Engaging Municipalities in Climate Adaptation for Water Resources: The Role of Boundary Organizations

Rebecca Esselman
Huron River Watershed Council
The Huron River Watershed

900 square miles
½ million residents
63 municipalities

Formed in 1965 as council of governments
HRWC Climate work begins

Why?
• Growing demand from the field
• Lack of access to locally relevant, actionable climate information

Led to:
• Newsletter Special Issue
• Partnership with GLISA formed
• Fundraising and staffing resources allocated
Boundary Organizations

Huron River Watershed Council - A link in the chain

- Climate Science
- GLISA
  - Climate science translators
- HRWC
  - Trusted advisor
- Water Resource Professionals
  - Implementers
The Climate Science Link

GLISA

- Boundary Chain partner
- Role – analysis, translators

How?
- Participate in discussions with sectors.
- Listen to need.
- Package data to meet need.

www.GLISA.umich.edu
Creating Climate Resilient Communities

Goal: pilot a process to address local climate change impacts by convening interested stakeholders to determine information needs and strategies that build resiliency in the watershed
WATER INFRASTRUCTURE
for practitioners involved with water utilities, wastewater treatment facilities, stormwater management

IN-STREAM FLOWS
for dam operators, fisheries biologists, and hydrologists

NATURAL INFRASTRUCTURE
for land managers involved with natural areas preservation, restoration, and management
Products

Sector-based Reports
Climatologies
Impact Fact Sheets

Climate change ambassadors
Local climate expertise
Climate adaptation strategies
1. Research how climate change is expected to impact key tree species in the watershed

2. Summarize findings in fact sheets and disseminate to key audiences
Favorability of future climate to tree species of the Huron

<table>
<thead>
<tr>
<th>Boxelder</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Maple</td>
<td>0</td>
</tr>
<tr>
<td>Sugar Maple</td>
<td>−</td>
</tr>
<tr>
<td>Paper Birch</td>
<td>−</td>
</tr>
<tr>
<td>Hickory spp.</td>
<td>+</td>
</tr>
<tr>
<td>American Beech</td>
<td>−</td>
</tr>
<tr>
<td>Tamarack</td>
<td>−</td>
</tr>
<tr>
<td>Black Spruce</td>
<td>−</td>
</tr>
<tr>
<td>Eastern White Pine</td>
<td>−</td>
</tr>
<tr>
<td>White Oak</td>
<td>+</td>
</tr>
<tr>
<td>Bur Oak</td>
<td>+</td>
</tr>
<tr>
<td>Black Oak</td>
<td>+</td>
</tr>
<tr>
<td>American Basswood</td>
<td>0</td>
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</tbody>
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Tree Species Fact Sheet describing expected changes in range and abundance of a species, and the vulnerabilities of the natural communities in which they occur.
1) Improve accuracy of rainfall frequency curves adopted by the State and local governments, which are used as the basis of stormwater-related decisions; and

2) Identify a series of high priority “no-regrets” actions to improve the practice of stormwater management in the watershed.
Precipitation Frequency Data

Current Storm Thresholds or Frequency Intervals do not take in to account

- the last 30 years of records
- any future predictions

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>1-year</th>
<th>2-year</th>
<th>5-year</th>
<th>10-year</th>
<th>25-year</th>
<th>50-year</th>
<th>100-year</th>
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<tbody>
<tr>
<td>1 hour</td>
<td>19%</td>
<td>8%</td>
<td>12%</td>
<td>16%</td>
<td>22%</td>
<td>27%</td>
<td>31%</td>
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<tr>
<td>12 hour</td>
<td>12%</td>
<td>5%</td>
<td>5%</td>
<td>7%</td>
<td>13%</td>
<td>18%</td>
<td>23%</td>
</tr>
<tr>
<td>24 hour</td>
<td>12%</td>
<td>4%</td>
<td>3%</td>
<td>4%</td>
<td>9%</td>
<td>13%</td>
<td>17%</td>
</tr>
</tbody>
</table>

For Ann Arbor Station:
7% increase in storm event used for sizing storm conveyance pipes (2.72” to 2.9”)
17% increase in event used to determine FEMA flood boundary maps and size detention (4.36” to 5.11”)

In-stream Flows Group
Recommendations

1. Network dam operators to facilitate improved management, learning and information exchange
2. Establish additional stream gages more comprehensive flow data
Huron River Dams Network

- November 2012 a meeting was convened for dam owners/operators
- HRWC as the network coordinator
- Agreement to meet once a year
- Create a network platform to share information and plans
Elements of success

- Relationship with GLISA
- Sector-based approach
- Cross-jurisdictional facilitator
- Watershed approach relevant for water resource issues

*Water is a shared resource. Climate Change is a shared threat.*
## Successes & Challenges

<table>
<thead>
<tr>
<th>Successes</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making time for climate adaptation</td>
<td>Limits of data</td>
</tr>
<tr>
<td>Local climate literacy</td>
<td>Projections still perceived with suspicion</td>
</tr>
<tr>
<td>Strategies already being implemented</td>
<td>63 municipality landscape make broad adoption</td>
</tr>
<tr>
<td>Fundraising for adaptation</td>
<td>complex</td>
</tr>
<tr>
<td>New sector: Hazard Mitigation</td>
<td>Engaging unlikely partners</td>
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The Huron River Watershed Council would like to thank the project funders: Mott Foundation, Friedman Family Foundation, City of Ann Arbor, Porter Family Foundation, Esperance Family Foundation, Upton Foundation, Washtenaw County Water Resources Commissioner, and GLISA.

Reports can be found online at http://www.hrwc.org/the-watershed/threats/climate-change/

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Priority No-regrets Actions

• Green Infrastructure and design standards
• Community planning and regional collaborations
• Education on flooding and mitigation
• Acquire and manage ecosystems to regulate runoff
• Monitor weather and surface water conditions