

**Wisconsin DNR Final Report
September 10, 2015**

**Clough Island Preservation & Restoration Land Acquisition NCWC grant (C-15-L-1, F05AP00014)
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Summary

Work under the Clough Island Preservation & Restoration Land Acquisition NCWC grant started in 2012 and is wrapping up in 2015. Over the four years, significant accomplishments have been made towards inventorying existing aquatic and terrestrial resources, assessing habitat quality and restoration potential, and restoring native ecosystems at Clough Island.

Inventory & Monitoring. Inventory and monitoring at Clough Island included an aquatic plant survey, a macroinvertebrate survey, National Heritage Inventory survey and rapid ecological assessment, an invasive plant survey, coastal wetland monitoring, and a baseline aquatic sediment assessment. The reports and documents listed here summarize the inventory and monitoring data collected as a part of the Clough Island Grant:

- Aquatic Macrophyte Survey Report (WDNR, 2013; attached)
- Clough Island Invasive Plant Survey (Hlina et al., 2013; attached)
- Macroinvertebrate Survey Results (SWIMS Report; attached)
- Clough Island: A Summary of Inventory and Monitoring (Staffen and O'Connor, 2014) can be found at <http://dnr.wi.gov/files/PDF/pubs/nh/NH0849.pdf>
- Coastal Wetland Monitoring Survey Report: Clough Island (Dumke et al., 2014; attached)
- Baseline Aquatic Sediment Assessment (results and report forthcoming)

On-The-Ground Restoration

- A total of 198 acres of invasive buckthorn and honeysuckle have been treated on the island.
- Conifer restoration efforts have resulted in a total of 45 acres of white pine, white spruce, white cedar, and balsam fir plantings.
- Major infestations of non-native common reed grass (*phragmites australis*) have been treated on the south portions of the island totaling over 3.25 acres.
- Seeding approximately 10 acres of wild rice along the eastern shoreline of the island through an educational volunteer event.
- Installation of an interpretive sign at the island's major access point
- Removal of remaining structures on the island
- Clean-up an unauthorized campsite and trash on the island

The timeline of activities below details the work completed each year under the Clough Restoration Grant. Thank you for supporting this project. These efforts are contributing to the removal of the Loss of Fish and Wildlife Beneficial Use Impairment through the evaluation and restoration of habitat in the St. Louis River Area of Concern.

January - September 2015

- **Baseline Aquatic Sediment Assessment.** In August of 2014 WDNR staff collected surface sediment samples at 7 locations adjacent to Clough Island. These samples were sent to the Wisconsin State Lab of Hygiene for analysis to assess the surface sediment quality. Surface sediment quality can influence macroinvertebrate communities sampled previously in 2013. Potential issues that will be identified through this sampling are contamination from the adjacent Superfund site just upstream, and/or from pesticides used on the island during the early-mid 1900's when it was farmed. Samples are being analyzed for nutrients, metals including mercury, methylmercury, PCBs, PAHs, pesticides, chemical oxygen demand, total organic carbon, oil & grease, and particle size. The results will be available in Fall 2015. The results of the study will inform future restoration efforts on and around the island by the WDNR.
- **Conifer Reforestation.** Six areas totaling 18.7 acres (shown on attached map) were identified for reforestation in 2015. A total of 6000 additional trees are being planted in and caged in upland areas on the northern portion of the island in September 2015, including 1200 balsam fir, 1200 white pine, and 3600 white spruce. The contractor is also removing three large female buckthorn trees in the planting areas.
- **Invasive Species Control.** During the 2015 field season, WDNR hired contractors to control common buckthorn and invasive honeysuckle on Clough Island based on the Invasive Species mapping conducted in 2013. The three areas that were controlled, totaling 81 acres, are shown in the map below. The control areas include two areas that had not previously been treated (Areas 7 and 8), and follow-up treatment in Area 2, which was treated once in 2012 prior to planting. In May 2015, WDNR staff collaborated with the Lake Superior National Estuarine Research Reserve to coordinate field trips with two 4th grade school groups to help conduct follow-up buckthorn treatment in Area 1 and Area 6. Students learned about the significance and threat of invasive species, and helped hand-pull stems less than 2ft tall, which were not treated as part of the 2014 contract.
- **Phragmites Control.** In addition, phragmites is being treated in 2015. Great Lakes Indian Fish and Wildlife Commission conducted an estuary-wide survey for phragmites that included Clough Island in 2014. With that survey, along with the mapping conducted in 2013 as part of this project around Clough Island, the WDNR has a good understanding of the locations of phragmites around Clough Island. In June, 2015, WDNR staff assessed the sites that were treated in 2014. These sites were noticeably weakened and set back, but did experience some limited re-growth. These sites are being re-treated in 2015. The WDNR hired a contractor to control all known occurrences of phragmites throughout the estuary in Wisconsin. This Clough Island grant is funding treatment of phragmites around Clough Island, while a separate Great Lakes Restoration Initiative grant will fund treatment throughout the rest of the estuary in Wisconsin.
- **Wild Rice Restoration.** In August of 2015 the St. Louis River Alliance (SLRA) was contracted to coordinate and conduct a wild rice restoration event. The St. Louis River Wild Rice Implementation Plan identified the eastern shoreline of Clough Island as high potential for wild rice habitat, although the NRRI did not observe wild rice while conducting coastal wetland plant monitoring surveys in that area in 2012 - 2013. Wild Rice will be seeded over approximately 10 acres by volunteers in September 2015 by volunteers as part of an outreach event. The event will include an educational program about the ecological and cultural values of wild rice in the emergent wetlands around Clough Island. The WDNR plans to pursue other funding sources to continue seeding in this area in the coming years to increase potential for success of wild rice.

