

## **Jordan Valley Forest Biodiversity Stewardship Area**

### Introduction

The proposed 18,941 acre Jordan Valley Forest Biodiversity Stewardship Area has long been considered an extraordinary place (Figure A-2). The proposed BSA contains 15,737 acres of state forest land, and represents a matrix-scale mesic northern forest dominated by sugar maple, beech, and basswood (Kotar plant habitat class: AFO). The area also contains several small patch examples of dry-mesic northern forest (DMNF) and wetland communities (a mix of rich conifer swamp, hardwood-conifer swamp and other types) associated with the Jordan River drainage. The Jordan River, Michigan's first designated Natural River, winds its way through poorly drained outwash channels located between high moraine ridges with numerous seeps and flowing springs.

The predominant cover types on state forest land are Upland (Northern) Hardwoods 10,721 acres (68%); Aspen 1,939 acres (12%); Mixed Swamp Conifers 1,081 acres (7%); Grass 429 acres (3%); Cedar (331 acres (2%); Lowland Brush (287 acres (2%); and Upland Brush 208 acres (1%). The forest is second growth, following the period of widespread timber harvest in the late 1800s and early 1900s. The area is one of the few places in Michigan that escaped the severe post logging-era fires. As a result of widespread harvest in the period of 1920-1930, the current structure of the northern hardwoods is mostly even-aged, with some stands having a two-age structure due to relatively recent thinning harvests. Due to the young age of the hardwoods, coarse woody debris and den trees are at relatively minor levels in the stands. Many aspen stands originated during the same period, with some stands previously coded as potential old growth. These stands are in the process of succeeding to a mixture of hardwoods. Early successional aspen stands have been established by timber harvests from the 1980s to the present. Some aspen stands are located on sites with an AFO Kotar habitat class. The mixed swamp conifers, cedar and lowland brush stands have not been actively managed.

In 1974, the core 22,000 acre state-owned portion of the proposed Jordan Valley BSA was designated as the Jordan Valley Management Area with its "intent being preserving the public land for multi-use outdoor recreation in a near-natural setting with an emphasis on quiet recreational use." Mineral exploration and extraction has been prohibited. A 1,570 acre area of the BSA has been nominated as a Natural Area, and is currently being managed as such. Other compatible uses that are maintained are timber production and concentrated and dispersed recreation, including hunting, camping, hiking, boating, and fishing. The Graves Crossing and (walk-in access) Pinney Bridge State Forest Campgrounds are located in the BSA. There are two boating access sites to the Jordan River within the BSA. The 18 mile Jordan Valley pathway is located in the BSA, and a snowmobile trail is located on the road that runs through the valley.

The proposed BSA supports myriad wildlife species associated with closed-canopy mesic northern forest, marsh, and riparian corridors. Notable species include wood duck, red-shouldered hawk, great blue heron, northern water thrush, golden-winged warbler, ruffed grouse, eastern massasauga, mink, river otter, bobcat, white-tailed deer, and black bear. The area provides opportunities for wildlife-related recreation including hunting and bird watching and has historically supported wild turkey, ruffed grouse, woodcock, white-tailed deer, bobcat, river otter, and black bear harvests.

Antrim gas development has occurred in the area. The majority of the BSA is intentionally classified as non-development which has greatly limited development. Several active wells do occur within the BSA, mostly on private land.

Jordan River BSA  
(18,941 Acres)

