

An Assessment of the Applied Research, Management, and Outreach Needs Associated with Wisconsin's Great Lakes Freshwater Estuaries

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How Did We Define Freshwater Estuaries? (American Geological Institute, 2005)

- Drowned river mouth at the lower reach of a tributary to a lake
- Zone of transition from stream water to lake water
- Influences from changes in lake level resulting from wind tides or seiches
- Commonly separated from adjacent main body of water by a barrier spit or baymouth bar

Raspberry Bay

Photo: Eric Epstein, 1996



Fish Creek

Photo: Wisconsin DNR WebView, 2005



Ashland

Why Freshwater Estuaries?

Great Lakes Regional Water Program, Environmental Restoration Theme Priorities

- **Great Lakes freshwater estuaries**
- Dams
- Restoration of headwater streams
- Shorelands and buffers
- Wild rice restoration and preservation

Wisconsin's Freshwater Estuary Initiative

- Lake Superior National Estuarine Research Reserve
- **Statewide needs assessment**
- Green Bay TMDL Development and Habitat Conservation Plan

Wisconsin Freshwater Estuary Needs Assessment

- Statewide assessment of priority needs
 - Applied research needs
 - Management needs
 - Outreach needs
- Important to the development of an integrated, efficient, and effective response
- Relevant for the ongoing NERR project

Needs Assessment Process Phases

- Phase I - Coastal Community Working Sessions
- Phase II – Survey of Wisconsin’s Great Lakes Freshwater Estuary Needs

Phase I: Coastal Community Working Sessions *Overview*

- Three sessions in the summer and fall of 2006
- Targeted individuals with relevant expertise, experience, or interests
- 195 invites/63 attendees (32% response rate)
- Facilitated nominal group technique (Delbecq *et al.*, 1975)
- Identified applied research, management, and outreach priority needs

Phase I: Coastal Community Working Sessions

Results

- The priority needs were analyzed and categorized using Qualitative Content Analysis techniques (Taylor-Powell and Renner, 2003)
 - Step 1: Review your data
 - Step 2: Focus the analysis
 - Step 3: Categorize information
 - Step 4: Identify patterns and connections
 - Step 5: Interpret
- The content analysis process produced 15 priority freshwater estuary needs



Phase I: Coastal Community Working Sessions

Evaluation

- Attendees included
 - Nine non-profit organizations
 - Nine county or municipal departments
 - Four federal agencies
 - Three state agencies
 - Three tribal governments
 - Three universities
- Participants described the sessions as organized, stimulating, and effective (evaluation response rates were 100%, 100%, and 72%)
- 93% are interested in being involved with future implementation strategies

Phase II – Survey of Freshwater Estuary Needs

Objective and Design

- Survey objective - to further refine the data from the working sessions
- Survey design - purposeful, non-random census of individuals with relevant expertise or experience
- Web-based survey administered via email distribution

Phase II – Survey of Freshwater Estuary Needs

Target Population

- Target population included individuals with freshwater estuary expertise, experience, or interest (e.g., elected officials) and was primarily restricted to coastal counties
- Six sub-populations (N=225)
 - Elected Official (n=18)
 - Federal Agency Staff (n=28)
 - Local Government Staff (n=23)
 - Non-profit Organization Representatives (n=38)
 - State Agency Staff (n=42)
 - Tribal Representative (n=10)
 - University staff (n=51)
 - Other (n=15)

Phase II – Survey of Freshwater Estuary Needs

Pretest

- Pretest (or pilot) survey was sent to 10% of the target population and was weighted based upon the sub-population numbers
- Fourteen day response period
- Pretest respondents were asked to provide written comments after completing the survey
- 78% response rate to the pretest (18 of 23)
- Substantial changes in survey text and design were made based upon the responses

Phase II – Survey of Freshwater Estuary Needs

Final Survey

- Advance notice was sent out nine days prior to the survey being administered
- Fourteen day response period
- Two email reminders were sent
- 42% response rate (94 of 225); typically considered average for an email survey (University of Texas at Austin, 2006)

1 Need 1: Increase Basic Knowledge and Awareness Related to Freshwater Estuaries

1 2 3 4 N/A
Very low priority Low priority High priority Very high priority

Applied Research

1 2 3 4 N/A

Information you would like to add for this topic (optional)

