

**Perceptions of the St. Marys River by Chippewa County, MI Residents and their
Environmental Concern**

By:

Sheri L. Glowinski, PhD
Assistant Professor of Biology
Lake Superior State University
223 Crawford Hall
650 W. Easterday Ave.
Sault Ste. Marie, MI, 49783
sglowinski@lssu.edu

February 28, 2014

Introduction

The St. Marys River (SMR) is a multi-use waterway connecting Lake Superior and Lake Huron and forms the international border between Michigan in the United States and Canada. Historically a productive fishery, the water quality and flow of the SMR has been significantly altered by the construction of the Soo Locks beginning in 1855, the removal of four significant rapids areas, and numerous riverside industries. Designated a Great Lakes Area of Concern in 1987, ecological and environmental impairments of the SMR include loss of fish and wildlife habitat, invasive species, water and sediment contamination by point-source and nonpoint-source pollution, beach closings, and degradation of aesthetics among others (EPA, 2013; NOAA, 2014). Water quality has significantly improved over the last 30 years due to efforts to control or eliminate these point sources (MDEQ, 2009). However, several fish species remain of special concern due to population declines (e.g., Godby, Wright, & Fielder 2008).

In 2013, the initial stages of the ecological restoration of the Little Rapids area of the St. Marys River began, with the goal of addressing two Beneficial Use Impairments, Degradation of Fish and Wildlife Populations and Loss of Fish and Wildlife Habitat. In addition to ecological improvements to fish and wildlife populations and habitat, this project is projected to improve socio-economic opportunities in the SMR corridor due to resulting expansion of fisheries and tourism in the area (Great Lakes Commission, 2009). In spite of the considerable historical alterations to the SMR and the ensuing restoration, little is known about residents' perceptions concerning the ecological, economic or social importance associated with the SMR. As public support is an integral component of successful ecological restoration efforts (e.g., Barro & Bright, 1998), this fundamental knowledge is important to provide guidance in steering public educational efforts accordingly (Bright et al., 2002; Buijs, 2009). Accordingly, I investigated perceptions and recreational use of the St. Marys River by Chippewa County, MI residents, and their general environmental views.

Methods

In December 2013, a single wave of mail-back questionnaires was sent to 1,209 Chippewa County, MI homeowners randomly selected from a database of properties respective owners provided by the Eastern Upper Peninsula Regional Planning and Development Commission. In the accompanying cover letter (Appendix A), each participant was given the option to complete an identical on-line version of the questionnaire as an alternative to the mailback version.

Participants were also given the option to be included in a free drawing for a piece of St. Marys River artwork.

The questionnaire (Appendix B) incorporated 16 questions measuring the participants' residence type and length, participation in activities associated with the St. Marys River, views on the aesthetic value of the Little Rapids area of the SMR located north and south of the causeway to Sugar Island, and demographics. Question formats included dichotomous, multiple choice, and open ended. The questionnaire also incorporated 14 New Ecological Paradigm (NEP) statements, a scale which measures the respondents' extent of biocentric versus anthropocentric views on general environmental statements (Dunlap et al., 2000). An additional set of 14 statements addressed perspectives on issues related to the functions of the SMR, importance of proximity of SMR, connection to SMR, and quality of water of SMR. Respondents indicated the extent to which they agreed or disagreed with the statements using a 6-point scale with 1 representing Strongly Disagree and 6 representing Strongly Agree. Prior to dissemination, the questionnaire was approved by the Lake Superior State University Institutional Review Board. All analyses were completed using SPSS 16.0. Standard deviation is displayed where applicable.

Results

Out of the 289 surveys returned, 34 (2.8%) were returned undeliverable and five (0.04%) were returned with no data, resulting in a response rate of 20.1%.

Demographics

Over one-half of respondents (60.0%) were male with 1.6% selecting Other for gender. Respondents were largely Caucasian/White (83.2%), followed by Native American (9.2%), Other (4.0%) and Hispanic/Latino (0.4%). Three point two percent did not respond. Respondents were generally older with the largest age category being 60-69 (28.8%) followed by 50-59 (27.6%), 40-49 (13.2%), 30-39 (6.0%) and 18-29 (0.4%). Two point eight percent did not respond. Most respondents indicated Some or all of high school as the highest level of education as presently achieved (29.6%). This was followed by Graduate degree (22.0%), Some undergraduate coursework (16.0%), Associate's degree (14.5%), Undergraduate degree (10.8%) and Graduate level coursework (4.0%). Three point two percent did not respond.

