The Status and Trends of Michigan's Wetlands

Wetlands provide the citizens of Michigan with many public benefits:

- Habitat for a diverse set of creatures, from the smallest macroinvertebrates, to a varied assortment of amphibians, fish, and birds.
- Important water quality functions, serving as nature's kidneys by filtering out sediment and nutrients before they reach rivers and lakes.
- Reduction of flood flows through depressional floodwater storage in some areas, while slowing the delivery of flood flows to surface water by providing vegetated buffers in other areas.

These benefits (sometimes referred to as ecological functions and services) are increasingly valuable to the citizens of Michigan, as the acreage and quality of wetlands in the State has been steadily decreasing since the beginnings of European settlement. New information is being produced that can provide more insight into the quantity and quality of Michigan's remaining wetlands. The DEQ has been working with Ducks Unlimited to produce an update to the National Wetland Inventory (NWI), the standard-bearer for wetland mapping nationally, using 1998 and 2005 aerial imagery (DU-NWI).

An analysis of the status and trends of Michigan's wetlands from 1978-2005 is being developed using this exciting new data.

This analysis will summarize the findings of the recent wetland inventory efforts undertaken in the State and analyze trends for wetlands over the past three decades. It will focus on the common ecological wetland types (along with certain abiotic measures), and attempt to assess the statewide condition of our wetland resources as a whole. It will also examine the efficacy of the current inventory, new technology/data/analysis tools and their implications for improved wetland mapping, and future directions for wetland inventory efforts in Michigan.

Regional Differences

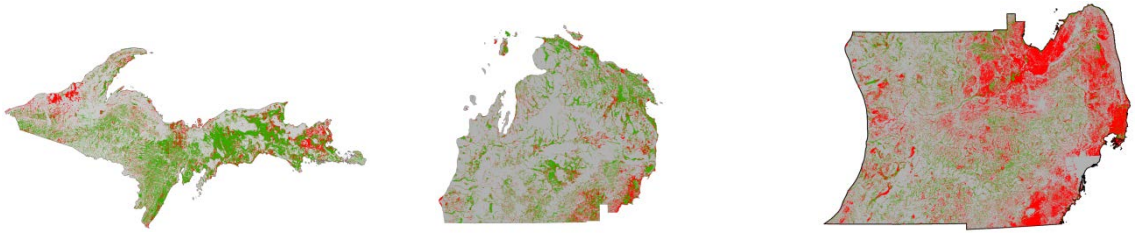
Given that Michigan encompasses a geography that includes one of the largest industrial hubs of the 20th century in Detroit, the largest expanse of freshwater shoreline in the lower 48 states, and some of the largest tracts of forest in the Midwest in the Upper Peninsula, wetland loss in this diverse region has not been uniform.

- UPPER PENINSULA ……..17% LOSS (638,000 ACRES)
- NORTHERN LOWER PENINSULA……..20% LOSS (387,000 ACRES)
- SOUTHERN LOWER PENINSULA……..66% LOSS (3,320,000 ACRES)
- GREAT LAKES COASTAL WETLANDS….71% LOSS

The numbers can tell a powerful story of the slow degradation and loss of this important resource, but the images illustrate it more powerfully. Comparing original Pre-European wetland locations, based on hydric soils analysis, with our current inventories yields the following glimpse into the spatial distribution of wetland loss in our State:

Wetland Loss (Red) by Region since Pre-European Settlement

UPPER PENINSULA NORTHERN LOWER PENINSULA SOUTHERN LOWER PENINSULA



In addition to the DU-NWI update, which mainly serves as a quantitative summary of wetland gains and losses, the DEQ has been completing more advanced wetland classification and analysis for select watersheds in the State since 2007 to aid watershed planning efforts and encourage wetland restoration and preservation. This advance in wetland mapping and classification adds abiotic information to NWI's normal Cowardin classification of major ecological type (Emergent, Scrub-Shrub, Forested, Aquatic Bed, etc.) with the addition of information pertaining to landscape position, landform, and hydrologic connectivity. This "NWI+" methodology, as it has become known, was developed by the US Fish and Wildlife Service in the American Northeast, and adapted by the Wetlands, Lakes, and Streams Unit of DEQ for use in Michigan. This methodology facilitates a basic hydro geomorphic analysis of existing wetlands in NWI to allow estimation of wetland function.

These efforts allow a quantitative and qualitative analysis of wetlands gains and losses, and help to translate wetland acreage losses into concepts that are more digestible for a broader audience. Speaking in the language of ecosystem services and functional loss helps drive home the point that historic and current wetland losses are a systemic driver of water quality issues in the State (e.g., excessive sedimentation and nutrient inputs in our streams, rivers, and lakes, habitat loss and fragmentation for many of our rare and imperiled aquatic organisms, increased erosion along our shoreline and riparian areas as vegetated buffers are removed, and increased flashiness in our streams and rivers during storm events resulting in flooding and loss of property and infrastructure). Solving these issues remains the heart and soul of the WRD and we look forward to using this high-tech new tool to enhance our efforts.

What do you do in the WRD? Meet Chad Fizzell and Jeremy Jones

Chad Fizzell, Wetlands Geographic Information Systems (GIS) Specialist, Michigan Department of Environmental Quality

Chad Fizzell works as a GIS Specialist in the Wetlands, Lakes, and Streams Unit within the WRD. Though he is involved in many aspects of the Wetlands program, Chad is the Department expert in the Landscape Level Assessment of Wetlands, Wetland Inventory, and Remote Sensing. Chad was also the lead in developing and adapting the NWI+ methodology

and Landscape Level Wetland Functional Assessment process in Michigan, and applying these concepts to watershed management in the State.

Jeremy Jones, Wetlands GIS Analyst, Michigan Department of Environmental Quality

Jeremy Jones has worked with geospatial technologies since 2006 in both non-profit and government sectors. Jeremy has worked for the State on various projects including the NWI+, coastal zone projects, enforcement cases, conservation easements, and the Enbridge Oil Spill. Jeremy's background includes editing GIS data, aerial photo interpretation, GPS unit operation, and updating the High Risk Erosion Area Maps.