

# Grand Lake Limestone Bedrock Glade ERA Plan

## Administrative Information:

- Location:
  - Atlanta Forest Management Unit, Alpena Lake Plain Management Area, compartments 140 and 141
  - Alpena County, T34N R07E, Sections 33 and 34
- Contact information:
  - Darrick Coy, Forester, Atlanta Forest Management Unit
- State of Michigan owned lands
- Existing infrastructure/facilities: Powerline
- Other documents related to this ERA: See References

## Conservation Values

Describe the natural community occurrence for which the ERA is recognized:

- Limestone Bedrock Glade, EO\_ID 6511, EO RANK S2, last observed 9/19/2006 (2)
- ERA designation is for a rare natural community (State- S2 & Global- G2G4) (1)
- Limestone Bedrock glade is a patchy herb and graminoid (grass) dominated plant community containing scattered stunted shrubs and trees growing on rather thin soil over limestone or dolomite. Tree cover is usually 10 to 25%, but it can be as high as 60%. The cover for herbs and shrubs is irregular, commonly exposing patches of bedrock. On rock surfaces or thin organic soil, algae, mosses, and lichens are commonly found. The short rooting depth, poor nutrient availability, summer drought, and seasonal flooding all contribute to creating and maintaining semi-open growing conditions. More information can be found in the MNFI abstract: ([http://mnfi.anr.msu.edu/abstracts/ecology/Limestone\\_bedrock\\_glade.pdf](http://mnfi.anr.msu.edu/abstracts/ecology/Limestone_bedrock_glade.pdf)) (1)
- Limestone bedrock glade occurs in the Upper Peninsula near Lake Huron and Michigan shorelines. It also occurs in the Northern Lower Peninsula, along the Lake Huron shoreline near Rogers City, Alpena, and Thompson's Harbor. Most Limestone Bedrock Glade occurs on relatively flat terrain with a gradual slope to the south. It's often adjacent to more limestone rich communities such as limestone cobble shore, limestone bedrock lakeshore, and alvar. Bedrock Glade ranges in size from small to large patches (5 to 392 acres). (1)

- Description from the Element Occurrence Record (excerpted from Cohen, 2008):  
This small limestone bedrock glade occurs in a complex with other natural communities found on limestone bedrock including rich conifer swamp, northern wet meadow, northern shrub thicket, and boreal forest dominated by northern white-cedar, white spruce, and balsam fir. The glade occurs on a gentle northeast facing slope with thin (4-10 cm) loamy, alkaline (pH 7.5-8.0) soils mixed with dolomite cobble. The bedrock is broken with the north facing slope having been mostly formed by buried talus. (2)

The glade is characterized by a scattered canopy and subcanopy with northern white cedar (20-37 cm DBH) dominating the canopy (30-60%) and cedar, balsam fir, and white spruce (12-17 cm DBH) dominating the subcanopy with associates including paper birch, quaking aspen, jack pine, and sugar maple. The open shrub layer includes soapberry, alder-leaved buckthorn, red-osier dogwood, round-leaved dogwood, serviceberry, downy arrow-wood, and common juniper. The ground layer is dense with ebony sedge, poverty grass, dwarf lake iris (state threatened), bearberry, old-field goldenrod, large-leaved aster, arrow-leaved aster, Canada mayflower, and wild rose. (2)

The most recent survey was conducted on 9/19/06 and only a small area of high quality glade was recognized, significantly reducing the previous designation of over ~900 acres to 105 acres. (2) An additional survey is to occur at a future date to get a better idea of the location(s) and amount of bedrock glade present.

- Other High Conservation Values Present: None.
- Other Values for Consideration:
  - Other priority species- Cooper's Milk Vetch, Dwarf Lake Iris, Grizzled Zipper, and Calypso or Fairy-Slipper.
  - Recreation- No designated recreational trails exist, only a few two-tracks and illegal ORV trails. There is local use for hunting throughout and fishing north of the glade within the Grand Lake pike marsh. Any illegal or unnecessary access routes should be identified and closed.
  - Timber products- Surrounding forested areas may be considered for harvest if they do not affect the integrity of the designated bedrock glade areas. Harvesting within the bedrock glade degrades the community, so it should not be allowed. An unmanaged buffer zone to the glade should be determined through consulting with ERA planners and MNFI collaborators before conducting any harvesting activities.
  - Archeological- Some sites exist. Contact the state historical preservation office for more information.

### Threats Assessment (2)

Threats listed below disturb the bedrock glade and provide pathways for the introduction or spread of invasive plant species degrading the quality of the natural community.