Management

1 2 3 4 N/A

Information you would like to add for this topic (optional)

Outreach and Education

1 2 3 4 N/A

Information you would like to add for this topic (optional)

Priority Applied Research Needs

Lake Superior

Top Three Based Upon Mean Score (n=35)

- Improve the understanding of interactions between freshwater estuary systems and the Great Lakes
- Conduct monitoring of freshwater estuary systems
- Identify and protect critical freshwater estuary resources

All Responses

Top Three Based Upon Mean Score (N=94)

- Understand and address invasive species impacts
- Improve the understanding of interactions between freshwater estuary systems and the Great Lakes
- Assess and address freshwater estuary habitat loss and biodiversity issues

Priority Management Needs

Lake Superior

Top Three Based Upon Mean Score (n=35)

- Identify and protect critical freshwater estuary resources
- Increase application of watershed management approaches
- Address land use impacts and build local capacity related to land use decision making

All Responses

Top Three Based Upon Mean Score (N=94)

- Identify and protect critical freshwater estuary resources
- Understand and address invasive species impacts
- Increase application of watershed management approaches

Priority Outreach Needs

Lake Superior

Top Three Based Upon Mean Score (n=35)

- Address land use impacts and build local capacity related to land use decision making
- Foster and increase partnerships, citizen involvement, and sense of place related to freshwater estuaries
- Increase application of watershed management approaches

All Responses

Top Three Based Upon Mean Score (N=94)

- Foster and increase partnerships, citizen involvement, and sense of place related to freshwater estuaries
- Address land use impacts and build local capacity related to land use decision making
- Increase basic knowledge and awareness related to freshwater estuaries

Priority Shared Needs

Lake Superior

Top Three Based Upon Mean Score (n=35)

- Identify and protect critical freshwater estuary resources
- Address land use impacts and build local capacity related to land use decision making
- Increase application of watershed management approaches

