Adapting to the Effects of Climate Change on Wild Rice

Barb Barton, Endangered Species Consulting
Roger LaBine, Lac Vieux Desert Band of Lake Superior Chippewa
Jubin Cheruvelil, Michigan State University
Focus Area

- Relationship between wild ricing, ecology, climate change and cultural knowledge
- Reviewed literature
- Met with Tribal Elders – Traditional Knowledge
- Developed adaptation strategy
Climate Change Predictions
The potential impacts on Manoomin
Historic Distribution

- 245 Sites
Extant Sites

• 154 locations
Presque Isle Flowage – Presque Isle River
Rice Bay, Lac Vieux Desert
Winter

Seeds prefer temps below 35° for 3-4 months to germinate

Temps ↑ 8°
• Impacts germination

Loss of Ice Cover
• Loss of protection from winter storm events

Precipitation ↑ 20%
• Increased flood events in spring
Spring

Temps ↑ 6.5°

Precipitation
- ↑ Storm events
- Heavy rain events 25% increase in frequency
- Flash floods - increase in runoff/snow melt
Summer

Temps $\uparrow 6.5^\circ$

• Growing season increases 8 - 10 weeks
• Drought conditions
• Decrease/increase wetland habitat
• Pollination affected, reduced seed production
Summer

Temps ↑ in Lakes

- Lower $O^2$ levels
- ↑ invasives – carp, hydrilla, water hyacinth
- Other invasives expand northward
- Decomposition ↑, releasing nutrients, contaminants, including phosphorous
Summer

Dewpoint Trending ↑

- Warm, humid conditions support growth of brown spot fungus
  
  *Bipolaris oryzae, B. sokiniane*
Fall

Temps ↑ 6.5°

• Low water levels
• Advance of *Phragmites*
• Biodiversity ↓ if rice production declines - bird species moving northward
Conversations with Tribal Elders
Intergenerational Knowledge

• Elders - cultural knowledge
• Younger members - scientific understanding of climate change
• Elders – historical perspective, ricing heritage, past climatic events
Common Themes - Elders

• Recognition of history and legacy of wild rice
• Sovereignty and rights (legal) of LVD to pursue ricing
• Protection of rice habitats (lakes, wild rice beds)
• Education of younger community members about climate change and wild ricing.
Other Important Points

- Ricing - community identity and connection to the past
- Community members riced in the past, often away from Tribal areas
Threats to Ricing

- Revitalization efforts just beginning
- Outside political and economic factors
- LVD does not have control or influence over traditional harvesting activities
- Lack of younger practitioners and experts that will carry traditions of their ancestors
Adaptive Strategies

- Knowledge building
- Ecological monitoring
- Regulatory protection
- Education and outreach
- Coalition building and collaborations
Knowledge Building

- Traditional knowledge + western science
- Research on climate change, plant and habitat ecology
- Monitoring conditions/Manoomin beds
Regulatory Protection

• Tied to Tribal sovereignty and treaty rights
• Tribes must preserve and protect wild rice habitats, their right to harvest, and food sovereignty
• Learn from MN and WI Regulatory process
Education and Outreach

• Climate change, Tribal perspective on wild ricing and adaptation

• Ecological, economic and cultural information, ways to develop a climate resilient community
Coalition Building and Collaborators

- GLIFWC (Great Lakes Indian Fish and Wildlife Commission)
- USFWS
- USFS
- US EPA
- MI DNR, DEQ
- Native Wild Rice Coalition
- USDA – NRCS
- Stewardship Network
Summary

- Manoomin affected by climate change
- Adaptation strategies needed
- Merging of TEK and Western Science
- Regulatory protection
- Education and outreach
- Coalition building and collaborations
Questions?

Barb Barton  akikwe@gmail.com
Roger LaBine  tc_brushman@yahoo.com
Jubin Cheruvelil  cheruvel@gmail.com