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Social dimensions of lake ecology: Stakeholder perception surveys used to design effective lake management plans

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Social Dimensions of Lake Ecology: Stakeholder Perception

Surveys Used to Design Effective Lake Management Plans

(TITLE)

BY

Laurie Nannini

THESIS

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ABSTRACT

Lake conservation management plans have exhibited varying levels of success through out Illinois. Recent research, in eutrophic lakes shows that pollution at any level stabilizes when stakeholder cooperation is enhanced by high conformist tendency and social concern. Involving stakeholders in preliminary stages of lake management plans creates more legitimacy and connectedness with the local government as well as stakeholder involvement with management plans. Public opinion data also allows policy makers to sustainably involve stakeholders in management plans. Members of the Illinois Lake Management Association were surveyed on their perceived threats to lakes, preferences on lake facilities and activities. Responses were analyzed by household income, gender, land use and highest degree earned. The survey found that most demographic groups recognize the most important items that have the greatest impact on impaired lakes as reported by the IEPA and EPA but did not show stakeholders recognized the sources or causes of these items.

DEDICATION

This thesis is dedicated to my parents, Gino and Antoinette Nannini, for always telling me I can do anything I choose, who, along with my sisters Regina and Jennifer Nannini, best friend Courtney O'Hara, aunts Virginia Castrogiovanni and Lorriane Rountree, cousins Dave and Donna Gaylor and Cathy Castrogiovanni, grandparents Catherine and the late Anthony Vella have lifted me up, encouraged me, loved me and allowed me to be the person I am today. And to the children in my family, always aim for the stars.

ACKNOWLEDGEMENTS

I would like to thank my thesis chair, Dr. Charles Pederson for writing and distributing the survey used in my thesis and his thoughts about the results and data analysis; committee members, Dr. Barbra Carlsward and Dr. Andrew Methven for their thoughts and suggestions. I appreciate the assistance of Dr. Joan M. Brehm in the Sociology Department at Illinois State University in formulating my research questions and expanding my scope of social ecology.

I appreciate the work of Tanya Stearny for her help in quantifing the data. To my co-workers, class mates and new friends, who inspired me and supported me academically and emotionally no matter the time of day.

LIST OF FGURES

Introduction

Ecologists have realized the need to focus their attention on cross-disciplinary studies such as sociology, psychology, social psychology, neurobiology and economics for their field to have more applications, to solve complex anthropogenic environmental problems and to best serve the public (Lowe, Whitman & Phillipson, 2009; Suzuki & Iwasa, 2009). Human social structures are an entanglement of complex interactions compounded with the spontaneity of multiple choice options shaped by economic penalties and free will (Suzuki & Iwasa, 2009). In short, it is difficult to predict how people are going to behave for a long enough period of time to make an effective policy that protects an impaired resource. As the human population continues to grow exponentially, and the environment changes, the complex scientific principles that govern resources may cause the condition of these resources to change quickly for better or worse (Suzuki & Iwasa, 2009). Often times it is too costly, monetarily and temporally, for state and federal legislatures to amend polices in time to preserve the resource.

The impact of our society and economy touch nearly every ecosystem on Earth. We are inseparable from the environment and have to be part of the considerations by environmental problem solvers when addressing environmental issues. As a result, it is necessary for ecologists to gain knowledge and perspective of human social interactions with the environment in order to make predictions about its future health, minimize the dilemma of the commons and identify sustainable solutions (Suzuki & Iwasa, 2009; Dietz, Ostrom & Stern, 2003).

Previous policy decisions that evaluated ecological and economic components at the federal and state levels have been successful in controlling specific types of pollution problems by limiting the amount of pollutant emitted. One example is the case of ozone-depleting substances in the Montreal Protocol and global lead concentrations in the atmosphere (Dietz, Ostrom & Stern, 2003). In the case of aquatic ecosystems, pollution limits have been set for point pollution and penalties established for violation of the limits. However, top-down management techniques based on principles not perceived as legitimate in the eyes of resource users often result in low cooperation and lack of support for strengthening existing policies (Dietz, Ostrom & Stern, 2003). In comparison, state governmental policies that have been influenced by non-governmental and community organizations have resulted in high levels of cooperation (Dietz, Ostrom & Stern, 2003).

In 2009, the United States Environmental Protection Agency (USEPA) released the first National Lakes Assessment (NLA) that surveyed the United States lakes. Biological conditions, habitat stressors, suitability for recreation and trophic states were reported by region. The temperate plains region, where Illinois is located, reported that 60% of the shorelines exhibited moderate to high levels of lakeshore human disturbance and that 45% of the lakes are hypereutrophic while 21% are eutrophic. In accordance with the federal Clean Water Act and the Water Quality Planning and Management regulation, The Illinois Environmental Protection Agency (IEPA) generates the Illinois Integrated Water Quality Report (IWQR) and Impaired Water List (IWL) every two years, most recently in 2008. The IWQR and IWL report on aquatic life, fish consumption, primary contact, secondary contact, aesthetic qualities, the public and food processing supply. The IEPA lists crop production, sources unknown (agricultural and urban runoff) and litoral/shore modifications as the top three sources of impairment on

Illinois lakes. Similarly, total phosphorus (TP), total suspended solids (TSS) and aquatic algae were found to be the top three items that have the greatest impact on impaired lakes. Total phosphorus (TP), TSS and aquatic algae are directly related to pollution found in urban and agricultural runoff due to methods of food production, septic and storm water overflow and toxins released from burning fossil fuels and corrosive metal leachate (Welch, Jacoby & Lindell, 2004). Non-point sources of pollution from run-off contaminated with agricultural, urban and septic storm water are difficult to regulate by top-down management due to the nature of the source. As a result, it is often not possible to prevent non-point sources of pollution from entering a lake or reservoir (Welch, Jacoby & Lindell, 2004)

Social-ecological experiments are being conducted in the United States (Slimak & Dietz, 2006), parts of Sweden (Jobrn *et al,* 2005) and Northeast Russia (Walker *et al,* 2006) to understand what the public perceives as risks or threats to rivers, lakes, soil and the atmosphere in an attempt to gather creative insight into complex stochastic problems. All three countries recognize the need to incorporate public perceptions into solutions for dynamic multivariate water problems. The study conducted in Russia identified a public education gap between what the public perceives and the actual condition of the environment to guide future policy and educational endeavors. Researchers in Sweden are unsure of how they will use the information they have collected but recognize cost-effective benefits of involving stakeholders in management practices. The United States and Russia agree that incorporating stakeholder opinions, values and perceptions during the early stages of environmental assessment creates more connectedness and legitimacy with the local government and often leads to increased civic duty (Jobrn *et al* 2005, Walker *et al* 2006, Slimak & Dietz, 2006).

Having public opinion data bridges the gap between perception and reality between community members and experts and allows policy makers to make more effective policy. If no cognitive dissonance exists in the minds of stakeholders, involvement in the assessment may produce more trust and cooperation in future management of threats (Slimak & Dietz, 2006), as well as sustainable community involvement. Understanding public perception of environmental risks and threats can also lead to rational communication between community members, experts and policy makers and lead to effective, sustainable plans in dealing with the problem (Slimak, & Dietz, 2006).

Previous research has offered some theoretical explanation of gender and threat perception (Slimak & Dietz, 2006; Davison & Freudenberg, 1996; Slovic, 1999). Slimak & Dietz (2006) conducted research surveying the values, beliefs, social-structure (education, age, income, political views, where and how one was raised) and risk perception to ecological, biological and chemical threats. They found that as the level of education increases, respondents concern for ecological threats decreases and that income is not related to ecological threats (referred to as risks in the article). Slimak & Dietz, 2006 also found that the level of education shows a more positive correlation to environmental threats than does gender. Since age and income tend to increase with one's level of education, some research reports a greater perception of ecological risk as age and income increases. Land use was analyzed in this study because Illinois is primarily an agricultural state (USEPA 2009) and I wanted to know if people who live in rural, agricultural areas have a different perspective on the effects of eutrophication because they are more directly involved with the phenomenon.

The focus of this research is a survey administered to Illinois Lake Management Association members (ILMA) on their perception of lake integrity and what a "good" lake is. I will summarize what ILMA stakeholders value about their lake for consideration as reference criteria for all lakes in Illinois. Previous studies have looked at perceptions of environmental threats from the general population (Jobrn *et al* 2005) and amongst three different cities in a region (Walker *et al,* 2006). One study looked at perception of threat to the environment based on social-psychological demographics of the United States public and USEPA experts (Slimak & Dietz, 2006). In my study, ILMA perceptions of threats to lake integrity will be broken into demographic groups in an effort to identify inconsistencies in perceptions for the use and knowledge of the Illinois Lake Management Association. Suggestions will be offered as to how survey information about stakeholder perceptions, attitudes and values can be of use to organizations like North American Lake Management Society (NALMS) and ILMA in designing more cost effective and sustainable management plans through community engagement.

Stakeholders in general have a unique perspective about lakes. They depend on lakes in part for fulfillment of their happiness through activities they enjoy and the atmosphere that is created at the lake. They have first-hand experience with the lake, are able to interpret it through their senses and perhaps process information with what they may or may not already know about the lake. This provides a unique perspective compared to people who are not lake users. ILMA members are stakeholders that are separated from the general public in two ways. One, they have interests in the health of the lake beyond recreational enjoyment and ,two, ILMA members which gives more likely to attend the ILMA annual conference, read the ILMA newsletter and interact with other ILMA members giving them more experience than the general public in lake education.

Methods

Setting

On February 28, 2008 at the 23rd Annual ILMA conference in Springfield, Illinois, a survey was distributed to 60 ILMA members in order to gather their perceptions regarding the integrity of Illinois lakes and reservoirs. The conference was put on in partnership with the IEPA. Presenters and member attendees of the conference came from all over Illinois with mixed expertise in lake ecology. They consisted of environmental restoration business owners, grant presenters, creek and lake watershed mangers, employees from the Chicago Botanic Gardens, Lake County Health Department, Illinois Department of Natural Resources (IDNR), Illinois Natural History Survey (INHS), and faculty and students from Eastern Illinois University, Northeastern Illinois University, Illinois State University and Pontiac High School.

Survey

The survey was created by Dr. Charles Pederson, Professor of biological sciences at Eastern Illinois University, who studies aquatic ecology with an emphasis on lake restoration. He is a long time member of ILMA and the lake community and has participated in ILMA conferences in the past.

Illinois Lake Management Association conference attendees were asked to provide self-descriptive information that included: age, gender, marital status, annual household income, highest degree earned, location of primary residency, description of primary residency, how the land is used in the area of primary residency, name(s), location(s), distance(s), condition(s) and frequency of lakes or reservoirs most frequently visited in Illinois (Appendix A).

In order to analyze their perceptions, respondents were asked to rank their attitude towards utilizing a lake or reservoir upon which certain restrictions were applied using a Likert-style scale of 1-3 with: 1) I would utilize the lake or reservoir regardless of this restriction; 2) I might utilize a lake or reservoir with this management feature, but would seek an alternate location; and, 3) I would not utilize a lake or reservoir with this management feature. They were also asked to evaluate a set of recreational experiences relative to a visit to one of their favorite lakes or reservoirs using a Likert-style scale of 1-4 with: 1) extremely important; 2) somewhat important; 3) not very important; and, 4) unimportant. The activities consisted of a mix of beach, water and on-shore activities commonly enjoyed in Illinois. Participants were then asked to rate the importance of certain facilities to their enjoyment of a lake or reservoir using the same Likert-style scale used to rate recreational experiences. Finally respondents were asked to rank items with regards to their perception of the greatest threats to the integrity of Illinois lakes and reservoirs using a Likert-style scale 1-4: 1) extremely important; 2) somewhat important; 3) not very important; and, 4) unimportant. There was also an opportunity for participants to provide other answers for activities related to recreational enjoyment of a lake, perceived threats to the integrity of Illinois Lakes and reservoirs, and the importance of lake facilities if their response was not in the survey.

