Introduction

The Manoomin Partnership: St. Louis River is in the third year of a program of work to restore wild rice beds to the St. Louis River Estuary. The Minnesota Land Trust (MLT), Fond du Lac Band of Lake Superior Chippewa Natural Resources (FDLNR), the 1854 Treaty Authority (Treaty Authority), the Great Lakes Indian Fish & Wildlife Commission (GLIFWC), the Wisconsin Department of Natural Resources (WDNR) and the Minnesota Department of Natural Resources (MDNR) are working together to establish at least 275 acres of wild rice in the estuary over the next 10 years. The Partnership coordinates with other wild rice restoration efforts in the estuary lead by the National Estuary Research Reserve (NERR) and University of Wisconsin Extension that were begun independently.

This report summarizes the restoration activities and evaluation of previous work undertaken in 2017 and covers work in both Minnesota and Wisconsin waters of the St. Louis River estuary.

Background

The partnership continuted restoration work at the 5 sites started in 2016 as well as completing 3rd year seeding for the 6 sites started in 2015. We expect to seed sites for 3-5 years to establish robust wild rice beds. Currently, funds from Minnesota’s Outdoor Heritage Fund (OHF) to MDNR and the Great Lakes Restoration Initiative, through WDNR support our wild rice restoration in the estuary.

Table 1: Mannomin Partnership sites in the St. Louis River estuary seeded in 2017

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Site name | State | Mapped area | Restoration year | Source of Funds |
| Landslide Bay | WI | 10 acres | 2 | GLRI/WDNR |
| Oliver Bay | WI | 20 ac | 2 | GLRI/WDNR |
| Walleye Alley Bay | WI | 20 ac | 2 | GLRI/WDNR |
| Mud Lake east | MN | 45 ac | 2 | OHF |
| Bear Island | MN | 12 ac | 2 | OHF |
| Rask Bay | MN | 33 ac | 3 | OHF |
| North Bay | MN | 14 ac | 3 | OHF |
| Radio Tower Bay | MN | 15 ac | 3 | OHF |
| Duck Hunter Bay North | WI | 19 ac | 3 | GLRI/WDNR |
| Duck Hunter Bay South | WI | 40 ac | 3 | GLRI/WDNR |
| Clough Island | WI | 10 ac | 3 | GLRI/WDNR |
|  |  | 238 ac |  |  |

Methods

Fond du Lac Natural Resources and 1854 Treaty Authority completed site preparation, seed collection, seeding and monitoring this year as they did last year. MLT and MDNR administered grant funds and permit requirements for Wisconsin and Minnesota waters, respectively.

Site preparation and aquatic plant material disposal

Since no new acres were initiated this year no site preparation was conducted.

Seed year and seed collection

Wild rice beds in the local area around the estuary preferred as our seed source, did not have a highly productive year. FDLNR followed our wild rice seed acquisition guideline of acquiring seed from local sources before using more distant sources. 100% of required seed was available from the White Earth Reservation this year.

Seeding

FDLNR completed seeding a total of 207 acres on September 12, 2017 using a total of 10,484 lbs of wild rice seed from White Earth. FDLNR staff and MN Conservation Corps seeded all sites by hand from a boat.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Site | Area seeded (ac) | Date completed | Seed source | Total seed (lbs) | Seeding rate (lbs/acre) |
| Rask Bay | 33 | 9/12/2017 | White Earth | 1647 | 50 |
| Walleye Alley | 17 | 9/12/2017 | White Earth | 850 | 50 |
| Landslide |  9 | 9/12/2017 | White Earth | 425 | 47 |
| DH north | 19 | 9/12/2017 | White Earth | 953 | 50 |
| DH south | 40 | 9/12/2017 | White Earth | 2006 | 50 |
| North | 14 | 9/12/2017 | White Earth | 707 | 50 |
| Radio Tower | 15 | 9/12/2017 | White Earth | 767 | 51 |
| Bear Island |  2 | 9/12/2017 | White Earth | 100 | 50 |
| Oliver Landing | 25 | 9/12/2017 | White Earth | 1241 | 50 |
| Mud Lake NE | 33 | 9/12/2017 | White Earth | 1788 | 54 |
| Clough Island | 10 | 9/12/2017 | White Earth | 500 | 50 |
| Sum total | 207 |  |  |  |  |

Monitoring

The 1854 Treaty Authority collected wild rice plant distribution data from all sites during the growing season to evaluate seeding success. The Treaty Authority collected field data, including an aerial survey, between August 22, 2017 and September 6, 2017. The Treaty Authority’s complete monitoring report is included as Appendix A to this report.

Overall density of wild rice at the monitored sites in 2017 does not yet meet the restoration target established by the partnership. However, since these results are from the second and third growing seasons this result is expected and indicates the strategy of multiple years of seeding is a prudent one.

Only one site, met, or exceeded, the wild rice density objective for the St. Louis River Wild Rice Plan of 1 stem/0.5m2 (2 stems/m2) at more than 50% of the sampling points for this year. The average density of wild rice at Duck Hunter Bay North was 4.3 stem/1/2m2 (8.6 stem/m2) at 77% of points sampled. This is the second consecutive year this site has met the density target. The density objective needs to be met 3 out of 5 years for the site to be considered “restored”.

This year biomass metrics for wild rice was lower at 5 of 8 sites with at least 2 years of seeding. Visual observations indicate widespread grazing effects at these sites. Grazing –likely by Canada Goose- is the most likely cause for this effect.

1854 Treaty Authority also began collecting pre-project aquatic plant data to establish a robust baseline at additional 5 sites we anticipate initiating wild rice restoration activities over the next few years.

Permits and Administration

No permits were required for wild rice restoration activities in 2017.

Restoration Protection Structures

Project partners continue to have some concern about the potential impact geese might have on the success of wild rice restoration efforts. Evidence of widespread grazing was noted by Project Partners during monitoring and seeding efforts. Although, no additional structures, or activities were scheduled for restoration sites in 2017, project partners met to discuss workable methods and strategies.

Knowledge Base

MLT contracted Barr Engineering to evaluate and map riverbed substrate conditions within the future restoration sites identified by the Partnership. Soil texture, organic composition and “bed hardness”. The findings confirm wild rice preferentially occurs on moderately soft sediments (organic, peat, silty soils) with high organic content (>50%). The findings begin to quantify a methodology and acceptable ranges for future mapping efforts. The complete report is included as Appendix B. The survey also indicates that a significant saw waste deposit may exist in Foundation Bay.

Conclusions and Recommendations

FDLNR continued to develop an efficient and highly effective seed procurement and seeding operation. Seeding about 200 acres a year is a good target given current capacity and seed procurement methods.

1854 Treaty Authority monitoring continues to demonstrate that seeding efforts are being effective at increasing the wild rice component within restoration sites, but that we have not yet achieved restoration success metrics at any site. We should continue seeding the current 3-year old restoration sites for at least another year.

Grazing animals appear to be having an effect on the growth and productivity of wild rice at the restoration sites. Additional effort should be taken to minimize effects on growth and production at least until a site is considered self-sustaining. Multiple long, narrow (<30 ft) exclusion plots within restoration sites with intensive seeding rates of 150-200 lbs/ acre are suggested. Lightweight nets, or fencing, mounted 6 to 12 inches above the water surface is likely adequate to discourage goose access to plots. Detailed planning and design should be completed spring 2018 so structures can be deployed early season to minimize disturbance to germinating rice.

Legacy sawmill waste wood was noted during substrate surveys in Foundation Bay. Additional investigation to describe the nature, extent and thickness of these deposits is suggested to determine if removal is warranted.