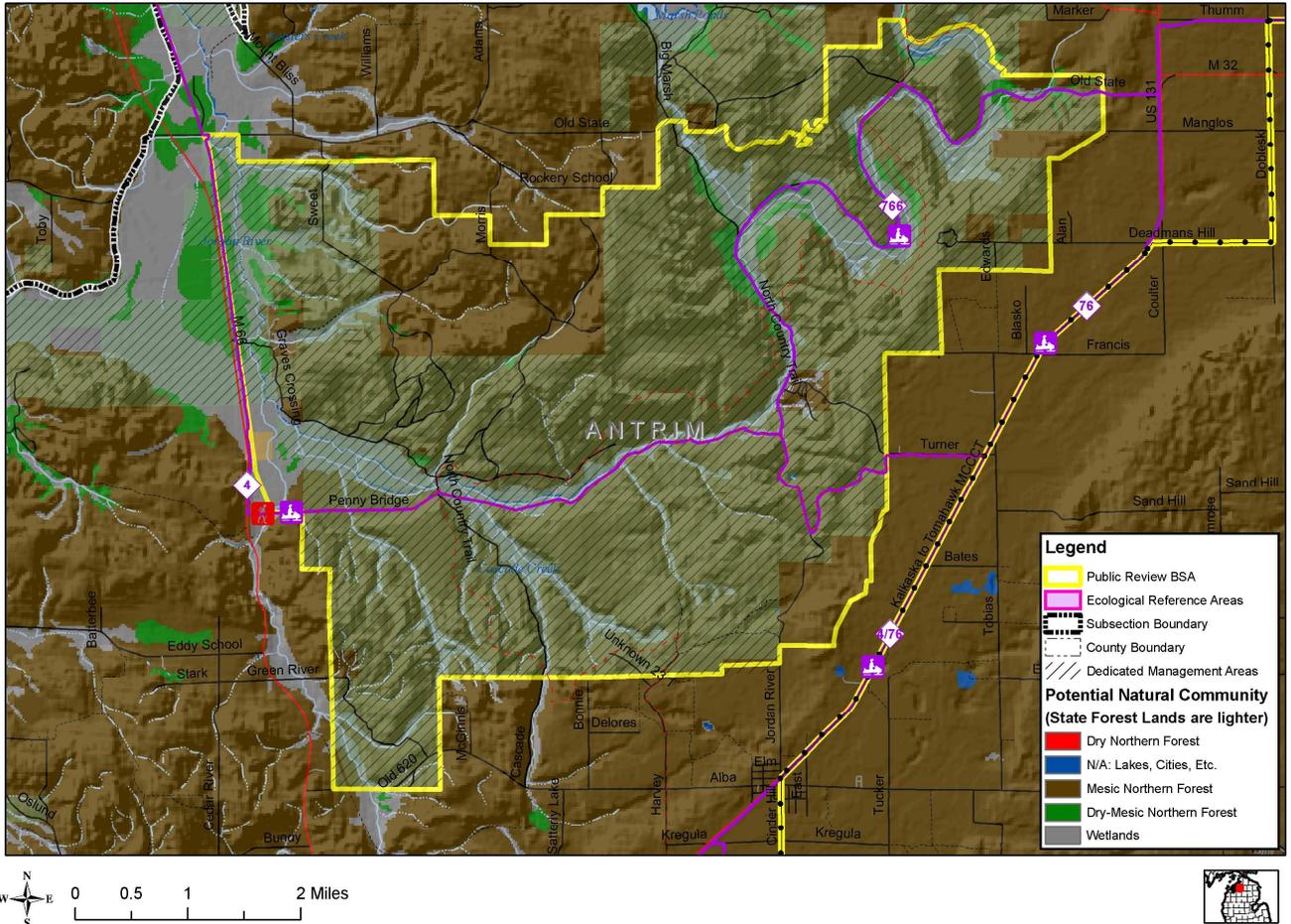


Figure A-2. Proposed Jordan Valley Forest Biodiversity Stewardship Area

Desired Future Conditions

Desired future conditions are essentially vision statements for the desired future composition, structure, function, and stressors/threats for the major natural communities that occur in this BSA. The following desired future conditions apply to the proposed BSA:

Mesic Northern Forest Community

Stands are located on coarse-textured ground and end moraines and medium-textured moraines, Kotar plant habitat type AFO.

The ideal future condition and composition of mesic northern forest (MNF) in this BSA is as follows:

- Early-successional stands will comprise approximately 5% of the MNF, and are dominated by aspen and paper birch (1% of area) or mid-tolerant species (4% of area).
- Mid-successional stands comprise approximately 20% of the MNF with the following composition:
  - A mix of mid and shade tolerant species, including yellow birch, black cherry, red maple, red oak, white ash, basswood, hemlock and white pine.
  - Mature even-aged aspen-birch is a declining component of some stands, with a developing multi-aged mid-canopy of sugar maple and red maple.
- Late-successional stands comprise approximately 75% of the MNF with the following composition and structure:
  - Stands in aggregate constitute a large, contiguous block of forest, exhibiting a diversity of age structure through the full range of gap phase dynamics (natural or human-caused regeneration holes in the canopy), and the presence of standing snags and dead and down woody material in various stages of decomposition.
  - Stands are all-aged, with an emphasis on representation of larger diameter trees (including trees 30 inch and greater diameter), higher residual basal area than under conventional management.
  - Stands have advanced regeneration and a diverse herbaceous layer (e.g. ground hemlock) present and not inhibited by over-browsing. The over-story of mesic stands is dominated by sugar maple, hemlock, yellow birch, basswood, and beech, with a component of super canopy white pine.
  - South and west aspect slopes may support small patch occurrences of dry-mesic northern forest, dominated by red oak, black cherry and with a component of super canopy white pine.
  - Some mesic stands may be dominated by hemlock and yellow birch, and with multi-cohort hemlock on appropriate sites.

The natural disturbance regime ideally consists of:

- Low intensity, naturally occurring single tree windthrow that creates small-scale (0.005-0.025 acre, or 9-20 foot radius) to medium-scale (0.025-0.1 acre, or 20-41 foot radius) canopy gaps, which may be mimicked by timber harvest in current even-aged stands. Severe ice storm events naturally create larger gaps with a return interval of 20-100 years.
- High intensity, naturally occurring catastrophic windthrow and/or fire are infrequent (return interval 1,200+ years for windthrow and 1,400 years for fire), but potentially significant (up to 9,000+ acres).

- Herbivory and high threat invasive species populations are minimal. The incidence of emerald ash borer and beech bark disease mortality is ideally below epidemic thresholds.

