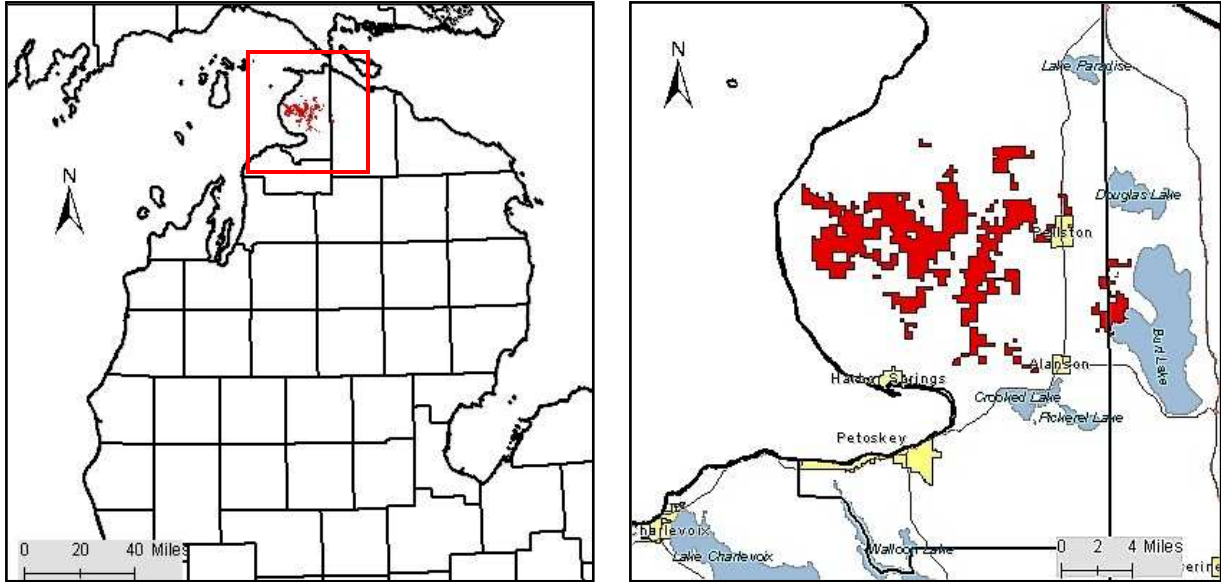


## Emmet Moraines Management Area



### Attributes

The Emmet Moraines Management Area is located north and east of Harbor Springs in Emmet and Cheboygan Counties and has approximately 36,000 acres of State Forest land, much of it highly fragmented. The primary attributes which were important in identifying this MA include:

- Ecological Classification - The MA falls mostly within the Stutsmanville sub-region of the NLP Ecoregion as classified by Albert (1994).
- Landforms - The dominant landforms include steep glacial moraines or sand ridges (some nearly 500 feet high), with poorly-drained outwash plain and high dunes near Lake Michigan.
- Cover Types - The historic and current vegetative composition is dominated by northern hardwood species including beech, sugar maple, hemlock, basswood, ironwood and yellow birch.
- Social – The Sierra Club has been interested in designating parts of this MA (particularly compartment 43) as a Biodiversity Stewardship Area, due to values which include large closed-canopy trees, steep slopes, narrow valleys, seeps and springs providing a wide range of diverse habitat. This MA is experiencing increased development of private land adjacent to the state forest land (especially in the south part of the MA) leading to an increase in recreational pressure. Invasive and exotic pests and diseases, the most notable of these being beech bark disease and emerald ash borer have been identified.
- Cultural - Certain areas of this MA are sources of non-commercial forest products sought by Native Americans. The University of Michigan Biological Station is located near this MA.

### Major Cover Types

- Northern Hardwoods/Upland Hardwoods - More than half of the MA, approximately 19,000 acres, is covered by northern hardwoods – most of it un-evened aged. Fifteen thousand acres of the hardwood has lower stocking, indicating recent selection management. Steep

slopes and seeps present accessibility issues. There are areas of ground hemlock (yew) that have been adversely impacted by deer browsing. Large hemlock trees are a component of some stands.