Participants may or may not have attended the conference session and panel discussion titled "What is a Good Lake?" prior to completing the survey.

Quantification

Surveys were collected, compiled, quantified and analyzed using descriptive statistics. The categories and responses were entered into a Microsoft Excel® document. Categories of demographic information and information describing residency were assigned a number correlating to the response in that category (Appendix F). A second sheet titled" Use of Lake," revealed how respondents would use a lake or reservoir with certain restrictions in place (Appendix B). The independent variables (items asked) were set in the top row and the sample respondents (also referred to as observers) in the left column. Responses to the remaining categories: 1) Importance of recreational activity at a lake or reservoir relative to enjoyment (Appendix C); and, 2) Importance of facilities (Appendix D) and perceived threats to the integrity of lake or reservoir (Appendix E) were set up using the same technique in sheets 3 "Recreation," 4 "Facilities" and 5 "Threats," respectively.

Descriptive Statistical Analysis

What is important to ILMA Members

In order to make conclusions about what ILMA members collectively value about the lakes and reservoirs they use, mean responses were taken for all of the independent variables and a 95% confidence interval was constructed. Column graphs were constructed to display the responses in each category (use with restrictions on lakes or reservoirs, importance of recreational activity, importance of facilities and perceived threats to lake integrity).

Demographic variables

Perceptions of ILMA stakeholders by demographic data were characterized in an attempt to understand how ILMA could fine-tune their organization and make lake management more effective by tailoring their outreach to different demographics. A mean age was calculated with a 95% confidence interval. Gender, household income, highest degree earned and land use in the area of primary residency were reported as percentages. The "Threats" spreadsheet was cut and pasted into the "Demographic" spreadsheet and all the data were sorted by gender. The means of female responses (dependent variable) to each threat (independent variable) and the male responses (dependent variable) to each threat (independent variable) were calculated with a confidence interval of 95% (Fig. 1). The data was then sorted by household income (Fig. 2), highest degree earned (Fig. 3) and land use in area of primary residency (Fig. 4), all with 95% confidence intervals. Column graphs were constructed for each demographic. A column graph with the groups in the land use demographic rearranged to display the perceptions of rural vs. non-rural stakeholders was also constructed. Groups in the land use demographic were rearranged because agriculture is the predominant land use in Illinois (76% of land in the temperate plains region is planted/cultivated; National lake assessment 2009). Because rural stakeholders are directly or indirectly involved with farming culture as well as lake culture, they may have significant differences in their perception to lake threats/risks. The data were organized into tables and conclusions were drawn from the graphs and tables.

Means and standard deviations are displayed in the graphs to show differences in ILMA members. A 95% confidence interval was applied around the means of the different threats perceived by the demographic groups to compare the perceptions of people in ILMA to data reported by the Illinois EPA (IEPA) in the 2008 Integrated Water Quality Report listing causes and sources of impaired lakes (Scott, 2008) as well as the National Lake Assessment (NLA) as reported by the USEPA in 2009. NLA is a report of public, private, federal, state and tribal lakes. IEPA reports only on publicly owned lakes. Although lakes in this survey are a mix of public and privately owned, public and private lakes in Illinois have similar characteristics and the data is therefore comparable.

Results

Characteristics of Sample

Survey data was collected from ILMA members. Of the 60 stakeholders surveyed, 11 attended the session and panel discussion "What is a good lake?" Among the 60 surveys collected, the sample size varied depending on the category being analyzed because some respondents did not include pertinent information. Attitudes and perceptions gathered in the survey were based on 64 different lakes the stakeholders reported visiting throughout the year. The lakes were located in Jackson, Cook, McHenery, Lasale, Sangamon, Lake, Montgomery, Madison, Christian, Menard, Dupage, McDonough, Williamson, Bond, Champaign, Vermilion, Woodford, Coles, Iroquois, Boone and Macoupin counties. Frequency of visits ranged from once a year to less than once a year. Demographic information was compiled that described age, gender, level of education, land use and annual household income as mean percentages. Mean age was 52 ±3.5 years old. Four stakeholders did not indicate age and two did not indicate perceived threats. Females represented only 25.9% of the sample while two stakeholders did not indicate gender and two individuals did not rate their perceptions of threats to lakes.

Descriptive Statistical Analysis by Demographic

Characteristics of demographic groups

Groups were formed within each demographic in such a way as to make them comparable to existing research. Highest degree earned (Figure 3) was divided into two groups; group 1 consisted of 30.4% participants who did not graduate from high school, hold a high school diploma/GED and/or an Associate's degree. Group 2 consisted of 70.0% participants holding a bachelor's, master's, doctoral and/or professional degree. Two respondents did not list their level of education and two respondants did not rate their perceptions of threats to lakes and were excluded.

Household income (Figure 2) was divided into three groups. Group 1 included 38% of participants sampled who earn $25,000-$74,999. Group 2 included 51% of participants sampled who earn $75,000-$199,999. Group 3 included 11% of the participants sampled who earn more than $200,000. Two respondents did not indicate perceptions to threats and five did not indicate their level of education and were excluded.

Land use (Fig. 4) was divided into two groups. Group 1 was city/urban and suburban and contained 46 % of the participants sampled. Group 2 was suburban/rural mix and rural and contained 54% of the population sampled. Two respondents did not indicate land use and two did not indicate their perceptions of threats to lakes or reservoirs and therefore were excluded. To further analyze the difference between land use, it was reorganized into rural and non-rural, which were 18% and 82% respectively.

Collective Perceived Threats

Nutrient inputs (1.2±0.1), sediment import from watershed and/or loss of lake volume (1.2±0.1), sediment contamination (1.2±0.1), shoreline erosion (1.3±0.1), exotic plant and animals (1.3±0.1), aquatic habitat destruction (1.3±0.1), septic contamination (1.4±0.2), algal blooms (1.4±0.1) and loss of native aquatic plants/animals (1.4±0.2) were all perceived as the most important threats to the integrity of lakes and reservoirs.

Gender

Women and men did not differ in their perception on any given threat. Fig. 1 shows men ranked agriculture (livestock operations) within the watershed (1.5±0.2), shoreline development (1.6±0.2), urbanization or industrialization within the watershed (1.7±0.3), agriculture (cropland) within a watershed (1.6±0.2), decreased water clarity (1.5±0.2), excessive boating activities and forest harvest within the watershed (2.2±.3) as less threatening than nutrient inputs (1.2±0.1) and sediment import from watershed and/or loss of lake volume (1.2±0.1). Women found nutrient inputs (1.2±0.2) and sediment import from watershed and/or loss of lake volume (1.2±0.2) as slightly more of a threat than decreased water clarity (1.7±.3) and forest harvesting within the watershed (2.0±0.4). Of greater interest is that men view urbanization or industrialization within the watershed (1.7±0.3), agriculture (cropland) within a watershed (1.6±0.2) and excessive boating activities (1.6± 0.2) as less threatening than women when compared to nutrient input and sediment from watershed/loss of lake volume.

Household Income

All three groups had similar perceptions for any given threat, except that significant differences were seen between groups 1 and 2 compared to group 3. Fig. 2 shows group 3 described exotic plants/animals and loss of native aquatic plants/animals as an extreme threat (1.0±0), while group 1 (1.4±.3 and 1.6±0.3) and group 2 (1.3±0.2, 1.4 ±0,2) did not find them as threatening. Group 1 differs from group 2 by a mean of 0.1 in ranking agriculture (livestock operations and cropland) within the watershed as more of a threat.

Highest Degree Earned

There was no difference in the manner in which group 1 and group 2 view any one threat. Fig. 3 shows group 1 mean for nutrient inputs (1.2±0.2), shoreline erosion (1.2±0.2), aquatic habitat destruction (1.2±0.2) and algal blooms (1.2±0.3) did not over lap with the means for shore line development (1.8±0.3), urbanization/industrialization within the watershed (1.8±0.3), excessive boating (1.9±0.3) and forest harvest within the watershed (2.4±0.5). Group 2 results showed sediment import from watershed and/or loss of lake volume (1.1±0.1) as different from shoreline development (1.7±0.2), agriculture (cropland) with in the watershed (1.6±0.2) and decreased water clarity (1.6±0.2).

Both group 1 and 2 perceived nutrient inputs (1.2±0.2), such as phosphorus and nitrogen, relatively equal and as an extreme threat 1.2 ± 0.2 and 1.2 ± 0.1, respectively.

Land Use

No differences were found between the two groups for any given threat. Fig. 4 shows group 1 perceived nutrient inputs (1.2±0.2) as more of a threat than shoreline development (1.8±0.3) and urbanization or industrialization within a watershed (1.8±0.3). They also perceived algal blooms (1.3±0.2) as more threatening than shoreline development (1.8±0.3), while their perception of shoreline erosion (1.3±0.2) and shoreline development (1.8±0.3) is consistent. Group 2 perceived nutrient input (1.1±0.1) as more threatening compared to agriculture (livestock operations) within the watershed (1.5±0.2), urbanization or industrialization within the watershed (1.6±0.3), agriculture (cropland) within a watershed (1.5±0.2) and decreased water clarity (1.7±0.3). Group 1 stakeholders found agriculture (livestock operations and cropland) within the watershed more of a threat than group 2 stakeholders when compared to nutrient inputs.

Recreational Activities

Recreational activities with a mean between 1-2.5 are activities that stakeholders want and find enjoyable at lakes. Fig. 5 shows in order of decreasing importance these include: bank fishing (1.7±0.2), boat fishing (1.7±0.2), pleasure boating, (1.7±0.2) picnicking (1.8±0.2), hiking (1.9±0.2), swimming (2.1±0.3) and canoeing/kayaking (2.2±0.2). Water skiing/tubing/knee boarding (2.6±0.3), activities on a beach (2.6±0.2), camping (2.6±0.3), bird watching (2.7±0.3), sailing (2.8±0.3), ice fishing (3.2±0.2), ice skating (3.2±0.2), jet skiing or personal water craft (3.2±0.3), hunting water fowl (3.4±0.2), scuba diving (3.4±0.2) and wind surfing (3.5±0.2) are activities that stakeholders do not rate as important to lake enjoyment.

Facilities

Facilities with a mean between 1-2.5 are facilities stakeholders find important for enjoyment of lakes. Fig. 6 shows in decreasing order of importance: concrete or asphalt boat ramps (1.6±0.2), modern restroom facilities (1.6±0.2), picnic areas/shelters

(1.7±0.2), maintained hiking trails (1.9±0.2), unimproved boat ramps (2.1±0.2), fishing pier (2.1±0.2) and maintained swimming beaches (2.3±0.3). Marinas (2.5±0.3), modern campgrounds (2.5±0.3), shoreline concessions (beverages, food) (2.6±0.3), primitive campgrounds (2.6±0.3), shoreline concessions (bait, fishing gear) (2.7±0.3), shoreline concessions (goat rental, canoe rental) (2.8±0.3) are facilities stakeholders find relatively unimportant for enjoyment of lakes.

Use of Lake Based on Restrictions

Restrictions with a mean between 1-1.5 suggests stakeholders will tolerate and still enjoy using their lakes or reservoirs (Fig. 7). These include: no-wake zones (1.1±0.1), fishing restrictions (1.1±0.1), motor size restrictions (1.2±0.1), timed no-wake (1.2±0.1) and no access zones (1.4±0.2). No-wake the entire lake (1.5±0.2), fish consumption advisories (1.6±0.2), occasional swimming beach closures (1.6±0.2) and motors prohibited (1.7±0.2) are restrictions that may lead some users to seek alternative locations.

ILMA Stakeholder Perceptions of a "Good Lake"

Mean responses for the importance of recreational activities (Fig. 5), importance of facilities (Fig 6) and use based on lake/reservoir restrictions categories (Fig. 7) were used to assess what ILMA stakeholder's value in the lakes they use. These data could be used further to decide reference lake status for the state of Illinois.

Figure 1

Mean Scores on Perceived Importance of Threats to Lake Integrity and Gender. 1) Extreme Threat; 2) Somewhat of a threat; 3) Not much of a threat; 4) Unimportant (Confidence Interval = 95%).

