

Green Swamp ERA Plan

Rich conifer swamp



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Administrative Information

- Name: Green Swamp Ecological Reference Area, aka Rattlesnake Swamp
- Location:
 - MA: Rattlesnake Hills and Pigeon River
 - FMU: Atlanta and Pigeon River
 - Compartments: 53052, 54020, 54033-54038, 54041-54043
- Geo-political location information:
 - County: Montmorency and Otsego
 - TRS: T30N, R1E, Sec. 2, 3; T31N, R1W, Sec. 25-27; T31N, R1E, Sec. 19, 20, 22-30, 33-36; T31N, R2E, Sec. 18-20, 30
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- Ownership information: The green swamp is mostly owned by the State of Michigan, with multiple private portions.
- Existing infrastructure/facilities: Several county roads, electric lines and gas ROWs cross the green swamp. Also, an abandoned railroad grade crosses the ERA, especially in the east half.
- Other documents related to this ERA: The Green Swamp is part of a larger Eastern Massasauga Managed Lands (EMML) plan.

Conservation Values

- Natural community occurrence for which the ERA is recognized:
 - The Green Swamp ERA is a representative example of the rich conifer swamp natural community. Its EO_ID is 12248, EORANK is B, and LASTOBS was July 10, 2007. Rich conifer swamp is uncommon but not rare. It is potentially at risk over the long term.
 - Rich conifer swamp is a groundwater influenced, or minerotrophic, forested wetland that is dominated by northern white cedar (*Thuja occidentalis*) and occurs on organic soils (e.g., peat and muck). The community is often referred to as cedar swamp.
 - The Green Swamp or Rattlesnake Swamp is an extensive rich conifer swamp that occupies a branched outwash channel associated with several streams. The swamp is surrounded by glacial moraines and kames that rise dramatically from the wetland basin. The swamp slopes down gently from the uplands towards the streams and is situated on deep circumneutral to alkaline peat that is typically greater than a meter in depth. The entire area appears to have been cut circa 1920s. The swamp is characterized by high ground cover diversity associated with the heterogeneous microtopography of the moss-covered hummocks and hollows. In addition to fine-scale gradients in soil moisture and soil chemistry, there are also large-scale gradients in these factors depending on proximity to streams and upland margins. Coarse woody debris of all decomposition classes is abundant. Portions of the wetland complex include pockets of northern shrub thicket, northern wet meadow, and northern fen.
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- High Conservation Value (HCV) attributes:

- The Green Swamp ERA is part of a **large landscape level forest** within the Pigeon River and Rattlesnake Hills Management Areas, which together prove over 136,000 acres of contiguous landscape level forest.
- This ERA includes **attributes of regional (Great Lakes) importance**, including:
 - Two blocks of contiguous forest >500 acres that have rare species. Two rare plants have been documented within the rich conifer swamp: ram's head lady's-slipper (*Cypripedium arietinum*, state special concern) and limestone oak fern (*Gymnocarpium robertianum*, state threatened). In addition, eastern massasaugas (*Sistrurus c. catenatus*, is federally listed as threatened).
 - Inholdings of northern fen have been identified.
- ERA includes two **roadless areas** of 3282 acres and 653 acres.
- Other Values:
 - Archaeological/cultural: Stevens Camp was a logging camp on an island within the Green Swamp. It was here that timber was loaded onto railroad cars on the B.C.G.&A. R.R.
 - Recreation: Trout fishing on East Branch of Black River
 - Eastern Massasauga Rattlesnake CCAA,
 - Cold water stream corridor along Rattlesnake Creek and the East Branch of the Black River.

Threats Assessment

- Loss of rich conifer swamp forest on private land within this ERA. This has been minimal so far, in part do to state ownership of most of the land in the ERA.
- Loss of surrounding upland forest--high quality upland communities such as mesic northern forest, dry-mesic northern forest, and dry northern forest--which feeds water into rich conifer swamp. This diminishes the flow of mineral rich water to this minerotrophic forest community. The surrounding forest is currently intact and productive but could face long term threats due to climate change.
- Logging in a rich conifer swamp typically results in conversion to a different community type. For example, several wintertime deer cedar cuts have regenerated as lowland hardwood or lowland aspen.
- Roads and old RR grades which lack proper cross drainage disrupt the hydrology, causing one side to flood which the other side dries out. Changes in water lever, whether too high or low, results in conversion to a different forest community. This is seen dramatically along the B.C.G.&A. grade in the east part of the ERA.
- Excessive numbers of deer result in limited cedar recruitment. Typically, little northern white cedar is seen in the understory. This situation may improve in the future as more windthrow occurs. It is expected that most regeneration will result from layering of

branches and roots in windthrown trees. Seedlings may establish in root balls or on decomposing logs.