#### Wetland Communities

The wetland communities of the proposed Jordan River BSA are a mixture of lowland types associated with the thread of the Jordan River and its tributaries. Communities include areas of rich conifer swamp, hardwood-conifer swamp, northern hardwood swamp, and northern shrub thicket. The expression of these related communities is dependent upon variability in topography, near-surface geology, soils, hydrology, micro-climate, and the incidence of disturbance regimes.

The ideal future condition and composition of wetland communities in this BSA is as follows:

- Early successional stands follow flooding, wind throw disturbance or rare stand-replacing fire and comprise about 25% of wetlands, with the following composition and structure:
  - 15% dominated by fen grasses and sedges and/or shrub thickets dominated by tag alder and winterberry,
  - 10% dominated by cedar, black spruce, balsam fir, tamarack, black ash, and red maple (30-50 years old).
  - Natural regeneration and recruitment of all species is continually occurring on exposed mineral soil from fire, wind throw and nurse logs. Vegetative reproduction of cedar, black spruce and tamarack occasionally occurs via layering.
- Mid-successional stands comprise about 20% of wetlands with the following composition and structure:
  - Dominated by cedar, black spruce, balsam fir, tamarack, black ash, and red maple, 50-100 years old with >75% canopy cover.
- Late successional, uneven-aged stands comprise about 55% of wetlands with the following composition and structure:
  - Dominated by mature cedar with some black spruce and balsam fir. Other canopy associates may include tamarack, white pine, hemlock and a variety of hardwoods including red maple and yellow birch.
  - Northern white cedar will often occur in almost pure stands.
  - All-aged structure, with an emphasis on representation of larger diameter trees and >75% canopy cover.
  - Stands exhibit the full range of gap phase dynamics, and the presence of dead snags (>10 per acre), stumps, tip-up mounds, and coarse woody debris.

The ideal disturbance regime to be emulated is as follows:

- Low intensity, small-scale wind throw and insect mortality create numerous small-scale canopy openings.
- High Intensity catastrophic disturbance is predominantly flooding and wind throw with a 300-600 year return interval.
- Naturally occurring stand replacing fire is very rare with a 3,000 year return interval, and is limited by legal fire suppression requirements.

- High threat invasive species populations are rare. The incidence of larch sawfly, larch casebearer, and spruce budworm are ideally below epidemic thresholds

Short Term Management Direction (within 10 years)

- Actively manage mesic northern forest stands for greater age, compositional and structural diversity.
- Employ modified fire suppression tactics based on fire location, weather conditions, resource availability, safety, and property considerations.
- Under-plant mesic conifers (including hemlock) on north and east-facing slopes, in stands where natural seed sources are deficient .
- Place high priority on control of high risk invasive exotic species.
- Follow previous direction in the Jordan Valley Management Plan for oil and gas development. Maintain existing developed oil and natural gas well pads outside of the plan area.

Long Term Management Direction (100+ years)

- Manage up to 1% of the upland areas in the BSA as early successional aspen and paper birch (<30 years old)
- Manage up to 20% of the BSA as mid-successional (30-75 years old) .
- Manage approximately 75% of the BSA as late-successional mesic northern forest, with small inclusions of dry-mesic northern forest.
- Manage current red and white pine dominated stands to:
  - Maintain as dry-mesic northern forest as two-tiered or occasionally all-aged stands, with diversified age and structural characteristics.
  - Convert pine stands on AFO Kotar habitat class areas to mesic northern forest through thinning or selection harvests.
  - Encourage development of multiple even-aged cohorts
  - Retain a supercanopy of red and/or white pine.
- Manage aspen stands to:
  - Passively convert/succeed stands in excess of 1% of the BSA to mid- and late-successional mesic northern forest stands.
  - Maintain up to 1% of the BSA (about 160 total acres) on a rotating basis as early successional aspen or birch stands (<30 years old).
- Maintaining an all-aged class distribution in mesic northern forest, with diameters ranging from 1-30+ inches. Manage for greater tree species diversity.
- Retain or augment snags and coarse woody debris (CWD) in all stands in greater amounts than under standard retention guidance and in various stages of decomposition.
- Passively manage wetland communities with little to no active prescriptions.
- Maintain the existing recreational infrastructure (campgrounds, boating access sites, trails, and pathways) as outlined in the Jordan Valley Management Plan.
- Remediate oil and gas sites to a forested condition through active planting when wells are depleted and capped.
- Allow new oil and natural gas well development on currently leased lands and lands with a current lease classification of "Development" or "Development with restrictions".

Standards

- Michigan DNR *Jordan Valley Management Plan*, 1974 (once updated). Recently portions of the Jordan Valley have been included in old growth planning.
- 2007 Inland Consent Decree

Guidelines

- Use DNR BSA silvicultural guidelines for management of forest cover types within natural communities.
- Michigan Natural Features Inventory community abstract for Mesic Northern Forests.
- Emerald Ash Borer Guidelines