Retired (45.2%) was the largest Employment category, followed by Other (26.0%) and Administrative (8.8%). Two percent did not respond to this question. Sixteen towns were represented with most respondents resided in Sault Ste. Marie, MI (66.0%) with many fewer respondents residing in other towns (e.g., De Tour Village (5.6%), Drummond Island (3.6%), Brimley (3.6%)). Two point four percent did not respond. Respondents reported living in Chippewa County, MI for an average of 40 years (SD = 21) and having residences an average of 8.7 miles (SD = 15.2) from the SMR. The majority of respondents (77.9%) maintained permanent homes in Chippewa County while only 7.2% maintained seasonal homes and 9.2% maintained both residences type. Nearly three-quarters of respondents (74.4%) reported knowing the history of the SMR fairly well.

St. Marys River

Recreational Use – To assess recreational use of the SMR and associated areas, respondents were asked to indicate all activities from a list of 16 in which they participated anywhere along the SRM. The most frequently completed activities included Freighter watching (70.4%), Motorboating (54.0%), Swimming (45.2%) and Angling (45.2%), with only 7.4% of respondents not participating in any activities. Respondents were asked to indicate the single most important activity of those previously selected. Of those presented in the questionnaire, Angling (12.0%), Freighter watching (12.0%), Motorboating (10.8%), and Walking a pet (6.0%) were considered the most important activities. The largest category selected was Other and included activities such as “beach combing”, “looking at river”, “picnic and playground at Sherman Park”, “sailing”, and “use of ferry”. When asked to indicate where they spend time along the SMR, respondents indicated a diverse selection of sites such as Sherman Park, 4 Mile Beach, Rotary Park, Ashmun Bay, Sugar Island Ferry, Drummond Dock, DeTour, Potagannissing Bay, Cook-Island Preserve, North Shore of Sugar Island, USCG base, Waiska Bay, Brady Park, Kemp Marina, and Mosquito Bay. Twelve point eight percent did not respond. Complete list of sites is provided in Appendix C.

Water Quality – To better understand residents’ views on SMR water quality, they were asked to indicate whether they thought it was safe to conduct various water-based activities in the SMR. The large majority of respondents indicated support for Boating (93.6%), Fishing (92.0%), and Swimming (74.8%), whereas fewer respondents indicated support for Washing hands (58.0%), Washing clothes (51.2%) and Drinking (14.8%). Non-responses ranged from 18% for Washing clothes to 4% for Fishing.

St. Marys River Belief Statements

Functions of the SMR – Respondents expressed strong support for the statement “Fish and wildlife are important considerations when it comes to managing the St. Marys River.” (mean = 5.56 ± 1.03) and asserted the importance of managing SMR as a multi-use waterway (“The St. Marys River has many uses and should be managed as such.”, mean = 5.15 ± 1.08 ; “The most important function of the St. Marys River is to provide a source of transportation.”, mean = 3.49 ± 1.70). Respondents expressed slightly above average support for the statements “There is a sufficient amount of quality habitat for the fish and wildlife present in the St. Marys River.” (mean = 3.98 ± 1.59) and “The St. Marys River should be changed so that it can function biologically similarly to how it used to be.” (mean = 3.62 ± 1.77).

Proximity to SMR – Respondents recognized the SMR and its proximity as important (e.g., “Having the St. Marys River nearby is valuable.”, mean = 5.53 ± 0.99 ; “Being close to the St. Marys River is something I treasure.”, (mean = 5.20 ± 1.28)) while respondents expressed slightly less agreement with the statement “My Chippewa County residence is close to the river.” (mean = 4.84 ± 1.68). Respondents also feel connected to the SMR (“I feel a connection to the St. Marys River.”, mean = 4.82 ± 1.43); “I do not consider the St. Marys River to be an important part of my life.”, mean = 4.82 ± 1.61).

Connection SMR – Respondents gave moderate support to the statements “The St. Marys River is highly polluted.” (mean = 3.54 ± 1.74) and “Water quality of the St. Marys River has improved over time.” (mean = 3.49 ± 1.73).

