

Lake Puckaway Common Tern (*Sterna hirundo*) Nesting Raft Management Plan

February 11, 2013
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Introduction

Unlike its name would suggest, the Common tern is an endangered species in Wisconsin. Common tern populations were drastically reduced due to overharvesting for their feathers, but after the practice became illegal their population increased, and peaked in the 1930's. However, their populations began a decline in the 1970's because of loss of nesting habitat, human disturbance and competition for nesting habitat with gulls. Common terns nest on islands, peninsulas, and modified manmade structures including floating rafts. Common Terns prefer to nest in sandy, beach-like conditions with sparse or low vegetation. In the state of Wisconsin, Common Terns currently nest only on Lake Superior and Lake Butte des Morts in Winnebago County. The Lake Butte des Morts location is a small, artificial island specifically made for terns.

Lake Puckaway is shallow 5,038 acre lake along the Fox River in Green Lake County. The lake currently hosts a nesting colony of another endangered species the Forster's Tern (*Sterna forsteri*). Constructing Common Tern habitat is consistent with management plans for the species including The Comprehensive Management Plan for Lake Puckaway's (2004) goal 13 which recommends that Common Tern habitat should be constructed on the lake.

Tern nesting rafts are successfully used throughout the world for several species of terns that nest on beaches. Tern nesting rafts range in size from a sheet of plywood to medium sized barges. These rafts are covered with sand or fine gravel. The use of rafts on Lake Puckaway is desirable because of frequent, large fluctuations in water levels. 2012 was both a year of flood and drought: high water peaked on May 12th, and in less than 60 days dropped four feet according to the Log Cabin staff gauge. Rafts will allow for the rise and fall of water levels. A permanent nesting island on Lake Puckaway may be desirable, but is cost prohibitive at this time. Such an



Figure 1. Common tern nest, Lake Butte des Morts

island would have to accommodate frequent high water and large waves, and would need to be built 6-8 feet above the normal July water level to prevent nests from being washed out in flood years. Large floods have occurred on Lake Puckaway in 2004, 2008, and 2012. Rafts will provide some protection from such events. The placement of rafts later in spring than the peak nesting site selection of ring-billed and herring gulls also reduce nest site competition over permanent islands. If a permanent Common Tern island is made, the colonies established on the rafts would increase the island's chance of early success. Also, much knowledge would be gained about issues affecting terns on Lake Puckaway before the construction of a costly island.

Goal: to create an annual nesting colony of Common Terns using floating rafts, totaling 18 nesting pairs. First and second year success will be measured by the birds accepting the rafts as breeding areas. Third year success will be gauged by maintaining a colony size of 12 or greater nests and terns' ability to fledge an average of one chick per nest. Long-term goals include placing more rafts, or the construction of a permanent island for terns.

Methods: Nesting rafts will be constructed by modifying pontoon boats, floating docks, or creating rafts from recycled plastic barrels with a wood deck. For examples of rafts see photos in Appendix B. Rafts will be anchored by four 50 lbs. anchors chained to the raft. The deck will be covered by 1.5 inches of sand or pea gravel, and allow for drainage. Plywood sides will be placed around the deck to prevent use by Canada geese, double-crested cormorants, and American white pelicans, discourage predators, contain chicks, and provide protection from waves and high winds associated with storm events. Signs will be placed near the raft stating the rafts are tern nesting areas and to keep out. Rafts will be placed approximately 10 May to avoid peak nest site selection by gulls, and removed by September 1 to avoid conflicts with the opening of the duck season. Tern decoys will be placed on the rafts to help the terns identify the rafts as nesting areas. Common Tern calls may also be played through an audio system if one can be loaned to the LPPRD. The public will be informed of the project by press releases to the local newspapers, the LPPRD's website and fliers at boat landings. The LPPRD will seek to manage gulls on the islands by removing any eggs, and stringing monofilament line above the substrate before terns begin nesting to discourage gulls. The LPPRD will have to obtain permits from the Fish and Wildlife Service to remove gull eggs. Actual removal may have to be done by WDNR, or APIS depending on permit conditions. Permits will have to be obtained to place rafts.

Location:

Sites 1, 2, and 3 are located north of the riprapped remains of a USACE dredge bank, and are secondary in site preference. This bank is usually covered with water during spring or flood events. The bank provides some protection against waves even when submerged. The cane beds (*Phragmites australis*) provide protection from west winds and waves.

Site 4 is located north of a cane bed, and always submerged portion of the dredge bank. This site has been selected as the best site for raft location.

Site 5 receives last priority, but is a desirable location due to its remoteness.