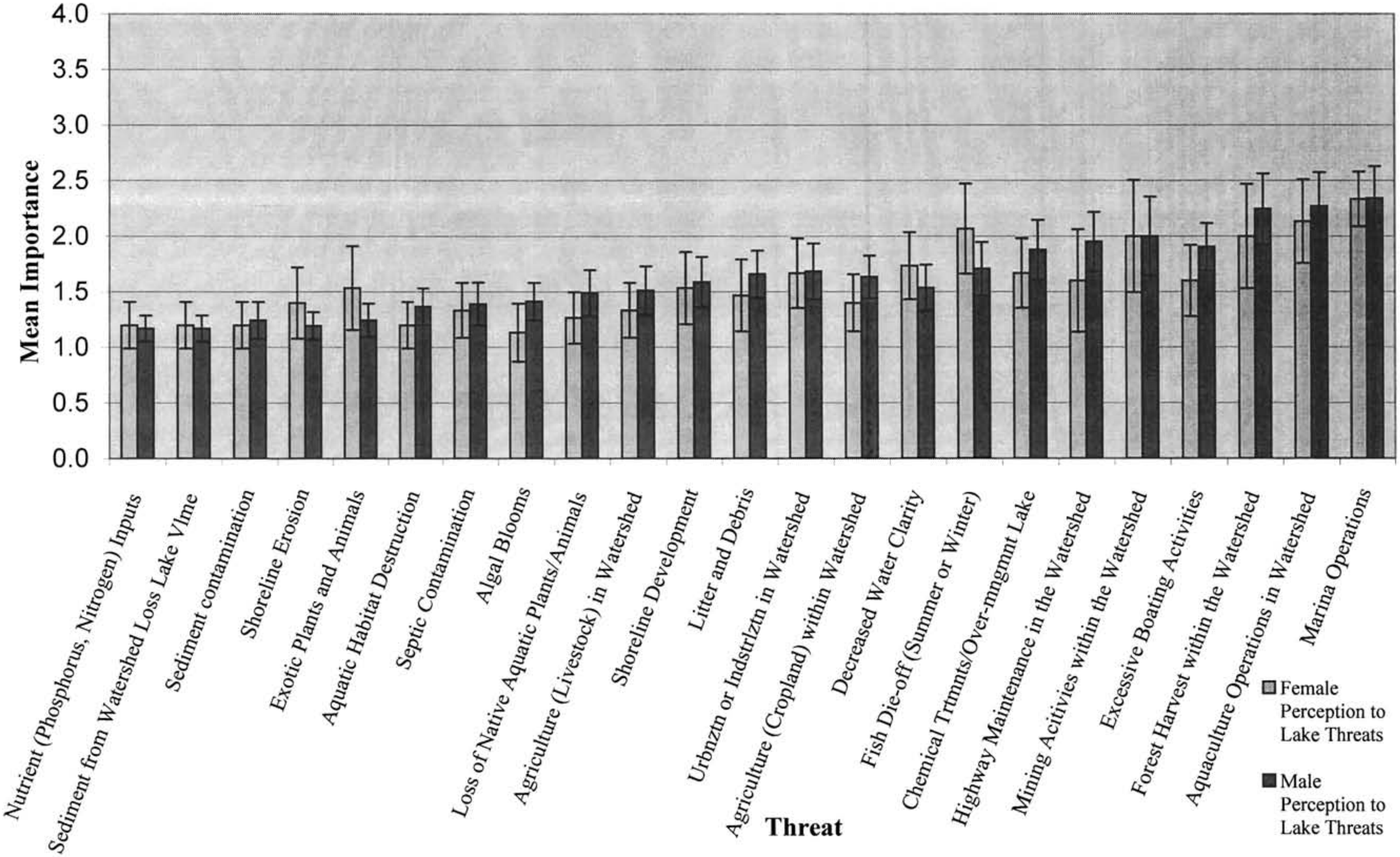


Figure 2

Means of Perceived Importance of Threats to Lake Integrity and Highest Degree Earned. 1) Extreme Threat; 2) Somewhat of a Threat; 3) Not Much of a Threat; 4) Unimportant (Confidence Interval = 95%).

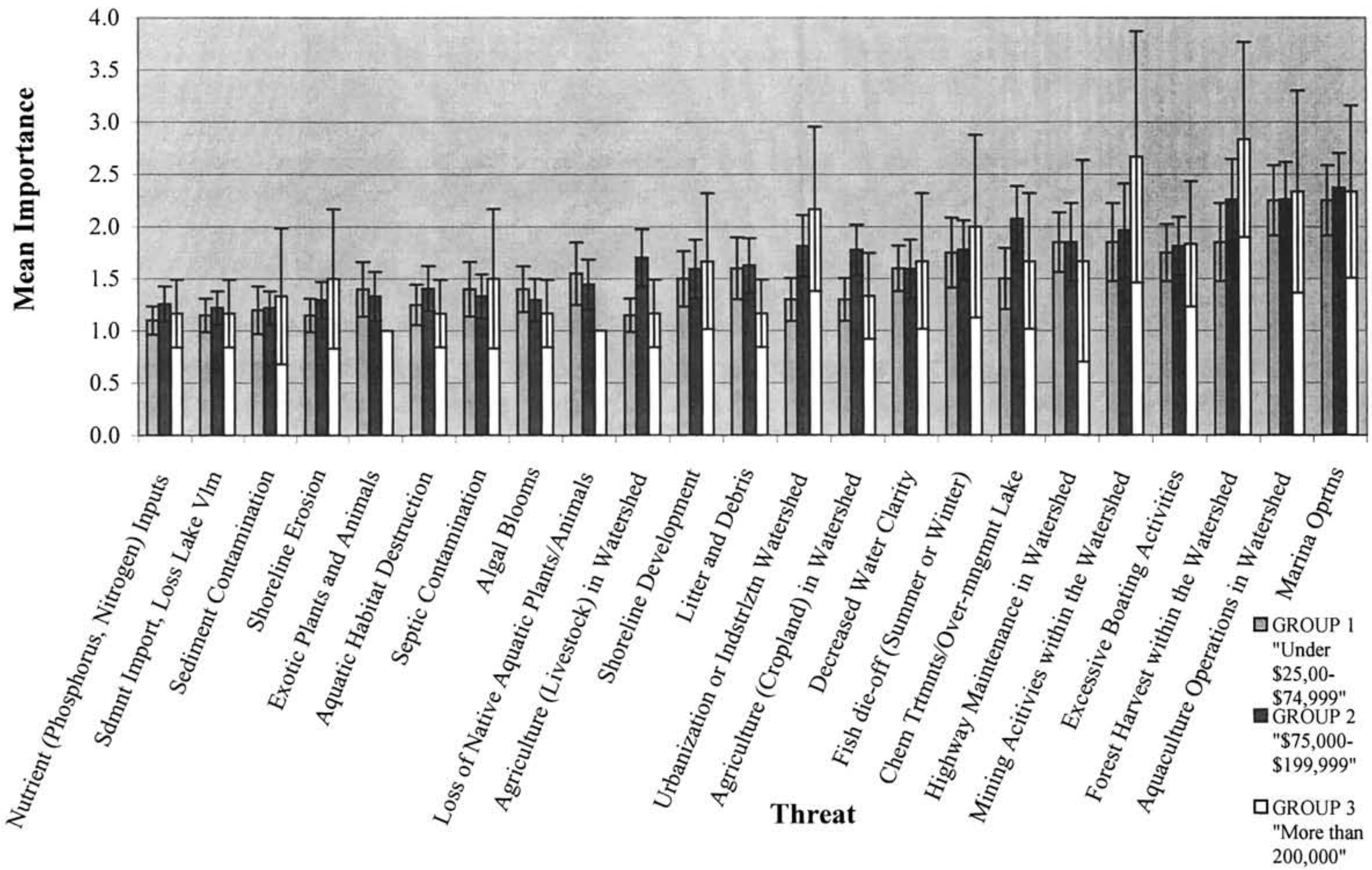


Figure 3

Means of Perceived Importance of Threats to Lake Integrity and Highest Degree Earned. 1) Extreme Threat; 2) Somewhat of a Threat; 3) Not Much of a Threat; 4) Unimportant (Confidence Interval = 95%).

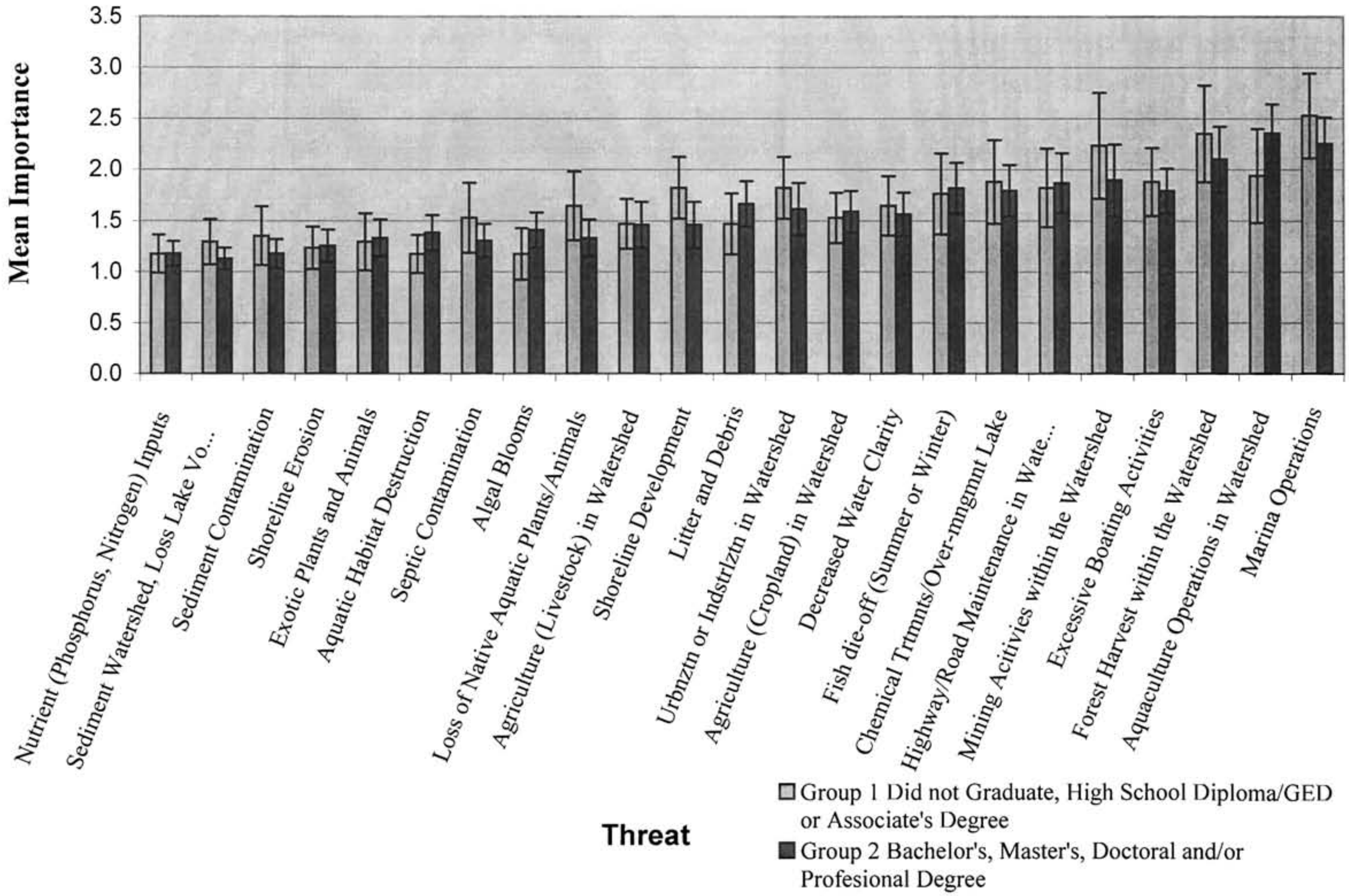


Figure 4

Means of Perceived Importance of Threats to Lake Integrity and Land Use. 1) Extreme Threat; 2) Somewhat of a Threat; 3) Not much of a threat; 4) Unimportant (Confidence Interval = 95%).

