

## Southern Lower Peninsula Ecoregion

### Landscape Context

The Southern Lower Peninsula ecoregion encompasses 24,248 square miles and includes all of Muskegon, Ottawa, Kent, Montcalm, Gratiot, Midland, Saginaw, Tuscola, Huron, Sanilac, St. Clair, Lapeer, Genesee, Shiawassee, Clinton, Ionia, Allegan, Barry, Eaton, Ingham, Livingston, Oakland, Macomb, Wayne, Washtenaw, Jackson, Calhoun, Kalamazoo, Van Buren, Berrien, Cass, St. Joseph, Branch, Hillsdale, Lenawee and Monroe counties and portions of Newaygo, Mecosta, Isabella and Bay counties. This region has a prevalence of rolling hills and flat lake plains. Landcover in this ecoregion is primarily forested (23%) and agricultural (50%). Wetlands cover 8% and urbanization covers approximately 9% of the land area.

This region is characterized by high levels of agricultural and urban development, which has led to high levels of habitat fragmentation. Rolling hills and flat lake plains are prevalent. Historically, fire-dependent oak savanna and prairie dominated this region (Albert 1995). Closed-canopy oak forests are now the prevailing vegetative cover type.

The climate is strongly influenced by the Maritime Tropical air mass and the proximity of Lake Michigan, which induces lake-effect snow and moderates inland temperature fluctuations (Eichenlaub et al. 1990, Albert et al. 1986, Denton 1985, Eichenlaub 1979). Compared to the rest of the State, this region experiences more warm, humid air masses from the Gulf of Mexico and fewer cold, dry air masses of continental origin. In addition, this region has the highest average annual temperature and the longest growing season. The average length of the growing season is 154 days (Albert et al. 1986). Intensive agriculture in Michigan is concentrated in this region because of its comparatively mild climate.

The region is underlain by Paleozoic bedrock and was completely glaciated during the Late Wisconsinan period. The bedrock, which was deposited in marine and near-shore environments, includes sandstone, shale, limestone and dolomite (Dorr and Eschman 1984). Typically, 100–400 feet of loamy glacial drift covers the bedrock. Glacial and postglacial landforms cover the entire land surface of the region. Glacial landforms include lake plain, outwash, ground moraine (till plain) and end moraine. Broad lacustrine plains occur along all of the Great Lakes; these lake plains extend more than 20 miles inland along Lake Michigan and more than 50 miles inland along the Lake Huron shoreline at Saginaw Bay. Postglacial sand dunes form a 1–5 mile band along much of the Lake Michigan shoreline. The interior of the region consists of a relatively low plain of ground and end moraines, with narrow outwash channels throughout. A broad interlobate outwash plain occupies the southern half of the region.

Most of the soils of the region are calcareous and loamy, derived from underlying limestone, shale, and sandstone bedrock. Till deposits are primarily loams, silt loams and clay loams. Fertile lacustrine soils occur on the lake plain along the east and west edges of the region. These lacustrine soils are primarily dominated by silt and clay. Where sandy soils occur on the lake plains, they are often banded with silt or clay. The outwash plains are sands, often containing abundant gravel.

Circa 1800, fire-dependent savanna and forest systems dominated this region. Oak savanna was probably the most prevalent cover type, followed by oak–hickory forest (Albert 1995). Beech–sugar maple forest was also important on areas of lakeplain and fine-textured moraines (Comer et al. 1995). Species diversity and structural complexity of the beech–sugar maple forests were maintained by gap phase dynamics (small-scale windthrow and ice-storm events). This is the only region of Michigan that originally supported large areas of tallgrass prairie, which was concentrated in the sandy interlobate area in the southwestern part of the region. Prairie and savanna ecosystems were maintained by frequent fires which were ignited by lightning strike and also started by Native Americans. Large areas

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of wet prairie and Great Lakes marsh occurred on the lake plains of Lake Erie, Lake St. Clair and Lake Huron. Wetlands include extensive marshes, fens, bogs and swamp forests (Comer et al. 1993a, 1993b). Numerous broad floodplain forests occurred along the rivers of this region.

Most of the region is now farmed for row crops; this is the most heavily farmed region in Michigan. The enduring forest has become fragmented. The remaining floodplain forests provide important habitat for songbird migration and breeding, especially as adjacent upland forests are increasingly fragmented for further agricultural or residential development. Most of the oak savannas have been eliminated or converted to closed-canopy forests as a result of fire suppression. Almost all of the original tallgrass and wet prairies have been converted to farmland. Diking and pumping have allowed vast expanses of wet prairies and some marshes to be farmed. The remaining marshes and wetlands along Great Lakes shorelines are critical for maintaining migratory waterfowl, shore birds, and the Great Lakes fisheries. Rare plant communities found within this region include coastal plain marshes, which occur in sandy depressions in outwash plains and glacial lake beds, inland salt marshes, which are limited to a handful of locations along the Maple River, and prairie fens, which are concentrated in the interlobate region. The heaviest urban, industrial and residential development has occurred in this region, especially along the Great Lakes shoreline.

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 threats in this region are industrial, residential and recreational development, invasive species, which includes the spread of established species and introduction of new species not yet found in the region, and fragmentation. The remainder of the ten threats (social attitudes, wetlands modification, altered fire regime, pesticides and herbicides, urban, municipal and industrial pollution, lack of scientific information, and non-consumptive recreation) were still significant, but not to the same degree as the first three.

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
- Work with municipalities to develop planning and zoning ordinances which promote the retention of grassland features or their conversion to features which have greater value to wildlife
- Manage to approximate natural disturbance regimes by using prescribed fire and hydrologic management

Shrubland

- Educate private landowners on the value of shrubland features to wildlife and people
- Institute invasive species monitoring, prevention and control programs
- Manage to approximate natural disturbance regimes by using prescribed fire and hydrologic management
- Work with municipalities to develop planning and zoning ordinances which promote the retention of shrubland features or their conversion to features which have greater value to wildlife

Forest

- Institute invasive species monitoring, prevention and control programs

- Assess management goals to ensure that resource goals provide for a diversity of communities across the landscape
- Implement disease monitoring and control programs
- Work with municipalities to develop planning and zoning ordinances which promote the retention of forested landscape features or their conversion to features which have greater value to wildlife
- Support Landowner Incentive Programs to foster conservation on private land

**Inland Wetlands/Water**

- Develop new legislation and ordinances, where necessary, to regulate or limit draining or development of interior wetlands and water; enforce existing regulations concerning draining and development of wetlands
- Institute invasive species monitoring, prevention and control programs
- Manage to approximate natural disturbance regimes by using prescribed fire and restoration of natural water flow patterns
- Provide information to landowners on methods of fertilization and pest management that are less chemically intensive
- Support Landowner Incentive Programs to foster conservation on private land

**Great Lakes/Coastal**

- Assess management goals to ensure that resource goals provide for a diversity of communities across the landscape
- Institute invasive species monitoring, prevention and control programs
- Expand and support conservation easements and the purchase of high quality occurrences
- Support Landowner Incentive Programs to foster conservation on private land