- Invasive species threaten the ecological integrity of rich conifer swamps and adjacent natural communities. This includes glossy buckthorn (*Rhamnus frangula*), purple loosestrife (*Lythrum salicaria*), narrow-leaved cattail (*Typha angustifolia*), hybrid cattail (*Typha xglauca*), reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), and European marsh thistle (*Cirsium palustre*).

Management Goals

- Invasive Species: monitor and, ideally, eliminate invasive species if they appear.
- Ensure that the ERA maintains representation of native plants, indicator species, and rare species.
- Prevent further fragmentation.
- Reduce other threats (alteration of hydrology, ORV use, conflicting land uses, etc.)
- Allow cedar to regenerate naturally through layering and seedling recruitment.
- Allow natural processes to occur.

Management Objectives

- Continue to block/eliminate illegal ORV access points.
- Identify critical areas within the ERA to monitor and treat for invasive species. Prioritize areas where vehicles or horses access the ERA.
- Continue to deny permission for construction of access/easements into the ERA.
- Allow blowdown/windthrow and insect mortality to occur without salvage harvest.
- Determine where impacts to hydrological system are occurring.
- Within each compartment having a portion of the Green Swamp ERA, assess forest regeneration and health during re-inventory. This will focus on areas of windthrow.
- Work with adaptation specialist to determine threats associated with climate change.

Management Actions

(M= Maintenance action, R= Restoration action)

- Monitor for invasive species at high probability sites such as the B.C.G.&A., Co. Rd. 622, Huff Road, Meridian Line Road, et cetera. Complete by 10/01/2022. (M, R)
- Remove invasive plants using appropriate control methods for that particular species (e.g., hand-pull, herbicide, Rx.) Within one year of discovery. (M, R)
- Give priority to land acquisition to further block in ownership. (R)
- Close trails used by horses and ORVs. Complete by 10/01/2022. (M, R)
- Install culverts along B.C.G.&A. grade to restore natural hydrological flow. (R)

- Retain an intact 100-foot buffer of natural vegetation surrounding the ERA to reduce the threat of negative hydrologic impacts, windthrow in the ERA, and to discourage deer feeding on edge of ERA.
- In all inventory cycles, minimize clearcuts near the ERA due to existing significant deer browse pressure, and excessive windthrow. This can be accomplished by letting stands reach their full rotation age before harvest.
- Update plan with additional knowledge as it becomes available. (M)

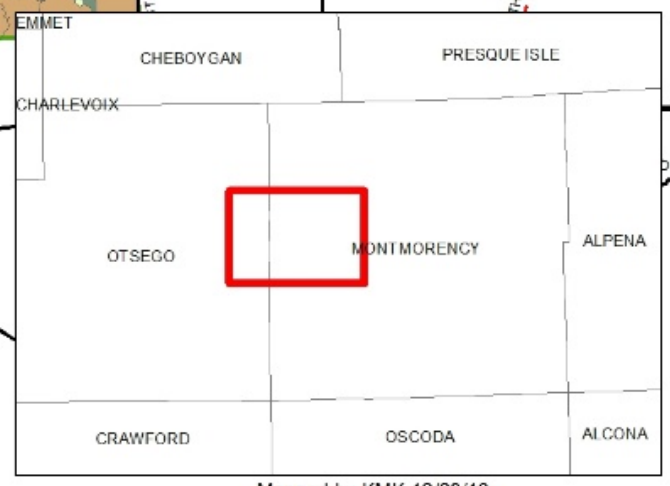
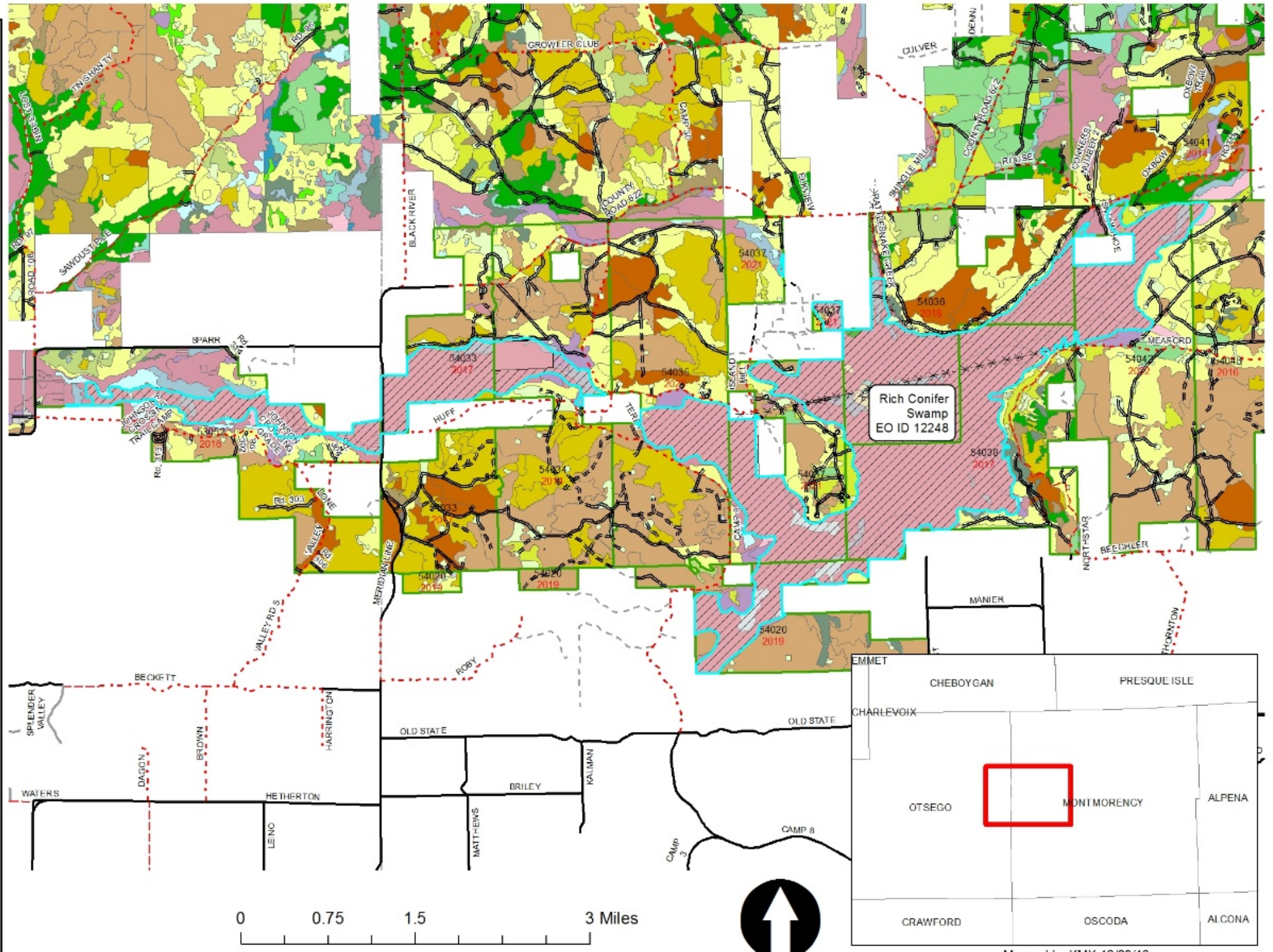
Monitoring

