

Great Lakes Resource Managers Online Survey

Principal Investigator: Dan Engel, Master's candidate, School of Natural Resources and Environment, University of Michigan

Co-Investigator: Jeff Schaeffer, Fisheries Biologist, Great Lakes Science Center, USGS

Faculty Advisory: Bobbi Low, Professor of Natural Resources, School of Natural Resources and Environment, University of Michigan

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

c. I supervise others who supervise employees

b. I 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

d. Never

b. Occasionally

e. Don't know

c. Rarely

6. In which state(s)/province(s) do you currently work? (Check all that apply)

a. Illinois

f. Ohio

b. Indiana

g. Pennsylvania

c. Michigan

h. Wisconsin

d. Minnesota

i. Ontario

e. New York

7. Pick the category that best describes the primary focus of your current work. (Check all that apply)

a. Biodiversity management

f. Water quantity management

b. Fisheries management

g. Wildlife management

c. Forest resources management

h. Recreation

d. Mineral resources management

i. Other _____

e. Water quality management

8. In which of the following systems do you currently work? (Check all that apply)
- | | |
|---|---|
| a. <input type="checkbox"/> Lake Erie | f. <input type="checkbox"/> Inland lakes |
| b. <input type="checkbox"/> Lake Huron | g. <input type="checkbox"/> Huron-Erie corridor |
| c. <input type="checkbox"/> Lake Michigan | h. <input type="checkbox"/> Rivers and streams |
| d. <input type="checkbox"/> Lake Ontario | i. <input type="checkbox"/> Other connecting channels |
| e. <input type="checkbox"/> Lake Superior | j. <input type="checkbox"/> Other _____ |
9. In which of the following ecosystems in the Great Lakes Basin do you currently work? (Check all that apply)
- | | |
|--|---|
| a. <input type="checkbox"/> Great Lakes coastal wetlands/marshes | g. <input type="checkbox"/> Forests |
| b. <input type="checkbox"/> Great Lakes islands | h. <input type="checkbox"/> Inland lakes |
| c. <input type="checkbox"/> Great Lakes nearshore zone | i. <input type="checkbox"/> Inland streams and rivers |
| d. <input type="checkbox"/> Great Lakes open water | j. <input type="checkbox"/> Prairies |
| e. <input type="checkbox"/> Agricultural land | k. <input type="checkbox"/> Urban areas |
| f. <input type="checkbox"/> Dunes | l. <input type="checkbox"/> 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.

- How would you rank your familiarity with the concept of ecosystem services?

a. <input type="checkbox"/> Very familiar	d. <input type="checkbox"/> Not at all familiar
b. <input type="checkbox"/> Moderately familiar	e. <input type="checkbox"/> Don't know
c. <input type="checkbox"/> Vaguely familiar	
- How would you rank your familiarity with the methods for quantifying the economic value (e.g. dollar value) of ecosystem services?

a. <input type="checkbox"/> Very familiar	d. <input type="checkbox"/> Not at all familiar
b. <input type="checkbox"/> Moderately familiar	e. <input type="checkbox"/> Don't know
c. <input type="checkbox"/> Vaguely familiar	
- How would you describe your familiarity with the methods for quantifying ecosystem services spatially and temporally (e.g. mapping, ecological production functions, etc.)?

a. <input type="checkbox"/> Very familiar	d. <input type="checkbox"/> Not at all familiar
b. <input type="checkbox"/> Moderately familiar	e. <input type="checkbox"/> Don't know
c. <input type="checkbox"/> Vaguely familiar	
- How would you define ecosystem services?
 - (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.

- 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. <input type="checkbox"/> Yes	ii. <input type="checkbox"/> No
---------------------------------	---------------------------------

 - If Yes to question 5 (concept-level), how do you consider ecosystem services at a concept-level as you make decisions and design policies?
 - (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 vi. Contingent valuation
 ii. Replacement cost vii. Option and insurance values
 iii. Travel cost viii. Choice experiments (conjoint analysis)
 iv. Factor income ix. Other _____
 v. Hedonic pricing
- 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)

Ecosystem Services	Strongly Unrelated	Strongly Related	I don't know (IDK)
Supporting Services (services needed for the production of all other ecosystem services)	0 ----- 2 ----- 4		IDK
Provisioning Services (products obtained from ecosystems)	0 ----- 2 ----- 4		IDK
Regulating Services (benefits obtained from regulation of ecosystems)	0 ----- 2 ----- 4		IDK
Cultural Services (Non-material benefits obtained from ecosystems)	0 ----- 2 ----- 4		IDK

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

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

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

Ecosystem Services	Strongly Unrelated	Strongly Related	I don't know (IDK)
Fresh Water (water supply)	0 ----- 2 ----- 4		IDK
Food (wild game)	0 ----- 2 ----- 4		IDK
Fuel/energy (Hydro-electricity)	0 ----- 2 ----- 4		IDK
Genetic Resources	0 ----- 2 ----- 4		IDK
Ornamental Resources (beach glass jewelry, household decorations)	0 ----- 2 ----- 4		IDK
Biochemical, Natural Medicines, and Pharmaceuticals (medicines)	0 ----- 2 ----- 4		IDK
Fiber (timber production)	0 ----- 2 ----- 4		IDK

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

Ecosystem Services	Strongly Unrelated	Strongly Related	I don't know (IDK)
Pollination	0 ----- 2 ----- 4		IDK
Regulation of Human Diseases	0 ----- 2 ----- 4		IDK
Biological Control (pest control, invasives)	0 ----- 2 ----- 4		IDK
Air Quality Maintenance (air purification, visibility)	0 ----- 2 ----- 4		IDK
Storm Protection	0 ----- 2 ----- 4		IDK
Erosion Control	0 ----- 2 ----- 4		IDK
Water Regulation (flood mitigation)	0 ----- 2 ----- 4		IDK
Climate Regulation (carbon storage, moderation of weather extremes)	0 ----- 2 ----- 4		IDK
Water Purification and Waste Water Treatment (water quality, waste assimilation, groundwater quality)	0 ----- 2 ----- 4		IDK

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)

Cultural Services - non-material benefits obtained from ecosystems

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

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

	Greatly Inadequate	More Than Adequate	I don't know (IDK)
Adequacy of ecosystem services-related information for management needs	0 ----- 2 ----- 4		IDK

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)