

# Shupac Lake Pine Barrens and Dry Sand Prairie Ecological Reference Area (ERA) Management Plan

## Administrative Information

- This plan covers two ERAs on State Forest lands in the vicinity of Shupac Lake:
  - Shupac Lake Pine Barrens
  - Shupac Lake Dry Sand Prairie
- Location within the State Forest:
  - Grayling Forest Management Unit
  - Kirtland's Warbler Management Area
  - Lovells Kirtland's Warbler Management Units 49, 50, 51
  - Compartment 271 (YOE 2020)
  - Stands 3, 6, 22
- Geopolitical location information:
  - Crawford County
  - T28N R01W Sections 7, 8, 17
- Contact Information:
  - Susan Thiel, Grayling FMU Manager, FRD, [thiels1@michigan.gov](mailto:thiels1@michigan.gov), (989) 348-6371x7440
  - Keith Kintigh, Forest Certification and Conservation Specialist, DNR, [kintighk@michigan.gov](mailto:kintighk@michigan.gov), 989-732-3541 x5016
  - Joan Charlebois, Forester, FRD, [charleboisj@michigan.gov](mailto:charleboisj@michigan.gov), (989) 348-6371x7443
- Existing infrastructure and facilities:
  - Highlander Trail, a designated snowmobile trail (LP #47) crosses through the Shupac Lake Pine Barrens ERA.
  - An overhead powerline crosses through the north end of the Shupac Lake Dry Sand Prairie ERA.
  - Buried pipelines border the Prairie ERA's perimeter, serving two adjacent gas well sites.
- Documents related to these ERAs include the Shupac Lake Pine Barrens ERA Management Plan approved in 2008, Shupac Lake Dry Sand Prairie ERA Management Plan approved in 2008, the MDNR Kirtland's Warbler Operational Plan approved in 2016, and Michigan Natural Features Inventory (MNFI) natural community abstracts and element occurrence records.



## Conservation Values

The Shupac Lake ERAs are composed of two natural communities: Pine Barrens and Dry Sand Prairie. Both natural community types have a Global Conservation Status Rank of G3 (vulnerable) and a State Conservation Status Rank of S2 (imperiled).

### Pine Barrens:

Pine Barrens are a coniferous, fire dependent savanna community that occurs on level sandy outwash plains and sandy glacial lake plains in the northern Lower Peninsula and infrequently in the Upper Peninsula. Pine Barrens are found on very strongly to strongly acidic droughty sands with very poor water retaining capacity and low nutrient availability. Pine Barrens are characterized by a scattered overstory of pine (e.g. *Pinus banksiana*) with a grass/sedge dominated ground layer. Canopy cover is typically less than 60%. Frequent fires, drought, growing-season frosts and low-nutrient soils maintain open conditions in pine barrens.

- Shupac Lake Pine Barrens: EO\_ID 15942, BC ranked, Last observed 2006-08-16

This ERA is one of seven pine barrens element occurrences ranked BC or higher within the state. Shupac Lake Barrens are open pine barrens occurring on sandy outwash plain. The soils are characterized as acidic (pH 4.5-6.0) medium-textured loamy sand over coarser sands with abundant pebbles. Jack Pine (*Pinus banksiana*) occurs as scattered trees and in scattered clumps. Low shrubs found throughout the site include low sweet blueberry (*Vaccinium angustifolium*), sand cherry (*Prunus pumila*), and bearberry (*Arctostaphylos uva-ursi*). The low herbaceous vegetation is dominated by grasses including poverty grass (*Danthonia spicata*), little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), hair grass (*Deschampsia flexuosa*), rough fescues (*Festuca scabrella*, state threatened), old field goldenrod (*Solidago nemoralis*), Hill's thistle (*Cirsium hillii*, state special concern), and pale agoseris (*Agoseris glauca*, state threatened).

### Dry Sand Prairie:

Dry sand prairie is a native grassland community dominated by little blue stem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*) and Pennsylvania sedge (*Carex pensylvanica*) that occurs on loamy sands primarily on well drained to excessively well drained, sandy glacial outwash plains and lakebeds. Vegetation is typically short and patchy. Historically, dry sand prairie occurred in association with oak barrens, oak-pine barrens, and pine barrens. Areas dominated by native grasses with less than one mature tree per acre (0.4 ha) are considered prairie.