September 2013 – December 2014

- **Rapid Ecological Assessment.** In November 2014, WDNR's Natural Heritage Inventory Program completed the rapid ecological assessment report that includes a terrestrial and aquatic condition assessment. The report titled Clough Island: A Summary of Inventory and Monitoring can be found at: <http://dnr.wi.gov/files/PDF/pubs/nh/NH0849.pdf>
- **Coastal Wetland Monitoring Report.** Through separate efforts, the University of Minnesota Natural Resources Research Institute (NRRI) conducted coastal wetland monitoring including fish, macroinvertebrates, aquatic vegetation, birds, amphibians and water quality sampling at Clough Island in 2012-2013. Through funding from this grant, the NRRI completed a report in 2014 summarizing the results of that monitoring. The Coastal Wetland Monitoring Survey Report: Clough Island is attached.
- **Conifer Reforestation.** In 2014, WDNR Foresters assessed the success of 2013 tree planting efforts and re-planted in areas that experienced seedling mortality, and planted additional white pines.
- **Invasive Species Control.** Contractors have been hired to control invasive species over a total of 107.8 acres on the island as a follow-up to the island wide invasive species mapping that was completed last year. The target species are common buckthorn, honeysuckle, and phragmites. The map below shows the buckthorn areas in need of control and the efforts have been focused on the priority areas 1, 3, 4, and 6.
- **Shed Removal.** An abandoned shed was removed from the island in 2014.
- **Interpretive Sign.** The St Louis River Alliance designed and coordinated installation of an interpretive sign at the beach along the southern edge of the island. This location is where the public is most likely to access the island. The sign includes information about the natural resources and history of the island, as well as permitted uses. A photo of the sign installed on the island is shown below.



October 2012 – September 2013

- ***Invasive Species Mapping.*** A contractor, Leaning Pine Natives, was hired to map identified selected invasive species on the island and associated wetlands. This mapping effort took place from May through September and resulted in maps showing the location(s) of the selected invasive species and relative abundance. The contractor has submitted the report and associated maps and WDNR staff will review this information to determine control options that can be implemented with this grant funding in Fall of 2013 and Spring of 2014. The Clough Island Invasive Plant Survey is attached.
- ***WDNR National Heritage Inventory (NHI) Conducted.*** WDNR's National Heritage Inventory Program and contractor conducted the following surveys in 2013 to help establish a base line condition assessment of the island and adjacent wetlands: (1) Migratory Bird, Breeding Bird, Marsh Bird and Herptile Survey; (2) Rare Plant and Natural Community Survey; (3) Small Mammal Baseline Survey and (4) Bat Survey. Additional survey work will be completed in Spring of 2014 and the data compiled to create a NHI Rapid Ecological Assessment report. As a result of this survey work, Clough Island has now been designated a new State Natural Area. This survey work is also part of a larger NHI effort in the St. Louis River Estuary funded by the Wisconsin Coastal Management Program. Additionally, the EPA is funding the Natural Resources Research Institute (NRRI) to conduct the coastal wetland monitoring throughout the Great Lakes. WDNR collaborated with NRRI folks as they conducted the coastal wetland monitoring for Clough Island in 2012 and 2013, and they will be supplying their data to be included in the Rapid Ecological Assessment Report noted previously.
- ***Aquatic Resources Survey Conducted.*** In August of 2013 WDNR staff conducted a point intercept survey of the aquatic vegetative beds associated with the island. This survey will result in a statistically valid survey documenting the aquatic vegetation (species) that is present and also will include a map of the aquatic beds. The Aquatic Macrophyte Survey report was completed in 2013 and is attached. Also in August, WDNR Water staff with a contractor from the Lake Superior Research Institute conducted macroinvertebrate sampling at six locations to determine the existing species that are present. As restoration of the island and other restoration projects in the estuary are completed the information collected from these aquatic surveys will be utilized to determine if the condition or health of the river/wetlands/estuary are improving. Data were entered into the WDNR's Surface Water Integrated Monitoring System (SWIMS). Results from this survey are attached.
- ***Conifer Reforestation Plan Developed and Implemented.*** In 2012 a WDNR Forester developed the plan after conducting a forestry recon of the island and identified three areas for conifer planting totally 25.6 acres (see map below). The tree species and approximate amount planted on the island included 3500 white spruce, 1000 balsam fir, 1350 white pine and 150 white cedar. The seedlings for this project were supplied, at no cost, by WDNR's state nursery. A contractor, Wetland Habitat Restorationists, was hired to conduct the planting in May of 2013 and some maintenance work related to tree cage repair occurred in July and August. Our Forester has identified at least two additional areas for conifer reforestation in May of 2014 and additional planting in areas from this year that experienced seedling mortality. Overall goal is to conduct conifer reforestation to ~ 10% of the island.
- ***Common Buckthorn Control Conducted.*** In October of 2012 a contractor, Wetland Habitat Restorationists, was hired to conduct chemical control of common buckthorn within the three planting areas totally 25.6 acres. The contractor was scheduled to conduct additional control to improve success September of 2013, but we have not received a status report from the contractor yet.
- ***Island Clean-Up Conducted.*** In summer of 2013 the St. Louis River Alliance was retained to conduct a garbage clean-up of the island. Before the island was purchased and protected for conservation purposes it appeared people used the island for camping, hunting and other purposes and left their trash on the island after they left. The trash was sorted to remove recyclable materials; approximately 400lbs of metal was taken to the Bayside Recycling Company.