Results of St. Marys River belief statements are found in Appendix D.

Little Rapids Area of the SMR

Recreational Use – To assess specific use of the Little Rapids site of the SRM that is undergoing restoration, respondents were asked to indicate all activities from a list of 16 in which they participated at least once specifically at that location. Motorboating (26.8%), Angling by boat (22.8%), Bird-watching (15.2%) and Angling from shore (10.4%) were the most frequently selected. Of the categories presented in the questionnaire, respondents selected Angling by boat (10.4%), Motorboating (10.0%), and Other (23.2%) as the most important activities. Other included activities such as “walking your pet”, “skiing”, “freighter watching”, and “parking at

ferry dock”. Fifty-four percent indicated they did not participate in any activities at the Little Rapids area of the SMR or did not respond.

Visual Aesthetics – Respondents were asked to indicate what they would say to a visitor who asked for his/her opinion regarding how visually appealing the Little Rapids area was. The open-ended responses were classified as positive, negative, both, or neutral/undetermined. Of the 114 responses to this open ended question, 50.9% contained content that indicated support for the visual appeal of the Little Rapids area while 14.0% contained negative responses. An additional 9.6% contained both positive and negative content and 25.4% of the responses could not be classified as either positive or negative. Positive content included such statements as “I would tell them how beautiful the area is. The boats, water. Our area is so clean. The freighters are also beautiful”, “Green, lots of fresh clean water, wildlife”, “It's beautiful! It's a blessing to our city. Very good improvements have been made to it.”, and “Very appealing with the way to natural materials were used in construction of causeway and surrounding improvements.” Negative content included such statements as “It looks highly modified- unnatural.”, “It used to be really nice but the waters are becoming unsafe.”, “That is not the rapids of the 40 and 50. Was built up. The corp does not provide a safe place to fish from. Also stop natural flow of water.” Representative statements for responses containing both positive and negative content include “It is a nice area to boat but not very clean water for fishing.” and “It is serene and especially tranquil and beautiful in the mornings. Toward evening the full moon comes up beautifully and can be seen from there. Waterfowl frequent these waters and you might see a beaver or an otter. The causeway itself is not so attractive. Sapling are "chopped up" end of growing season and look hideous.” Undetermined responses included “I would say, "are you taking a survey about the new causeway?""”, “Beauty is in the eye of the beholder.” and “I know very little about the Little Rapids area.”

Environmental Concern

Overall, respondents demonstrated a higher than average environmental concern (mean = 4.15 ± 1.59) as measured by the New Ecological Paradigm scale (Dunlap *et al.* 2000; Appendix D). The statement “Despite our abilities, humans are still subject to the laws of nature.” received the strongest support (mean = 5.50 ± 1.10) followed by “Plants and animals have as much right as humans to exist.” (mean = 4.81 ± 1.53). The two least supported statements (“Human ingenuity will ensure that we do not make the earth unlivable.” and “The earth has plenty of natural resources - we just need to learn how to develop them.”) both had below average

means (mean = 3.26 ± 1.58 and mean = 3.06 ± 1.72 , respectively) whereas all other statements received at least average support.

Discussion

This study aimed to examine recreational activities and views of Chippewa County, MI residents associated with St. Marys River and residents' general environmental concern. Freighter watching was the most conducted activity anywhere along the SMR whereas Angling was deemed the most important activity. In contrast, motorboating was the most conducted activity at the Little Rapids area by the 50% of people who responded to this question. Respondents indicated that Angling by boat was the most popular activity conducted by anyone at the Little Rapids area. Respondents generally had a positive view of the Little Rapids area of the SMR. That said, only half responded to this open-ended question, several of whom indicated they were unfamiliar with this particular area. Others, based on their responses, may have responded to the question with the SMR in mind, rather than the Little Rapids area, specifically. Although the survey did not specifically address restoration efforts of the Little Rapids area, one statement asked whether respondents thought the SMR should be altered so that it functioned biologically similarly to a previous time. Respondents did not express strong support for this statement, suggesting several possibilities. First, the statement did not give a specific timeframe for context, thus respondents may have compared the current state of the river to recent years when water was more polluted rather than to a historical baseline prior to significant alteration of the river. Second, respondents may not have approved of restoration efforts. Sugar Island, where the Little Rapids restoration site is located, has several parties that have been vocally opposed to the on-going restoration efforts. Thus, these protest views may be reflected in the average score for this topic, particularly given the large standard deviation. Given this opposition, an instructive follow-up analysis will be to examine Sugar Island residents' views of the SMR and compare them to non-Sugar Island residents.

