Wild Rice Restoration in the St. Louis River Estuary: Moving From Planning Today to Planting Tomorrow

Mark Pranckus
• Background on the St. Louis River Estuary and the significance of wild rice

• Wild rice planning process

• Wild rice planting process
Significance of Wild Rice in the St. Louis River Estuary

• Important component to fish and wildlife habitat in the estuary
  • Fish – Provides spawning and nursery grounds for young fish
  • Wildlife – Nutrient-rich seeds for waterfowl during fall migration

• Cultural importance
  • Integral to Ojibwe people’s Migration Story – Continue west until the “land where food grows on water”
  • Today, fall harvest remains an important event in tribal cultural
Decline of Wild Rice in the St. Louis River Estuary

- Historical accounts of 600 to 1,000 acres from 1930s to 1960s

- Wild rice is naturally variable – annual plant with 3 to 5-year cycles

- Major decline through 1970s
  - Municipal waste
  - Industrialization and development of the estuary
  - Invasive species – common carp
  - Increase in Canada geese

- Today, present in estuary, but nowhere near former abundance and distribution
Restoration of the St. Louis Estuary and Delisting of the AOC

- Cleaning up or addressing contaminated sites
- Removing historical impacts such as wood waste that impacted habitat
- Restoring fish and wildlife habitat – Role of wild rice restoration
Why Develop a Wild Rice Restoration Plan?

- Multi-partner effort – Need to have a common playbook
- A document to reference during funding requests
  - Great Lakes Restoration Initiative
  - State of Minnesota Sales Tax Fund (Clean Water, Land, and Legacy Act)
- Documentation and justification for use of public funding
- Key outcomes for the plan
  - Identify where and how to restore wild rice in the estuary and who will be responsible
Planning Process and Structure

• Develop a technical team – Restoration Site Team
  • MN Department of Natural Resources
  • MN Pollution Control Agency
  • WI Department of Natural Resources
  • Fond du Lac Band of Lake Superior Chippewa Natural Resources
  • Great Lakes Indian Fish and Wildlife Commission
  • 1854 Treaty Authority
  • Minnesota Land Trust

• Initial outreach effort to stakeholders in the estuary
  • Introduce the project
  • Request data pertinent to wild rice restoration

• Restoration Site Team meets on a regular basis to review and refine planning process and information
Basic Wild Rice Biology

- Annual plant
- Prefers water depth 2 – 3 ft
- Soft sediment, primarily organic
- Water level fluctuations less than 1 ft
- Prefers clear water
Using Existing Data to Develop a Site Selection Model

- Use stakeholder process to identify existing and available data in the estuary – collaborative process

- Beyond Restoration Site Team representatives, data were provided by:
  - USEPA
  - University of Minnesota – Natural Resources Research Institute
  - University of Wisconsin – Superior
  - Private organizations

- Estuary-wide data on bathymetry, presence/absence of wild rice, sediment characteristics and other plant community information
Preliminary Restoration Site Selection Model

**Calibrated model using 2010 MNDNR point intercept data from points where wild rice was found.**
<table>
<thead>
<tr>
<th>Wild Rice Restoration Potential</th>
<th>Substrate Characteristics</th>
<th>Plant Community Characteristics</th>
<th>Impact to Wild Rice Restoration</th>
</tr>
</thead>
</table>
| High                          | Soft, silt or organic-dominated. | Wild rice already present       | • Cost effective  
• Minimal site preparation  
• Minimal regulatory considerations  
• High probability of success |
| Medium                        | Muck (peat)-dominated     | Plant species that have similar habitat requirements as wild rice present and/or invasive species present | • Cost effective  
• More site preparation required  
• Minimal regulatory considerations  
• May require maintenance in future to continue wild rice |
| Low                           | Substrate not typically associated with wild rice | No plant species that have similar habitat requirements as wild rice are present. | • Increased cost  
• Intense site preparation required  
• Regulatory considerations  
• Requires altering existing site conditions |
<table>
<thead>
<tr>
<th>Restoration Potential</th>
<th>No. of Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Potential</td>
<td>1,129</td>
</tr>
<tr>
<td>Medium Potential</td>
<td>1,679</td>
</tr>
<tr>
<td>Low Potential</td>
<td>789</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,597</strong></td>
</tr>
</tbody>
</table>

Model Output

- High Potential: Dark Blue
- Medium Potential: Green
- Low Potential: Light Yellow

Map showing the distribution of restoration potential across different areas.
Wild Rice Restoration Objective

By 2025, between approximately 400 and 900 acres of wild rice will be restored or enhanced in approximately 15 locations where habitat conditions are suitable for wild rice to benefit fish and wildlife resources and provide opportunities for harvest. Restored or enhanced wild rice stands will be comprised of the following:

- Wild rice is present with an average density of greater than 1 stem/0.5 m² in 50% of the sampling points within the defined site in three of every five years and not absent in 60% or more of the sampling points for more than three straight years.

- Has an average stand density that can be identified through standard aerial photography methodology in late summer (August 7 through Sept 15) in two of every five years.
Breaking Up the Estuary into Restorable Pieces
Wild Rice Restoration Process

• Site preparation – Remove or reduce existing vegetation

• Seeding – Completed in the fall with fresh seed and repeated for at least 3 years

• Reducing herbivory – Exclosures used seasonally to minimize herbivory

• Monitoring – Adaptive management and tracking progress towards objective

• Partners in the Estuary are funded with the first round on implementation money in both Wisconsin and Minnesota
  • Start summer 2015
Seeding

• Completed in the Fall
• Rate - 50#/acre
• Repeated for 3 years
• Use local ecotype when possible
Herbivory Reduction

- Requires annual set up and tear down
- Seasonal maintenance
- Learning curve for scale and effectiveness for long term wild rice restoration
Summary

- Wild rice was once abundant in the St. Louis River estuary. As impacts have been removed or decreased, it has not naturally returned.

- States of Minnesota and Wisconsin along with tribal partners such as Fond du Lac Band of Lake Superior Chippewa, GLIFWC, and 1854 Treaty Authority and a non-profit, Minnesota Land Trust will be beginning the first year of a long-term process to restore 400 to 900 acres of wild rice in the estuary by 2025.

- The wild rice restoration plan will provide a framework for where and how to restore wild rice in the estuary. Each partner will bring resources to accomplish the objective in the shared resource.
Questions?

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