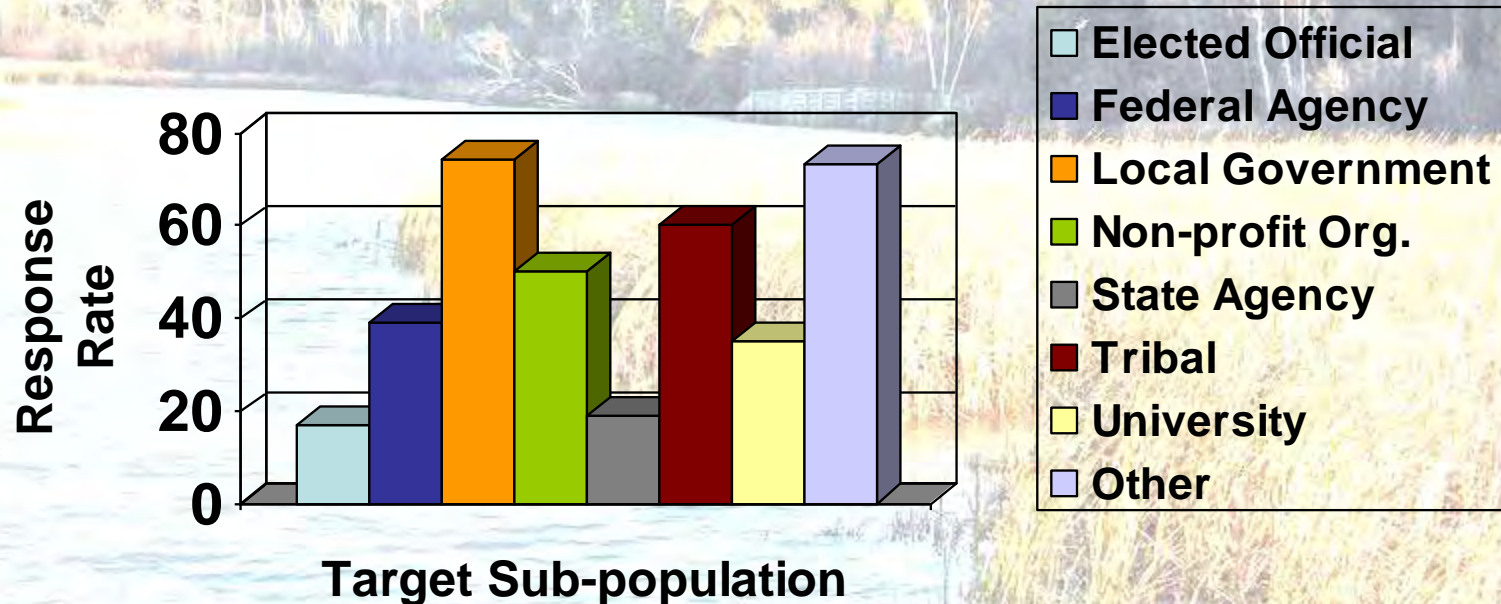
All Responses

Top Three Based Upon Mean Score (N=94)

- Identify and protect critical freshwater estuary resources
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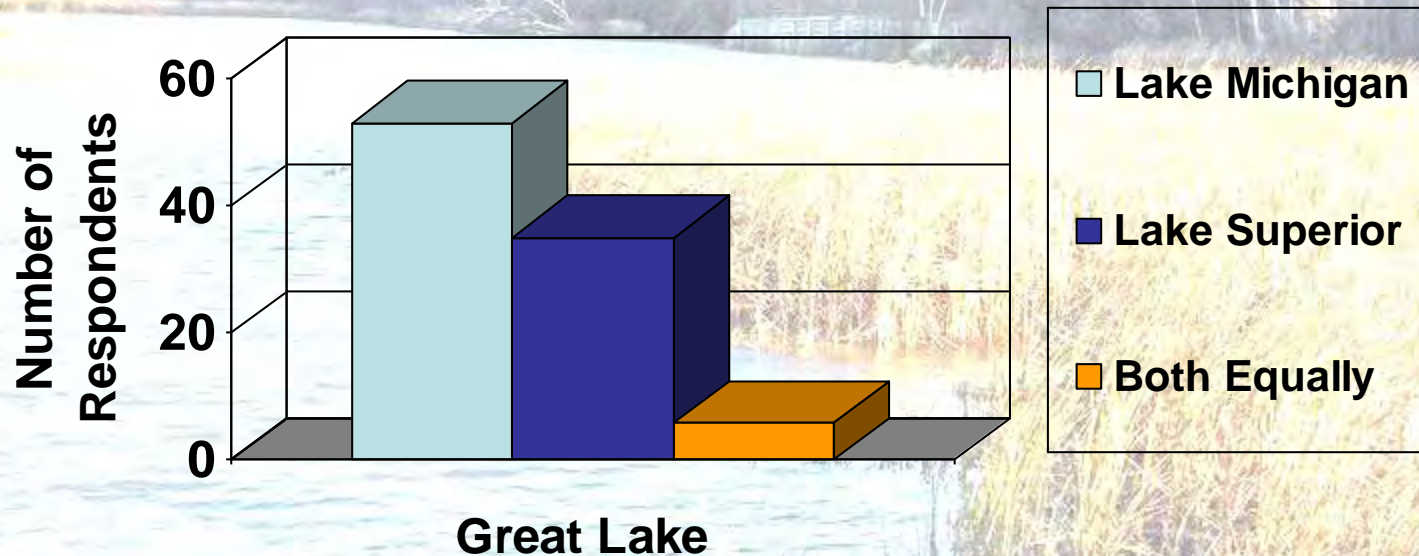
Phase II – Survey of Freshwater Estuary Needs *Results*

