Northern Lower Peninsula Ecoregion

Landscape Context

The Northern Lower Peninsula ecoregion encompasses 17,109 square miles and includes all of Emmet, Cheboygan, Charlevoix, Presque Isle, Alpena, Montmorency, Otsego, Antrim, Leelanau, Grand Traverse, Benzie, Kalkaska, Crawford, Oscoda, Alcona, Iosco, Roscommon, Missaukee, Wexford, Mason and Oceana counties and portions of Newaygo, Mecosta, Isabella and Bay counties. Landcover in this ecoregion is primarily forest (67%) and wetlands (20%). Agricultural land use covers 4% and urbanization covers approximately 2%. The remainder of the landcover consists of open grasslands, sparsely vegetated areas, beaches and rock areas.

This region is characterized by diverse topography with extensive outwash plains and large moraines. The ecoregion remains predominantly forested with northern hardwoods, early successional aspen forest, pine systems, and lowland conifer.

Most air masses cross the Great Lakes before entering this ecoregion. As a result, the ecoregion experiences a climate that differs from that of the surrounding continent. Lake-effect snow is common throughout portions of the ecoregion within 20–30 miles of the Great Lakes shoreline. The highest elevations in the Lower Peninsula occur in this ecoregion in the High Plains area. The High Plains, which is also the portion of the ecoregion most distant from the Great Lakes, experiences the most continental climatic conditions within the ecoregion: it has more summer precipitation, the greatest summer and winter temperature extremes, the shortest growing season, and the greatest risk of spring freeze (Denton 1985). The average length of the growing season for this ecoregion is 126 days (Albert et al. 1986).

The ecoregion is underlain by Paleozoic bedrock and was completely glaciated during the Late Wisconsinan period. The underlying bedrock, which was deposited in marine and near-shore environments, includes sandstone, shale, limestone and dolomite (Dorr and Eschman 1984). Limestone bedrock is locally exposed along the Lake Huron and Lake Michigan shorelines, but the sandy glacial deposits over most of the ecoregion are generally thick; the thickest deposits are 600–1100 feet near Cadillac and Grayling. Common glacial landforms include lake plain, outwash plain, end moraine and ground moraine. Large sand dunes, formed during the Lake Nippising high-water period (approximately 4,000 years ago), occur along portions of the Lake Michigan shoreline. In addition, extensive series of parallel beach ridges or wooded dune and swale complexes occur along former embayments of the postglacial Great Lakes shoreline.

Soils in the ecoregion range from sand to clay. The majority of soils are sands, loamy sands and sandy loams; sands are the most prevalent soil type (Albert 1990, USDA 1981). Almost all of the soils are forest soils.

Circa 1800, the common forest types included northern hardwood forest, jack pine barrens, white pine–red pine forest, hardwood–conifer swamp and conifer swamp (Comer et al. 1995). Northern hardwoods were common on the end and ground moraines of the ecoregion. Jack pine, along with northern pin oak, dominated the flat, droughty, fire-prone outwash plains which occupy large portions of the ecoregion. Forests of white pine and red pine were located in narrow outwash channels and on the moraines at the edges of the outwash plains, where fires were relatively common but less intense than on the outwash plains themselves. Conifer and hardwood–conifer swamps covered large portions of the lake plains, but also occurred along drainages throughout the ecoregion. The prevalent natural disturbance factor within this ecoregion was fire. In addition, windthrow was common on both upland hardwood and conifer forests. Interior open wetlands found within this ecoregion included intermittent

wetlands, bogs, northern wet meadows, northern fens, and poor fens. Coastal wetlands included interdunal wetlands, wooded dune and swale complexes, and Great Lakes marshes.

Most of the ecoregion remains forested by northern hardwoods, aspen, oaks, pines (with significant acreage constituting plantation) and lowland conifers. Intensive logging for white pine occurred in the latter half of the 19th century, causing major changes in forest composition. Eastern hemlock was also logged for the tanning industry and northern hardwoods were harvested for a number of uses. Early successional forest types (aspen/birch forest) are more prevalent today because of past and current management. Fire suppression has resulted in the conversion of many of the barrens systems to closed-canopy forest. Following logging, farming was attempted on a broad range of soil types within the ecoregion. Farming was unsuccessful on most of the sandy soils of the ecoregion, but row crops are grown locally on some of the loamy soils. Some pasturing is also done, especially on the loamy moraines. Orchards and vineyards are numerous along the Lake Michigan shoreline, where microclimatic conditions extend the growing season and reduce frost damage to fruit crops.

Priority Threats

Ten threats to wildlife and landscape features in this ecoregion were identified as significant by participants at a workshop for this region (see Methods chapter in the Introductory Text & Statewide Assessments section for more information). The greatest threat in this region is industrial, residential and recreational development, followed closely by invasive species, which includes the spread of established species and introduction of new species not yet found in the region. Slightly less severe threats are fragmentation and altered fire regime. The next level of severity includes non-consumptive recreation, disease, pathogens, and parasites, social attitudes and lack of scientific knowledge. The remainder of the ten threats (urban, municipal and industrial pollution and mining practices) were still significant, but not to the same degree as the first eight.

Priority Conservation Actions

The following are conservation actions that were repeated most frequently within each landscape feature category and, therefore, should be considered priorities for the ecoregion, because they will have the most widespread benefits for wildlife conservation in this region (no order implied):

Grassland
- Institute invasive species monitoring, prevention and control programs
- Manage to approximate natural disturbance regimes using controlled grazing, mowing and prescribed fire
- Work with municipalities to develop planning and zoning ordinances which protect grassland landscape features

Shrubland
- Manage to approximate natural disturbance regimes by using prescribed fire/water flow patterns
- Manage white-tailed deer densities to allow for regeneration within shrublands

Fores*t*
- Work with municipalities to develop planning and zoning ordinances which protect forested systems
- Develop and implement forestry best management practices which address the value of forested landscape features to wildlife
- Manage to approximate natural disturbance regimes using prescribed fire
- Manage for representation of all successional stages
- Expand and support conservation easements and the purchase of high quality occurences

Inland Wetlands/Water

- Develop and enforce new and existing regulations restricting non-consumptive recreational access
- Institute invasive species monitoring, prevention and control programs
- Manage to approximate natural disturbance regimes by using restoration of water flow patterns and prescribed fire
- Promote responsible use of ATVs, ORVs, and personal watercraft

Great Lakes/Coastal

- Manage to approximate natural disturbance regimes by restoring water flow patterns
- Develop and enforce new and existing regulations restricting non-consumptive recreational access
- Institute invasive species monitoring, prevention and control programs
- Promote responsible use of ATVs, ORVs, and personal watercraft