

# Opportunity Areas for Expanding Kirtland's Warbler Nesting Habitat in Wisconsin and Upper Peninsula of Michigan

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## The Authors

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## Map Description

The Kirtland's warbler (*Setophaga kirtlandii*) is a long-distance Neotropical migratory bird with narrow suitable nesting habitat conditions consisting of dense, young (3–20 year) jack pine (*Pinus banksiana*) forests growing on nutrient-poor and well-drained soils primarily within northern Lower Michigan. The Kirtland's warbler was officially delisted after more than 50 years of conservation and management activities following initial listing in 1966 under the U.S. Endangered Species Preservation Act (Byelich et al. 1976). However, Kirtland's warbler is considered a conservation-reliant species, meaning their sustained presence on the landscape requires continued management intervention. Expanding their nesting habitat is a key element in continuing conservation actions outlined by the Kirtland's Warbler Conservation Team. To this end, known characteristics of jack pine ecosystems suitable for nesting Kirtland's warblers were used to identify opportunities for expanding their nesting habitat across Wisconsin and Michigan's Upper Peninsula. First, Kirtland's warbler 2000–2018 census locations within the study area were overlaid with LANDFIRE (2014) environmental site potential (ESP) data to identify the categories with greatest historical warbler occupancy. ESP data were used because they provide consistent “wall-to-wall” coverage for the entire study area and focus on potential habitat development rather than existing cover types. The resulting categories were Boreal Jack Pine-Black Spruce Forest, Laurentian-Acadian Northern Pine(-Oak) Forest, and Laurentian Pine-Oak Barrens. The raster cells of the three ESP categories were then combined into a single spatial distribution of potential nesting habitat opportunities. Because Kirtland's warblers are considered area-sensitive, only those areas that were greater than 50 acres were retained. Next, this habitat distribution was defined by overlaying soil data (Soil Survey Staff 2017) to identify areas with excessively-drained dominant component (very sandy) soils. Lastly, land ownership (public and private) was integrated to enhance public-private partnerships for habitat management to create larger nesting habitat complexes that could be maintained in the future on a rotating basis. Sustaining the conservation goal of 200 Kirtland's warbler nesting pairs outside of their core nesting area in northern Lower Michigan will require regenerating adequate amounts of young pine forests on the landscape annually, and public-private partnerships will be a key element towards this goal.

## Suggested Citation

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## Data Sources

Environmental site potential data were obtained from Landfire (LANDFIRE 2014). Soil characteristic data were obtained from SSURGO database (Soil Survey Staff 2017). Land ownership data were obtained from U.S. Geological Survey (USGS) protected areas spatial database (USGS 2018). Basemap layers such as state boundaries were obtained from the Environmental Systems Research Institute (ESRI; Redlands, CA). The geospatial data used to create this map are available for download (Adams and Donner 2021).