- Shupac Lake Dry Sand Prairie: EO\_ID 5909, AB-ranked, Last Observed 2006-08-16

This dry sand prairie is a mosaic of prairie and pine barrens that occurs on a flat outwash plain with dark brown loamy sand (pH 4.5-5.0) over reddish brown coarse-textured sand mixed with cobbles and pebbles (pH 5.0-5.5). This site is surrounded by jack pine (*Pinus banksiana*) forests, plantations, and Kirtland's warbler (*Setophaga kirtlandii*, state

endangered) management areas. This dry sand prairie is characterized by a scattered canopy of open-grown jack pine ranging in age up to 40 years and often forming small clumps. The tall shrub layer includes scattered juneberry (*Amelanchier arborea*) and black cherry (*Prunus serotina*). The ground layer is characterized by low species diversity and is dominated by poverty grass (*Danthonia spicata*), little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Pennsylvania sedge (*Carex pennsylvanica*), bearberry (*Arctostaphylos uva-ursi*), and sand cherry (*Prunus pumila*). Rough fescue (*Festuca scabrella*, state threatened), Hill's thistle (*Cirsium hillii*, state special concern), and pale agoseris (*Agoseris glauca*, state threatened) are uncommon throughout the site.

#### High Conservation Value (HCV) Attributes:

The Shupac Lake Pine Barrens and Dry Sand Prairie both occur within the Lovells Kirtland's Warbler Management Unit, a Dedicated Habitat HCVA.

Other values for consideration:

- The ERAs support a rich diversity of invertebrates including numerous species of butterflies, skippers, grasshoppers, and locusts.
- Shupac Lake Pine Barrens and Dry Sand Prairie both have globally imperiled or state endangered or threatened native species (ranked G1, G2 by NatureServe, and S1, S2 by MNFI), state/federally listed or proposed for listing as threatened or endangered (MI and U.S.) and on IUCN Red List.
  - The Kirtland's warbler (*Setophaga kirtlandii*) is a federally listed endangered species and is a legally protected endangered species in the state. It is ranked as rare or uncommon in the state (S3) and globally ranked as imperiled (G1).
  - Prairie or pale agoseris (*Agoseris glauca*) is a clumped perennial that was last observed in 2004. Statewide, it is listed as a threatened, legally protected species while ranked as imperiled (S2). Globally it is ranked as secure (G5)
  - Rough fescue (*Festuca scabrella*) was last observed in 2004. Listed as a state threatened species, rough fescue has Federal status that is uncertain, ranging from imperiled to vulnerable (S2/S3). However, it is globally secure (G5).
- Due to vulnerability, declining trends, disjunct distributions, or endemic status, there are also species of special concern. They are ranked S3 by MNFI.
  - Dusted skipper (*Atryonopsis hianna*), found in the Shupac Lake Pine Barrens, is rare or uncommon in Michigan (S3) has the state status of special concern. The dusted skipper is globally ranked G4/G5 meaning the rank is uncertain, ranging from apparently secure to secure.
  - Hill's thistle (*Cirsium hillii*), last observed 2004, is another species that is rare or uncommon in the state (S3). Globally ranked as G3, the species is either very rare or local throughout its range, or found locally.
- Historically, Pine Barrens and Dry Sand Prairie natural communities occurred in a larger mosaic of fire dependent prairies and savannas. Historic logging, subsequent slash fires, and modern

fire suppression have all impacted the distribution and quality of these natural communities. Present uses at these sites include snowmobile trails, deer hunting, blueberry picking, Kirtland's warbler viewing and gas extraction.

### Threat Assessment

The primary threat to the Shupac Lake Pine Barrens and Shupac Lake Dry Sand Prairie ERAs is tree encroachment resulting from fire suppression or plantation management.

Ground vegetation disturbance from illegal ORV use, utility corridor maintenance, and gas well development are potential threats.

Invasive species are another threat. Two are currently known to occur within the ERAs: Spotted knapweed (*Centaurea stoebe*) and common St. John's Wort (*Hypericum perforatum*).

### Management Goals

Goals and resulting management objectives to achieve those goals for the Shupac Lake Pine Barrens and the Shupac Lake Dry Sand Prairie should address the following issues of importance to the specific site:

- Restore and/or expand the ERA wherever possible.
- Maintain or increase the representation of native plants, indicator species and rare species.
- Allow natural processes to occur.
- Minimize the presence of invasive species.
- Reduce fragmentation.
- Reduce other threats such as encroachment of woody vegetation, ORVs, etc.