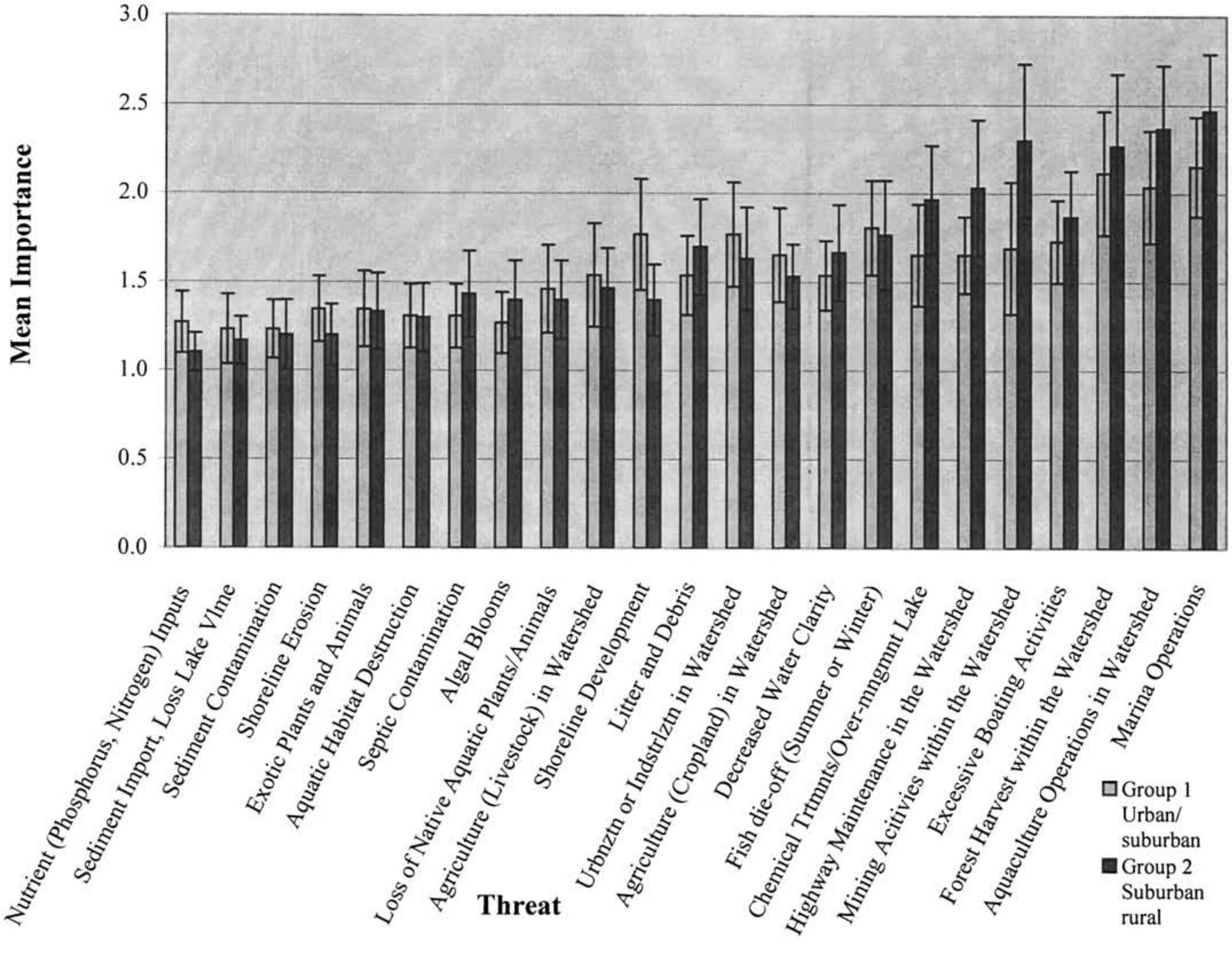


Figure 5

Means of Importance of Recreational Activities to ILMA Stakeholders for the Enjoyment of a Lake or Reservoir. 1) Extremely

Important; 2) Somewhat Important; 3) Not very Important; 4) Unimportant (Confidence Interval = 95%).

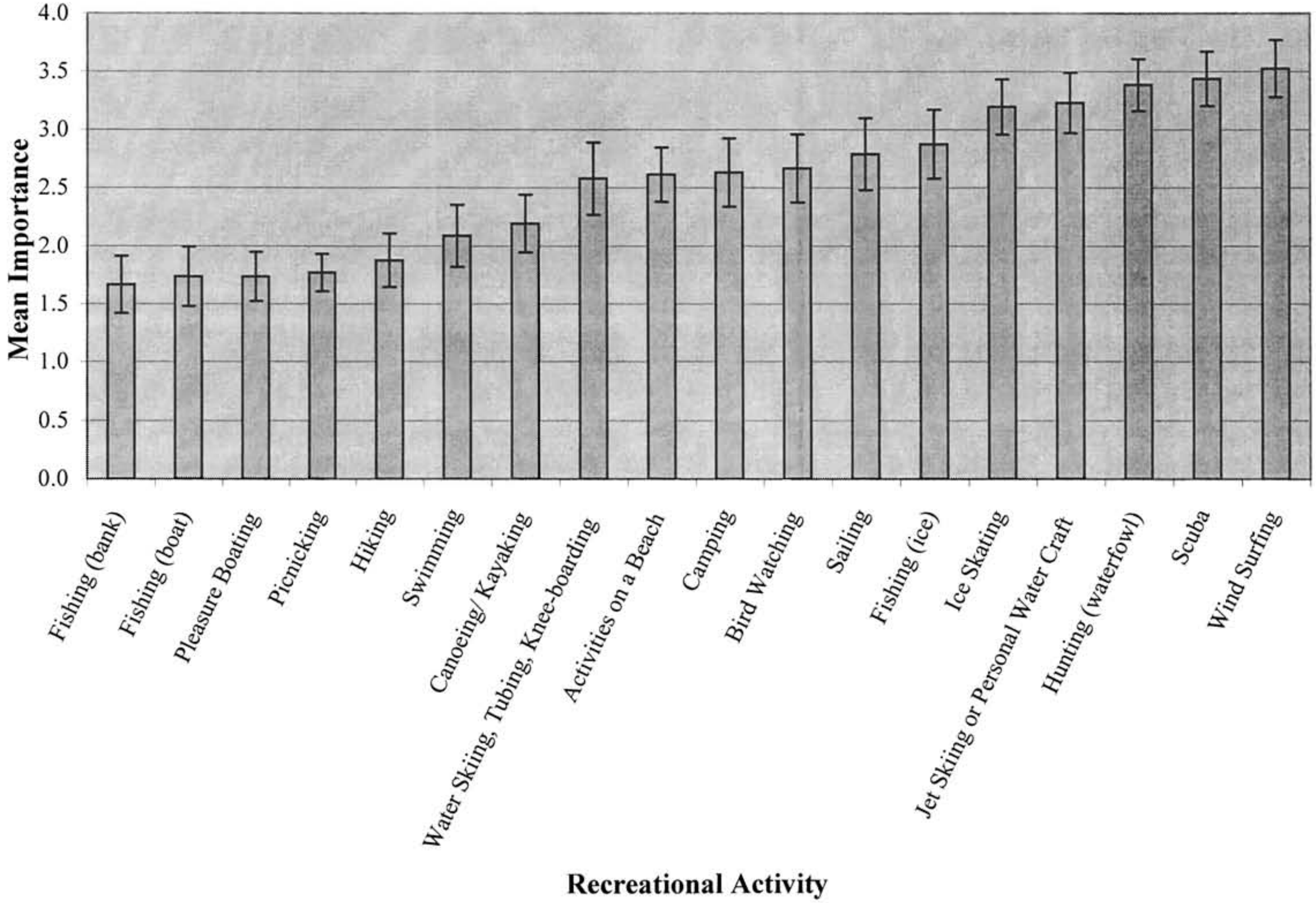


Figure 6

Importance of Facilities to ILMA Stakeholders for the Enjoyment of a Lake or Reservoir. 1) Extremely Important; 2) Somewhat Important; 3) Not very Important; 4) Unimportant (Confidence Interval = 95%).