- Primary threats to the community include:
  - Invasive species- Barberry and other potential invasive species. The number and extent of invasive species present is still relatively unknown until an additional site visit/survey is completed.
- Other potential recurring and long-term threats include:
  - Overgrazing from deer, powerline maintenance activities, alteration of hydrology from road construction, maintenance of existing roads, motorized off-road vehicle use, and dumping of waste materials.

### Management Goals, Objectives, and Actions (2)

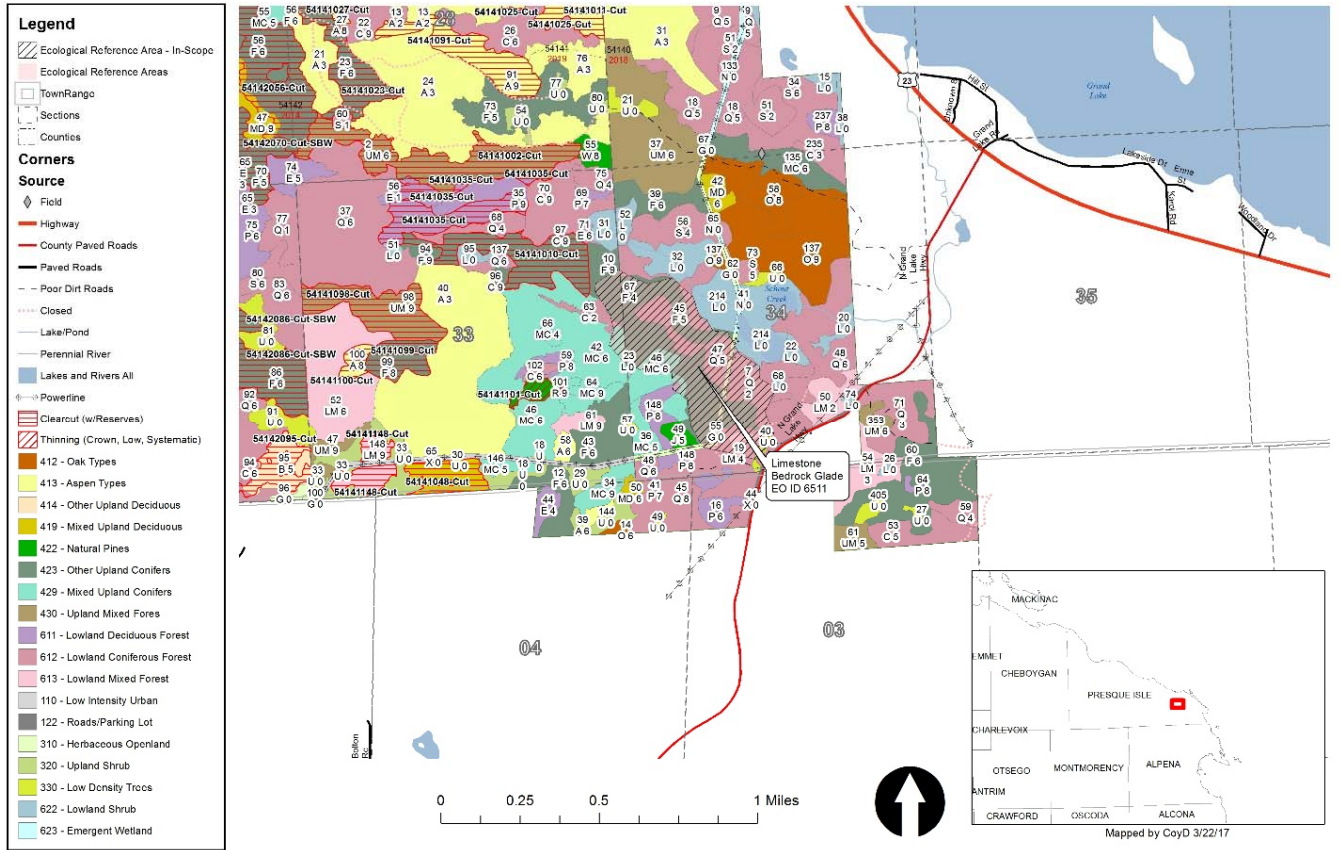
- Goal 1: Maintain the natural community and improve its quality over time.
  - Objective 1: Recognize the full extent of the community surrounding the known ERA boundary as time and budgets allow or within 10 years.
    - Action 1: Request (contract with) MNFI to verify the boundaries of the high quality natural community that extends beyond the known boundary of the glade.
    - Action 2: Incorporate information from MNFI surveys into the SCA/HCVA/ERA GIS layer for use in management decision making.
- Goal 2: Encourage conditions appropriate for viable populations of verified listed species.
  - Objective 1: Confirm the presence and condition of the eastern Massassauga rattlesnake, grizzled zipper, coopers milk vetch, fairy slipper, and dwarf lake iris as time and budgets allow or within 10 years.
    - Action 1: Contract MNFI to conduct a site visit/survey.
    - Action 2: Develop and implement plans for management, as needed to maintain or increase numbers.
- Goal 3: Eliminate or limit the extent of invasive plant species within the Grand Lake Glade.
  - Objective 1: Confirm the presence and condition of invasive plants as time and budgets allow or within 10 years.
    - Action 1: Contract MNFI to survey for invasive plants- specifically barberry (*Berberis vulgaris*).
    - Action 2: Develop and implement plans for management, as needed.