Chippewa County residents had a moderate to high level of environmental concern, falling in the middle of average scores for other groups. For example, birdwatchers' residing in the southern United States had a relatively high environmental concern as measured by the NEP (mean = 4.83). Two studies examining forest recreationists in Pennsylvania showed a mean NEP score of 3.55 (Thapa & Graefe, 2001) and 3.87 (Thapa, 2010), respectively. Tourists in a Chinese national forest had an average of 3.54 (Luo & Deng, 2008) and introductory psychology students in Utah averaged 3.43 for the NEP indicators (Amburgey & Thoman, 2012). An instructive follow-up analysis will be to examine how proximity to the SMR and potential exposure to associated ecological and environmental issues may influence environmental

concern, particularly given that over three-quarters of respondents indicated the water of the SMR was not safe to drink.

Study Limitations

This study experienced a low response rate of 20.1%. Several factors may have influenced this response rate. Due to logistical constraints, the survey was distributed mid-December of 2013 via U.S. Postal Service. Given that the survey would have been received immediately prior to the year-end holidays, it is possible that the survey envelope was dismissed as holiday-related mail. Further, designated recipients of the survey may have been travelling and did not receive the survey timely. Lastly, the database used for this project provided best available data at the time for this project. However, given the nature of the data provided in the database, it is possible that the owner data were not accurate (e.g., houses may have been sold or rented), or that owners were seasonal residents of Chippewa County, MI, and thus did not receive the envelope.

Overall, these types of information collected in this project will help to inform educational efforts regarding the restoration efforts in this region and to provide a baseline against which to compare post-restoration attitudes and beliefs.

Acknowledgments

Sincere thanks are due to M. Schaeffer-O'Connell, K. Kondoh, G. Zimmerman for assistance with survey development; to the Eastern Upper Peninsula Regional Planning and Development Commission for providing the data used in this project; to Lake Superior State University Fisheries and Wildlife students for stuffing over 1,200 envelopes; to A. Shefka for managing the survey preparation process and for data entry. Lastly, many thanks to the Chippewa County, MI residents who participated in this project.

Literature Cited

- Amburgey, J. W., & Thoman, D. B. 2012. Dimensionality of the New Ecological Paradigm: issues of factor structure and measurement. *Environment and Behavior* 44: 235-256.
- Barro, S. C., & Bright, A. D. 1998. Public views on ecological restoration: a snapshot from the Chicago area. *Restoration and Management Notes* 16(1): 59-65.

- Bright, A. D., Barro, S. C., & Burtz, R. T. 2002. Public attitudes toward ecological restoration in the Chicago metropolitan region. *Society & Natural Resources* 15(9): 763-785.
- Buijs, A. E. 2009. Public support for river restoration. A mixed-method study into local residents' support for and framing of river management and ecological restoration in the Dutch floodplains. *Journal of Environmental Management* 90(8): 2680-2689.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. 2000. Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues* 56:425-442.
- Environmental Protection Agency (EPA). 2013.
<http://www.epa.gov/glnpo/aoc/stmarys/index.html>. Accessed February 27, 2014.
- Glowinski, S. & Moore, F. R. 2014. The role of recreational motivation in the birding participation – environmental concern relationship. *Human Dimensions of Wildlife*. In press.
- Godby, N., Wright, G., and Fielder, D. 2009. St. Marys River Walleye stocking and evaluation plan. St. Marys River Fisheries Task Group Lake Huron Technical Committee Great Lakes Fishery Commission.
- Great Lakes Commission. 2009. St. Marys River Area of Concern / Little Rapids restoration proposal.
- Luo, Y., & Deng, J. 2008. The New Environmental Paradigm and nature-based tourism motivation. *Journal of Travel Research* 46: 392-402.
- National Oceanic and Atmospheric Administration (NOAA). 2014.
<http://www.regions.noaa.gov/great-lakes/st-marys-river/>. Accessed February 27, 2014.
- Thapa, B. 2010. The mediation effect of outdoor recreation participation on environmental attitude-behavior correspondence. *Journal of Environmental Education* 41: 133-150.
- Thapa, B., & Graefe, A. R. 2001. Environmental attitude-behavior correspondence between different types of forest recreationists. *Proceedings of the 2000 Northeastern Recreation Research Symposium* (pp. 20-27). Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station.

