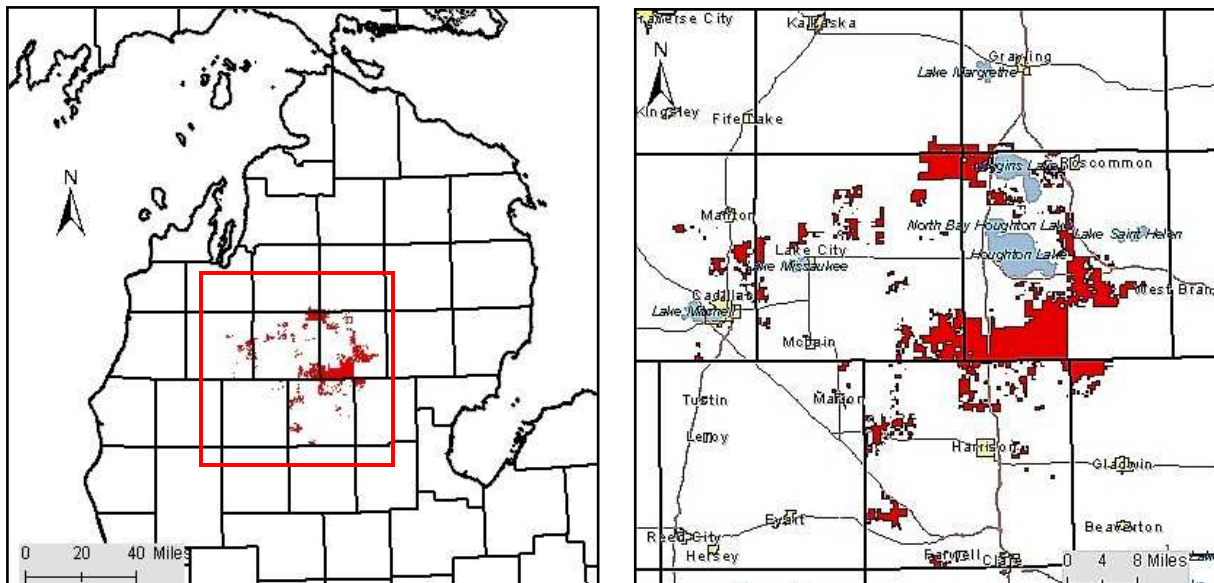


Upper Muskegon Management Area



Attributes

The Upper Muskegon Management Area is located mostly in Missaukee and Roscommon Counties with smaller portions in Crawford, Clare and Gladwin Counties in the Northern Lower Peninsula and has approximately 181,000 acres of scattered State Forest land. The primary attributes which were important in identifying this MA include:

- Ecological Classification - The MA falls within the Grayling Outwash Plain sub-region of the NLP Ecoregion as classified by Albert (1994).
- Cover Types - Historically, mixed red, jack and white pine and upland hardwood cover the area. The area is currently covered by aspen, oak, red pine and jack pine and 20% is in relatively inaccessible lowland types .
- Landforms - The dominant landform consists of sandy outwash plains with large ridges of ice-contact sands surrounded by poorly drained outwash channels and plains. Houghton and Higgins Lakes are adjacent to and the Muskegon River flows near this MA.
- Ownership size and connectivity – The state land in this MA is scattered in patches across four counties.
- Social and Economic – This MA is a popular area for game hunting, hiking, mushroom hunting and other activities for the nearby communities of Harrison, Houghton Lake, Grayling, and Roscommon. The Gladwin Field Trial Area is located in this MA and has a high level of recreation use. Natural gas development injection sites and pipeline right-of-ways (Cranberry Gas Storage Field) are located in this MA.

Major Cover Types

- Aspen – There are over 52,000 acres of aspen, with some stands mixed with oak. Overall, much of the aspen is good quality. The age class distribution is mostly balanced, with only 6% of the aspen over age 60, reflecting intensive management.