- Aspen – Most of the approximately 5,800 acres of aspen is younger than 40 years, and 14% is greater than 60 years. There are only 140 acres in the commercially viable 40 to 60 age class. The age 60+ aspen is likely on steep slopes and not accessible for harvest. There may be aspen in isolated clones in hardwood stands.
- Red Pine – Most of the approximately 3,000 acres of red pine in this MA was planted just after WWII on open land that failed to naturally regenerate. The large majority of the red pine is on high quality sites and is experiencing rapid growth. Many of the stands have little or no hardwood growth in the understory.
- Mixed Swamp Conifers/Cedar/ Swamp Hardwoods - About 2,900 acres, most of it older age classes and considered inoperable due to poor access in the Pleasantview Swamp.
- Upland Brush/Grass – The approximately 1,300 acres are primarily located in frost pockets and on old farming sites.

| Emmet Moraines       |        |     | Age Class (Years) |       |       |       |       |       |       |       |       |       |      | Uneven Aged |
|----------------------|--------|-----|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------------|
| Cover Type           | Acres  | %   | 0-9               | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 | 100+ |             |
| Upland Hardwoods     | 19,116 | 53% | 64                | 112   | 41    | 0     | 54    | 28    | 195   | 246   | 1,089 | 179   | 126  | 16,982      |
| Aspen                | 5,812  | 16% | 765               | 1,221 | 1,539 | 1,271 | 91    | 53    | 428   | 282   | 103   | 0     | 0    | 59          |
| Red Pine             | 2,724  | 7%  | 0                 | 156   | 42    | 0     | 229   | 2,258 | 39    | 0     | 0     | 0     | 0    | 0           |
| Mixed Swamp Conifers | 1,658  | 5%  | 0                 | 0     | 0     | 0     | 0     | 405   | 111   | 531   | 611   | 0     | 0    | 0           |
| Swamp Hardwoods      | 1,171  | 3%  | 0                 | 14    | 0     | 0     | 0     | 299   | 474   | 57    | 158   | 0     | 0    | 169         |
| Cedar                | 758    | 2%  | 0                 | 0     | 0     | 0     | 0     | 0     | 9     | 2     | 339   | 243   | 165  | 0           |
| Lowland Poplar       | 374    | 1%  | 0                 | 80    | 8     | 12    | 0     | 66    | 117   | 76    | 15    | 0     | 0    | 0           |
| White Pine           | 377    | 1%  | 0                 | 0     | 0     | 95    | 0     | 18    | 23    | 26    | 31    | 62    | 76   | 46          |
| Upland Brush         | 591    | 2%  |                   |       |       |       |       |       |       |       |       |       |      |             |
| Water                | 474    | 1%  |                   |       |       |       |       |       |       |       |       |       |      |             |
| Lowland Brush        | 1,998  | 5%  |                   |       |       |       |       |       |       |       |       |       |      |             |
| Grass                | 754    | 2%  |                   |       |       |       |       |       |       |       |       |       |      |             |
| Other Types          | 574    | 2%  |                   |       |       |       |       |       |       |       |       |       |      |             |

Total 36,381

Other Types include: Marsh, Spruce-Fir, Jack Pine, Hemlock, Tamarack, Bog, White Birch, Oak, Black Spruce.

**Concepts of Management**

- Northern Hardwoods/Upland Hardwoods (53% of the MA) – Manage northern hardwoods by selective harvesting to achieve an un-evened age structure. Keep oak in the upland hardwoods for mast and stand diversity. Leave or create conifer nurse logs and tip-up mounds for hemlock regeneration.
- Aspen (16% of the MA) – Due to high site productivity, manage for longer-than-standard rotations. Focus management on balancing the 0-59-year age classes of accessible aspen. Allow inoperable aspen in the 60+ year age classes to succeed to more shade-tolerant species, such as red maple and white pine. Allow selected small clones of aspen in hardwood stands to succeed to hardwood to create larger contiguous hardwood stands which are of benefit to some wildlife species.
- Red Pine (7% of the MA) – Follow the Red Pine Management Guidelines to balance the age class distribution. Allow selected areas of managed red pine to reach biological maturity. On red pine sites better suited to hardwoods with a significant hardwood understory, allow

conversion to hardwood upon final harvest. On sites without hardwood competition, continue to maintain red pine.

- Mixed Swamp Conifers and Cedar (5% of the MA) - Younger age classes are under-represented. Regeneration should be considered if harvests can be done in a manner that will not adversely impact wetland soils and if deer browsing can be minimized.
- Swamp Hardwoods (3% of the MA and Lowland Poplar (1% of the MA) - Younger age classes are under-represented. Regeneration should be considered if harvests can be done in a manner that will not adversely impact wetland soils and if deer browsing can be minimized.
- Upland Brush/Grass (4% of the MA) - Acreage in these cover types is likely to decrease as a result of natural succession.