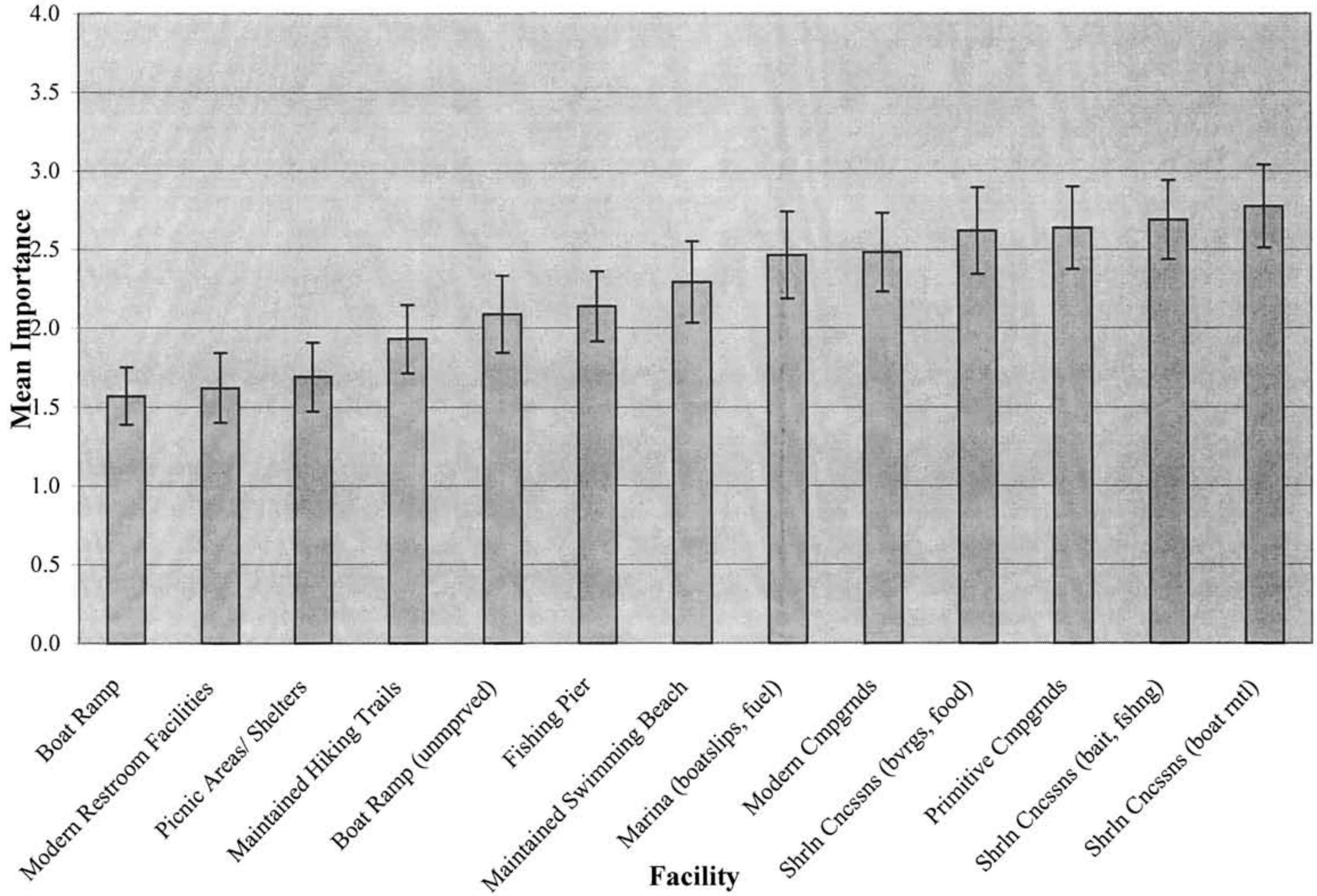
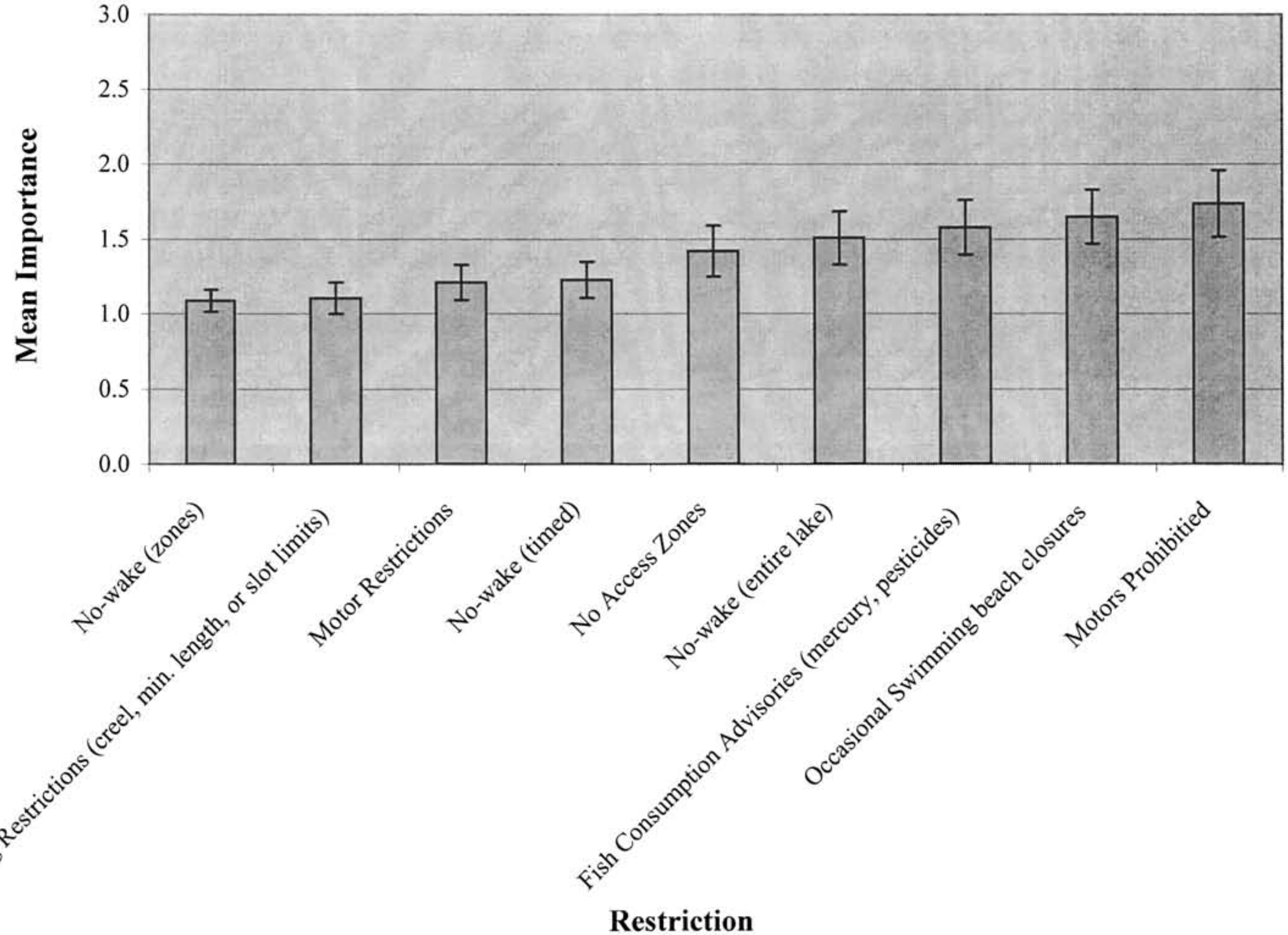


Figure 7

Mean Importance of Attitudes of ILMA Stakeholders and Lake Usage Based on Restrictions. 1) Utilize Regardless; 2) May Use, But Seek Alternative Location; 3) Would not Utilize (Confidence Interval = 95%).



Threats Commonly Perceived By All Demographics

Every demographic group reported a mean of 1.5 or lower for nutrient inputs (phosphorus and nitrogen). All but group 1 in highest degree earned showed sediment import from watershed and/or loss of lake volume as under a mean of 1.5. All group means for sediment contamination was 1.5 with a 95% confidence interval or lower except for group 3 in annual household income and group 2 in highest degree earned.

All ILMA stakeholders perceive sediment contamination to be a threat. Heavy metals like zinc, copper and lead are found in urban runoff from corrosion of vehicles and piping systems, then settle and contaminate lake sediment at a rate of 0.7 metric tons/$km^{-2}yr^{-1}$. Urbanization reduces the recharge zone needed for precipitation to infiltrate the ground and filter out pollution that leads to contamination of water, sediment and living organisms. Vegetative and forested areas that are replaced in a watershed with hard surfaces like concrete and asphalt increase the amount of unfiltered surface run-off entering a body of water.

One inconsistency worth noting is that every demographic group perceived watershed development as somewhat of a threat or not very important, while nutrient input and sedimentation from watershed were their number one and number two threats. Eutrophication from the addition of phosphorus and nitrogen containing compounds is the number one cause of eutrophication as reported by the ILEPA.

Analysis and consideration of perceived threats and values of people whose primary residence is on lake property based on land use and/or highest degree earned may increase the likelihood of long term commitment due to proximity.

Conclusion

Illinois Lake Management Association stakeholders understand that we need water to survive and that we have to preserve our freshwater sources. It is unlikely that the average person wants to intentionally degrade their drinking water. The reason stakeholders care about the lakes they use is because they enjoy the time they spend at lakes or reservoirs and depend on them for personal fulfillment. Unfortunately the very nature of some of the activities they enjoy at the lake contributes to its degradation. However, by restricting the things that harm the lake, civic cooperation and involvement with community restoration plans will be lowered.

Urbanization or industrialization, agriculture (livestock, cropland forest harvesting), mining and highway maintenance within the watershed are things that a community benefits from. As such, community efforts should focus on restoring shorelines and buffer zones in the watershed to minimize the impacts of these activities.

Much of the federal grant funding that once was available for lake management is no longer accessible and state funding is sporadic and often available only for some issues. Stakeholder perception and opinion information would be a useful tool for the NALMS Water Quality Monitoring Council, since it would involve the community at the initial phases of a management plan and give them insight into what is valuable to different lake communities. Inconsideration of those values, NALMS could then design a sustainable community involved management plan while maximizing resources. Surveys could be distributed through state or local organizations in partnership with NALMS and reports submitted for analysis and consideration when defining reference criteria for conserving lake characteristics stakeholders depend on for enjoyment.

North American Lake Management Society could serve as an effective interface with the USEPA and IEPA to advocate for more support and power for local lake management groups in making decisions in accordance with what is important to the community in the watershed. For example 3,000-4,000 local watershed groups in the United States are improving their neighborhood water resource with the help of regional, state, county and district agencies (USEPA 2009). Two years prior to the restoration of Mousuam Lake in Springvale, Maine, The Soil and Water Conservation District, Mousam Lake Regional Association and Maine's Department of Environmental Protection addressed water pollution problems and watershed stewardship. Youth groups were formed to implement best management practices and raise awareness. The group continues to restore impaired sites in their community, and residents in the watershed receive letters every year informing them about how they can help. In addition, several workshops are conducted to teach homeowners about maintenance and conservation of their water resources. The total project cost was $1.5 million. A project like this would be highly successful if preceded with a survey gathering perceptions and values of watershed residents to quickly and cost-effectively engage the community.

Free will and choice is difficult to account for when managing resources. The use of perception surveys to gain insight about attitudes of stakeholders and watershed communities could be used by ILMA and the NALMS to assess the level of stakeholder willingness to engage in a resource management plan and allow a better allocation of funds. In a study that statistically analyzed the dynamics of human socioeconomic choice and phosphorus pollution in a lake system, researchers found that a high conformist tendency enhances cooperation at any level of pollution and that a large social concern contributes to the stabilization of the lake ecosystem (Suzuki & Iwasa, 2009). Sociological studies have also shown that individuals will alter their decisions and modify their behavior to fit in with a group of peers (Berns *et al.,* 2005). Neurobiological studies have recently shown that visual cortex activity in the brain correlates more closely with perceptions than visual stimuli. When the visual cortex is stimulated during times of social conformity, conformity is altered through a change in perception (Berns *et. al*, 2005).

Illinois Lake Management Association members are of particular interest because they represent a group of people who form a community and use lakes as part of their culture. As society, the economy and the environment continue to change, sound water management plans are essential to water quality. Lake ecosystems are a large part of ILMA stakeholders well being and existence (Pederson personal communication). It is crucial that their perceptions be taken into consideration during water management planning to ensure the success of the plan. These are the individuals involved in mimetically transmitting the culture of lake ecosystems and therefore have the ability to affect social concerns and strengthen the conformist tendency of others making rational, healthy decisions about preserving lake integrity. From a social amplification of risk framework perspective (Kasperson *et. al, 1988.*), ILMA members who are on board with management plans amplify the tenets of the plan and generate greater involvement.

If resource management groups understands how stakeholders perceive the threats to their lakes and reservoirs and work to involve them in the process of assessment and planning, enough people will participate in the plan to shift the perceptions of others and change the community's regime to an ecologically sustainable one.

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Appendix A

Demographic Information

Demography							Residency				
Observation	Attended Session	Age (yrs)	Gender	Marital Status	Annual Household Income	Highest Degree Earned	County	Description	Primary Lake Front/Community Property	Secondary Lake Front/Community Property	Land Use
1	2	60	M	M	5	4	Jackson	5	2	1	3
2	1	28	M	S	3	5	Cook	6	1	1	1
3	2	71	M	M	3	5	McHenry	1	1	0	2
4	3	92	M	S	2	1	LaSale	1	1	2	3 and 4
5	3	45	M	M	5	5	Sangamon	1	2	2	1
6	3	46	M	M	8	3	Lake	1	2	1	3
7	2	34	M	S	3	4	Sangamon	2	2	2	1
8	2	52	M	M	5	5	Cook	1	2	2	2
9	1	44	M	M	3	5	Montgomery	1	1	2	4
10	2	53	M	M	0	5	Sangamon	1	2	2	2
11	1	48	M	M	5	2	0	1	2	2	2
12	1	41	M	M	5	4	Madison	1	1	0	4
13	1	61	M	M	5	2	Christian	1	1	0	3
14	1	53	M	M	7	4	Lake	1	1	2	2

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Demographic Information

Primary Residency Lake Front/Community				Lakes Frequently Used				
Observation	Name	County	Condition	Name	County	Visits/yr	Distance (mi)	Condition
				Turkey Roost	Jackson	20	12	1
				Kinkaid	Jackson	5	5	2
1	0	0	0	Cedar	Jackson	2	15	2
2	Michigan	Cook	3	Michigan	0	>10	<1	3
3	Wonder	McHenry	3	Michigan	Lake	2	50	2
4	0	0	0	Holiday	0	365	0	3
5	Springfield	Sangamon	3	Shelbyville	0	1 or 2	65	2
				Michigan	Lake	12	15	1
				Apple Canyon	Jo Daviess	8	180	2
6	0	0	0	Fox Chain of Lakes	Lake	4	15	2
					0			
				Springfield	0	6-10	0	3
7	0	0	0	Sanders	0	3-4	0	2
				Monee Reservoir	0	3	10	2
				Fox Chain of Lakes	0	3	45	1
8	0	0	2	Braidwood	0	6	30	3
9	Lou Yaeger	Montgomery	3	Springfield	Sangamon	4	50	3
				Springfield	Sangamon	2	7	2
				Litchfield	Montgomery	5	50	2
10	0	0	0	Lou Yaeger	Montgomery	2	50	2
				Fawn Ridge	Cook	50	1	2
				Miller Pond	Cook	40	1	1
11	0	0	0	Monee Reservior	0	15	15	2
12	Silver	Madison	3	Carlyle	Clinton	1	30	2
					Christian			
				Bertinetti	Christian/Sanga	365	0	1
				Sanchris	mon	6	15	2
13	Bertinetti	Christian	1	Taylorville	Christian	12	1	2
14	Forest	Lake	3	0	0	0	0	0

