

Barclay Lake & Fisher Bridge Bog and Dry Northern Forest ERA Plan



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Administrative Information:

- The Barclay Lake and Fisher Bridge ERA Plan contains three ERAs: one bog and two dry northern forests.
- These ERAs are located on State Forest land in the Newberry FMU, in compartments 39 and 41.
- These ERAs are within the Deer Park Management Area (MA).
- Luce County, McMillan Township, T49N R09W sections 10, 11, 13, 14 and 24; and T49N R08W section 18.
- Primary plan author: Amy Douglass, Forest Resources Division (FRD) EUP Inventory and Planning Specialist; contributors and reviewers include Sherry MacKinnon, Wildlife Division (WLD) Wildlife Ecologist; Keith Kintigh, FRD Forest Certification and Conservation Specialist; Kristie Sitar, WLD Wildlife Biologist; Keith Magnusson, FRD Unit Manager; FRD EUP Timber Management Specialist Jason Tokar and FRD Forester Amy Livermore.
- There are no existing infrastructure/facilities within these ERAs.
- While the state-owned lands within these ERAs were logged in the past, only the Fisher Bridge dry northern forest has been logged recently (2014-2015). The Barclay Lakes bog and dry northern forest ERAs were burned by the Duck Lake wildfire in 2012. Salvage cutting was completed adjacent to these ERAs.
- ERA boundaries are derived from the underlying Natural Community EO boundary which are 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 difference result in potential conflicts with proposed forest activities, consult with the Forest Conservation and Certification Specialist to request a boundary evaluation by Michigan Natural Features Inventory.

Conservation Values

There are three ERAs found in two different natural communities in this area:

Bog (G3G5 S4):

Bogs are nutrient-poor peatlands characterized by acidic, saturated peat and the prevalence of sphagnum mosses and ericaceous shrubs. Bogs can occur in depressions in glacial outwash and sandy glacial lakeplains and in kettles on pitted outwash and moraines. Bogs frequently occur as a floating mat on the margins of lakes and ponds.

Fire and flooding are the main natural disturbance factors.

Barclay Lakes Bogs, EO_ID: 3580, LASTOBS: 2020-07-07

Rank B, Good estimated viability. 27 acres of state forest land.

Surveyed dry northern forest and bogs following 2012 Duck Lake wildfire. Portions of both bog polygons burned during the wildfire with the bog margins supporting grounded bog mat burning most extensively. Black spruce (*Picea mariana*) snags burned during the fire occur locally within the bog. Bog shrubs responded favorably to the fire, resprouting vigorously. The fire did not burn all the way to the floating mat, likely because peats within this portion of the bog occur above water and remain saturated even during drought conditions. Soil sample from floating bog mat in southern bog polygon: 80cm of fibric peat (pH 4.5) over water. Fibric peat from sphagnum hummock is extremely acidic (pH 4.0). Soil sample from grounded bog within northern bog polygon: greater than a meter of fibric to hemic peat (pH 4.5). Cored a 3.9 cm black spruce which was estimated to be over 49 years old. In the southernmost bog polygon there were actual floating bog mats, one of which moved 20-30 ft along the bog pond with the wind.

The hydrology of the southernmost portion of the southern bog polygon has been locally impacted by the road. Along the road margin, broad-leaved cat-tail (*Typha latifolia*) and tag alder (*Alnus rugosa*) occur locally, suggesting that the road has locally increased nutrient availability and decreased the acidity of the peatland.

Bog characterized by scattered and stunted canopy conifers (5-25%) with tamarack (*Larix laricina*), white pine (*Pinus strobus*), black spruce (*Picea mariana*), and jack pine (*Pinus banksiana*). Canopy trees range in DBH from 3-15cm DBH and 1-6 meters tall. Canopy coverage increases in areas where the bog mat is grounded and decreases in the floating mat zone. Prevalent understory species (10-25%) include the canopy conifers (i.e., black spruce, tamarack, white pine, and jack pine) with mountain holly (*Ilex mucronate*) occurring along the bog margin. The low shrub zone is dense (40-60%) with leatherleaf (*Chamaedaphne calyculata*) dominant and ericaceous species as prevalent associates including Labrador tea (*Rhododendron groenlandicum*), bog laurel (*Kalmia polifolia*), bog rosemary (*Andromeda glaucophylla*), and huckleberry (*Gaylussacia baccata*). These shrubs vigorously sprouted following the fire, especially leatherleaf. Black spruce is also common in the low shrub layer. Characteristic ground cover species include pitcher plant (*Sarracenia purpurea*), small cranberry (*Vaccinium oxycoccos*), grass-pink (*Calopogon tuberosus*), few-seed sedge (*Carex oligosperma*), cotton grasses (*Eriophorum* spp.), creeping snowberry (*Gaultheria hispidula*), rose pogonia (*Pogonia ophioglossoides*), white beak-rush (*Rhynchospora alba*), and round-leaved sundew (*Drosera rotundifolia*). Areas of floating mat are characterized by a low

sphagnum carpet with white beak-rush, pitcher plant, large cranberry (*Vaccinium macrocarpon*), and round-leaved sundew. Submergent vegetation occurs within the bog ponds and includes variegated pond-lily (*Nuphar variegata*) and fragrant water lily (*Nymphaea odorata*). Treed bog occurs locally in areas of grounded mat and is more prevalent in the northern bog polygon. Areas of treed bog are more floristically homogenous and dominated by black spruce, leatherleaf, and few-seed sedge.



