Bryan Creek Ecological Reference Area (ERA) Plan

Administrative Information:

- Location:
  - Gwinn Forest Management Unit, Ralph Ground Moraine Management Area, Compartment 55
  - Marquette County, MI, T44N, R26W, Section 7; 75 acres
- Contact Information:
  - Plan Writer: Rachel McDonald, Forester, Gwinn; (906) 346-9201, mcdonaldr3@michigan.gov
- State of Michigan owned lands
- Existing Infrastructure: Snowmobile Trail #32
- Other Documents Related to This ERA:
  - Cohen, J.G. 2002. Natural community abstract for dry mesic northern forest. Michigan Natural Features Inventory, Lansing, MI.12 pp.
  - Michigan Natural Features Inventory Element Occurrence Record Dry Northern Forest EO Num 10.
  - Slaughter, B. 2007. Site Summary for Bryan Creek Dry Northern Forest Element Occurrence (EO NUM) 10 (now known as Dry Mesic Northern Forest EO Num 43) Surveyed August 7, 2007. Michigan Natural Features Inventory, Michigan State University 2 pages.
  - Slaughter B. 2007. Dry northern forest\Bryan Creek EO -10-993 Plant Species Lists 08/07/07.
  - Bryan Creek Dry-mesic Northern Forest ERA Management Plan FINAL w/ Jan 08 Ecoteam Changes 4/30.

Conservation Values

Bryan Creek is recognized as a representative example of a good quality dry mesic northern forest (EO_ID: 993, EORANK: B, LASTOBS: 2007-08-08), which were prevalent in the region prior to European settlement, but now constitute less than 0.02% of Michigan's current vegetation (Cohen 2002). The site is dominated by red pine and white pine on sandy, droughty, rather flat ground moraine, surrounded by more degraded uplands and rather extensive acidic peatlands (muskeg and poor conifer swamp). Mature, tall canopy red pines are generally 110-135 years old. White pine dominates portions of the occurrence. Patchy sub-canopy of balsam fir, black spruce, and white spruce is locally dense. Patchy ground layer is best developed in windthrow gaps, which are widespread. Human disturbances include localized cutting and fragmentation by logging roads. Evidence of fire noted on stumps, but only a small scar 10' high, perhaps due to lightning, was noted on one living red pine trunk.

The canopy is dominated by red pine *Pinus resinosa*, grading to white pine *Pinus strobus* locally. Patchy, locally dense subcanopy includes balsam fir *Abies bal samifera* (dominant), with both black and white spruce *Picea mariana* and *P. glauca,* the former likely an influence of the poor conifer swamp that borders the occurrence. Hardwoods (red maple *Acer rubrum*, white birch *Betula papirifera*) occur

occasionally in the subcanopy. The ground layer ranges from absent under dense subcanopy to locally dense in gaps, characterized by blueberries *Vaccinium angisifolium, V. myrtiloides,* Canada dogwood *Cornus cananadensis,* Canada lily *Maianthemum canadense,* star flower *Trientalis borealis,* twin flower *Linnaea borealis*, and other species indicating a mesophytic (moisture loving) influence.High Conservation Value (HCV) attributes include that this ERA is part of a landscape-level complex of extensive acidic peatlands (muskeg and poor conifer swamp) (Slaughter 2007), and is largely an intact and functional landscape. The ERA includes attributes of regional importance as it contains mixed ages of trees that include large legacy trees that are over 120 years old, and it is a pine stand of natural origin.

Other values within the Bryan Creek ERA include recreational uses. The area is used for dispersed camping, as well as deer, bear, and bird hunting. It is accessed by a woods road and the snowmobile trail (#32) that wind through the ERA. The recreational trail through the ERA is popular in part due to its aesthetic value. Stately, large pines give a cathedral-like atmosphere and open view-shed that is unique to the area. The ERA may be able to support timber when fir, spruce, and other undesirable regeneration is removed from the stand. On a landscape level, the ERA is part of an extensive complex of muskeg and poor conifer swamp of which moose occasionally move through. The poor conifer swamp is recognized as an element occurrence (EO_ID: 17609, EORANK: AB, LASTOBS 2010-09-09), and lies less than a mile to the east of Bryan Creek ERA. The Bryan Creek Corridor borders the ERA to the south, and supports Bryan Creek, a Type 1 Trout Stream. Both Bryan Creek and its Corridor are Special Conservation Areas (SCA). Historically, an old logging camp known as Camp 10 was stationed in the area, and the recreational trail #32 is known as Camp 10 Road, after this historical camp. Scattered artifacts were found in the area from approximately 1910-1940, but other historical information is not held on record by the State Historical Preservation Office.

