The purpose of this research study is to evaluate the science program at the Great Lakes Science Center (hereafter GLSC) in the context of understanding ecosystem services. Thus, this survey is designed to gather background information and develop an empirical basis for analyzing whether the needs of resource managers in relation to ecosystem services are being met by the science conducted at the Great Lakes Science Center (hereafter GLSC). Data will be collected from both Great Lakes resource managers (U.S. and Canada) and GLSC scientists in relation to their consideration of ecosystem services in their respective work. Analysis will compare the information needs of resource managers and the information provided by GLSC scientists, and matches and mismatches will be highlighted.

We are interested in how resource managers are thinking about ecosystem services as they design policy and make decisions regarding resources in the Great Lakes Basin. With that in mind, please answer these questions with respect to the work you are currently doing as a resource manager in the Great Lakes Basin.

1. Do you agree to take part in the survey?
   a. ____ Yes
   b. ____ No

Part 1: Agency Work
The first section of the survey asks questions that try to determine what kind of work you are doing as a resource manager in the Great Lakes basin.

1. In your current work, do you directly contribute to management or policy decisions regarding natural resources in the Great Lakes Basin?
   a. ____ Yes
   b. ____ No
2. Which agency do you currently work for?________________________________________________________
3. What is your position (e.g. wildlife biologist, etc.)? ________________________________
4. Choose the category that describes your administrative duties.
   a. ____ I don’t supervise employees
   b. ____ I supervise employees
   c. ____ I supervise others who supervise employees
5. In comparison with other agencies that your agency works with, how frequently does your agency currently work with the Great Lakes Science Center?
   a. ____ Frequently
   b. ____ Occasionally
   c. ____ Rarely
   d. ____ Never
   e. ____ Don’t know
6. In which state(s)/province(s) do you currently work? (Check all that apply)
   a. ____ Illinois
   b. ____ Indiana
   c. ____ Michigan
   d. ____ Minnesota
   e. ____ New York
   f. ____ Ohio
   g. ____ Pennsylvania
   h. ____ Wisconsin
   i. ____ Ontario
7. Pick the category that best describes the primary focus of your current work. (Check all that apply)
   a. ____ Biodiversity management
   b. ____ Fisheries management
   c. ____ Forest resources management
   d. ____ Mineral resources management
   e. ____ Water quality management
   f. ____ Water quantity management
   g. ____ Wildlife management
   h. ____ Recreation
   i. ____ Other ___________________________
8. In which of the following systems do you currently work? (Check all that apply)
   a. ___ Lake Erie
   b. ___ Lake Huron
   c. ___ Lake Michigan
   d. ___ Lake Ontario
   e. ___ Lake Superior
   f. ___ Inland lakes
   g. ___ Huron-Erie corridor
   h. ___ Rivers and streams
   i. ___ Other connecting channels
   j. ___ Other _______________________

9. In which of the following ecosystems in the Great Lakes Basin do you currently work? (Check all that apply)
   a. ___ Great Lakes coastal wetlands/marshes
   b. ___ Great Lakes islands
   c. ___ Great Lakes nearshore zone
   d. ___ Great Lakes open water
   e. ___ Agricultural land
   f. ___ Dunes
   g. ___ Forests
   h. ___ Inland lakes
   i. ___ Inland streams and rivers
   j. ___ Prairies
   k. ___ Urban areas
   l. ___ Other _______________________

Part 2: How do you as a resource manager consider ecosystem services?
This section asks questions that try to determine how you as a resource manager are considering ecosystem services while making decisions and designing policies in the Great Lakes Basin.