Appendix A. St. Marys River Cover Letter



LAKE SUPERIOR STATE UNIVERSITY
Department of Biological Sciences

St. Marys River Survey

Greetings!

I am writing to ask for your help with an important study being conducted by Lake Superior State University. I am interested in understanding how people view and interact with the St. Marys River. My contact information is provided below for your reference. Feel free to contact me directly with any questions you have regarding this questionnaire. The questionnaire should take about 15-20 minutes of your time. Please return the completed survey in the return envelope enclosed, at no cost to you.

If you prefer to take the questionnaire on the internet instead of completing the paper form, you can do so by entering the following website and survey code: www.monkeysurvey.com/StMarysRiver

CODE: _____

This research project has been reviewed by the Human Subjects Protection Review Committee, which ensures that academic research involving participants follows current federal regulations. The following information is provided to you so that you can make an informed decision on whether or not you wish to participate in this study. Although your participation in this research is solicited, it is completely voluntary. By completing and returning the questionnaire, you acknowledge that you give your consent for the data contained within the questionnaire to be used for academic research purposes. Information you provide on the questionnaire will be held in the utmost confidentiality. Your responses will not be uniquely identified in any publications stemming from this research.

As a measure of my gratitude for your participation in this research, upon receipt of the completed survey, you have the option to be included in a drawing for a free piece of St. Marys River artwork, valued at \$100.00. The drawing will take place during February, 2013. You may choose to opt out of the drawing by indicating this at the appropriate place on the last page of the questionnaire.

Many Thanks!

Dr. Sheri L. Glowinski
Assistant Professor of Biology
223 Crawford Hall
650 W. Easterday Ave.
Lake Superior State University
Sault Ste. Marie, MI, 49783
sglowinski@lssu.edu
(906) 635-2147

If you have any complaints about your treatment as a participant in this study, please call or write:

Dr. Ron Hutchins, Chair, IRB
Associate Dean of Nursing
Lake Superior State University
650 W. Easterday Ave.
Sault Ste. Marie, MI, 49783
rhutchins@lssu.edu
(906) 635-4426

Appendix B. St. Marys River Survey

 **St. Marys River Survey** 

1. How long have you lived in Chippewa County, Michigan? years

2. What type of residence do you maintain in Chippewa County, Michigan?

Permanent Seasonal Both

3. About how close is your residence to the St. Mary's River? miles

4. I know the history of the St. Marys River fairly well. Yes No

5. Please checkmark all of the following activities in which you participated anywhere along the St. Marys River at least once during the last year.



- | | | |
|---------------------------------------|---|--|
| <input type="checkbox"/> motorboating | <input type="checkbox"/> snowmobiling | <input type="checkbox"/> snowshoeing |
| <input type="checkbox"/> angling | <input type="checkbox"/> canoeing / kayaking | <input type="checkbox"/> walking your pet |
| <input type="checkbox"/> yachting | <input type="checkbox"/> freighter watching | <input type="checkbox"/> hiking in adjacent natural areas |
| <input type="checkbox"/> fly-fishing | <input type="checkbox"/> swimming | <input type="checkbox"/> hunting in adjacent natural areas |
| <input type="checkbox"/> ice-fishing | <input type="checkbox"/> bird-watching | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> waterskiing | <input type="checkbox"/> cross-country skiing | |

I do not participate in any activities along the St Marys River. (If you selected this option, please continue to Question #9.)

6. Of those activities checkmarked above, which ONE do you consider to be the most important to you?

7. How often do you participate in the activity you listed for Question 5, above?

8. Where along the St. Marys River do you spend time? Include any location that you visit (example: Sherman Park, children's fishing pond at Rotary Park).

 Please continue to the next page. 

code



9. Please place a checkmark by all of the following activities in which you have participated at least once during the last year at the Little Rapids area of the St. Marys River, located upstream and downstream of the causeway at Sugar Island.