- Unless otherwise specified, monitoring is expected to occur once every 10-year cycle.
- Representative and rare species- species occurrences. Resurvey Green Swamp in 2029.
- Eastern Massasauga Rattlesnake. As required under EMR CCAA.
- Populations of invasive species- number and scope by species
- Change in EO rank. Current rank is B. Resurvey Green Swamp in 2029
- Evaluate the effects of invasive species treatment- growing year post treatment and for two successive years thereafter (dependent upon removal method and species.) To be checked annually by AmeriCorps member.
- Illegal ORV activity - Number of new instances and number of citations issued.

Imagery

Legend

- DNR - Secondary Forest Road
- === DNR - Forest Access Route
- Federal / State Highway
- Federal / State / County - Paved Road
- - - Federal / State - Dirt / Gravel Road
- . - . County - Gravel Road
- - - County - Dirt Road (Seasonal)
- Private - Paved Road
- - - Private - Dirt / Gravel Road
- * * * Abandoned Railroads
- AtI035_ERA_compartments
- ▨ Ecological Reference Area - In-Scope
- Ecological Reference Areas
- - - County
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 423 - Other Upland Conifers
- 429 - Mixed Upland Conifers
- 430 - Upland Mixed Fores
- 611 - Lowland Deciduous Forest
- 612 - Lowland Coniferous Forest
- 613 - Lowland Mixed Forest
- 110 - Low Intensity Urban
- 122 - Roads/Parking Lot
- 211 - Cropland
- 310 - Herbaceous Openland
- 320 - Upland Shrub
- 330 - Low Density Trees
- 500 - Water
- 622 - Lowland Shrub
- 623 - Emergent Wetland
- 629 - Mixed Non-forested Wetland
- 710 - Sand/Soil
- 790 - Other Bare/Sparsely Vegetated



Mapped by KMK 12/28/16

Sources

- Kost, M.A. 2002. Natural community abstract for rich conifer swamp. Michigan Natural Features Inventory, Lansing, MI. 10 pp.
- Kintigh, K. Natural Community Management Guidance Rich Conifer Swamp, Michigan Department of Natural Resources, Lansing, MI.
- Cohen, J. G.; B. S. Slaughter and M. A. Kost. 2008. Natural community surveys of potential ecological reference areas on state forest lands. Michigan Natural Features Inventory Report Number 2008-04. Lansing, MI, p. 206.