### Management Objectives

Objectives will be prioritized and implemented based upon available resources.

- Reintroduce fire to the pine barrens and dry sand prairie for the restoration and maintenance of the natural communities.
- Conduct harvests only if needed to initially reduce the tree cover to levels that can be burned in a controlled manner.
- Identify and prioritize critical areas within the ERA to treat for invasive species.
- Identify and control illegal off-road use.
- Allow blowdown/windthrow, fire, and insect mortality to occur without salvage harvest.
- Assess EO quality every 10-20 years.

## Management Actions

(M-maintenance action, R-restoration action)

- Use periodic prescribed fire to mimic ground fires and maintain the presence of native plant species, reduce invasive plants, and reduce woody encroachment. (M,R)
  - Ideal/range fire return for pine barrens is 5-10 years
  - Ideal/range fire return for dry sand prairie is 1-5 years
- Develop a future schedule for burns to restore and maintain the ERAs. (M,R)
  - To reduce the impacts of management on fire-intolerant species, it will be important to consider a rotating schedule of prescribed burning in which adjacent management units are burned in alternate years.
- Remove invasive plants using appropriate control methods for that particular species (hand-pull, herbicide, prescribed burn) using staff and volunteers. (M,R)
- Work with Fire Protection staff to investigate the application of Minimum Impact Suppression Tactics for ERAs to better utilize wildfire as a management tool. (M,R)
- Avoid the establishment of new fire lines within the ERAs to reduce invasive species encroachment. (M,R)
- Work with local units of government to manage pine barrens and dry sand prairie at a landscape scale. (M,R)
- Limit Off-Road access. Post “No ORV” signs as appropriate. (M)
- Update plan with additional knowledge as it becomes available. (M)

## Monitoring

Unless otherwise specified, monitoring is expected to occur once every 10-year inventory cycle.

- The existing inventory will be updated with new information as the ERA is monitored.
- Work with MNFI to survey sites every 10 years to evaluate the progress of management efforts and determine if the EO ranking has changed.
  - The representation of native plants, indicator species, and rare species will be surveyed to determine changes in abundance.
- Evaluate the degree of fragmentation by surveying for illegal off-road use.
- Evaluate the effects of prescribe burn treatments and varying fire intervals and intensities on rare species.
- Evaluate the effectiveness of invasive species treatments the following growing season and for two successive years thereafter (dependent upon removal method and species).

## Imagery

ERA boundaries are derived from the underlying Natural Community EO boundary which is mapped using NatureServe standards. EO Boundaries are informed by vegetation and other site characteristics including soils, landform, and/or historic aerial imagery. As a result, it is not uncommon for EO/ERA boundaries to differ from forest inventory stand boundaries. If these differences result in potential conflicts with proposed forest activities, consult with the Forest Conservation and Certification Specialist.

Research

<https://mnfi.anr.msu.edu/data/specialanimals.cfm>

<https://mnfi.anr.msu.edu/data/specialplants.cfm>

[https://mnfi.anr.msu.edu/abstracts/ecology/Dry\\_sand\\_prairie.pdf](https://mnfi.anr.msu.edu/abstracts/ecology/Dry_sand_prairie.pdf)

[https://mnfi.anr.msu.edu/abstracts/ecology/Pine\\_barrens.pdf](https://mnfi.anr.msu.edu/abstracts/ecology/Pine_barrens.pdf)

Kost, M.A. 2004. Natural community abstract for dry sand prairie. Michigan Natural Features Inventory, Lansing, MI. 10 pp.

Comer P.J. 1996. Natural community abstract for pine barrens. Michigan Natural Features Inventory, Lansing, MI. 4 pp

Shupac Lake Pine Barrens - ERA Management Plan - Final Approved November 6, 2008

Shupac Lake Dry Sand Prairie - ERA Management Plan- Final Approved November 6, 2008

Michigan DNR Kirtland's Warbler Management Strategy

Approvals

\_\_\_\_\_  
Forest Resources Division                      Date

\_\_\_\_\_  
Wildlife Division    Date

\_\_\_\_\_  
Fisheries Division    Date

\_\_\_\_\_  
Parks And Recreation Division                      Date