- | | | |
|---|--|--|
| <input type="checkbox"/> angling by boat | <input type="checkbox"/> waterskiing | <input type="checkbox"/> hiking in adjacent natural areas |
| <input type="checkbox"/> angling from shore | <input type="checkbox"/> snowmobiling | <input type="checkbox"/> walking your pet |
| <input type="checkbox"/> angling while wading | <input type="checkbox"/> canoeing / kayaking | <input type="checkbox"/> hunting in adjacent natural areas |
| <input type="checkbox"/> fly-fishing | <input type="checkbox"/> swimming | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> ice-fishing | <input type="checkbox"/> bird-watching | |
| <input type="checkbox"/> motorboating | <input type="checkbox"/> snowshoeing | |

I have spent no time in the Little Rapids area. (If you selected this option, please go directly to Question 11.)

10. Of those that you checkmarked above, which ONE would you consider to be the most frequently conducted activity by ANYONE who uses the Little Rapids area?

11. Imagine that a visitor to the area asked you for your opinion on how visually appealing the Little Rapids area is. What would you say to this person?

		YES	NO
12. I think that the water of the St Marys River is safe for:	swimming	<input type="checkbox"/>	<input type="checkbox"/>
	washing clothes	<input type="checkbox"/>	<input type="checkbox"/>
	boating	<input type="checkbox"/>	<input type="checkbox"/>
	washing hands	<input type="checkbox"/>	<input type="checkbox"/>
	drinking	<input type="checkbox"/>	<input type="checkbox"/>
	fishing	<input type="checkbox"/>	<input type="checkbox"/>



 Please continue to the next page. 

code



13. Rate each of the following statements on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree).

Statement	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree
A. My Chippewa County residence is close to the river.	1	2	3	4	5	6
B. Despite our abilities, humans are still subject to the laws of nature.	1	2	3	4	5	6
C. The St. Marys River is highly polluted.	1	2	3	4	5	6
D. Humans are abusing the environment.	1	2	3	4	5	6
E. Having the St. Marys River close by improves the quality of my life.	1	2	3	4	5	6
F. Human ingenuity will ensure that we do not make the earth unlivable.	1	2	3	4	5	6
G. Fish and wildlife are important considerations when it comes to managing the St. Marys River.	1	2	3	4	5	6
H. The so-called "ecological crisis" facing humankind has been greatly exaggerated.	1	2	3	4	5	6
I. Being close to the St. Marys River is something I treasure.	1	2	3	4	5	6
J. Humans will eventually learn enough about how nature works to be able to control it.	1	2	3	4	5	6
K. Plants and animals have as much right as humans to exist.	1	2	3	4	5	6
L. Humans have the right to modify the natural environment to suit their needs.	1	2	3	4	5	6
M. If I had a choice, I would not live close to the St. Marys river.	1	2	3	4	5	6
N. Humans were meant to rule over the rest of nature.	1	2	3	4	5	6
O. The balance of nature is strong enough to cope with the impacts of modern industrial nations.	1	2	3	4	5	6

 Please continue to the next page. 