## References

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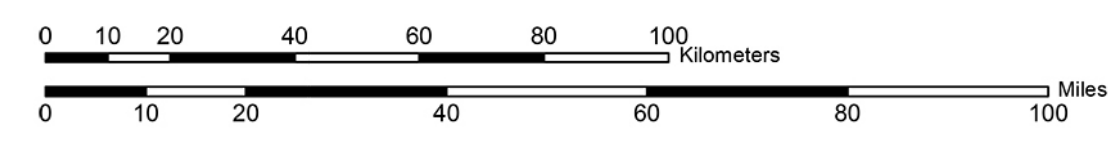
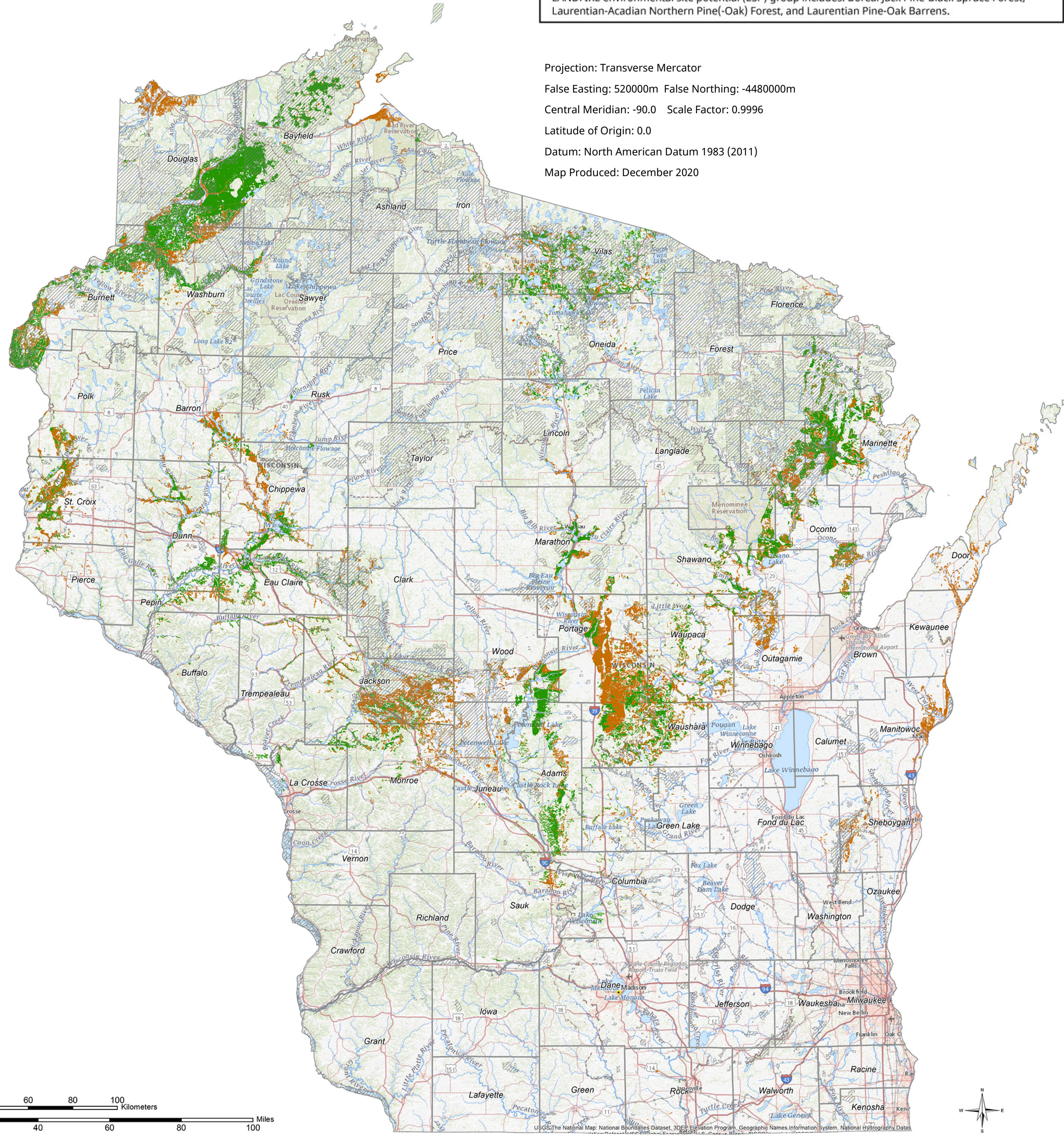
# Wisconsin

**Opportunity Areas for Kirtland's Warbler Potential Nesting Habitat Expansion**

- LANDFIRE ESP group with excessively-drained dominant soil component
- LANDFIRE ESP group without excessively-drained dominant soil component
- Federal/State/Local Government lands with management potential
- County boundaries

LANDFIRE environmental site potential (ESP) group includes: Boreal Jack Pine-Black Spruce Forest, Laurentian-Acadian Northern Pine(-Oak) Forest, and Laurentian Pine-Oak Barrens.

Projection: Transverse Mercator  
False Easting: 520000m False Northing: -4480000m  
Central Meridian: -90.0 Scale Factor: 0.9996  
Latitude of Origin: 0.0  
Datum: North American Datum 1983 (2011)  
Map Produced: December 2020





# Opportunity Areas for Expanding Kirtland's Warbler Nesting Habitat in Wisconsin and Upper Peninsula of Michigan

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# Upper Peninsula of Michigan

**Opportunity Areas for Kirtland's Warbler Potential Nesting Habitat Expansion**

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