

Marsh Lake – Project History, Vegetative Response, Monitoring and Observations of Shorebirds and Muskrats.

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Marsh Lake, located in west-central Minnesota, is entirely within the Lac qui Parle Wildlife Management Area. This presentation will review the history of this project and document important steps starting in the 1930's until project completion and final implementation. Changes in aquatic vegetation over several decades and response of vegetation to the initial drawdown will be discussed. As part of our monitoring of environmental changes, observations and monitoring of shorebird and muskrat (*Ondatra zibethicus*) response to habitat changes will be discussed.

The Marsh Lake Dam was originally established as a water conservation and flood control project in the late 1930's by establishing a fixed crest dam and re-routing the Pomme de Terre river. Over several decades, it became apparent that the original project was not meeting objectives and producing negative environmental effects. Over the course of several decades, beginning in 1985, discussions began to modify the dam and facilitate the ability to alter water levels on Marsh Lake. Over the course of the next 34 years through multiagency planning and coordination a final ecosystem restoration project was brought to completion and implementation.

One of several aspects of our monitoring of this project was to document shorebird use of the lake during the drawdown. Citizen observers were recruited to make observations of species use and numbers. The drawdown attracted large numbers of shorebirds. 25 different shorebird species were identified totaling over 28,000 individuals.

A two-year drawdown of Marsh Lake produced a dramatic change in vegetation conditions. A nearly 5500-acre lake that was nearly devoid of vegetation, saw a significant increase in emergent vegetation present on the lake along with some increases in submerged aquatic vegetation. Emergent vegetation coverage increases from approximately 1000 acres to over 4000 acres occurred after the drawdown. Submergent vegetation also increased, although increases have not been as significant.

One aspect of monitoring that was added later was changes in muskrat use of the lake. Muskrats can be viewed as a keystone species or ecosystem engineer in prairie wetlands by changes they produce in habitat conditions through their grazing and house building. We used November satellite images to document changes in muskrat house numbers post project completion.

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