

Management Plan for Bogus Lake Fen
(Units 4.02, 4.03, 4.04 and Parts of Unit 1.08 and 2.07)
Draft 5-12-15

Community Type: Bogus Lake Fen is a degraded Prairie Fen. Prairie Fens are rare natural communities with a G3 Global Rank and a S3 State Rank (Michigan Natural Features Inventory, accessed 1-27-15). A G3 natural community is either very rare and local throughout its range or is vulnerable to extinction throughout its range while a S3 natural community is rare or uncommon in the state. The Bogus Lake Fen is considered degraded because non-native glossy buckthorn is dominant in the shrub-tree vegetation zone.

Location: Bogus Lake Fen is located T2S, R1E, mostly in the west half of Section 2 and a small part of the northeast 1/4 of Section 3; Latitude 42.325520^o to 43.332011^o and Longitude -84.284972^o to -84.290282^o. The boundary of the fen is primarily based on soil types and to a lesser extent on vegetation characteristic of fens.

Size: 60 acres

Soil Types: See Figure 1. Bogus Lake Fens soil map.

Soil Symbol and Name	Acres	Percent
30 Edwards muck ~28" deep, substrate marl ¹	38.2	64.2
45 Martisco muck ~8" deep, substrate marl	20.5	34.6
W Water	1.3	2.2
Total	60.0	100.0

¹Palms muck (37) often includes small areas of poorly drained Edwards muck which are included in the Edwards muck acreage. Soils adjacent to the fen include: 18, Gilford-Colwood complex; 20, Houghton muck; 37, Palms muck; and 47, Histosols and Aquents, ponded.

Presettlement Vegetation: Inland Wet Prairie

Current Cover Types: See Figure 2. Bogus Lake Fen vegetation zones.

Vegetation Zone/Mgmt. Unit	Acres	Percent	Dominant Plants
Wetland Shrub-tree/ Unit 4.02	47.6	79.3	Glossy buckthorn
Sedge Meadow/4.03	11.1	18.5	Shrubby cinquefoil
Inundated Flat/4.04	1.3	2.2	Hardstem bullrush
Total	60.0	100.0	

Current Rare Animals: Several Threatened (T) and Special Concern (SC) species that are associated with fens have been seen at the Haehnle Sanctuary, but none of them have been recorded in the Bogus Lake Fen. They include barrens buckmoth (SC), Blanding's turtle (SC), eastern massasauga (SC) and northern harrier (SC).

Human Impacts: Dredging the Portage River in 1921-22 and subsequent construction of ditches and sub-surface drain tile lines lowered water levels. Fires started by lighting, native Americans and later the early European settlers suppressed wood plants. In recent times fire has been eliminated from this area. Invasive plants, especially glossy buckthorn, have invaded the Bogus Lake Fen as a result of disrupted hydrology and fire suppression.

That part of the fen in Section 2 was donated to Michigan Audubon by Casper Haehnle in 1955. Michigan Audubon purchased the small acreage of the fen in Section 3 from Charles Wipfler in 1963.

Sanctuary Goals:

- 1.00 Conserve native flora and fauna at the sanctuary, especially Sandhill Cranes.
- 2.00 Increase public understanding of the sanctuary, its wildlife and their environment.
- 3.00 Increase scientific knowledge of wildlife and their environment through research.

Sanctuary Objectives and Fen Management Actions:

- 1.02 Restrict public access to environmentally sensitive areas including fens and wetland used by cranes.
- 1.04 Restore, enhance and maintain native biotic communities i.e. grasslands, savannahs, oak forests, fens, and wetlands.
- 1.04a Cut glossy buckthorn beginning at the southern part of the fen in the area of Martisco muck. Begun
 - 1.04b Apply herbicides to suppress glossing buckthorn. Begun
 - 1.04c. Burn every 3-5 years, or as needed to encourage native plants. Needs to be implemented.
 - 1.04d Once glossy buckthorn has been reduced, consider planting native species normally found in fens.
 - 1.04e Annually, monitor and evaluate results of management actions to restore the fen, including panoramic photos, maintain a list of plants, Lepidoptera, and vertebrates in the management area before and after management actions. Needs to be implemented.
- 2.02 Provide educational materials.
- 2.02a Write articles for newsletters about fens and restoration efforts. Ongoing.
 - 2.02b Develop an display in the kiosk about fens and restoration efforts. Ongoing.
- 2.03 Provide opportunities for self-guided wildlife viewing.
- 2.03a. Add an informational station about fens where restoration work in the fen can be seen from the nature trail.
- 3.01 Maintain an inventory of plants, insects, fish, amphibians, reptiles, birds and mammals. Most of these surveys are outside the restoration area so they are different from the management action 1.04e prescribed above.
- 3.01a Conduct a plant survey along 100-meter transect from stake 4.03 -to stake 4.04. Needs to be implemented.
 - 3.01b Continue to conduct bird point counts at 4.03 stake. Unfortunately, stake 4.03 is near the edge of the fen so birds recorded here include ones from several biotic communities. Ongoing
 - 3.01c Take panoramic photos at 4.04 stake. Needs to be implemented.
 - 3.01d Continue conduct butterfly surveys along Transect F. Ongoing