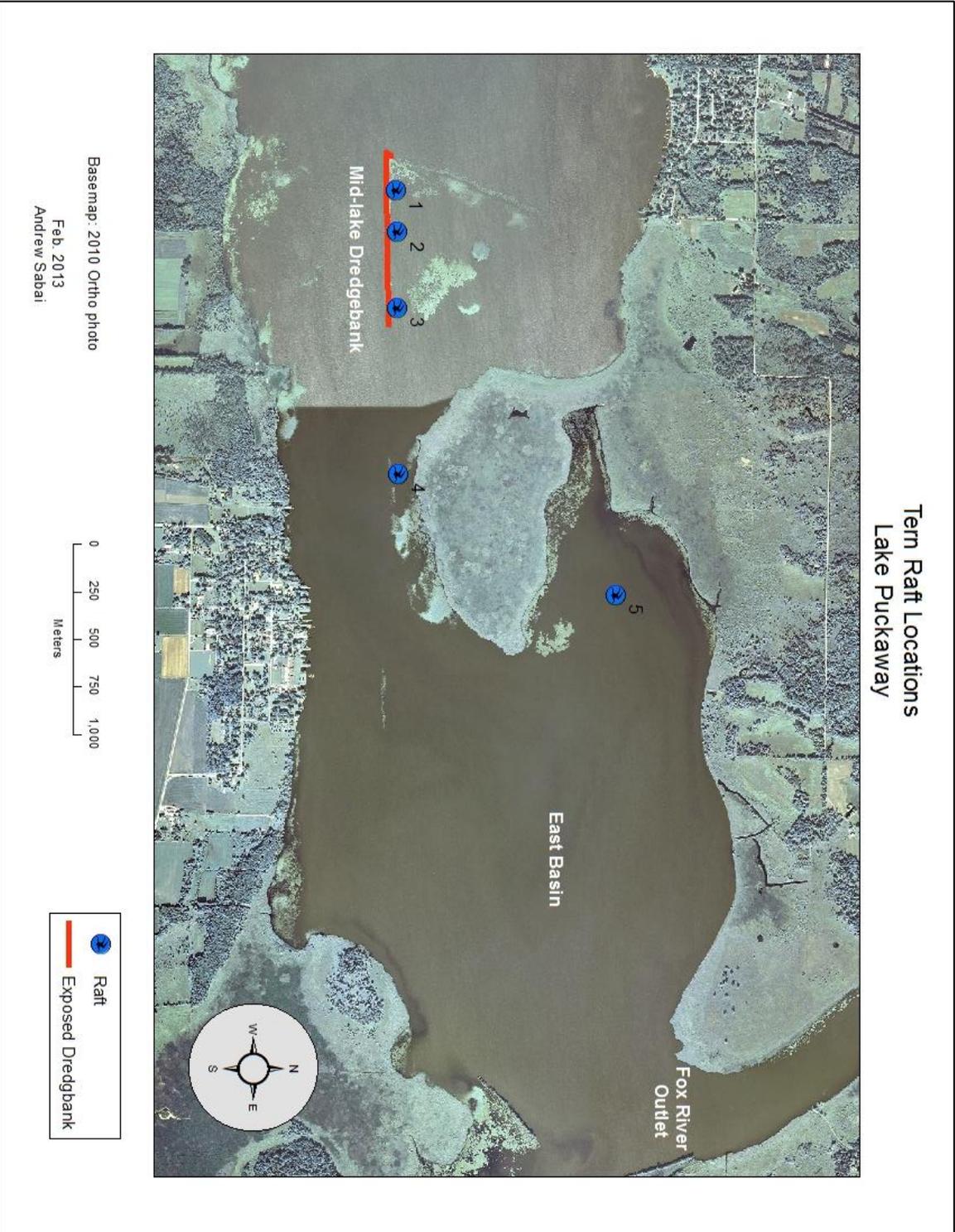
Map of locations is in Appendix A.

Table 1. Tern Raft Locations

Id	Lat	Long
1	-89.1688995	43.7536011
2	-89.1661987	43.7537003
3	-89.1612015	43.7537994
4	-89.1503983	43.7540016
5	-89.1427994	43.7644997

Monitoring: Floating rafts will be monitored weekly for tern use, predation, raft condition, and human disturbance. Number of nests, eggs, and chicks will be counted each week, and this data and final report sent to DNR biologists at the end of the breeding season or as often as requested. Once placed, the rafts should need little maintenance, but if damage occurs it will be fixed as soon as possible.

Appendix A



Appendix B



Common tern nesting rafts, Rye Meads, United Kingdom (www.rspb.org.uk)



Common tern nesting raft Tommy Thompson Park, Toronto, Canada (www.tommythompsonpark.ca)



Common tern raft preparing to be deployed, London, United Kingdom (www.ecovigour.com)