- **Oak** – There are approximately 33,000 acres of oak, with most of the sites being productive. The age class structure is skewed to the 70-99 years. There has been some successful oak regeneration following clear cuts, although tree vigor is declining with age. Some sites have been inter-planted with red pine following harvest. These stands may or may not be typed as oak. Red maple is a frequent competitor for oak and prescribed burns have been conducted to reduce the amount of red maple.
- **Red Pine** – About 45% of the 19,000 acres were planted by the Civilian Conservation Corps in the 1930s (8,400 acres) and another 6,000 acres were planted by the State after WWII. There are some areas with hardwood regeneration in the understory. Many red pine stands have an oak component. There has been 2,400 acres of red pine regeneration in the past twenty years.
- **Jack Pine** – The majority of the 14,000 acres jack pine occur in generally pure stands, although some of it is of poor quality. Half of the 60–69 age class has not been prescribed for harvest. Seed tree cuts have been successful.
- **Mixed Swamp Conifers and Swamp Hardwoods** – A significant part of the 16,000 acres of these types lies in Muskegon River flood plain, where part of the floodplain forest community has been identified as an Ecological Reference Area. Past management has allowed cedar to continue natural growth and mortality. Some checkerboard cutting was successful in promoting succession to other species (spruce, balsam, hemlock, including cedar.) Where cedar is blowing down, cedar is regenerating via layering.

Upper Muskegon			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+	
Aspen	52,370	29%	6,284	8,519	10,679	11,492	9,748	2,247	929	878	1,285	248	23	38
Oak	32,749	18%	2,161	2,556	1,732	991	347	460	900	5,626	10,630	4,304	1,777	1,265
Red Pine	18,645	10%	1,309	1,140	334	231	2,131	3,824	2,344	3,724	2,349	699	464	96
Jack Pine	14,497	8%	1,888	4,350	1,192	2,091	977	1,064	1,450	676	523	161	2	123
Mixed Swamp Conifers	8,642	5%	35	23	53	21	42	17	151	483	3,512	1,643	2,471	160
Swamp Hardwoods	7,503	4%	136	283	173	166	104	350	551	922	2,476	883	811	648
Upland Hardwoods	6405	4%	258	295	478	350	256	348	491	1500	1205	304	264	656
White Pine	4,726	3%	102	60	105	470	966	575	423	106	719	450	624	126
Grass	4,892	3%												
Lowland Brush	7,629	4%												
Upland Brush	4,094	2%												
Water	3,443	2%												
Other Types	15,703	9%												

Total 181,298

Other Types include: Marsh, Cedar, Bog, Spruce-Fir, Lowland Poplar, Upland Mixed Conifers, Black Spruce, Tamarack, Upland Mixed Deciduous, Hemlock, White Birch, Lowland Mixed, and Sand Dune.

Concepts of Management

- **Aspen (29% of the MA)** – Balance the distribution of the 0-59 year age classes. Harvest operable acres in older age classes to maintain the current acreage. There may be a slight decline in acreage due to succession of some older inaccessible stands to more shade tolerant species.
- **Oak (18% of the MA)** – With 22,000 of the 33,000 acres of oak over age 60, it is important to increase stand replacement harvesting (clearcutting), even on wetter sites. There should also be some attempt to harvest stands at a younger age to take advantage of more vigorous stump sprouting. Seek opportunities to under-plant red pine and white pine to achieve a mixed oak-pine type. Seek opportunities to regenerate oak by conducting prescribed burns.

- Red Pine (10% of the MA) – Following the Red Pine Management Guidelines, address the age class spike of red pine and trough of regeneration. Harvest aggressively in the age class spikes between 40-59 years and regenerate suitable red pine areas through planting or prescribed fire to encourage natural regeneration. Allow selected areas of managed red pine to reach biological maturity. Following the Within Stand Retention Guidelines allow selected individual red pines in other cover types to become super canopy specimens.
- Mixed Swamp Conifers and Swamp Hardwoods (9% of the MA) – Harvest over next ten years some of the poorer sites to regenerate mixed swamp conifers and swamp hardwoods, provided it can be done in a manner that protects soil and water quality. Allow better sites to go without management.
- Jack Pine (8% of the MA) - Prescribe as much as the balance of the 60+ age classes as is operable or not factor-limited. Maintain jack pine where it is currently located and maintain in-stand species diversity. Inoperable acreage will succeed to more shade tolerant species.