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Demographic Information

Demography							Residency				
Observation	Attended Session	Age (yrs)	Gender	Marital Status	Annual Household Income	Highest Degree Earned	County	Description	Primary Lake Front/Community Property	Secondary Lake Front/Community Property	Land Use
15	0	0	0	0	0	0	Menard	0	1	0	0
16	1	48	F	M	5	5	Lake	3	2	2	1
17	0	55	F	S	3	2	Sangamon	3	1	0	0
18	1	25	F	M	4	4	U.S.	1	2	2	2
19	1	0	F	S	4	4	DuPage	1	2	2	3
20	1	53	M	M	8	7	Sangamon	1	1	0	3
21	1 and 3	61	M	M	4	4	Jackson	1	1	2	4
22	1	53	F	M	3	4	Menard	5	2	2	4
23	1	38	F	M	4	4	Sangamon	1	1	2	3
24	1	44	M	M	3	5	Lake	6	2	2	2
25	3	53	F	M	5	5	Cook	1	2	2	2

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Demographic Information

Primary Residency Lake Front/Community				Lakes Frequently Used				
Observation	Name	County	Condition	Name	County	Visits/yr	Distance (mi)	Condition
15	Lake Petersburg	Menard	2	Sanechris Lake	Sangamon	4	55	2
				Michigan				
				Greenbelt Forest				
				Preserve	Lake	50	1	2
				Sterling Forest	Lake	25	5	2
16	0	0	0	Preserve	Lake	5	15	2
				Springfield	0	10	1	3
17	Springfield	Sangamon	0	Sunset	0	10	45	2
18	0	0	0	0	0	0	0	0
				Michigan	0	5-10	30	3
				Silver Lake	0	3	5	2
19	0	0	0	Herrick Lake	0	5	5	3
				0	Shelbysville	<1	60	3
				Shelbyville	Macoupion	<1	30	3
20	Springfield	Sangamon	3	Otter	Montgomery	<1	23	3
				Cedar	Jackson	60	0	2
				Devils Kitchen	Williamson	2	10	1
21	Cedar	Jackson	2	Kincaid	Jackson	2	15	2
				Springfield	0	10	25	4
				Sangcris	0	1	30	3
22	0	0	0	Petersburg	0	4	8	3
				Springfield	Sangamon	2	10	3
				Sunset	Macoupin	2	45	2
23	Val-E-Vue	Sangamon	4	Shelbyville	Shelby	2	90	2
24	0	0	0	Various	Lake	0	0	0
				Fox River	Carpentersville/	2	7-20	2
25	0	0	0	Private coal mine lake	St. Charles	2	50	1

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Demographic Information

Demography							Residency				
Observation	Attended Session	Age (yrs)	Gender	Marital Status	Annual Household Income	Highest Degree Earned	County	Description	Primary Lake Front/Community Property	Secondary Lake Front/Community Property	Land Use
26	1	46	F	M	5	3	Lake	1	1	0	3
27	1	57	M	M	6	4	McDonough	1	1	0	4
28	1	0	M	M	0	5	Williamson	5	2	2	4
29	3	64	M	M	4	5	Jackson	5	2	2	4
30	3	40	M	M	3	6	Jackson	1	2	2	1
31	1	43	M	S	2	2	Bond	1	2	1	3
32	0	0	0	0	0	0	Lake	1	2	2	2
33	3	25	F	S	5	4	McHenry	1	1	2	2
34	3	49	M	S	4	2	DuPage	6	2	2	2
35	1	56	F	M	7	5	Sangamon	0	2	2	3
36	1	54	M	M	4	5	Champaign	1	1	0	2

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Demographic Information

Primary Residency Lake Front/Community				Lakes Frequently Used				
Observation	Name	County	Condition	Name	County	Visits/yr	Distance (mi)	Condition
				Loon Lake	Lake	<0	<0	2
				Nrthrn IL. Cnsrvtn Clb	Lake	200	0.5	4
26	Loon Lakes	Lake	2	Chain O'Lake	Lake	10	0.5	4
				0	McDonough	10	15	2
27	0	McDonough	1	Arggle	Spring Lake	12	8	3
				Lake of Egypt	Williamson	1-2	8	2
				Glendove	Pope	1-2	40	1
28	0	0	0	Crab Orchard	Williamson	1	15	3
29	0	0	0	Kindaid	Jackson	200	12	2
				Devils Lake	0	5	8	1
				Campus Lake	0	20	1	4
30	0	0	0	Cedar Lake	0	10	8	1
				Caryle Glen	Clinton	1	20	4
31		0	4	Shoals	Montgomery	2	20	2
				Silver Lake	Madison	1	20	4
32	Bangs	Lake	3	Bangs	Lake	20	0	3
				Silver Lake	McHenry	20+	≤ 0.25	2
33	Silver Lake	McHenry	2	Lake Killarney	McHenry	1	≤ 0.25	2
				Tower Lakes	0	4	5	2
				Spring	DuPage	10	3	3
34	0	0	0	Springfield Park	Bloomingdale/DuPage	10	3	3
				Lake Springfield	0	5	10	3
35	0	0	0	Lake Paradise	0	3	60	4
				Lake Taylorville	0	2	5	3
				Lake of the Woods	Champaign	365	1	2
36	Twin Oaks Lake	Champaign	4	Lakes at Riverbend	Champaign	6	5	3
				Twin Oaks Lake	Champaign	365	≤ 1	4

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Demographic Information

Demography							Residency				
Observation	Attended Session	Age (yrs)	Gender	Marital Status	Annual Household Income	Highest Degree Earned	County	Description	Primary Lake Front/Community Property	Secondary Lake Front/Community Property	Land Use
37	1	74	M	M	3	4	Lake	1	1	2	2
38	1	65	M	M	8	7	Vermilion	1	1	2	1
39	1	62	M	M		6	Lake	1	1	0	3
40	1	46	M	M	5	4	Lake	1	1	0	3
41	1	52	M	M	3	4	Woodford	1	2	2	3
42	1	51	M	M	4	2	Coles	1	2	2	3
43	1	45	F	M	3	5	Sangamon	1	1	0	1
44	3	56	F	M	3	2	Madison	3	2	2	3
45	1	57	M	M	3	3	Madison	3	2	2	1
46	1	74	M	M	5	5	Iroguois	1	1	0	4
47	3	43	M	S	2	4	Sangamon	1	2	2	1
48	1	65	M	M	3	2	Boone	1	1	0	3
49	1	64	F	M	3	2	Boone	1	1	0	3
50	2	48	M	M	4	3	Sangamon	1	2	2	1

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Demographic Information

Primary Residency Lake Front/Community				Lakes Frequently Used				
Observation	Name	County	Condition	Name	County	Visits/yr	Distance (mi)	Condition
				Grass	0	1	5	4
37	Antioch	Lake	2	Katherine	0	1	5	2
				Channel	0	1	5	2
38	Vermilion	Vermilion	4	Lake Michigan	0	6	150	1
39	Waterford	Lake	2	Lake Michigan	0	15	15	2
				Round Lake	Lake	12	1	1
40	Round Lake	Lake	1	Fourth Lake	Lake	2	1/4	1
				Long Hare Lake	Lake	6	3	2
				Lake Bloomington	0	250	22	3
				Evergreen Lake	0	175	20	2
41	0	0	0	Lake Eureka	0	5	1.5	3
				Paradise Lake Mattoon	0	100	5	3
42	0	0	0	Lake	0	15	9	3
				Lake Springfield	0	≥ 150	≤ 1	2
43	Lake Springfield	Sangamon	2	Lake Sangchris	0	≈ 3	15	2
				Silver Lake	Madison	10	5	2
44	Silver Lake	Madison	2	Carysle Lake	Clinton	1	25	3
				Highland Silver Lake	0	12	2	2
45	0	0	0	Carysle Lake	0	3	25	2
46	Bayles	Iroguois	2	0	0	0	0	0
47	Lake Springfield	Sangamon	2	0	0	0	0	0
					0	4	75	2
48	CWL	Boone	2	Lake Michigan CWL	Boone	365	0.1	2
				Michigan	0	4	74	2
				Candlewick	0	345	1 blk	2
49	Candlewick Lake	Boone	2	Pierce	0	2	10	0
					0	20	12	2
				Otter Lake Springfield	0	2	18	2
50	Otter Lake	Macoupin	2	Lake Sanchos	0	2	6	3

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Demographic Information

Demography							Residency				
Observation	Attended Session	Age (yrs)	Gender	Marital Status	Annual Household Income	Highest Degree Earned	County	Description	Primary Lake Front/Community Property	Secondary Lake Front/Community Property	Land Use
51	3	41	F	M	5	2	Lake	1	1	0	2
52	3	50	M	M	5	2	Lake	1	1	0	2
53	1	33	F	M	5	4	Boone	1	1	0	3
54	2	65	M	M	4	4	Boone	1	1	0	4
55	1 & 3	34	M	M	3	4	Kenosha	3	2	2	1
56	1	48	M	M	4	4	Sangamon	1	2	2	3
57	1	66	M	M	8	5	Lake	1	2	1	3
58	1	62	M	S	3	2	Menard	1	2	2	3
59	1	61	M	M	5	5	Christian	5	1	0	3
60	1	70	M	M	3	3	Christian	1	1	0	3

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Demographic Information

	Primary Residency Lake Front/Community			Lakes Frequently Used				
Observation	Name	County	Condition	Name	County	Visits/yr	Distance (mi)	Condition
				Round Lake		0	0	2
				Grass Lake	Lake	3	8	3
51	Round Lake	Lake	2	Lake Springfield	Lake Sangamon	10	25	3
				Round Lake	0	6	0	2
				Grass Lake	0	2	8	3
52	Round Lake	Lake	2	Fox Lake	0	2	4	3
				Candlewick Lake	0	165	0	2
				Lake Wildwood	0	200	110	3
53	Candlewick Lake	Boone	2	Tanglewood Lake	0	200	110	4
				Candlewick Lake	0	365	75 Ft	2
54	Candlewick Lake	Boone	2	Lake Michigan	0	2	80	3
55	0	0	0	Sterling Lake	0	4	2	1
				Springfield	0	2	5	3
				Otter	0	2	30	2
56	0	0	0	Shelbyville	0	1	45	3
				Wonder Lake	McHenry	150	40	3
				Lake Zurich	Lake	4	5	1
57	0	0	0	Forest Lake	Lake	4	5	2
58	0	0	0	0	0	0	0	0
				Bertinetti Lake	0	25	0	1
				Taylorville Lake	0	8-10	1/4	1
59	Bertinetti Lakes	Christian	1	Lonquist	0	8-10	12	1
				Bertinetti Lake	Christian	100	0	1
				Taylorville Lake	Christian	5	1/2	2
60	Bertinetti	Christian	1	Shelbyville	Shelby	1	25	1

Appendix B
Use of Lake Based on Restrictions

1 = Utilize regardless; 2 = May use, but seek alternative location; 3 = Would not utilize