Figure 1. Barclay Lake Bog (EO ID 3580). Photo by Joshua G. Cohen.



Figure 2. Barclay Lake Bog (EO ID 3580). Photo by Joshua G. Cohen.

Dry Northern Forest (G3 S3):

Dry northern forest is a pine- or pine-hardwood-dominated forest type that occurs on dry sandy sites lying mostly north of the climatic tension zone. This community occurs principally on sandy glacial outwash and sandy glacial lakeplains, and also commonly on sand ridges within peatlands on glacial outwash or glacial lakeplains. Two distinct variants are included within this community type, one dominated by jack pine (*Pinus banksiana*) or jack pine and hardwoods, and the other dominated by red pine (*P. resinosa*). Prior to European settlement, dry northern forest typically originated in the wake of catastrophic fire. Frequent, low-intensity ground fires maintained red pine systems by removing competing hardwoods.

Both red pine and jack pine dominated sites can contain minor components of northern pin oak. Jack pine dominated sites should include or be managed to promote scattered groups of super canopy red and/or white pine. In both variants, other canopy species can be present only at low levels. These include white pine, paper birch, aspen, red oak, and red maple.

ERAs should resemble pre-settlement forest conditions. This includes the presence of some larger diameter trees (as described above); a fire-maintained understory with conditions suitable for infrequent canopy fire; a relatively high native plant species density and diversity; and an unaltered (or mimicked) natural disturbance regime. This means a lack of evidence of grazing. In subsections where that the remaining sites have been harvested, ERAs should be recovered

from past harvests meaning the age of dominant jack pine should be greater than 70 years, while red pine should be greater than 100 years.

Barclay Lake Jack Pines, EO_ID: 12024, LASTOBS: 2020-07-07

Rank B, Good estimated viability. 170 acres of state forest land. (175 acres total)

Elevated rank from BC to B due to occurrence of wildfire within the landscape and throughout the dry northern forest. The dry northern forest recently burned in the Duck Lake Wildfire (2012). Invasive species occur along road margins and include common St. John's-wort (*Hypericum perforatum*) and spotted knapweed (*Centaurea stoebe*). Remapped again in 2020 to exclude recently clear-cut areas and add a small adjacent lobe of burned dry northern forest to the western polygon.

The severity of the 2012 Duck Lake wildfire across the dry northern forest was variable ranging from crown fire to partial crown fire to ground fire locally. Where jack pine (*Pinus banksiana*) was more prevalent in the canopy there was more overstory mortality and the remaining canopy coverage ranges from 5-20% with living red pine (*Pinus resinosa*) more common than living jack pine. Areas of former jack pine dominance are characterized by numerous burnt jack pine snags and charred coarse woody debris. Both red oak (*Quercus rubra*) and red maple (*Acer rubrum*) have responded to the fire by stump sprouting and there has also been a pulse of jack pine regeneration from serotinous seed. Where jack pine was a co-dominant with red oak and/or red pine, the crown fire was less severe or there were ground fires. Areas of partial crown fire are characterized by 25-60% crown coverage and areas of ground fire are characterized by 60-80% crown cover. Cored a 56.6 cm red pine that survived the 2012 fire and determined it to be over 200 years old. Cored a 41 cm red pine that survived the 2012 fire and determined it to be over 102 years old with good growth for the first 40 years. Cored a 25.8cm jack pine that survived the fire and estimated it to be over 70 years old.

The understory ranges from patchy (5-15%) where there were ground fires to dense (40-60%) where fires were more intense. Sprouting red oak (*Quercus rubra*) and red maple (*Acer rubrum*) are prevalent in the understory along with jack pine (*Pinus banksiana*) regeneration from serotinous cones. Red pine (*Pinus resinosa*) regeneration is occasional. The low shrub layer is dense (50-70%) with prevalent species including huckleberry (*Gaylussacia baccata*), low sweet blueberry (*Vaccinium angustifolium*), sweet fern (*Comptonia peregrina*), and Canada blueberry (*Vaccinium myrtilloides*). In addition, sprouting red maple and red oak, and jack pine seedlings are also abundant in this strata. The ground cover ranges from 40-65% and is characterized by bracken fern (*Pteridium aquilinum*), Pennsylvania sedge (*Carex pensylvanica*), starflower (*Trientalis borealis*), bunchberry (*Cornus canadensis*), trailing arbutus (*Epigaea repens*), wintergreen (*Gaultheria procumbens*), hair grass (*Deschampsia cespitosa*), and cow-wheat (*Melampyrum lineare*).

