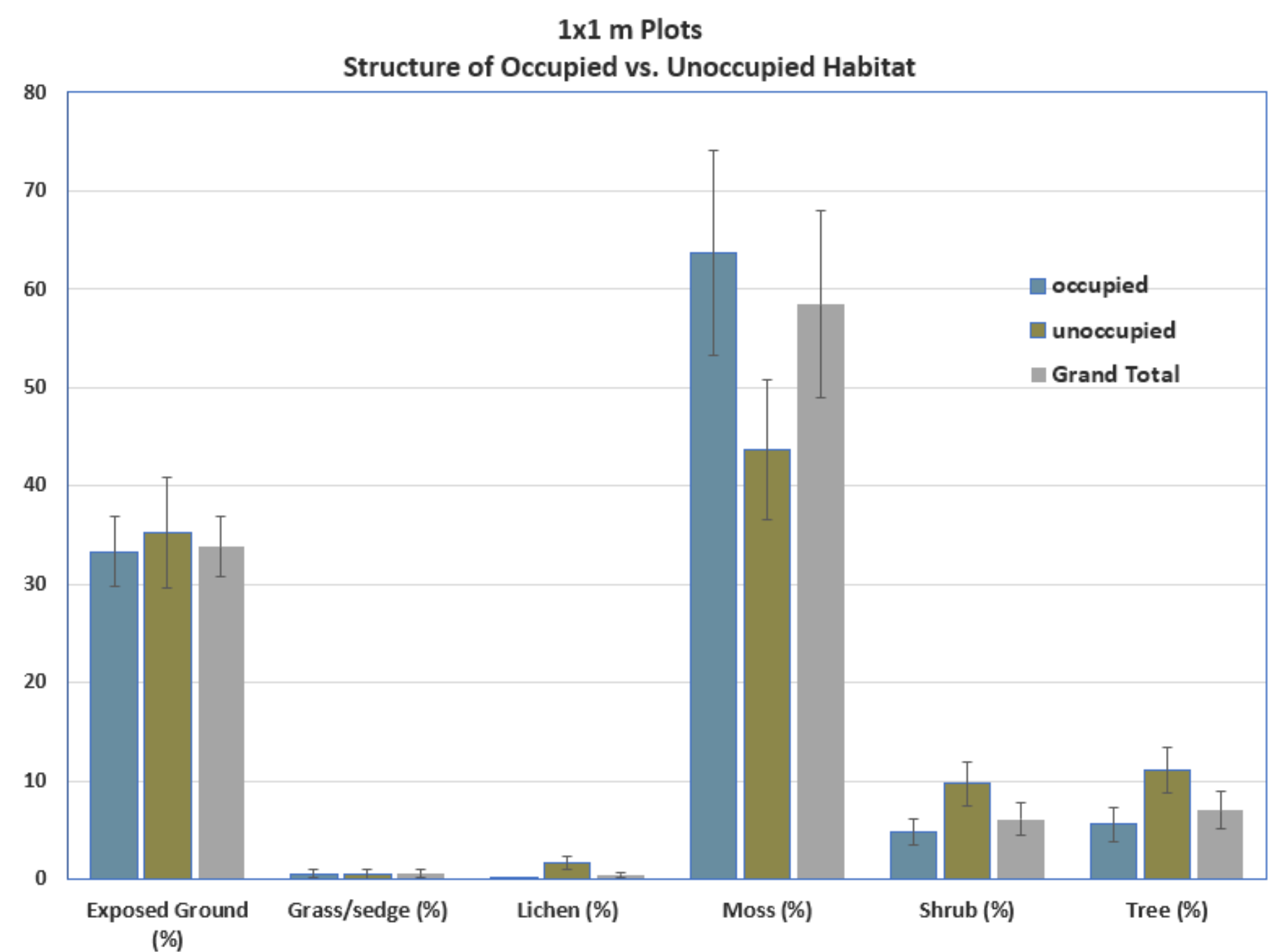
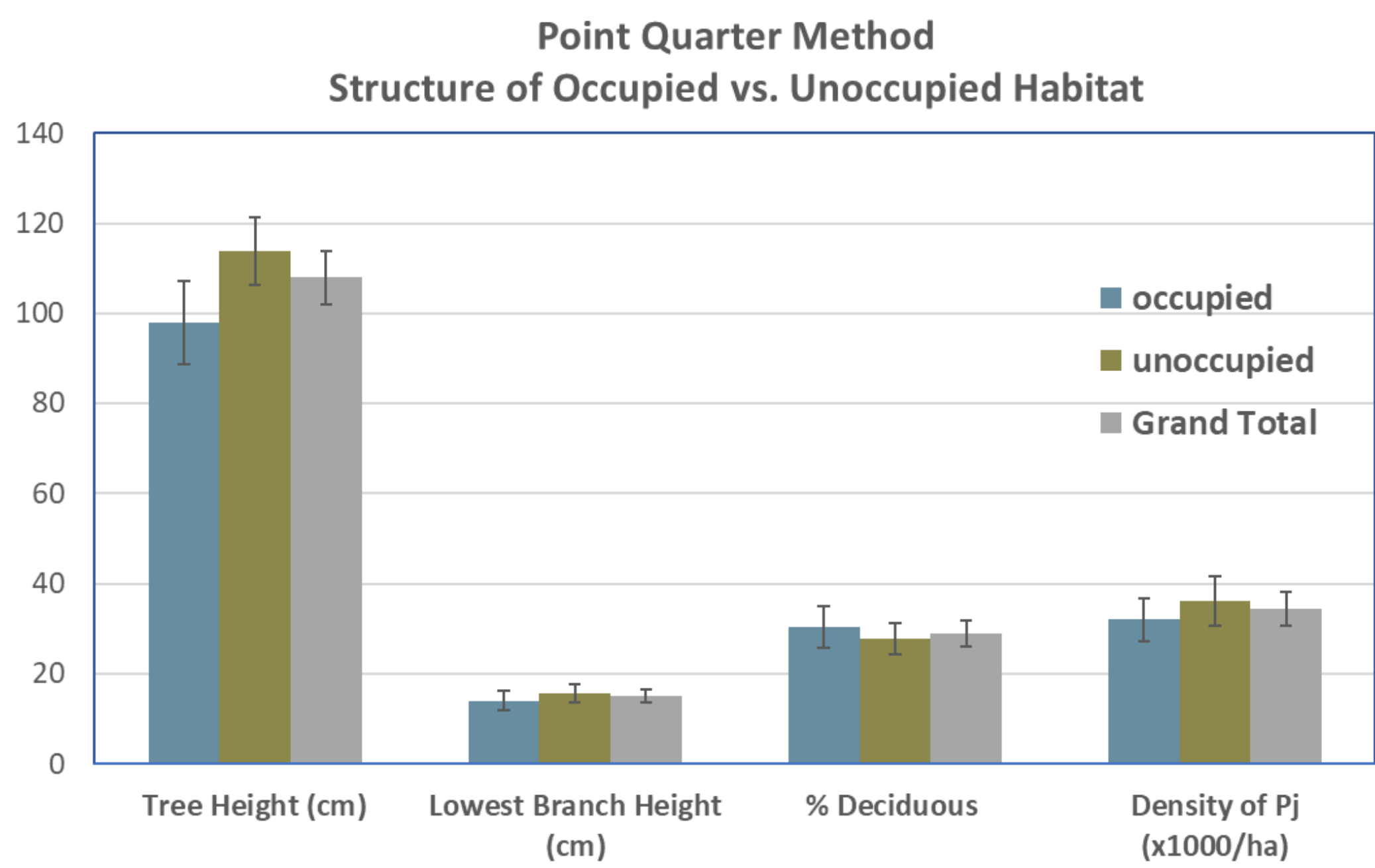
RESULTS AND DISCUSSION

Kirtland’s Warbler Breeding and Habitat Occupation:

- In 2023 we discovered four unmated, young males seeking mates within the burn at two locations.
- In 2024, many of those males returned, with two females, and two nesting pairs were confirmed present.
- French River represents a new breeding habitat for Kirtland’s Warbler as the species has never been documented to use rock barrens.
- Only the third ever nesting site in Canada for an endangered species.



We are characterizing the habitat within Kirtland’s Warblers territories based on tree height, lowest live branch, Jack Pine density, tree diversity, dead snag density, and vegetation structure. Preliminary results show that tree height (p=0.006) and lichen cover (p=0.0016) are significantly lower, and suggest a preference for territories with higher cover of moss (p=0.07) and lower cover of shrubs (p=0.07) compared to random plots, outside of occupied territories. See Point Quarter and 1x1 m plot tables.



CONTACT INFORMATION

PETER BURKE
GEI Consultants Canada Ltd.
pburke@geiconsultants.com

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