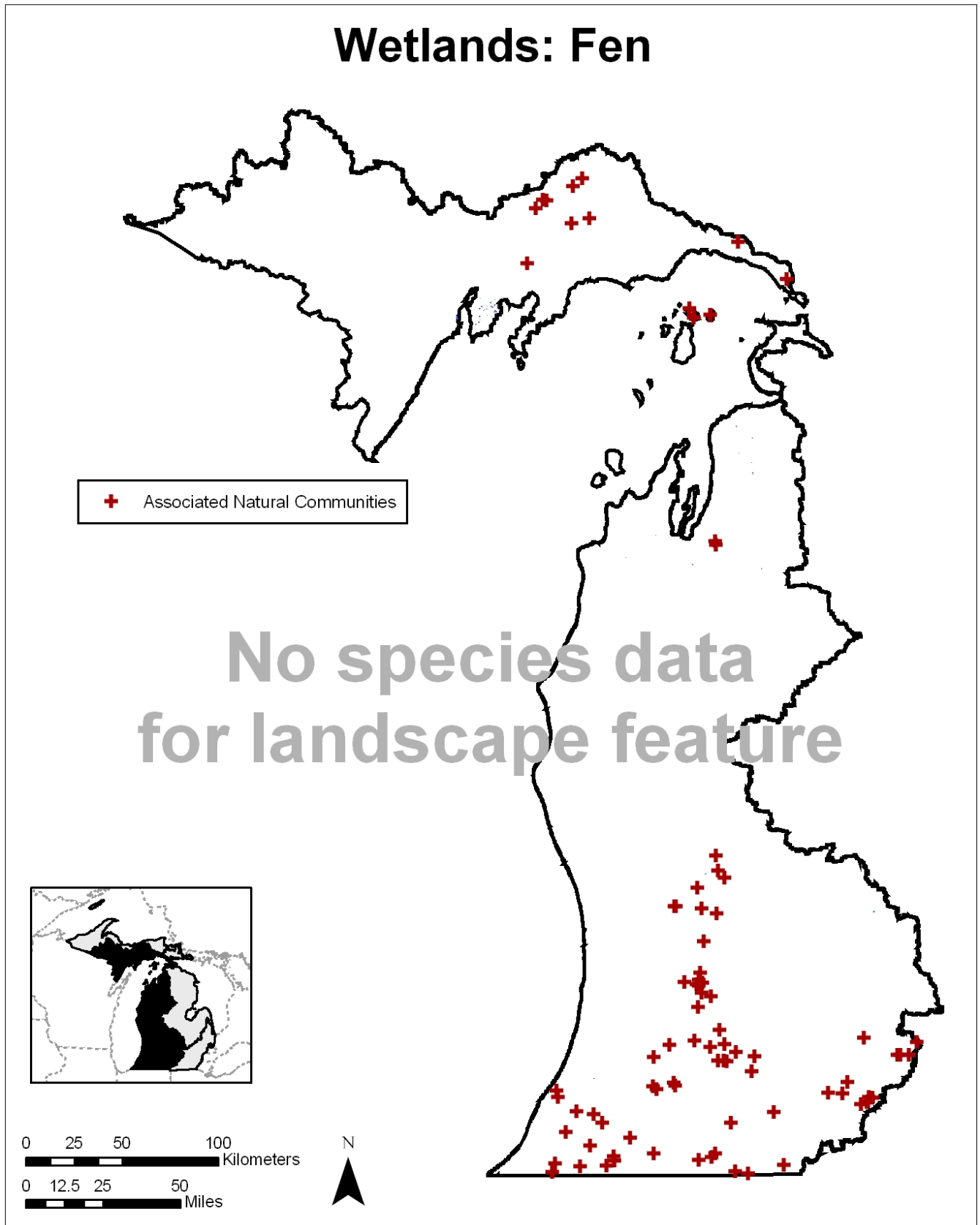


# Wetlands: Fen



**MICHIGAN'S WILDLIFE ACTION PLAN**  
**AQUATIC SYSTEMS: LAKE MICHIGAN BASIN**

**Wetlands: Fen**

Description

Fens are peat-accumulating wetlands that receive much of their water and nutrients from groundwater rich in calcium and magnesium carbonates. Fens tend to have relatively high pH and nutrient levels, hence supporting a great diversity of grasses, sedges (*Carex sp.*), rushes (*Juncus sp.*), and wildflowers. Open conditions are maintained by seasonal water fluctuations, fire, and beaver-flooding.

General Condition of Feature

This habitat is considered 45% in good to excellent condition, 25% in fair condition, and 30% in degraded to very degraded condition.

