Coastal Resilience in the Great Lakes Region

February 13, 2020

Materials will be available at: www.eesi.org/021320greatlakes

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• Founded in **1984** by a **bipartisan Congressional caucus**.

• Now an **independent, bipartisan nonprofit** with no Congressional funding.

• We provide **fact-based information** on **energy** and **environmental** policy for Congress and other policymakers.

• We focus on **win-win solutions** to make our energy, buildings, and transportation sectors **sustainable** and **resilient**.

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Building Resilience on America’s Freshwater Coast

Beth Gibbons
American Society of Adaptation Professionals
The Power of the Great Lakes Region

- 4,530 miles of US coastline
- 30 Million people
- 5 out of 10 leading agricultural states
- 160 Million Tons of Cargo transported Annually
- 80% of the surface freshwater in the US
Growth & Opportunity Under a Changing Climate

45 Million ppl

In neighborhoods flooding annually @ 3’ SLR
History of Policy Impacts

1. Racist Zoning Policy
2. Urban Renewal and FHWA "Blight" Removal
3. State Sanction Violence
4. Subprime Mortgage Targeting
Overcoming History in a Changing Context

**Detroit**
- Detroit Climate Action Collaborative
- Detroit Climate Ordinance
- We the People of Detroit

**Milwaukee**
- MMSD Capital [$35 Million]
- MMSD CSO Reduction [55/year to 2.3/Year]
- New GI RFP for a PPP to capture 50 million gallons of stormwater
For the small cities too...

Duluth, MN (pop. 86,000)
- Resilient Walkway investment $25 Million

Marquette, MI (pop. 21,000)
- $5 Million in road shift
- Civilian Conservation Corps
Changes from 1951 - 2017
We are in the change, right now.

- Temperature increase: 2.3°F
- Growing Season: 16 Days
- Total Precipitation: 14%
- Extreme Storms: 35%
Policy Recommendation Themes

- Mainstream climate.
- Be proactive.
- Develop lasting authority.
- Elevate social equity.
- Support nature-based solutions.
- Facilitate local and regional action.
Specific Policy Recommendations: Policy Updates

- Modernize the Stafford Act
- Renew the National Flood Insurance Policy
- Update FEMA Disaster Funding
- Accelerate CDBG relief
- Increase and Expand Great Lakes Restoration Initiative Funding to Great Lakes Restoration & Resilience Initiative
- Maintain soil health priorities in Farm Bills
Every $1 on resilience bears an $11 return on investment.
- National Institute of Building Science

- Federally Mandated Resilient Building Codes and Standards
- Establishment of Resilience Revolving Loan Fund
  - (e.g. H.R. 3779: Resilience Revolving Loan Fund Act of 2019)
- Establish funding for separating legacy combined sewer systems
Support Critical Climate Programs

- NOAA’s Regional Integrated Sciences and Assessments (RISA) program
- NOAA’s Regional Climate Centers (RCCs)
- NOAA’s National Estuarine Research Reserves (NERRS) program
- USGS Climate Adaptation Science Centers (CASC)
- USDA Climate Hubs.
- Bureau of Indian Affairs
- National Climate Assessment
Policy Recommendations in Summary

UPDATE

INNOVATE

SUPPORT
American Society of Adaptation Professionals

- Connecting & Supporting Adaptation Professionals to advance innovation & Excellence in the field of adaptation
Great Lakes Coastal Assembly

**Vision**...coastal landscapes that support unique structure and processes essential for sustaining healthy species populations, resilient natural communities, and provide benefits to society.