Response rate by target sub-population



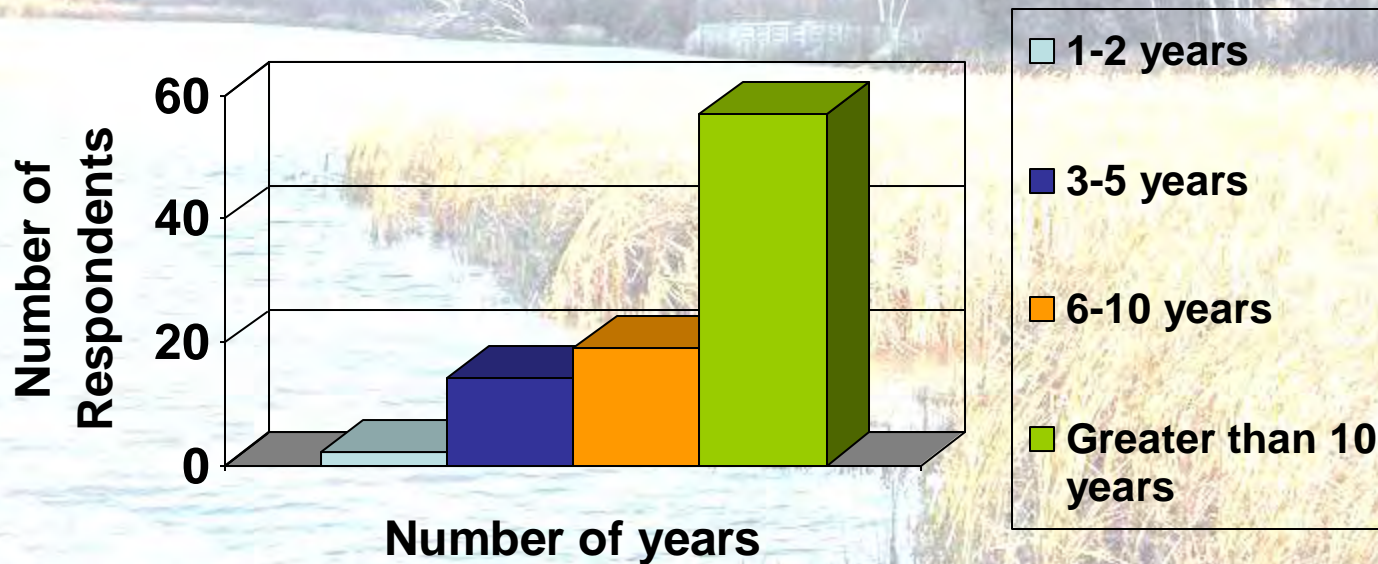
Phase II – Survey of Freshwater Estuary Needs *Results*

Respondents familiarity with the Great Lakes



Phase II – Survey of Freshwater Estuary Needs *Results*

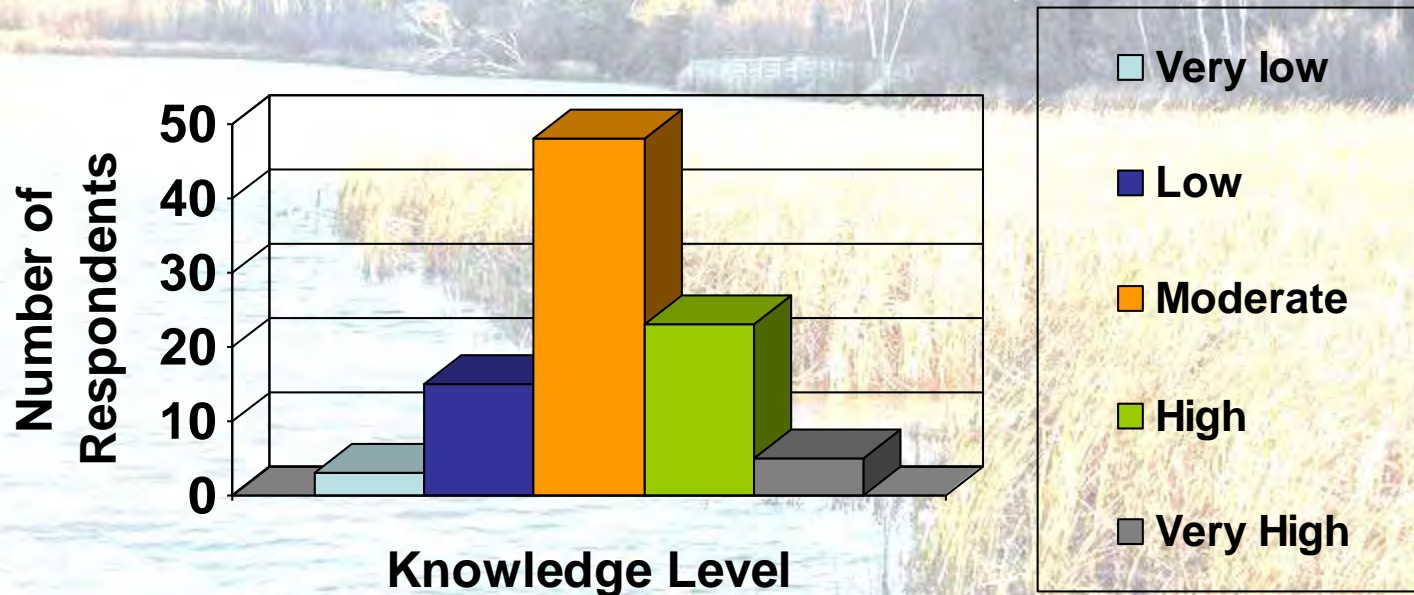
**Respondents number of years
working on water resource issues**