The soils have been impacted by the wildfire. The needle mat has been reduced and is very thin and charcoal occurs within the A horizon. The burning of organic material resulted in a nutrient pulse resulting in decreased acidity of the soils. The soils are characterized by a thin A horizon

(1-2cm, pH 5.0) over gray sands (5cm) over reddish sands that are fine- to medium-textured and acidic (pH 5.5-5.8).



Figure 3. Barclay Lake Jack Pines dry northern forest (EO ID 12024). Photo by Joshua G. Cohen.



Figure 4. Barclay Lake Jack Pines dry northern forest (EO ID 12024). Photo by Joshua G. Cohen

Fisher Bridge Red Pines, EO_ID: 708, LASTOBS: 2020-07-07

Rank D, Poor estimated viability, 230 acres of state forest land. (246 acres total)

A large red pine-dominated forest tract at the edge of a sandy glacial lake plain. Managed dry northern forest that has been thinned several times. Cut stumps and logging slash occur throughout the forest. Red maple (*Acer rubrum*) is increasing in the subcanopy, understory, and low shrub layer due to fire suppression. With fire suppression the dry northern forest is locally transitioning to dry-mesic northern forest. Soils shallow needle duff (2cm, pH 4.5) over fine-textured acidic sands (pH 5.5-6.0) with charcoal throughout. Cored a 43.1cm red pine (*Pinus resinosa*) and estimated it to be 150 years old with good growth for the first 50 years.

Canopy dominated by red pine (*Pinus resinosa*) with canopy associates including white pine (*Pinus strobus*), paper birch (*Betula papyrifera*), and big-toothed aspen (*Populus grandidentata*). Occasional canopy eastern hemlock (*Tsuga canadensis*) and white spruce (*Picea glauca*).

Canopy dominants typically range in DBH from 20-40cm and canopy coverage is 60-85%. Subcanopy (5-15%) with scattered white pine, black spruce (*Picea mariana*), balsam fir (*Abies balsamea*), northern white cedar (*Thuja occidentalis*), and red maple (*Acer rubrum*). Sparse understory layer (10-30%) with white pine, balsam fir, red maple, and black spruce. Red maple has become locally dominant in the understory following the logging. Shrubs and trees densest and most diverse along river corridor. Low shrub layer is prevalent and is dominated by blueberry (*Vaccinium* spp.) and huckleberry (*Gaylussacia baccata*) along with red maple, black spruce, white pine, and bush honeysuckle (*Diervilla lonicera*). The ground cover is patchy to sparse with characteristic species including bracken fern (*Pteridium aquilinum*), wintergreen (*Galtheria procumbens*), starflower (*Trientalis borealis*), cow-wheat (*Melampyrum lineare*), Pennsylvania sedge (*Carex pensylvanica*), trailing arbutus (*Epigaea repens*), bunchberry (*Cornus canadensis*), and Canada mayflower (*Maianthemum canadense*). Reindeer lichens (*Cladonia rangiferina* and *Cladonia mitis*) are common throughout. Invasive species occur along the road margins and include spotted knapweed (*Centaurea stoebe*), common St. John's-wort (*Hypericum perforatum*), and oxeye daisy (*Chrysanthemum leucanthemum*). Shallow needle mat (4-5cm) overlying fine- to medium-textured, dry, acidic sands (pH 4.5).



Figure 5. Fisher Bridge Red Pines dry northern forest (EO ID 708). Photo by Joshua G. Cohen.

High Conservation Value (HCV) Attributes:

The ERA landscapes, in general, are largely intact and functional landscapes. The ERAs are managed to preserve biodiversity attributes, threatened and endangered species and habitats, and natural communities. Surrounding state forest lands are managed for timber production. Diverse array of high-quality communities occur in the surrounding area, including poor conifer swamp and northern shrub thicket along the Little Two-Hearted River and managed dry-mesic northern forest and dry northern forest on the surrounding sandy glacial lakeplain. Dry northern forest grades to dry-mesic northern forest along the river corridor. Areas of poorly drained lakeplain support bog and poor conifer swamp.

In 2012, the Duck Lake Fire swept through the area. The Barclay Lake Bog and Dry Northern Forest ERAs are on the eastern edge of that wildfire. Fisher Bridge Dry Northern Forest ERA is just outside the fire perimeter.

Threatened and endangered plants and animals in the area of the Barclay Lakes Bog and Dry Northern Forest ERAs include: English sundew (*Drosera angelica*) and common loon (*Gavia immer*).