Observation	No-wake (zones)	Fishing Restrictions (creel, min. length, or slot limits)	Motor Size Restrictions	No-wake (timed)	No Access Zones	No-wake (entire lake)	Fish Consumption Advisories (mercury, pesticides)	Occasional Swimming beach closures	Motors Prohibitied
1	1	1	1	1	1	2	1	1	3
2	1	1	1	1	1	1	1	1	1
3	1	1	1	1	2	2	2	2	3
5	1	1	3	1	1	3	1	2	3
6	1	1	2	1	1	2	1	2	3
7	1	2	1	1	2	1	2	2	2
8	1	1	2	1	2	1	2	3	1
9	1	1	1	1	1	1	1	2	1
10	1	1	1	1	1	1	3	2	1
11	1	1	1	1	2	1	2	1	1
12	1	1	1	2	1	1	2	1	1
13	1	1	1	1	1	1	1	1	3
14	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	2	2	1
16	1	1	2	1	1	1	2	1	1
17	1	1	1	2	1	3	1	1	3
18	1	1	1	1	2	1	3	3	1
19	1	1	1	1	1	1	1	1	1
20	1	1	2	1	1	3	1	1	3
21	1	1	1	1	1	1	1	2	1
22	1	1	1	1	2	1	1	1	2
23	1	1	1	1	1	1	1	2	1
24	2	2	2	2	3	2	3	2	2
25	1	1	1	1	1	1	2	2	1
26	2	1	1	1	2	2	2	2	2
27	1	1	1	1	2	1	1	1	1
28	1	1	1	2	1	2	1	2	2
29	1	1	1	1	1	1	1	1	1
30	1	1	1	1	1	1	1	3	2

Appendix B
Use of Lake Based on Restrictions

1 = Utilize regardless; 2 = May use, but seek alternative location; 3 = Would not utilize

Observation	No-wake (zones)	Fishing Restrictions (creel, min. length, or slot limits)	Motor Size Restrictions	No-wake (timed)	No Access Zones	No-wake (entire lake)	Fish Consumption Advisories (mercury, pesticides)	Occasional Swimming beach closures	Motors Prohibitied
31	1	1	1	1	1	2	2	1	2
32	1	1	2	2	3	2	2	2	2
33	1	1	1	1	1	1	1	1	1
34	1	1	1	1	1	1	1	3	1
35	1	1	1	1	1	1	2	3	1
36	1	1	1	1	1	1	1	1	1
37	2	3	1	1	1	2	3	2	1
38	1	1	1	1	1	1	2	2	1
39	1	1	1	1	1	2	1	1	3
40	1	1	1	1	1	1	2	2	1
41	1	1	1	1	1	1	1	1	1
42	2	3	2	2	3	2	3	3	3
43	1	1	1	1	1	1	1	1	1
44	1	1	2	1	3	2	3	1	2
45	1	1	1	1	1	1	1	2	1
46	1	1	1	2	1	1	1	2	3
47	1	1	1	1	1	1	1	1	1
48	1	1	1	1	1	3	2	1	3
49	1	1	1	1	2	2	2	1	3
50	1	1	1	2	1	2	1	1	2
51	1	1	2	2	2	3	1	1	3
52	1	1	1	3	2	3	2	2	3
53	1	1	1	1	1	2	3	1	2
54	1	1	1	1	1	1	1	1	1
55	2	1	1	2	2	2	1	3	1
56	1	1	2	1	2	1	2	2	3
57	1	1	1	2	3	2	2	2	2
60	1	1	1	1	2	1	1	2	1

Appendix C

Recreational Importance

0 = No information provided; 1= Extremely important; 2 = Somewhat important; 3 = Not very important; 4 = Unimportant

Observation	Fishing (bank)	Fishing (boat)	Pleasure Boating	Picnicking	Hiking	Swimming	Canoeing/ Kayaking	Water Skiing, Tubing, Knee-boarding	Activities on a Beach
1	4	1	3	3	3	3	4	4	4
2	1	1	3	3	2	2	2	3	3
3	1	1	2	3	3	4	3	4	4
4	0	0	0	0	0	0	0	0	0
5	2	2	1	2	2	1	3	1	1
6	2	2	2	2	4	1	3	2	2
7	1	1	4	1	1	1	1	4	1
8	1	1	3	1	2	4	3	4	4
9	1	2	1	1	1	1	2	1	3
10	4	4	2	2	1	2	2	4	3
11	1	1	3	2	2	3	3	4	3
12	1	2	2	2	1	3	2	3	3
13	1	1	2	2	3	4	4	4	4
14	2	2	1	2	2	2	4	4	2
15	1	1	1	2	3	2	4	3	4
16	2	2	1	2	1	2	1	4	4
17	1	1	1	1	1	1	1	1	3
18	1	1	2	3	1	2	2	2	3
19	1	2	1	1	1	3	1	2	2
20	1	1	1	1	3	1	3	1	2
21	2	2	1	1	2	2	3	4	2
22	4	4	1	2	3	4	3	4	4
23	3	3	1	2	1	1	2	1	2
24	1	2	3	2	1	2	2	4	2
25	1	1	1	1	1	2	1	4	2
26	2	2	2	1	1	1	2	2	3
27	1	1	1	2	2	1	1	1	1
28	1	1	2	2	2	1	2	2	2
29	2	1	2	2	4	2	2	2	3

Appendix C
Recreational Importance

0 = No information provided; 1= Extremely important; 2 = Somewhat important; 3 = Not very important; 4 = Unimportant

Observation	Camping	Bird Watching	Sailing	Fishing (ice)	Ice Skating	Jet Skiing or Personal Water Craft	Hunting (waterfowl)	Scuba	Wind Surfing
1	1	4	4	0	0	4	3	4	4
2	3	4	4	1	3	3	4	4	3
3	4	1	3	4	4	4	4	4	4
4	0	0	0	0	0	0	0	0	0
5	2	2	2	4	3	2	3	2	1
6	3	4	2	4	4	3	4	4	4
7	1	2	1	3	3	0	3	2	4
8	1	4	4	2	3	3	4	4	4
9	1	2	1	4	4	4	3	4	3
10	2	4	4	4	1	4	4	4	4
11	3	2	3	2	4	4	4	3	4
12	3	3	4	3	3	3	4	2	4
13	4	1	4	3	4	4	4	4	4
14	4	4	4	4	4	4	4	4	4
15	4	2	3	3	4	4	2	3	4
16	1	2	1	2	2	4	4	2	2
17	1	3	2	2	3	2	3	3	2
18	2	3	3	1	4	3	1	2	4
19	2	2	4	3	3	2	4	4	4
20	2	4	3	2	4	1	3	4	4
21	5	2	4	4	4	4	4	4	4
22	3	2	3	4	4	1	4	4	4
23	2	2	3	3	3	2	4	3	3
24	4	4	3	2	4	4	4	4	4
25	1	4	4	4	4	4	4	4	4
26	3	4	2	2	2	2	4	3	4
27	3	3	3	2	3	1	3	2	3
28	2	4	3	3	4	3	1	4	4
29	2	4	3	4	4	4	1	4	4

Appendix C

Recreational Importance

0 = No information provided; 1= Extremely important; 2 = Somewhat important; 3 = Not very important; 4 = Unimportant

Observation	Fishing (bank)	Fishing (boat)	Pleasure Boating	Picnicking	Hiking	Swimming	Canoeing/ Kayaking	Water Skiing, Tubing, Knee-boarding	Activities on a Beach
30	1	1	3	3	2	3	1	4	4
31	1	1	1	1	1	1	1	1	3
32	2	2	1	2	3	3	2	2	2
33	2	2	2	2	2	1	4	2	2
34	2	4	4	2	1	4	4	4	2
35	2	2	2	1	1	2	2	3	3
36	1	1	1	2	2	2	2	2	3
37	2	2	2	2	1	1	2	2	2
38	1	1	1	1	1	2	1	2	3
39	1	1	2	2	1	3	1	3	3
40	3	3	2	2	1	2	1	4	3
41	2	3	3	2	1	4	2	4	4
42	3	4	2	2	2	3	2	4	3
43	1	1	1	1	1	1	2	1	2
44	4	4	2	1	1	2	2	2	3
45	4	4	2	1	1	3	1	2	2
46	3	3	1	2	3	1	3	4	2
47	2	2	2	2	2	2	3	2	2
48	1	1	1	2	4	1	2	1	3
49	1	1	1	2	2	2	4	1	2
50	1	1	2	2	2	3	2	2	2
51	1	1	1	1	2	1	1	1	1
52	1	1	1	1	2	1	2	2	1
53	1	1	1	1	2	1	1	1	1
54	1	2	1	1	2	1	2	1	3
55	1	1	2	2	3	3	3	3	3
56	1	1	2	2	2	2	2	2	2
57	2	1	1	2	2	2	2	2	3
60	1	1	2	3	3	4	2	4	4

Appendix C
Recreational Importance

0 = No information provided; 1= Extremely important; 2 = Somewhat important; 3 = Not very important; 4 = Unimportant

Observation	Camping	Bird Watching	Sailing	Fishing (ice)	Ice Skating	Jet Skiing or Personal Water Craft	Hunting (waterfowl)	Scuba	Wind Surfing
30	3	2	2	3	3	4	4	4	4
31	4	1	1	1	1	1	3	1	1
32	4	4	4	3	2	4	3	4	4
33	3	3	4	2	2	3	3	4	4
34	4	1	4	4	4	4	4	4	4
35	4	1	2	4	4	4	4	4	4
36	4	1	1	4	2	4	3	4	3
37	4	4	2	2	4	4	4	4	4
38	4	1	1	4	4	4	3	4	4
39	3	1	3	1	2	3	2	4	3
40	1	1	3	4	3	4	4	4	4
41	1	2	4	3	3	4	4	4	4
42	2	2	4	4	4	4	4	4	4
43	3	3	1	4	3	4	4	4	1
44	2	4	4	4	3	3	4	4	4
45	1	2	4	4	4	4	3	4	4
46	4	4	4	4	2	4	4	4	4
47	3	3	2	3	3	3	3	4	4
48	2	2	1	1	4	3	4	1	1
49	2	2	4	4	4	4	4	4	4
50	2	3	4	4	4	3	2	4	4
51	1	3	1	3	2	2	3	4	4
52	2	4	4	4	3	3	4	3	4
53	3	4	1	1	1	1	4	1	1
54	4	2	1	2	3	3	3	2	2
55	2	4	4	1	4	4	2	3	4
56	3	3	3	1	4	4	4	4	4
57	2	2	1	2	3	2	2	3	4
60	4	1	1	1	2	4	4	3	4

Appendix D
Facility Importance

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Boat Ramp (concrete or asphalt)	Modern Restroom Facilities	Picnic Areas/ Shelters	Maintained Hiking Trails	Boat Ramp (unimproved)	Fishing Pier	Maintained Swimming Beach
1	1	1	3	2	1	4	4
2	2	2	3	2	2	2	3
3	2	3	4	4	2	4	4
4	1	1	1	0	0	1	2
5	1	1	1	2	1	2	1
6	2	3	2	3	2	2	2
7	2	2	1	2	1	1	2
8	1	1	1	2	1	1	4
9	1	1	1	1	4	2	1
10	3	1	2	1	3	3	2
11	1	2	2	3	1	2	3
12	3	3	2	3	4	2	3
13	2	1	1	3	2	1	4
14	2	1	1	2	2	2	2
15	1	1	1	3	2	3	4
16	2	1	1	1	2	2	2
17	1	1	1	2	4	2	2
18	2	3	3	1	2	3	3
19	2	1	1	1	2	1	3
20	1	1	1	3	4	4	2
21	1	2	2	2	2	3	2
22	1	1	2	3	2	4	4
23	1	1	2	2	2	2	2
24	2	2	2	2	2	2	2
25	3	1	1	1	2	2	2
26	2	2	1	1	2	3	1
27	2	1	1	2	2	2	1
28	1	1	1	2	2	1	1