Threats Assessment

Currently the snowmobile trail and existing woods road travel through much of the ERA. Illegal spurs currently exist in a localized area off the snowmobile trail and are being utilized by off-road traffic. The illegal spurs cause a low level of damage themselves, but act as a vector for invasive species establishment and spread. Currently non-native plants include Canada bluegrass (*Poa compressa*), ox-eye daisy (*Chrysanthemum leucanthemum*), common speedwell (*Veronica officinalis*), and hawkweeds (*Hieracium* spp.). These species exist in a localized area, with minimal spread from existing roads. If the populations spread, however, they have the potential to create moderate damage to ecological integrity. In the future non-native pine diseases may be a threat. Currently there are no known non-native diseases in the area. The continued lack of wildfire will likely convert the red-pine-dominated portion to white pine dominance and more mesophytic species. Climate change is also a threat to the ERA, with its long-term changes in drought and precipitation regimes, and expansion of non-native pest and disease ranges.

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:

i. 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.

ii. 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.

Management Goals

- Maintain and restore high quality dry-mesic northern forest
- Allow natural ecological processes to occur
- Manage for presence of trees >120 years old
- Control/Prevent invasive species establishment and spread
- Maintain and highlight historical significance of Camp 10 Logging Camp
- Eliminate/Reduce illegal ORV activity

Management Objectives

- Assess pine regeneration during this planning period
- Restore natural pine regeneration using woods mower, scarification, girdling, or timber harvest when appropriate
- Allow natural fire to occur in the ERA
- Allow blowdown/windthrow to occur without salvage harvest
- Educate targeted user groups (ORV club, snowmobile club) about historical and ecological significance of Camp 10 and Bryan Creek ERA
- Identify and eliminate illegal ORV access points on state forest land (continuous)
- Assess EO quality every 10-20 years
- Determine additional threats to ERA complex (continuous)

Management Actions

- Conduct a regeneration survey in 2017
- In a portion of the ERA (stand 2, Compartment 56), the fir and spruce was removed with a summer timber harvest in 1999. The summer harvest promoted scarification and regenerated white pine seedlings, which are recruiting in the absence of fir and spruce competition. This action may need to be repeated with 10-20-year recurrence to promote the objective.
- Where red and white pine regeneration is found to be inadequate, implement the following management actions or combination of actions as is deemed appropriate:
    - Remove spruce and fir with aggressive woods mower (fecon) treatment
    - Canopy gaps can be created by girdling, tipping, or felling canopy trees, and leaving the wood onsite. Be sure to "clean the gaps" by mechanically removing all undesirable stems >1" at root collar.
    - Conduct mechanical operations during the summer to increase scarification of mineral soil and pine regeneration
- Provide FRD fire staff with location of ERA and directives to let wildfire burn for ecosystem restoration. Prescribed burning may be considered in the future, especially for successful red pine regeneration establishment. But high fuel loading, potential for devastating crown fire, and destruction of existing regeneration make it the least desirable management tool now.

- Existing roads and natural fire breaks should be used and the creation of new fire breaks should be avoided where possible to limit the spread of invasive plants.
- Partner with local CISMA to map and treat priority invasive species using the best methods for control
- Develop FTP for invasive species control along trail
- Close any illegal trails/roads and reinforce berms
- Work with LED to increase patrols for illegal ORV activity and enforce state land use rules
- Develop educational materials (i.e., interpretive sign, field trip) about the ERA's ecological and historical distinctiveness and need for public cooperation in attaining its management goals
- Work with MNFI and other experts to update EO inventory
- Update plan with additional knowledge as it becomes available

Monitoring

Metric	Current Status	Desired future status	Assessment
Illegal ORV activity- number of new instances and number of citations issued	Low activity; monitored via patrols, reports or opportunistically	Eliminated/fewer occurrences	
Populations of invasive species- number and scope by species	Localized and small numbers; detection monitoring opportunistically or every five years maximum	No new occurrences/controlled and contained populations	
Pine regeneration	White pine regeneration well-stocked in canopy gaps with successful sapling recruitment	Successful, well-stocked red and white pine regeneration and recruitment	
Representative and rare species- species occurrences	Baseline EO Records; updated when EO's are updated every 10-20 years or opportunistically	No decreases	
Presence/Absence of trees >120 years old	Baseline inventory data taken every decade	Increasing in age	