Threats Assessment

Bog

Threats to bogs include invasive species, possible impacts to hydrology from roads, adjacent agriculture and logging, illegal ORV use; and fire suppression.

- Barclay Lake Bogs: Uplands adjacent to the bogs could be harvested, which would moderately influence the peat chemistry along the bog margins. Due to the proximity of the bog to a road, off-road vehicle damage is a potential threat to the site. Fire suppression in the general landscape has likely increased the fire rotation of these peatlands. The main management recommendation is to allow natural processes to operate unhindered. Wildfires should be allowed to burn the bog as well as the surrounding uplands. Maintaining a forested buffer surrounding the bog will help ensure the stability of the bog's hydrologic regime. Monitoring for non-native invasive species should be implemented to ensure that they do not spread into the bog from the adjacent roads.

Dry Northern Forest

Fire suppression can result in failure of pine to regenerate, invasion by shade-tolerant species, and eventual conversion of dry northern forest to more mesic forest types. Numerous invasive plants are common in the ground layer of openings within dry northern forests, especially where fire has been excluded. Prevalent non-native plants include spotted knapweed (*Centaurea maculosa*), common St. John's-wort (*Hypericum perforatum*), hawkweeds (*Hieracium* spp.), sheep sorrel (*Rumex acetosella*), Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*P.*

pratensis), timothy (*Phleum pratense*), and common mullein (*Verbascum thapsus*). Efforts to monitor and control invasive species are critical for protecting biodiversity.

- **Barclay Lake Jack Pines:** The main threats to this site are logging and fire suppression. The primary management recommendation is to allow natural processes to operate unhindered (i.e., allow wildfires to burn). In the event of a wildfire or if prescribed fire is implemented, establishment of new fire lines should be avoided and existing fire breaks (i.e., roads and wetlands) should be used. New fire breaks could allow for spotted knapweed (*Centaurea maculosa*) encroachment. If prescribed fire is not feasible, mechanical thinning can be employed to promote pine and oak regeneration. In the event of a harvest, red pine (*Pinus resinosa*), white pine (*P. strobus*), and red oak (*Quercus rubra*) should be retained as seed trees. In addition, canopy jack pine should be retained for structural diversity. Excessive scarification and planting should be avoided, and the stand should be allowed to naturally regenerate.

Control and monitor invasives. Monitor response of forest to 2012 wildfire.

- **Fisher Bridge Red Pines:** Invasive species occur along the road margins and include spotted knapweed (*Centaurea stoebe*), common St. John's-wort (*Hypericum perforatum*), and oxeye daisy (*Chrysanthemum leucanthemum*). Red maple (*Acer rubrum*) is increasing in the subcanopy, understory, and low shrub layer due to fire suppression.

Prescribed fire should be employed to mimic ground fires. In the event of a wildfire or if prescribed fire is implemented, establishment of new fire lines should be avoided and existing fire breaks (i.e., roads and wetlands) should be used. Control invasive species along roads within the forest and monitor control efforts.

General Management of ERAs

ERAs will generally not be managed for timber harvest. Management activities or prescriptions in Ecological Reference Areas are limited to low impact activities compatible with the defined attributes and values of the community type, except under the following circumstances:

- Harvesting activities where necessary to restore or recreate conditions to meet the objectives of the ERA, or to mitigate conditions that interfere with achieving the ERA objectives. In this regard, forest management activities (including timber harvest) may be used to create and maintain conditions that emulate an intact, mature forest or other successional phases that may be under-represented in the landscape.
- Road building only where it is documented that it will contribute to minimizing the overall environmental impacts within the FMU and will not jeopardize the purpose for which the ERA was designated.

iii. Existing and new land use activities should be evaluated in the context of whether they detract from achieving the desired future conditions of the natural community for which the ERA was designated. The acceptability of land use activities within DNR administered ERAs will be evaluated using severity, scope, and irreversibility criteria, as established in DNR IC4199, Guidance for Land Use Activities within DNR Administered Ecological Reference Areas.

iv. Threats such as fire, natural or exotic pests or pathogens may warrant other management measures.

v. Harvesting and other management activities in presently accessible areas located within the peripheral boundary of an ERA that are NOT the natural community of focus and which may or may not be typed as a separate stand or forest type (e.g. an upland island of previously managed aspen within a bog complex) may be prescribed for treatments, contingent upon a determination of no anticipated direct or indirect adverse impact to the defined attributes and values of natural community for which the ERA was designated. The FRD Biodiversity Conservation Program leader shall be consulted regarding the determination of any direct or indirect adverse impact.

vi. Land management activities immediately adjacent to an ERA should consider any anticipated direct or indirect adverse impact to the defined attributes and values of natural community for which the ERA was designated. Management will be adaptive. ERAs will be monitored to determine if implemented management activities are moving the natural communities forward or maintaining them at their desired future condition. The network of ERAs will be evaluated every five years for their contribution to the overall goal of biodiversity conservation. This review cycle will allow for the potential addition or subtraction of lands from an ERA, designation of new ERAs, or removal of the ERA planning designation.

vii. In the conduct of field operations, FRD staff shall follow FRD Guidelines for Decontamination Methods by Risk Level for Terrestrial Activities and Equipment. For operations accomplished by DRN contractors, these guidelines shall only apply to work in ecologically sensitive areas where control of invasive species is a specified management objective.