1. How would you rank your familiarity with the concept of ecosystem services?
   a. ___ Very familiar
   b. ___ Moderately familiar
   c. ___ Vaguely familiar
   d. ___ Not at all familiar
   e. ___ Don’t know

2. How would you rank your familiarity with the methods for quantifying the economic value (e.g. dollar value) of ecosystem services?
   a. ___ Very familiar
   b. ___ Moderately familiar
   c. ___ Vaguely familiar
   d. ___ Not at all familiar
   e. ___ Don’t know

3. How would you describe your familiarity with the methods for quantifying ecosystem services spatially and temporally (e.g. mapping, ecological production functions, etc.)?
   a. ___ Very familiar
   b. ___ Moderately familiar
   c. ___ Vaguely familiar
   d. ___ Not at all familiar
   e. ___ Don’t know

4. How would you define ecosystem services?
   a. (Open ended)

For consistency, we will use the Millennium Ecosystem Assessment’s (MA) definition of ecosystem services as “the benefits people obtain from ecosystems.” Please keep this definition in mind while answering the following questions.

5. In your current work, do you consider ecosystem services at a conceptual-level (take into account the benefits people obtain from ecosystems but without necessarily assigning a specific dollar value) as you make decisions and design policies?
   i. ___ Yes
   ii. ___ No

b. If Yes to question 5 (concept-level), how do you consider ecosystem services at a concept-level as you make decisions and design policies?
   i. (open ended)
6. In your current work, do you consider ecosystem services at an economic valuation-level (assigning a specific dollar value) as you make decisions and design policies?
   i. _____ Yes
   ii. _____ No

b. If Yes to question 6 (valuation-level), how do you consider ecosystem services at an economic valuation-level as you make decisions and design policies?
   i. (Open ended)

c. If Yes to question 6 (valuation-level), which of the following valuation methods do you use as you quantify the economic value of ecosystem services? (Check all that apply)
   i. _____ Avoided cost
   ii. _____ Replacement cost
   iii. _____ Travel cost
   iv. _____ Factor income
   v. _____ Hedonic pricing
   vi. _____ Contingent valuation
   vii. _____ Option and insurance values
   viii. _____ Choice experiments (conjoint analysis)
   ix. _____ Other _______________________

d. If you had access to economic valuation information about ecosystem services, would you use that information?
   1. _____ Yes
   2. _____ No

ii. If Yes to 6d, how would you use ecosystem services economic valuation information?
   1. (Open ended)

7. Within the past five years, has a resource management decision appeared that you think would have benefitted from ecosystem valuation techniques?
   a. _____ Yes
   b. _____ No

The MA classifies ecosystem services according to four categories: 1) supporting services (services needed for the production of all other ecosystem services), 2) provisioning services (products obtained from ecosystems), 3) regulating services (benefits obtained from the regulation of ecosystems), and 4) cultural services (non-material benefits obtained from ecosystems). The purpose of the following questions is to find out what ecosystem services are important to resource managers in the Great Lakes basin.

8. On a scale from Strongly Unrelated to Strongly Related, how would you rate the following Ecosystem Services in their relation to your work as a resource manager? (Slide the bar to select the appropriate rating)

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Strongly Unrelated</th>
<th>Strongly Related</th>
<th>I don’t know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting Services (services needed for the production of all other ecosystem services)</td>
<td>0 ------------------ 2 ------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Provisioning Services (products obtained from ecosystems)</td>
<td>0 ------------------ 2 ------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Regulating Services (benefits obtained from regulation of ecosystems)</td>
<td>0 ------------------ 2 ------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Cultural Services (Non-material benefits obtained from ecosystems)</td>
<td>0 ------------------ 2 ------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
</tbody>
</table>
9. On a scale from Strongly Unrelated to Strongly Related, how would you rate the following **supporting services** in their relation to your research? (Select the appropriate rating)

**Supporting Services** – services needed for the production of all other ecosystem services

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Strongly Unrelated</th>
<th>Strongly Related</th>
<th>I don’t know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Formation and Retention (soil renewal, renewal of soil fertility)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Production of Atmospheric Oxygen</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Water Cycling (soil moisture storage)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Nutrient Cycling (nutrient storage)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Primary Production (energy capture, food chain support, energy flow for fish, benthic food chain)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Provision of Habitat (biodiversity support, habitat diversity)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
</tbody>
</table>