Phase II – Survey of Freshwater Estuary Needs

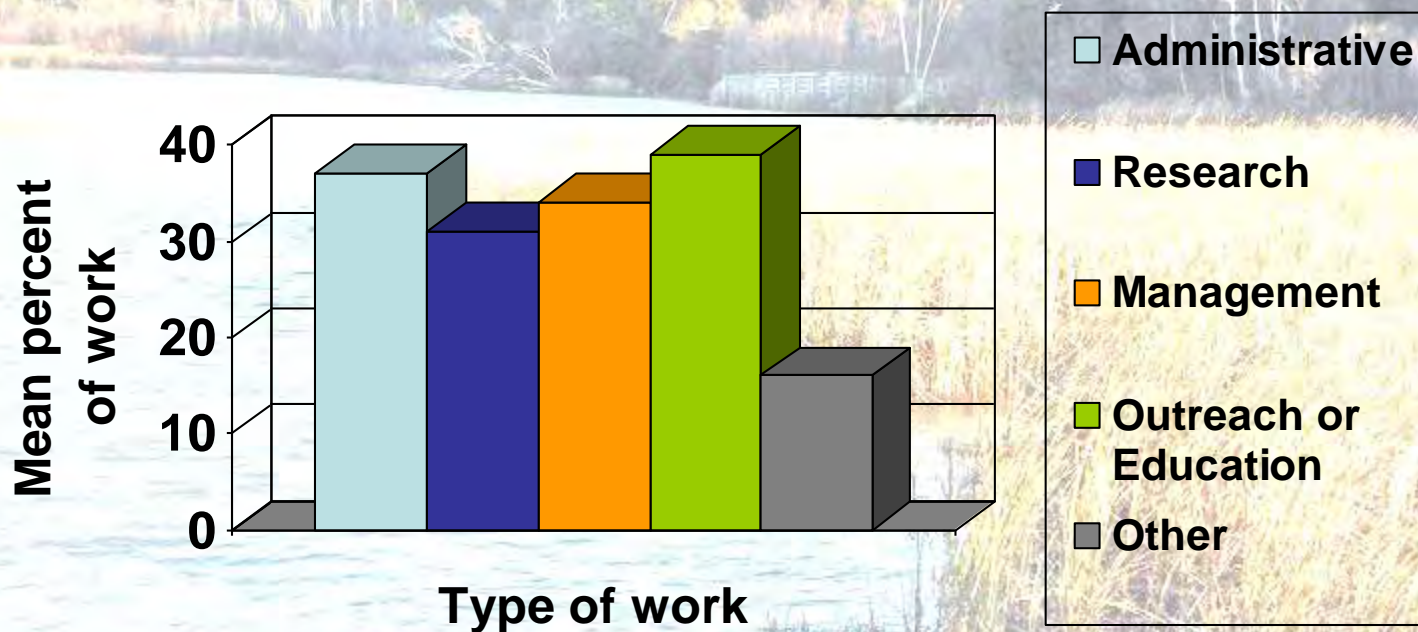
Results

Respondents knowledge of freshwater estuaries



Phase II – Survey of Freshwater Estuary Needs *Results*

Respondents current work



Next Steps

- Distribute results from the needs assessment work (freshwaterestuary.uwex.edu)
- Collaborate with partners and stakeholders to develop strategies that address priority needs and guide future actions
- Incorporate into ongoing activities, such as the Lake Superior NERR project and future work planning

Acknowledgements



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