Management Goals

Goals and resulting management objectives to achieve those goals should address the following issues of importance to the specific site.

Bog:

- Restoration of bog ERA where applicable.

- Invasive Species: Ideally, the best goal would be to eliminate invasive species (or maintain an absence of invasive species), but in some areas that may not be possible and a goal that recognizes this may be necessary.
- Reduce other threats (encroachment of woody vegetation, ORVs, etc.).
- The ERA has representation of native plants, indicator species, and rare species.
- Allow natural processes to occur.

Dry Northern Forest:

- Restoration of and/or expansion of the dry northern forest ERA where applicable.
- Invasive Species: Ideally, the best goal would be to eliminate invasive species (or maintain an absence of invasive species), but in some areas that may not be possible and a goal that recognizes this may be necessary.
- The ERA has representation of native plants, indicator species, and rare species.
- Reduce fragmentation.
- Allow natural processes to occur (fire, windthrow, insect epidemics)

Management Objectives

The following Management Objectives describe the measures necessary to ensure the maintenance and/or enhancement of the ERA site or sites. Objectives and associated actions will be prioritized and implemented based upon available resources.

Bog:

- Identify and eliminate illegal ORV access points.
- Identify and prioritize critical areas within the ERA to treat for invasive species.
- Determine if there are impacts to hydrological system.
- Allow blowdown/windthrow and insect mortality to occur without salvage harvest.
- Assess EO quality every 10-20 years.
- Work with adaptation specialist to determine threats associated with climate change.

Dry Northern Forest:

- Identify and prioritize critical areas within the ERA to treat for invasive species.
- High diversity of native plants is desirable.
- Allow blowdown/windthrow and insect mortality to occur without salvage harvest.
- Assess forest regeneration within the planning period.
- Assess EO quality every 10-20 years.
- Work with adaptation specialist to determine threats associated with climate change.

Management Actions

Suggested actions or series of actions that would help to achieve the above objectives.

M= Maintenance action, R= Restoration action)

Bog:

- If current data/knowledge are not available regarding the management goals, actions may address needed assessments (i.e. surveys may be needed). (M, R)
- Identify vectors of invasive species and reduce their introduction to the site. (M, R)
- Remove invasive plants using appropriate control methods for that particular species (hand-pull, herbicide, prescribed burn) using partnerships where appropriate. (M, R)
- Use periodic burning to maintain presence of native plant species, reduce invasives, and to reduce woody encroachment. (M, R)
- To reduce woody encroachment selective cutting can occur in winter using techniques to avoid impacting hydrology. (M, R)
- Write a wildfire plan to incorporate a “let it burn” policy where safety concerns allow. (M, R)
- Avoid establishment of new fire lines to reduce invasive species encroachment. (M, R)
- Minimal Impact Suppression Tactic (MIST) practices should be used for wildfire response in this area if possible. (M, R)
- Follow BMP Riparian Zone management (RMZ) guidelines related to lake, stream, pond or open water wetlands, which require a minimum zone width of 100 feet. Proposed activity including timber management within RMZs adjacent to ERAs should be evaluated on a case-by-case basis and are/may be acceptable where there is minimal risk of soil disturbance and sedimentation, and minimal risk of negatively impacting ERA quality. (M, R)
- Follow BMP guidance for fens, bogs, and other rare wetland types. Harvest activity immediately adjacent to fens, bogs, and other rare wetlands may encounter weak soils that are highly susceptible to rutting. When timber harvesting occurs adjacent to these features, ground and vegetation disturbance within the wetland area should be avoided. To prevent sedimentation or excessive nutrient delivery into a rare wetland, timber harvests should be avoided along slopes immediately above and leading into a rare wetland. (M, R)
- Close illegal roads and trails. (M, R)
- Avoid creating new roads adjacent to ERA.
- Work with MNFI and other experts to update EO inventory. (M, R)
- Update plan with additional knowledge as it becomes available. (M)

Dry Northern Forest:

- If current data/knowledge are not available regarding the management goals, actions may address needed assessments (i.e. surveys may be needed). (M, R)
- Identify vectors of invasive species and reduce their introduction to the site. (M, R)