10. On a scale from Strongly Unrelated to Strongly Related, how would you rate the following **provisioning services** in their relation to your research? (Select the appropriate rating)

**Provisioning Services** – products obtained from ecosystems

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Strongly Unrelated</th>
<th>Strongly Related</th>
<th>I don’t know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh Water (water supply)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Food (wild game)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Fuel/energy (Hydro-electricity)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Genetic Resources</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Ornamental Resources (beach glass jewelry, household decorations)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Biochemical, Natural Medicines, and Pharmaceuticals (medicines)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Fiber (timber production)</td>
<td>0 ------------------------- 2 ------------------------- 4</td>
<td>IDK</td>
<td></td>
</tr>
</tbody>
</table>
11. On a scale from **Strongly Unrelated** to **Strongly Related**, how would you rate the following *regulating services* in their relation to your work as a **resource manager**? (Slide the bar to select the appropriate rating)

**Regulating Services** - benefits obtained from the regulation of ecosystems

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Strongly Unrelated</th>
<th>Strongly Related</th>
<th>I don't know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollination</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Regulating Services</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Biological Control (pest control, invasives)</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Air Quality Maintenance (air purification, visibility)</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Storm Protection</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Water Regulation (flood mitigation)</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Climate Regulation (carbon storage, moderation of weather extremes)</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Water Purification and Waste Water Treatment (water quality, waste assimilation, groundwater quality)</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
12. On a scale from Strongly Unrelated to Strongly Related, how would you rate the following cultural services in their relation to your work as a resource manager? (Slide the bar to select the appropriate rating)

<table>
<thead>
<tr>
<th>Ecosystem Services</th>
<th>Strongly Unrelated</th>
<th>Strongly Related</th>
<th>I don’t know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation and Tourism (lake recreation, wild game, song birds, other wildlife)</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Aesthetic Values (aesthetics)</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Sense of Place</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Educational Values</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Inspiration</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Cultural Heritage Values</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Social Relations</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Cultural Diversity</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Knowledge systems (cultural, economic, scientific knowledge)</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
<tr>
<td>Spiritual and Religious Values</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
</tbody>
</table>

13. To what extent is available ecosystem services-related information adequate for your resource management needs? (Slide the bar to select the appropriate rating)

<table>
<thead>
<tr>
<th>Adequacy of ecosystem services-related information for management needs</th>
<th>Greatly Inadequate</th>
<th>More Than Adequate</th>
<th>I don’t know (IDK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequacy of ecosystem services-related information for management needs</td>
<td>0 ------------------------------ 2 ------------------------------ 4</td>
<td>IDK</td>
<td></td>
</tr>
</tbody>
</table>

14. What is your greatest data-deficiency in terms of ecosystem services-related information?
   a. (Open ended)

15. In your opinion, is it appropriate to consider ecosystem services when managing Great Lakes resources?
   a. _____ Yes
   b. _____ No

16. What do you think are some benefits to considering ecosystem services when managing Great Lakes resources?
   a. (Open ended)
17. What do you think are some drawbacks to considering ecosystem services when managing Great Lakes resources?
   b. (Open ended)

18. In your experience, are resource managers currently being asked to consider ecosystem services in their management decisions?
   c. ____ Yes
   d. ____ No
   c. If yes, by whom?
      i. (Open ended)

Part 3: Demographic Information
The last few questions ask about some demographic characteristics.

1. What is the highest level of education that you have attained?
   a. ____ Undergraduate degree
   b. ____ Master’s degree
   c. ____ Doctorate degree
   d. ____ Other _______________________

2. What is your gender?
   a. ____ Male
   b. ____ Female

3. How long have you been working with your current agency? _______

4. Do you have any additional comments that you would like to share?
   a. (Open ended)