- Goal 4: Control and restore damage from erosion, rutting, trash dumping, and soil compaction.
  - Objective 1: Discourage/control illegal ORV use within the ERA as time and budgets allow or within 10 years.
    - Action 1: Locate and block any illegal access to Grand Lake Glade from existing trails and roads that may exist.
    - Action 2: Complete resource damage reports and seek funding to restore damage to the ERA that may exist.
    - Action 3: Monitor the ERA for continued damage.
    - Action 4: Coordinate management and restoration with transmission line leases and block access on those lines to unauthorized vehicles.
  - Objective 2: Restore rutting on ERA because of historical logging as time and budgets allow or within 10 years.
    - Action 1: Continue to allow formerly harvested areas to regenerate naturally.
    - Action 2: Continue to allow ruts to heal in over time through natural processes.
    - Action 3: In any harvest operations, include specifications to minimize rut damage.
  - Objective 3: Limit and discourage trash dumping within the ERA as time and budgets allow or within 10 years.
    - Establish relationships with local volunteer groups to assist in removal of any trash found.
  - Objective 4: Minimize impacts from any fire suppression and other management activities as they occur.
    - Action 1: As appropriate for public safety, utilize minimum impact suppression techniques in response to wildfires.
- Goal 5: Determine sufficient level of protection for this ERA based on priorities within the Statewide Biodiversity Planning Process and Ecoregional Development.
  - Objective 1: Determine appropriate management on state lands in areas surrounding the ERA as time and budgets allow or within 10 years.
    - Action 1: Use the compartment review process and contracts within MNFI as listed above to identify and manage Special Concern Areas (SCA) outside of the ERA.
    - Action 2: Consider ERA management when determining appropriate level of development for mineral leasing.

Monitoring (2)