code

Page 3 of 6



14. Rate each of the following statements on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree).

<u>Statement</u>	<u>Strongly Disagree</u>	<u>Moderately Disagree</u>	<u>Slightly Disagree</u>	<u>Slightly Agree</u>	<u>Moderately Agree</u>	<u>Strongly Agree</u>
A. The most important function of the St. Marys River is to provide a source of transportation.	1	2	3	4	5	6
B. The earth has plenty of natural resources - we just need to learn how to develop them.	1	2	3	4	5	6
C. Having the St. Marys River nearby is valuable.	1	2	3	4	5	6
D. If things continue on their present course, we will soon experience a major ecological catastrophe.	1	2	3	4	5	6
E. I feel a connection to the St Marys River.	1	2	3	4	5	6
F. There is a sufficient amount of quality habitat for the fish and wildlife present in the St. Marys River.	1	2	3	4	5	6
G. We are approaching the limit of the number of people the earth can support.	1	2	3	4	5	6
H. I would recommend living near the St. Marys River to my friends and family.	1	2	3	4	5	6
I. The St. Marys River should be changed so that it can function biologically similarly to how it used to be.	1	2	3	4	5	6
J. The balance of nature is very delicate and easily upset.	1	2	3	4	5	6
K. Water quality of the St. Marys River has improved over time.	1	2	3	4	5	6
L. When humans interfere with nature, it often produces disastrous consequences.	1	2	3	4	5	6
M. The St. Marys River has many uses and should be managed as such.	1	2	3	4	5	6
N. I do not consider the St. Marys River to be an important part of my life.	1	2	3	4	5	6

~~~~~ Please continue to the next page. ~~~~~

code

Page 4 of 6



15. Gender:     \_\_\_ Female     \_\_\_ Male     \_\_\_ Other

16. Ethnicity:     \_\_\_ African American/Black     \_\_\_ Asian     \_\_\_ Caucasian/White  
                     \_\_\_ Native American     \_\_\_ Hispanic/Latino     \_\_\_ Other

17. What is your current age?     \_\_\_ 18 – 29  
                                                     \_\_\_ 30 – 39  
                                                     \_\_\_ 40 – 49  
                                                     \_\_\_ 50 – 59  
                                                     \_\_\_ 60 – 69  
                                                     \_\_\_ 70 +



18. What is your highest level of education presently achieved?     \_\_\_ Some or all of high school  
                                                                                                     \_\_\_ Associate’s degree  
                                                                                                     \_\_\_ Some undergraduate coursework  
                                                                                                     \_\_\_ Undergraduate degree  
                                                                                                     \_\_\_ Some graduate level coursework  
                                                                                                     \_\_\_ Graduate degree

19. What is your zip code?    

20. Circle the ONE category which BEST describes your present employment.

- |                     |                              |              |
|---------------------|------------------------------|--------------|
| Administrative      | K12 Education                | Student      |
| Engineer            | Military                     | Tourism      |
| Farmer              | Natural Resources Management | Unemployed   |
| Full time Homemaker | Retail                       | Other: _____ |
| Higher Education    | Retired                      |              |
| Industrial          | Scientist                    |              |



**You have completed the survey.**

 **Continue to the next page for information on a free drawing.** 

code

Page 5 of 6



 *Free Drawing* 

To be included in the free drawing for a piece of St. Marys River artwork, please write your name, preferred mailing address, phone number, and email address below so that we may inform you if you are the winner. Your completed survey must be received by **December 15, 2013** to be considered for the drawing. We will contact the winner of the drawing during the month of February, 2014. **Note that the contact information that you provide will only be used for this purpose.** Once the drawing takes place, this form will be destroyed.

**Name:** \_\_\_\_\_

**Preferred Mailing Address:** \_\_\_\_\_  
\_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Email Address:** \_\_\_\_\_

I do not wish to be included in the drawing for the St. Marys artwork. \_\_\_\_\_





Appendix C. Responses to Question 8. “Where along the St. Marys River do you spend time? Include any location that you visit (example: Sherman Park, children’s fishing pond at Rotary Park).”

- 4 Mile Beach
- Alford Park
- Algonquin trails
- All areas from locks to DeTour
- American Legion Post #3
- Ashmun Bay
- Aune Osborn
- Back side of power canal
- Bai de Waisae
- Bailey-Lagerstrom Preserve
- Barbeau
- Bayview/Big Pines
- beach property
- Big Lake George
- Birch Point
- Bouy 104
- Brady Park
- Brimley to DeTour
- Cedar Point
- children’s fishing pond
- clay banks
- Cloverland
- Clyde’s
- Cook-Island Preserve
- Cozy Corner
- Dan Resort
- DeTour
- DeTour village park
- Drummond Dock
- Dunbar
- Dunbar Park
- Elks Lodge
- Freighter rest
- Gogomain to Raber
- Historic Water Street
- International Bridge
- Izzak Watton Bay
- Karl’s Cuisine
- Kayak whole river system