- Remove invasive plants using appropriate control methods for that particular species (hand-pull, herbicide, prescribed burn) using partnerships where appropriate. (M, R)
- Reintroduction of missing associated native plant species (both canopy and ground flora) using local genotypes (R); particularly mesic conifer species where they have been removed.
- Use periodic burning to maintain presence of native plant species, reduce invasives, and to reduce woody encroachment. (M, R)
 - Ideal/range fire return interval for ground fires is 5-20 years for restored sites to promote herbaceous diversity and stimulate regeneration.
 - Summer burning should be employed to simulate naturally occurring lightning season burns.
- Write a wildfire plan to incorporate a “let it burn” policy where safety concerns allow. (M, R)
- Avoid establishment of new fire lines to reduce invasive species encroachment. (M, R)
- Minimal Impact Suppression Tactic (MIST) practices should be used for wildfire response when practical and commensurate with values at risk. (M, R)
- For restoration purposes if prescribed fire is not possible, mechanical removal of trees and scarification may be used to mimic stand replacing fires which would occur on a 120-300 year interval for red pine and 10-80 years for jack pine. (R)
- Close illegal roads and trails. (M, R)
- Install culverts if necessary, to restore natural hydrological flow. (R)
- Work with MNFI and other experts to update EO inventory. (M, R)
- Update plan with additional knowledge as it becomes available. (M)

Monitoring

Monitoring approaches and indicators appropriate for the natural community and in line with the objectives and management actions suggested, including appropriate frequency and timing considerations. (Unless otherwise specified, monitoring is expected to occur once every 10-year inventory cycle.)

Metric	Current Status	Desired Future Status	Assessment
Representative and rare species – species occurrences	Baseline EO Records; updated when EO's are updated	No decreases	TBD
Presence of rare animals	Baseline EO records	No decrease	TBD
Populations of invasive species – number and scope of species	Severity unknown; treatments should be monitored appropriately; detection monitoring opportunistically or every five years' maximum	Eliminated/fewer occurrences. Evaluate after treatment for two successive years.	TBD

Changes in EO rank	See above	No decrease	TBD
Illegal ORV activity – number of new instances and number of citations issued	Low; monitored via patrols, reports or opportunistically	Eliminated/fewer occurrences	TBD