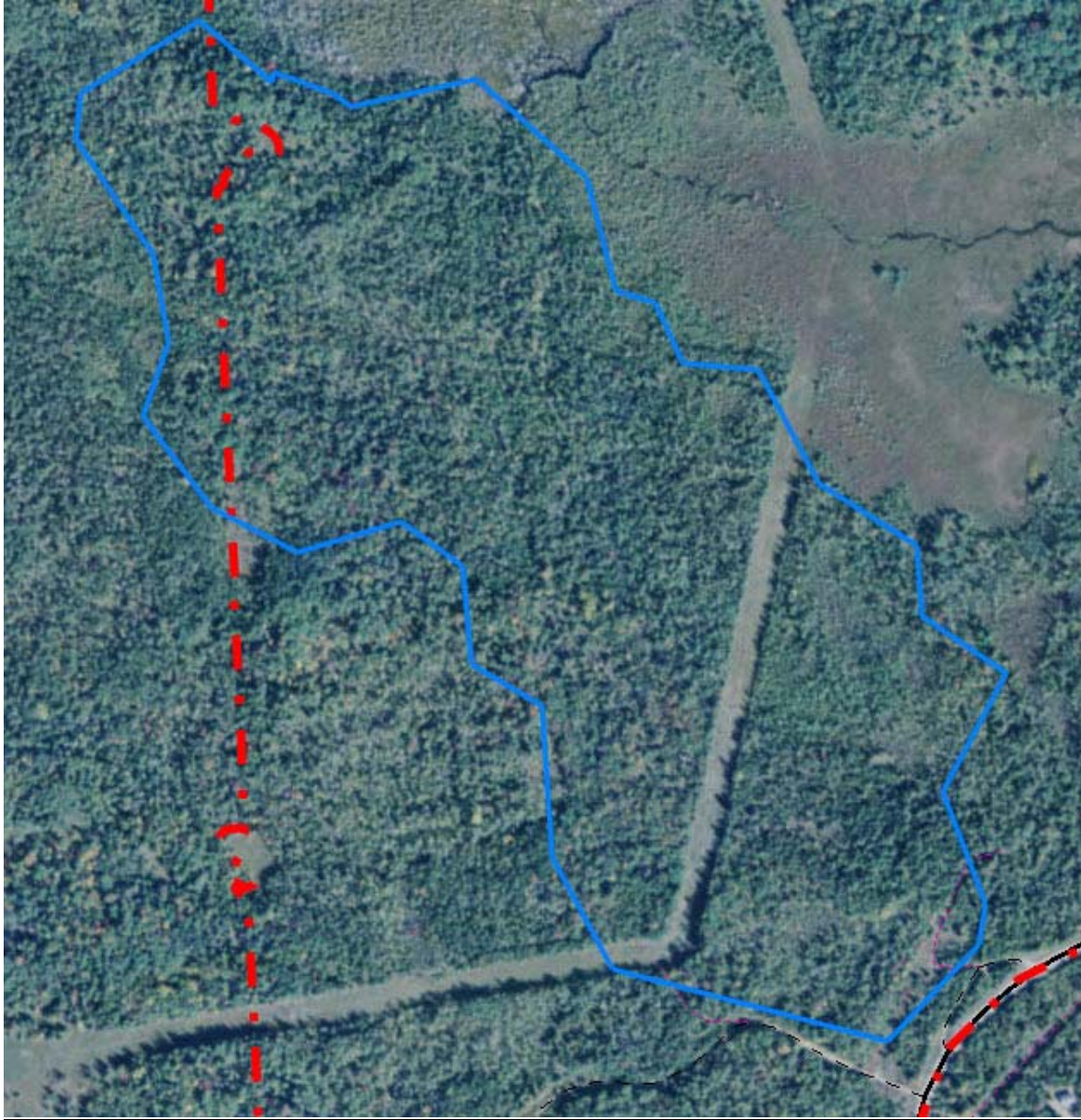
Indicators	Current Status	Desired Future Status	Summary Assessment
<b>Final 2008 Plan Indicators List:</b>			
Bedrock Glade- Absence of Invasive Plants	Good-Fair	Good-Fair or Better	TBD
Bedrock Glade- Absence of ORV Damage	Good-Fair	Good-Fair or Better	TBD
Dwarf Lake Iris- Presence of Flowering and Fruiting Ramets	Very Good	Very Good or Better	TBD
Grizzled Zipper- Presence of Host Plants Bear Berry and Wild Strawberry	Unknown	Known	TBD
Grizzled Zipper- Minimum Size and Patches of Open Alvar Habitat	Unknown	Known	TBD
Cooper's Milk Vetch- Minimum Size and Patches of Open Alvar Habitat	Good	Good or Better	TBD
Recreation- Limited Access	Good	Good or Better	TBD
Recreation- Lack of Trails and Roads	Good	Good or Better	TBD
Recreation- Unique Natural Community	Good	Good or Better	TBD
<b>Draft Indicators (Based Off Current Goals, Objectives, and Actions to Consider Adding):</b>			
Limestone Bedrock Glade EO Rank	good-fair	good-fair or better	TBD
% Change in ERA Acreage	unknown	known	TBD
Indicator and/or Species of Concern Present	2-unknown	known	TBD
Massassauga Rattlesnake Presence/Condition	unknown	known	TBD
Fairy Slipper Presence/Condition	unknown	known	TBD
# Invasive Species Present	1-unknown	known or 0	TBD
# Invasive Species Removed	none	>1 or 0	TBD
% Area Affected By Invasive Species	unknown	known or 0	TBD
# Resource Damage Occurrences	unknown	known or 0	TBD
# Resource Damage Closures	unknown	>1 or 0	TBD
% Area Affected By Resource Damage	unknown	known or 0	TBD

# Site Map:





Aerial Image (ESRI best 2014):



References

- (1) Albert, D.A. 2007. Natural community abstract for limestone bedrock glade. Michigan Natural Features Inventory, Lansing, MI. 9 pp.  
[http://mnfi.anr.msu.edu/abstracts/ecology/Limestone\\_bedrock\\_glade.pdf](http://mnfi.anr.msu.edu/abstracts/ecology/Limestone_bedrock_glade.pdf)
- (2) Michigan DNR. October 16, 2008. Grand Lake Glade Ecological Reference Area Management Plan. High Conservation Value Area (HCVA) and Ecological Reference Area (ERA) Management and Monitoring Forms Packet. Atlanta Forest Management Unit. 12 pp.