Associated Natural Communities

Northern Fen  
Patterned Fen

Poor Fen  
Prairie Fen

Associated Species of Greatest Conservation Need

*INSECTS*

muskeg damer (*Aeshna subarctica*)  
Hine's emerald dragonfly (*Somatochlora hineana*)  
incurvate emerald dragonfly (*Somatochlora incurvata*)  
ebony boghaunter (*Williamsonia fletcheri*)  
ringed boghaunter (*Williamsonia lintneri*)  
Subarctic bluet (*Coenagrion interrogatum*)

*AMPHIBIANS*

pickerel frog (*Rana palustris*)

*REPTILES*

copperbelly water snake (*Nerodia erythrogaster neglecta*)  
spotted turtle (*Clemmys guttata*)

Associated Threats

*MODIFICATION OF NATURAL PROCESSES*

- Altered hydrologic regimes: Altered hydrology; Draining; Roads often interfere with fen drainage

*POLLUTION*

- Pesticides and herbicides
- Urban, municipal, and industrial pollution

*HABITAT CONVERSION*

- Dredging and channelization: Dredging
- Riparian modification: Development; Unregulated development
- Wetland modification: Filling; Draining

*BIOLOGICAL INTERACTIONS*

- Invasive plants and animals

*CONSUMPTIVE BIOLOGICAL RESOURCE USE*

- Forestry practices
- Mining practices: Peat
- Removal of wildlife

*NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE*

- Macrophyte removal: (low threat)

*EDUCATION*

- Social attitudes

Conservation Actions Needed (Threats addressed)

*LAND & WATER PROTECTION*

- Create and/or expand conservation easements (variety of threats)
- Support land conservancy purchase of undeveloped land (variety of threats)
- Support landowner incentive programs to foster conservation on private land (variety of threats)

*LAND, WATER & SPECIES MANAGEMENT*

- Close roads during breeding seasons or install tunnels along migration pathways to allow amphibians and reptiles access to breeding areas (species issue)
- Control and prevent aquatic invasive species introductions and establishments (invasive plants and animals)
- Maintain or establish riparian buffers of at least 50 ft., but 500 ft. or wider maximizes conservation benefits (forestry practices, riparian modification)
- Maintain or rehabilitate natural corridors between fens and other significant habitats to amphibians and reptiles (species issue)

- Maintain or rehabilitate natural hydrology and hydrologic functions, i.e., throughflow, wetlands (altered hydrologic regimes)
- Protect or rehabilitate fen habitats (wetland modification)
- Reduce herbicide and pesticide use (pesticides and herbicides)
- When removing invasive vegetation, at least 60-80% of native vegetation should be preserved (invasive plants and animals, macrophyte removal)
- Rehabilitate native flora (wetland modification)

#### *LAW & POLICY*

- Continued vigilance and cooperation on preventing more aquatic invasive species establishments (invasive plants and animals)
- Encourage green space planning (riparian modification)
- Include wetland protections in zoning and planning ordinances (wetland modification)
- Limit water withdrawals in flow-limited or groundwater-fed systems (altered hydrologic regimes)
- Protect and rehabilitate groundwater recharge by requiring that development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Restrict dredging and channelization (dredging and channelization)
- Restrict peat mining (dredging and channelization, mining practices)
- Strengthen environmental laws (variety of threats)
- Strengthen wetland regulations, mitigation requirements, and enforcement (wetland modification)
- Use best management practices (variety of threats)
- Work with local governments to develop and refine planning and zoning regulations and ordinances that consider natural processes (variety of threats)
- Work with local officials on setback and buffer ordinances (riparian modification)

#### *EDUCATION & AWARENESS*

- Educate legislators, land owners, other policy makers, and the public on fen systems and the species that rely on them (social attitudes)
- Work with and educate Drain Commissioners on the importance of fen systems (variety of threats)
- Work with Extension services to educate farmers and landowners on the value of fens (social attitudes)

#### Research and Survey Needs

- Conduct statewide wetlands inventory
- Determine effective prevention, control, and survey techniques for aquatic invasive species
- Determine how threats effect vegetative structure, patterns, and species
- Determine life histories of those SGCN that use fen
- Determine other aquatic species associated with fens
- Determine the amount of abandoned tiled farmland and ways to return it to the original condition
- Determine the amount of impervious in watersheds
- Determine the number and condition of fens in all watersheds
- Identify effective restoration techniques
- Investigate alternatives to water withdrawals and diversions
- Investigate historical frequency of fire disturbance in fens
- Model hydrologic flow of the entire watersheds

#### Monitoring

- Amount of impervious surface in watershed
- Aquatic invasive species
- Draining and channelization
- Riparian modification
- Storm water
- Water withdrawals
- Wetland modification