**Priorities...**

- Catalyze Collaboration
- Serve as a Resource
- Facilitate Communication
- Promote Science and Tool Development
Great Lakes Wetland Loss

- ~50% of Great Lakes wetlands lost due to change in land use
- ~90% wetland loss in Ohio – draining of the Great Black Swamp

Wetland Restoration and Conservation Opportunities

Potential Wetlands w/in Anthropogenic Classes

Note: Red dots (6178) indicate locations > 50 acres Wetland Potential ≥ 6
Coastal Assembly: Promoting Critical Connections

- Data
- Strategy
- Partners
- Projects
- Resources
- Plans

Accelerate “On the Ground” results + improved resiliency

- Sponsored first ever Great Lakes Coastal Wetland Symposium
- Catalyzed development of two coastal wetland Decision Support Tools
- Coordinated the development of coastal wetland projects for State and Federal implementation funding
- Developed a Shared Vision and Goals for coastal wetlands based on Landscape Conservation Design principles
- Tracking our collective progress and success through Blue Accounting (joint venture between GLC and TNC)
Tracking Coastal Wetland Progress

76,168
Protected, Restored, and Enhanced Acres

Great Lakes Restoration

The Nature Conservancy
Blue Accounting
Great Lakes Commission des Grands Lacs
blueaccounting.org
Coastal Resiliency

• Wetland Diversity – type and function
• Habitat (fish and wildlife)
• Water Quality (filtration, nutrient and sediment reduction)
• Water Retention (storage, flood mitigation)
• Wave/Energy Attenuation (shore protection and stabilization)

Maintain Ecosystem Services
“Strategic Investments based on Sound Science in a Changing World”

- Great Lake Water Levels
- Increased Storm Frequency and Magnitude
- Invasive Species
- Anthropogenic Impacts

Achieve Landscape Scale Benefits
Coastal Assembly Co-Chairs

Christie Deloria – USFWS Coastal Program
c christie_deloria@fws.gov

Cherie Hagen – WDNR Office of Great Waters
C Cherie.Hagen@Wisconsin.gov

Scudder D. Mackey, Ph.D.
Chief, Office of Coastal  Management
Ohio Department of Natural Resources
Scudder.Mackey@dnr.state.oh.us
Coastal Resilience in the Great Lakes Region: Traditional Knowledge, Vulnerability and Adaptation in the Ceded Territories

Rob Croll
Policy Analyst/Climate Change Program Coordinator
February 13, 2020
What is GLIFWC?

A “tribal organization” (PL 93-638) exercising authority delegated by its 11 member tribes to implement federal court orders and interjurisdictional agreements related to their treaty rights.

• GLIFWC assists its member tribes in:
  • Securing and implementing treaty guaranteed rights to hunt, fish and gather in the 1836, 1837, 1842 and 1854 Chippewa treaty ceded territories.
  • Cooperatively managing, restoring and protecting ceded territory natural resources and their habitats.
GLIFWC Climate Change Projects

• Lake Superior adikameg diet study
• Lake Superior namegos projects
• Phenology study
• Seed Bank
• Ogaa study/Mille Lacs Telemetry Study
• Waabizheshi Project
• Vulnerability assessment
• Tribal Climate Adaptation Menu
Climate Change Vulnerability Assessment

• Use a holistic approach to assess vulnerability of over 60 culturally important beings to climate change.

• Promote recognition that Anishinaabe knowledge and worldview provide important and needed contributions to the understanding of resource vulnerability.
Scientific Ecological Knowledge

- NatureServe’s Climate Change Vulnerability Index tool incorporates climate projections and literature on natural history
- Expert reviews of each being’s assessment used to validate and adjust scores.

Traditional Ecological Knowledge

- At least 3 interviews in each community.
- Interviewees provide stories, teachings, knowledge about changes.
- Given equal weight to expert reviews and used to validate and adjust scores.