- Kemp Marina
- KOA campground
- Lake George
- Lime Island
- Little Lake George
- lower River
- Maud Bay
- Mission Point
- Mission Street boat launch
- Mosquito Bay
- Mosquito Bay
- Munuscong Lake
- Near MSU property
- Neebish Island
- North Bay
- North Shore of Sugar Island
- Potagannissing Bay
- Power House
- Pt. Iroquois light house
- Raber Bay
- Rock Cut
- Rocky Point
- Rotary Park
- Sault Ste Marie City marina
- Shallows
- Sherman Park
- SI Ferry
- Soo Locks
- Spring Bay
- upper river
- USCG base
- Waiska Bay
- Waters around Nebish Island
- West Pier

## Appendix D. St. Marys River Belief Statements

| Belief Statement                                                                                           | Mean ± SD   |
|------------------------------------------------------------------------------------------------------------|-------------|
| <u><i>Functions of SMR</i></u>                                                                             |             |
| Fish and wildlife are important considerations when it comes to managing the St. Marys River.              | 5.56 ± 1.03 |
| The St. Marys River has many uses and should be managed as such.                                           | 5.15 ± 1.08 |
| There is a sufficient amount of quality habitat for the fish and wildlife present in the St. Marys River.  | 3.98 ± 1.59 |
| The St. Marys River should be changed so that it can function biologically similarly to how it used to be. | 3.62 ± 1.77 |
| The most important function of the St. Marys River is to provide a source of transportation.               | 3.49 ± 1.70 |
| <u><i>Proximity to SMR</i></u>                                                                             |             |
| Having the St. Marys River nearby is valuable.                                                             | 5.53 ± 0.99 |
| Being close to the St. Marys River is something I treasure.                                                | 5.20 ± 1.28 |
| *If I had a choice, I would not live close to the St. Marys River.                                         | 5.18 ± 1.43 |
| Having the St. Marys River close by improves the quality of my life.                                       | 5.10 ± 1.35 |
| I would recommend living near the St. Marys River to my friends and family.                                | 5.03 ± 1.27 |
| My Chippewa County residence is close to the river.                                                        | 4.84 ± 1.68 |
| <u><i>Connection to SMR</i></u>                                                                            |             |
| I feel a connection to the St. Marys River.                                                                | 4.82 ± 1.43 |
| *I do not consider the St. Marys River to be an important part of my life.                                 | 4.82 ± 1.61 |
| <u><i>SMR Water Quality</i></u>                                                                            |             |
| The St. Marys River is highly polluted.                                                                    | 3.54 ± 1.74 |
| Water quality of the St. Marys River has improved over time.                                               | 3.49 ± 1.73 |

*\*Item reverse-coded to ensure that scores represent same directional scale.*

Appendix E. New Ecological Paradigm (Dunlap *et al.* 2000) Environmental Concern Belief Statements

| Belief Statement                                                                                    | Mean $\pm$ SD   |
|-----------------------------------------------------------------------------------------------------|-----------------|
| Despite our abilities, humans are still subject to the laws of nature.                              | 5.50 $\pm$ 1.10 |
| Plants and animals have as much right as humans to exist.                                           | 4.81 $\pm$ 1.53 |
| *The balance of nature is strong enough to cope with impacts of modern industrial nations.          | 4.53 $\pm$ 1.60 |
| The balance of nature is very delicate and easily upset.                                            | 4.53 $\pm$ 1.39 |
| Humans are abusing the environment.                                                                 | 4.45 $\pm$ 1.40 |
| When humans interfere with nature, it often produces disastrous consequences.                       | 4.40 $\pm$ 1.46 |
| *Humans were meant to rule over the rest of nature.                                                 | 4.09 $\pm$ 1.94 |
| *Humans will eventually learn enough about how nature works to be able to control it.               | 4.03 $\pm$ 1.77 |
| If things continue on their present course, we will soon experience a major ecological catastrophe. | 4.01 $\pm$ 1.63 |
| *Humans have the right to modify the natural environment to suit their needs.                       | 3.96 $\pm$ 1.65 |
| We are approaching the limit of the number of people the earth can support.                         | 3.93 $\pm$ 1.65 |
| *The so-called "ecological crisis" facing humankind has been greatly exaggerated.                   | 3.55 $\pm$ 1.86 |
| *Human ingenuity will ensure that we do not make the earth unlivable.                               | 3.26 $\pm$ 1.58 |
| *The earth has plenty of natural resources - we just need to learn how to develop them.             | 3.06 $\pm$ 1.72 |

*\*Item reverse-coded to ensure that high scores represent a biocentric view of the environment and lower scores represent an anthropocentric view.*