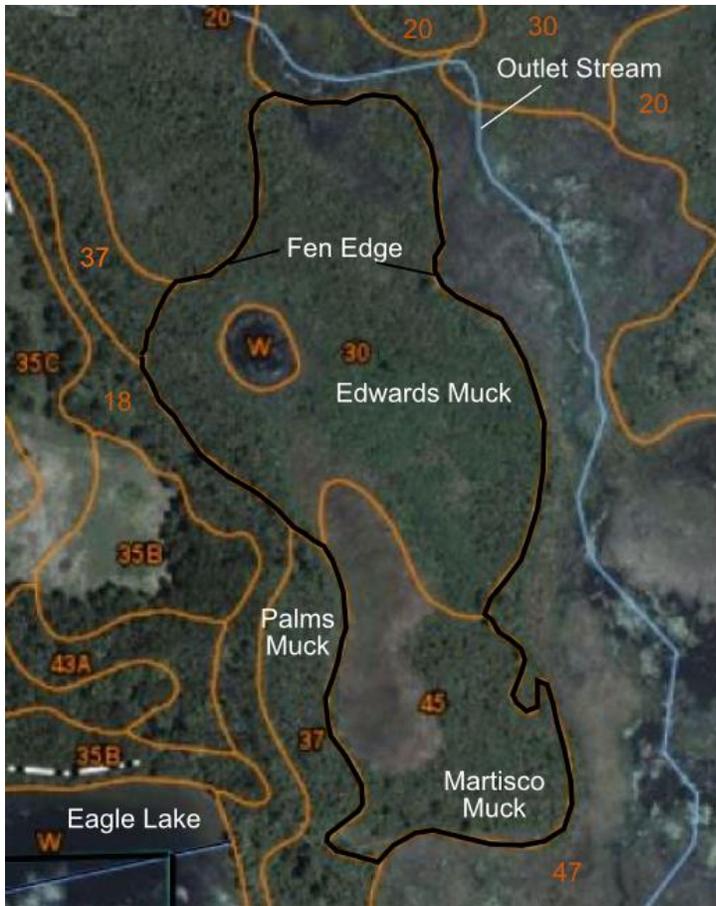


Figure 1. Bogus Lake soil map.

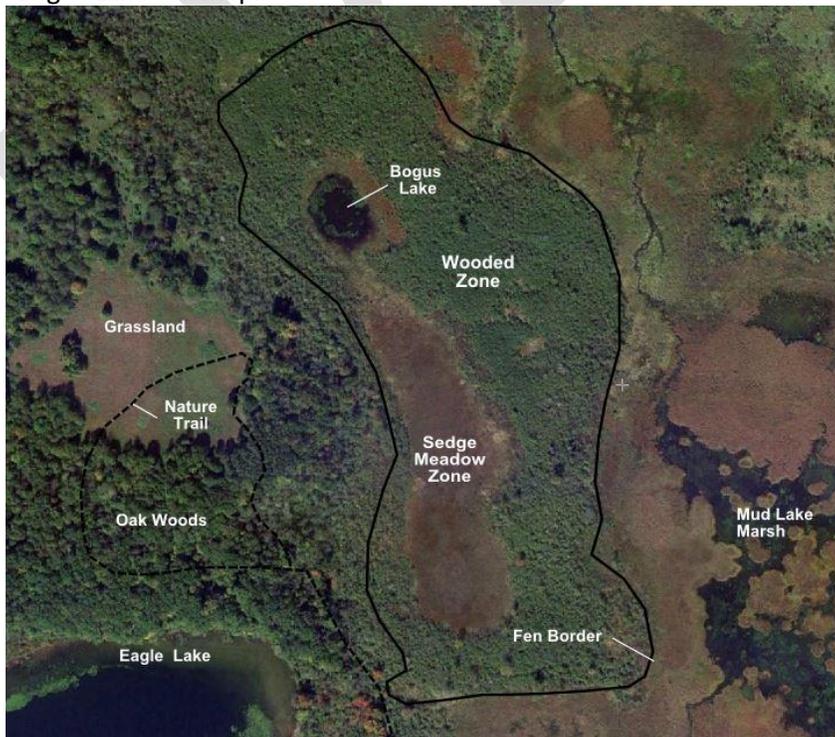


Figure 2. Bogus Lake Fen vegetation zones.

Record of Accomplishments and Monitoring Unit 4.02

1.04 Restore, enhance and maintain fen biotic community.

1.04a Cut glossy buckthorn beginning at the southern part of the fen (Unit 4.02) in the area of Martisco Muck.

- August 28 -- Sept. 4, 2015 6.4 acres
- March, 2016

1.04b. Spray glossy buckthorn spouts with a herbicide

- Oct. 7, 2015 USF&WS used a helicopter to spray Garlon 3 on about 3 acres of uncut glossy buckthorn at the southern part of the Unit 4.02.

1.04e Annually, monitor and evaluate results of management actions to restore the fen, including panoramic photos, maintain a list of plants, Lepidoptera, and vertebrates in the management area before and after management actions.

- Plant surveys
 - April 15, 2015 - 18 species of plants found in fen.
- Bird survey
 - 5-13-15 before cutting

2.02 Provide educational materials.

2.02a Write articles for newsletters about fens and restoration.

- JAS Newsletter *Bird Tracks* 2-8-15
- *Haehnle Sanctuary News* Spring 2015

2.02b Develop an display at the kiosk about fens and restoration efforts.

- Sept., 2015

3.01 Maintain an inventory of plants, insects, fish, amphibians, reptiles, birds and mammals.

3.01a Conduct a plant survey along 100-meter transect from stake 4.03 to 4.04.

3.01b Conduct bird point counts at 4.03 stake.

- April, 2013 - began survey

3.01c Take panoramic photos at 4.04 stake.

- ?? taken 2013

3.01d Conduct butterfly Transect F.

- Summer, 2014 - began survey