Results
Incorporate both
<table>
<thead>
<tr>
<th>Extremely Vulnerable</th>
<th>Lake whitefish, tullibee</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>American marten, moose, snowshoe hare</td>
</tr>
<tr>
<td></td>
<td>Wild rice, labrador tea, northern white cedar, tamarack</td>
</tr>
<tr>
<td>Highly Vulnerable</td>
<td>Northern pike, yellow perch, lake trout, walleye</td>
</tr>
<tr>
<td></td>
<td>Fisher</td>
</tr>
<tr>
<td></td>
<td>Wild leek, black ash, wild ginger, paper birch, sugar maple, balsam fir, American ginseng</td>
</tr>
<tr>
<td></td>
<td>Wood duck, trumpeter swan, common loon, cave bats, sharp-tailed grouse</td>
</tr>
<tr>
<td></td>
<td>Wood turtle</td>
</tr>
<tr>
<td>Moderately Vulnerable</td>
<td>Sturgeon, smallmouth bass, muskellunge</td>
</tr>
<tr>
<td></td>
<td>Blueberry, sweetgrass, American basswood, broadleaf arrowhead, sweet flag, bloodroot, princess pine, white ash</td>
</tr>
<tr>
<td></td>
<td>Sandhill crane, fireflies</td>
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<tr>
<td></td>
<td>Snapping turtle, painted turtle, spring peeper</td>
</tr>
<tr>
<td>Less Vulnerable</td>
<td>Largemouth bass</td>
</tr>
<tr>
<td></td>
<td>Long-tailed weasel, short-tailed/least weasel, American mink, white-tailed deer, river otter</td>
</tr>
<tr>
<td></td>
<td>Raspberry, red-osier dogwood, strawberry, ostrich fern, wild sage</td>
</tr>
<tr>
<td></td>
<td>Wild turkey, common raven, Canada goose, mallard, American crow, blue-winged teal, tree bats, bald eagle</td>
</tr>
</tbody>
</table>
Vulnerability Across Categories

Panci, 2020
● Culturally important beings moving (shifting ranges) or disappearing due to climate change
● Seasonal indicators no longer correspond with their associated natural phenomena
● Loss of access to culturally important beings and those reciprocal relationships that have been maintained since time immemorial is an existential threat to indigenous culture and physical & emotional health
● Tribal homelands, reservations and treaty ceded territories are fixed in place
● Adaptation actions must be culturally appropriate and community supported.
Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu

How do we create an adaptation planning tool that integrates indigenous knowledge, culture, science and perspective with western science and perspectives?

How can we facilitate culturally appropriate climate adaptation between tribes and non-tribal partners?
Guiding Principles

Provides a framework to integrate indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process.

Facilitates community engagement and decolonization of scientific research and application in indigenous communities and co-management areas (ceded territories).

Provides general guidance for non-tribal partners working in indigenous communities.

Written from an Ojibwe/Menominee perspective but intentionally designed to allow other tribal communities to integrate their customs and culture.
nindinawemaaganidag  
“all my relatives”

- Decisions for use of our relatives were originally communal decisions made with recognition, acknowledgement and reciprocity throughout.
- Today management and decision-making for land and the natural environment is no longer communal, but made by individuals, agencies and institutions.
Cultural Practices and Community Engagement

Strategy 1: Consider cultural practices and seek spiritual guidance.
1.1. Consult cultural leaders, key community members, and elders.
1.2. Consider mindful practices of reciprocity.
1.3. Understand the human and landscape history of the community.
1.4. Hold respect for all of our relations, both tangible and intangible.
1.5. Maintain dynamic relationships in a changing landscape.

Strategy 2: Learn through careful and respectful observation (gikinawaabi).
2.1. Learn from beings and natural communities as they respond to changing conditions over time.

Strategy 3: Support tribal engagement in the environment.
3.1. Maintain and revitalize traditional relationships and uses.
3.2. Establish and support language revitalization programs.
3.3. Establish, maintain, and identify existing inventory and monitoring programs.
3.4. Establish and maintain cultural, environmental education, and youth programs.
3.5. Communicate opportunities for use of tribal and public lands.
3.6. Participate in local- and landscape-level management decisions with partner agencies.
“TAM” Workshops

- Paper birch habitat & restoration – GLIFWC
- Forest management/cultural fire/moose habitat – Grand Portage Band of Ojibwe
- Tribal wetland restoration – Iowa Tribe of Oklahoma
- Great Lakes coastal marsh/manoomin restoration – Sault Tribe of Chippewa
- Cedar restoration – Bay Mills Indian Community
- Road/stream crossings – Hiawatha National Forest
- Sea level rise preparation – Miccosukee Tribe of Florida
- Creating an indigenous focused master naturalist class – Ho Chunk Nation
- Culturally appropriate invasive species control – Mohawk Council of Akwesan
Miigwech!