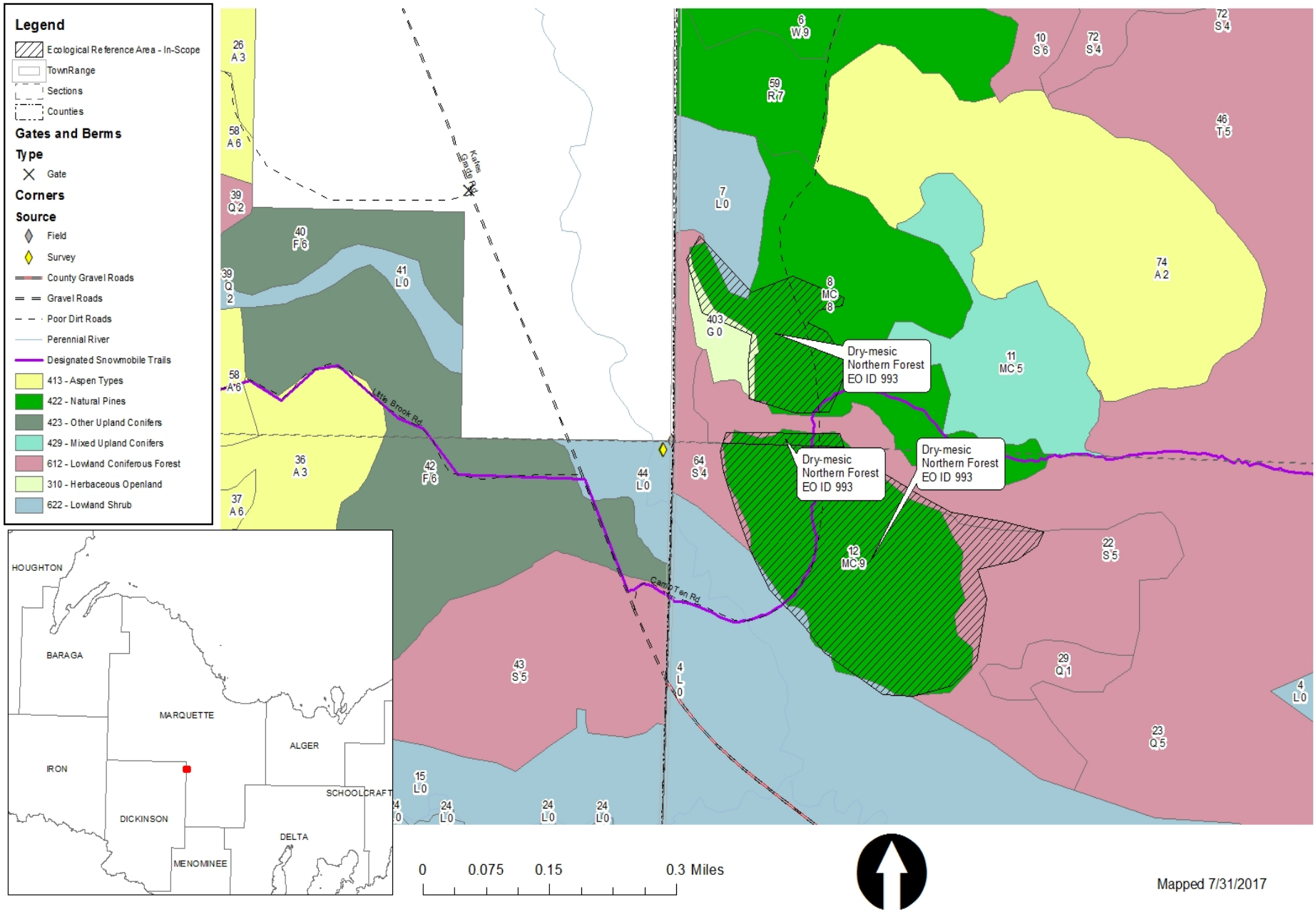
Legend
Ecological Reference Area - In-Scope
TownRange
Sections
Counties
Gates and Berms
Type
Gate
Corners
Source
Field
Survey
County Gravel Roads
Gravel Roads
Poor Dirt Roads
Perennial River
Designated Snowmobile Trails
413 - Aspen Types
422 - Natural Pines
423 - Other Upland Conifers
429 - Mixed Upland Conifers
612 - Lowland Coniferous Forest
310 - Herbaceous Openland
622 - Lowland Shrub
Dry-mesic Northern Forest EO ID 993
Dry-mesic Northern Forest EO ID 993
Dry-mesic Northern Forest EO ID 993
Little Brook Rd
Camp Ten Rd
Kates Grade Rd
HOUGHTON
BARAGA
MARQUETTE
ALGER
IRON
DICKINSON
SCHOOLCRAFT
DELTA
MENOMINEE
0
0.075
0.15
0.3 Miles
Mapped 7/31/2017

Figure 1: Naturally-regenerated red pine, approximately 130 years old in Bryan Creek ERA.

Figure 2: Canopy gaps created by natural wind event in Bryan Creek ERA. White pine regeneration thrives in these gaps.

Figure 3: Mixed pine stand in Bryan Creek ERA.