Images

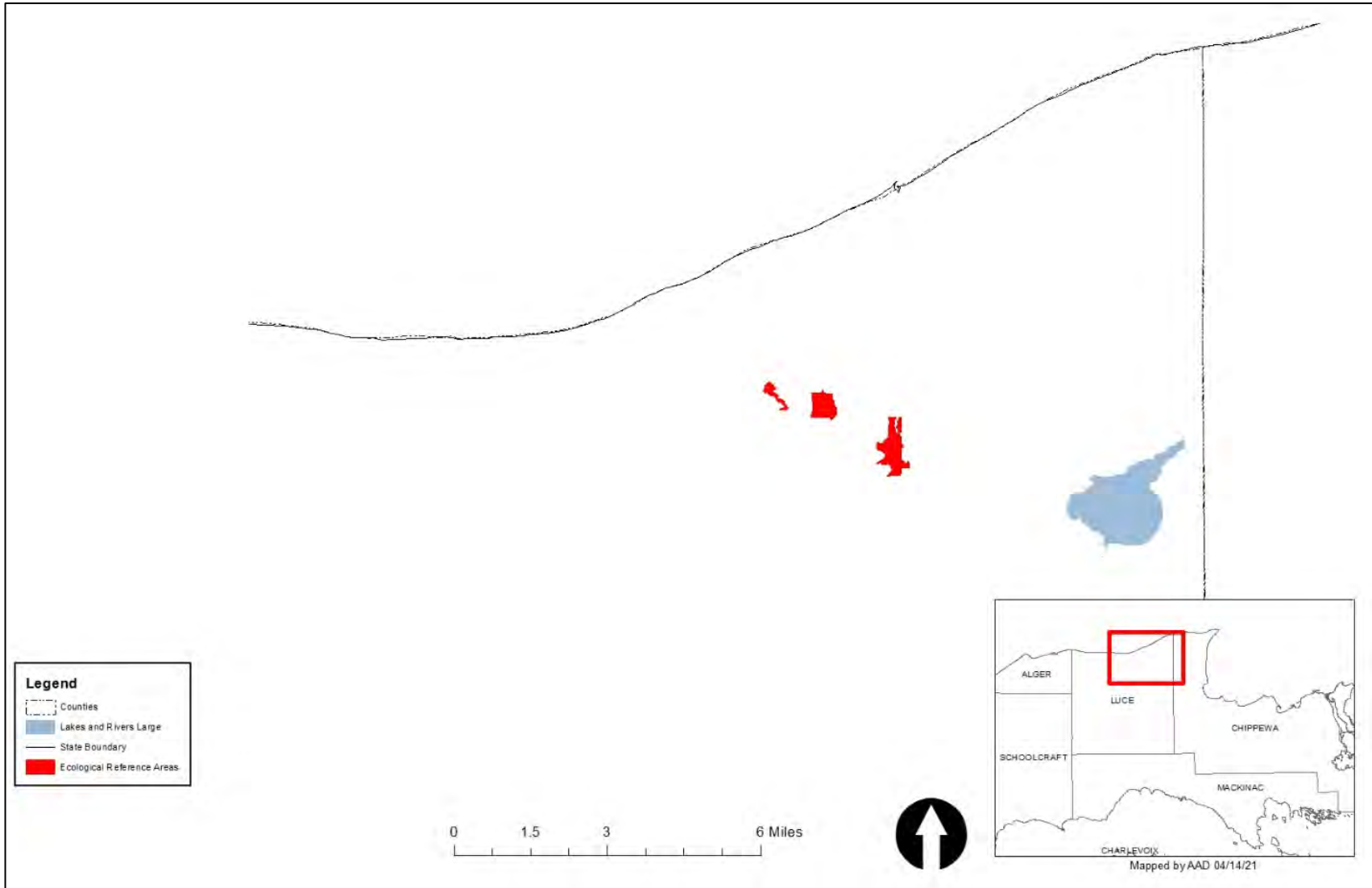


Figure 6. Barclay Lake & Fisher Bridge ERA plan locator map.

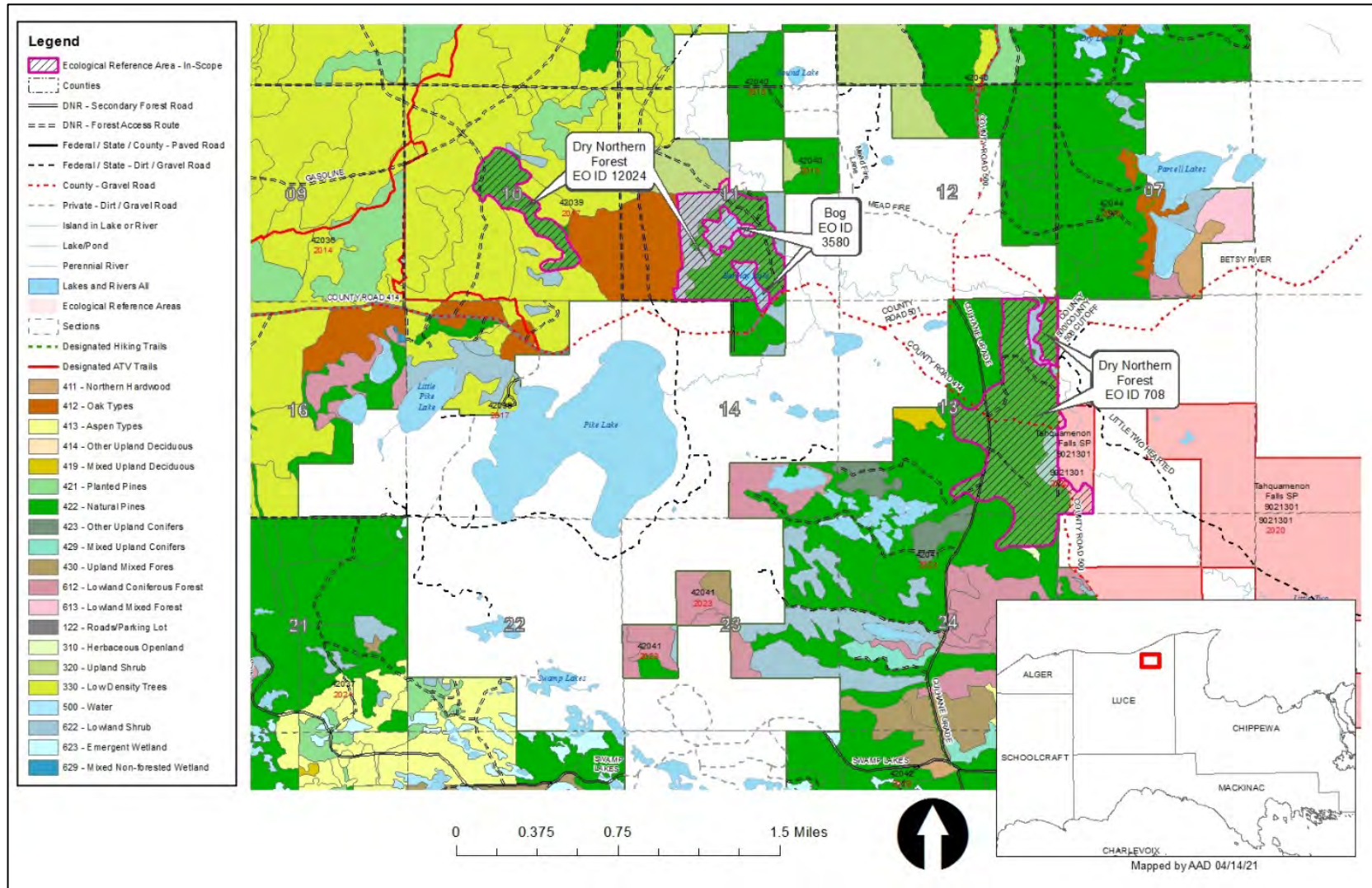


Figure 7. Barclay Lake & Fisher Bridge ERA cover type map.