Melonee Montano  
TEK Outreach Specialist  
mmontano@glifwc.org

Rob Croll  
Climate Change Program Coordinator  
rcroll@glifwc.org

Hannah Panci  
Climate Change Scientist  
hpanci@glifwc.org

Tanya Aldred  
Furbearer/Climate Change Biologist  
tanya.aldred@glifwc.org

Aaron Shultz  
Inland Fisheries Biologist  
aaronshultz@glifwc.org

gelifwc.org/ClimateChange
EVERY FARMER, EVERY ACRE AND EVERY VOICE MATTERS
TO CREATE SUSTAINABLE FOOD SYSTEMS

BRODY STAPEL, WISCONSIN DAIRY FARMER
FEBRUARY 13, 2020
Agriculture’s Impact

$2.8 trillion

Created by Andrei Yushchenko from Noun Project
America's Dairyland

23% of the total dairy farms in the U.S. are in Wisconsin.

In 2018, Wisconsin produced over 30 billion pounds of milk. That's 14% of the total U.S. milk production.

The Wisconsin dairy industry generates $45.6 billion each year for the state's economy. This is more than the combined value of Florida citrus and Idaho potatoes.

Wisconsin dairy farms help fuel the state's economy, creating 154,000 jobs and generating $1.26 billion in state and local taxes.

Wisconsin averages 150 cows per herd, well below the U.S. average of 251.

95% of Wisconsin dairy farms are family owned.
Agriculture’s Challenges

WE LOSE 175 ACRES OF FARM LAND EVERY HOUR, MOSTLY TO URBAN ENCROACHMENT.

According to American Farmland Trust, the United States loses about 175 acres of farmland every hour, mostly due to the expansion of urban and suburban areas. This equates to nearly 3 acres of farmland lost per minute – farmland that cannot be replaced once gone.

DISASTER EVENTS HAVE CAUSED OVER $560 BILLION IN DAMAGES IN THE UNITED STATES FROM 2010-2019 – AND THEY ARE INCREASING.

Eight of the last 10 years in the U.S. have experienced greater than the average number of billion-dollar disaster events, many of them from intense storms (thunderstorms, tornadoes, hurricanes, and blizzards) that greatly impact agriculture.
Currently, U.S. soils store 100 times more carbon than total U.S. emissions in a year.

Agriculture carbon removal estimates:
- 8.4% Total US Agriculture GHG emissions
- 3.0% Total US Agriculture GHG emissions
- -4% Total US Agriculture GHG emissions

Baseline:
- Practically achievable
  - 46% change from baseline
- Practically achievable
  - 147% change from baseline

Source: United States Department of Agriculture Climate Change Data Portal.

1.2% drop in total U.S. GHG emissions.
Farmer-Led Watershed Conservation

- 31 organizations
- Sensitive watersheds
- Continuous improvement
- Stakeholder partnerships
- Innovative solutions
Continuous improvement:
• Land use
• Soil health
• Nutrient management
• Water quality/quantity
• Greenhouse gas emissions
• Energy use
Technology on the Farm

- 250 cows, 1,100 acres
- Fitbits for cows
- Precision technology
- Adaptability
Changing to Cover Crops

• Reduce soil erosion
• Manage nitrogen, nutrients
• Boost water-holding capacity
• Protect water quality
• Sequester carbon
• Control weeds
• Increase yields
Coastal Resilience in the Great Lakes Region

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www.eesi.org/survey

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