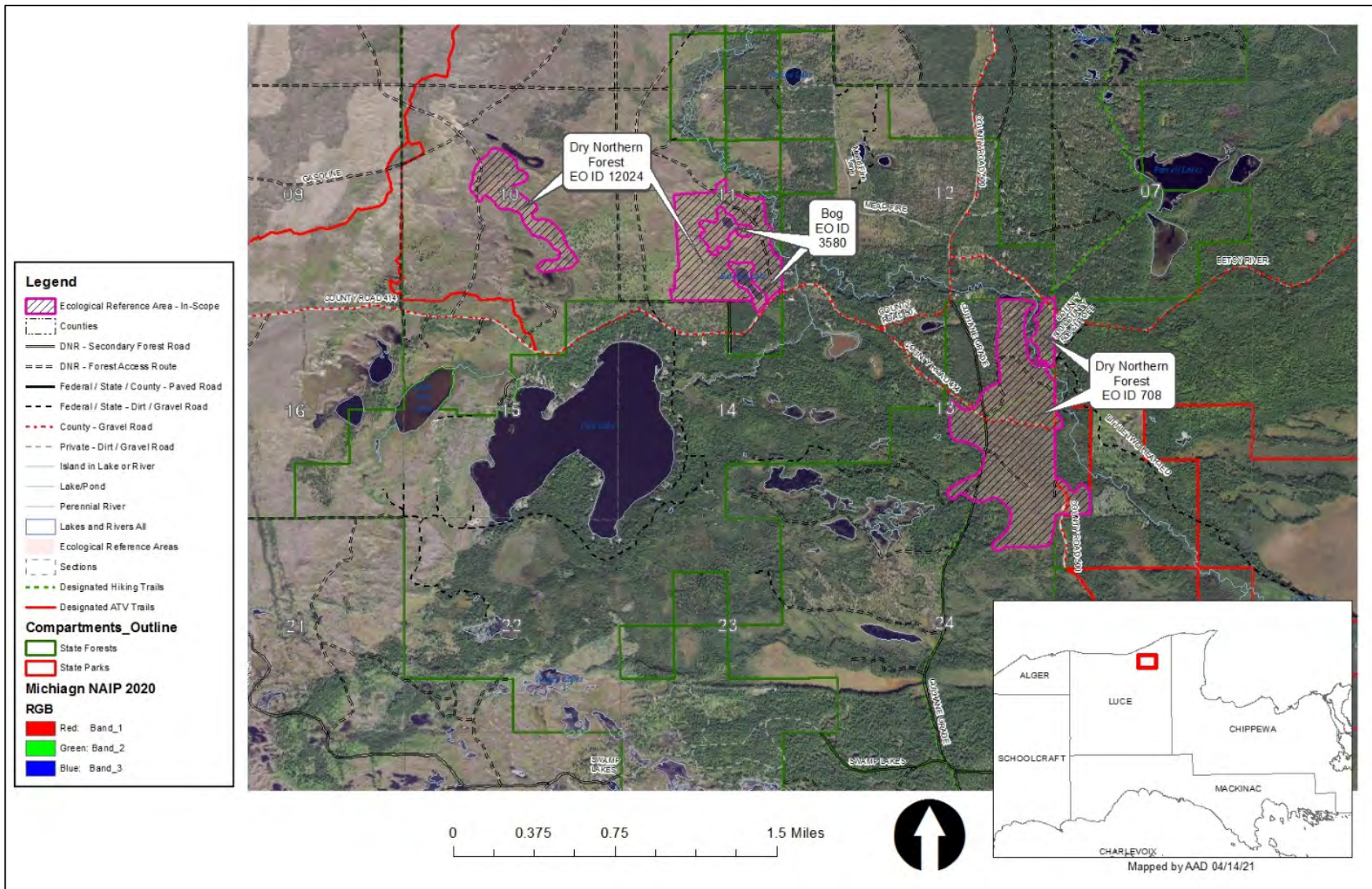


Figure 8. Barclay Lake & Fisher Bridge ERA 2020 photo.

Additional Resources:

MNFI Natural Community Abstracts: <http://mnfi.anr.msu.edu/pub/abstracts.cfm#Communities>

Michigan Department of Natural Resources Forest Certification Work Instruction 1.4:
http://www.michigan.gov/documents/dnr/WI_1.4BiodMgt_320943_7.pdf