Appendix D
Facility Importance

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Marina (boat slips, fuel)	Modern Campgrounds (water, electrical, sewer)	Shoreline Concessions (beverages, food)	Primitive Campgrounds	Shoreline Concessions (bait, fishing gear)	Shoreline Concessions (boat rental, canoe rental)
1	3	1	3	4	3	4
2	4	2	4	2	3	4
3	2	4	4	3	3	4
4	1	1	1	1	1	4
5	1	1	1	2	4	1
6	2	3	3	3	3	3
7	2	2	3	2	2	2
8	2	1	2	1	2	1
9	1	2	2	1	2	2
10	4	2	1	2	3	2
11	3	3	3	3	2	2
12	3	4	4	3	4	4
13	4	4	4	4	4	4
14	2	2	1	4	1	1
15	3	2	3	2	3	3
16	4	2	4	2	4	4
17	2	2	3	2	3	3
18	2	3	4	2	3	4
19	4	2	2	1	1	1
20	1	3	1	4	1	3
21	4	4	4	4	4	4
22	3	4	4	3	4	4
23	2	2	2	2	2	3
24	3	2	3	3	3	3
25	3	1	3	4	3	3
26	3	3	4	2	4	4
27	1	2	1	3	3	2
28	3	1	2	3	2	2

Appendix D

Facility Importance

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

29	1	3	3	2	1	3	2
30	2	3	3	2	2	2	3
31	2	1	1	1	2	2	1
32	1	3	3	2	3	2	2
33	3	1	2	2	3	2	1
34	2	1	1	1	4	2	3
35	2	1	1	2	2	3	4
36	3	1	1	1	3	2	2
37	1	1	2	2	1	4	2
38	1	1	1	1	1	3	2
39	1	1	2	1	1	2	2
40	3	1	1	1	3	2	1
41	2	2	1	1	1	2	4
42	1	2	2	2	4	1	3
43	1	2	1	2	4	2	2
44	2	1	1	1	2	2	1
45	3	4	4	1	3	3	2
46	1	4	2	1	2	1	2
47	1	1	2	2	1	3	2
48	1	1	1	4	2	1	1
49	1	1	1	2	3	2	2
50	2	2	2	2	2	2	2
51	1	1	1	1	1	1	1
52	1	1	1	2	1	2	1
53	1	1	1	2	2	2	1
54	1	2	2	2	2	1	2
55	1	3	3	3	1	1	4
56	1	2	2	1	1	1	3
57	1	2	2	3	2	2	3
60	1	2	3	4	1	3	4

Appendix D

Facility Importance

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

29	3	3	4	3	4	4
30	4	3	3	2	3	3
31	1	3	2	1	2	2
32	1	3	2	3	2	2
33	2	3	2	3	2	2
34	3	3	3	2	2	3
35	4	4	4	4	4	2
36	2	1	2	1	2	2
37	3	4	4	4	4	4
38	2	4	2	4	2	1
39	3	3	4	3	4	4
40	4	1	2	1	3	2
41	4	2	4	1	4	2
42	1	3	3	3	2	2
43	2	3	2	3	2	3
44	2	1	1	2	1	1
45	4	2	3	4	3	2
46	1	3	4	4	4	4
47	2	3	2	3	2	3
48	1	1	2	2	2	2
49	1	2	1	4	3	4
50	2	2	2	2	2	3
51	1	1	1	1	1	2
52	2	2	2	2	3	3
53	1	3	1	2	1	1
54	3	4	2	4	3	3
55	2	3	2	3	2	4
56	4	3	3	4	3	3
57	2	3	3	3	3	3
60	4	3	4	3	4	4

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Nutrient (Phosphorus, Nitrogen) Inputs	Sediment Import from Watershed and/or Loss of Lake Volume	Sediment contamination	Shoreline Erosion	Aquatic Habitat Destruction	Exotic Plants and Animals	Algal Blooms
1	1	1	1	1	2	1	2
2	2	2	2	2	2	2	2
3	1	1	1	1	1	1	2
4	1	2	1	1	1	2	2
5	1	1	1	1	1	1	1
6	1	2	3	1	1	1	1
7	1	1	1	1	1	1	2
8	1	1	1	1	2	1	1
9	1	1	1	1	1	1	1
10	1	1	2	1	2	2	1
11	1	1	1	1	1	1	1
12	1	2	2	1	2	2	1
13	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1
16	1	1	1	2	1	2	1
17	1	2	2	1	2	1	2
18	2	1	1	1	1	1	1
19	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1
21	1	2	1	2	2	1	2
22	1	1	1	1	1	3	1
23	1	1	1	1	1	1	2
24	2	1	1	1	1	2	1
25	1	1	1	2	1	2	1

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Septic Contamination	Loss of Native Aquatic Plants/Animals	Agriculture (Livestock Operations) within the Watershed	Shoreline Development	Agriculture (Cropland) within Watershed	Decreased Water Clarity	Litter and Debris	Urbanization or Industrialization within the Watershed
1	3	2	2	1	2	1	2	3
2	2	2	1	1	2	2	2	1
3	1	1	1	1	2	2	2	1
4	3	3	2	1	1	1	1	1
5	1	1	2	2	2	1	1	2
6	3	1	2	2	2	3	1	3
7	1	2	1	1	1	1	1	1
8	1	1	4	4	4	1	1	3
9	1	1	1	1	1	2	1	1
10	2	2	2	3	2	1	2	3
11	1	1	2	1	2	2	2	2
12	2	3	2	1	2	2	2	1
13	1	2	2	2	1	1	2	2
14	1	1	1	1	1	1	1	1
16	1	1	2	1	2	1	1	2
17	2	2	1	2	1	1	1	2
18	1	1	2	2	2	2	2	2
19	2	1	1	1	2	3	2	1
20	1	1	1	1	1	1	1	1
21	2	2	2	2	2	3	3	1
22	1	1	1	1	1	2	3	1
23	1	1	2	1	2	1	1	1
24	1	2	1	1	2	2	3	1
25	1	1	1	1	1	2	1	1

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Fish die-off (Summer or Winter)	Chemical Treatments/Over-management of the Lake/Resivoir	Excessive Boating Activities	Highway/Road Maintenance in the Watershed	Mining Acitivies within the Watershed	Forest Harvest within the Watershed	Aquaculture Operations within the Watershed	Marina Operations
1	1	3	2	4	4	4	4	4
2	3	2	1	2	2	2	2	2
3	2	1	2	1	3	1	2	2
4	3	3	1	3	3	3	2	1
5	1	2	3	2	1	3	2	4
6	3	2	3	1	4	4	4	3
7	1	1	2	2	1	2	3	1
8	1	1	3	2	1	3	4	3
9	1	1	2	1	1	2	3	3
10	2	3	2	2	2	3	0	3
11	2	1	2	2	1	2	1	2
12	2	3	3	3	4	3	2	3
13	2	2	1	4	4	4	0	4
14	1	1	1	1	1	2	1	1
16	2	2	1	1	0	2	2	2
17	3	2	3	2	3	3	3	3
18	2	1	2	2	3	1	2	2
19	2	2	1	1	2	1	3	2
20	1	1	2	1	4	3	1	1
21	3	2	2	2	1	1	2	4
22	2	1	2	2	2	2	2	2
23	1	2	1	1	2	1	2	2
24	1	1	1	2	2	1	1	2
25	2	2	1	1	1	2	2	2

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Nutrient (Phosphorus, Nitrogen) Inputs	Sediment Import from Watershed and/or Loss of Lake Volume	Sediment contamination	Shoreline Erosion	Aquatic Habitat Destruction	Exotic Plants and Animals	Algal Blooms
26	1	1	1	1	1	1	0
27	2	1	1	1	1	1	2
28	1	1	1	1	1	1	1
29	1	1	1	1	2	1	1
30	1	1	1	2	1	1	1
31	1	1	1	1	1	1	2
32	1	3	1	2	1	2	2
33	2	2	2	1	2	1	2
34	1	1	1	2	1	1	2
35	1	1	1	3	1	1	1
36	1	1	1	1	1	1	1
37	1	1	1	1	2	1	1
38	1	1	1	1	2	1	1
39	1	1	1	1	1	1	3
40	1	2	1	2	1	1	2
41	1	1	3	1	2	2	2
42	1	1	1	2	2	2	1
43	1	1	1	2	1	2	1
44	1	1	1	1	1	2	1
45	1	1	1	1	1	1	1
46	2	1	1	1	3	3	1
47	1	1	1	1	2	1	2
48	1	1	1	1	1	1	1
49	1	1	1	1	1	1	1

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Septic Contamination	Loss of Native Aquatic Plants/Animals	Agriculture (Livestock Operations) within the Watershed	Shoreline Development	Agriculture (Cropland) within Watershed	Decreased Water Clarity	Litter and Debris	Urbanization or Industrialization within the Watershed
26	2	1	2	1	2	2	1	1
27	1	1	1	2	2	2	2	2
28	1	1	3	1	2	1	3	1
29	1	1	2	1	2	3	2	1
30	1	1	1	2	1	1	2	1
31	1	2	1	3	1	1	2	1
32	2	2	3	2	2	2	2	3
33	1	2	2	2	2	2	1	2
34	2	1	2	2	2	2	1	2
35	2	1	1	1	1	2	2	3
36	1	1	1	1	1	1	2	1
37	1	3	1	2	1	2	1	1
38	1	1	1	3	1	1	1	3
39	1	1	1	1	2	2	2	2
40	2	1	1	1	2	1	2	2
41	2	2	2	2	1	2	1	2
42	1	2	1	2	1	1	3	2
43	2	1	1	2	1	2	2	2
44	1	2	1	2	1	2	2	2
45	2	1	2	2	2	2	2	2
46	1	1	3	1	1	2	1	4
47	2	1	1	1	1	1	2	1
48	1	1	1	2	2	2	1	2
49	1	1	1	1	1	1	1	1

Appendix E

Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Fish die-off (Summer or Winter)	Chemical Treatments/Over-management of the Lake/Resivoir	Excessive Boating Activities	Highway/Road Maintenance in the Watershed	Mining Acitivies within the Watershed	Forest Harvest within the Watershed	Aquaculture Operations within the Watershed	Marina Operations
26	1	2	2	1	3	1	2	2
27	1	3	3	2	2	2	3	3
28	1	2	2	3	3	3	3	2
29	1	2	2	2	1	1	3	2
30	2	2	2	2	1	3	3	2
31	1	2	3	2	2	2	1	3
32	2	2	2	2	4	4	2	2
33	3	2	1	1	2	3	3	2
34	2	4	1	1	4	3	2	1
35	3	3	1	4	4	4	3	3
36	1	1	2	1	1	1	2	2
37	2	1	1	1	1	1	2	2
38	3	2	2	2	2	3	3	3
39	3	1	3	2	1	1	2	3
40	2	2	1	1	2	2	3	1
41	2	3	2	3	4	4	4	2
42	3	3	2	2	1	3	3	2
43	3	2	2	3	2	2	3	3
44	1	1	2	2	2	1	1	3
45	2	2	2	2	2	1	2	2
46	3	4	1	4	4	3	2	1
47	2	1	2	2	1	1	2	2
48	1	1	2	1	1	1	2	3
49	1	1	1	1	1	2	2	2

Appendix E
Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Nutrient (Phosphorus, Nitrogen) Inputs	Sediment Import from Watershed and/or Loss of Lake Volume	Sediment contamination	Shoreline Erosion	Aquatic Habitat Destruction	Exotic Plants and Animals	Algal Blooms
50	2	2	2	1	2	1	1
51	2	2	2	2	1	3	1
52	2	1	2	2	1	1	1
53	1	1	1	1	2	1	1
54	1	1	1	1	1	1	2
55	1	1	1	1	1	1	1
56	1	1	2	1	1	2	2
57	2	1	1	2	1	1	2
60	1	1	1	1	1	1	1

Appendix E
Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Septic Contamination	Loss of Native Aquatic Plants/Animals	Agriculture (Livestock Operations) within the Watershed	Shoreline Development	Agriculture (Cropland) within Watershed	Decreased Water Clarity	Litter and Debris	Urbanization or Industrialization within the Watershed
50	2	2	2	2	2	2	1	2
51	1	2	1	3	1	2	1	2
52	1	3	1	2	2	1	2	3
53	1	1	1	2	1	1	1	2
54	1	1	1	1	1	1	1	1
55	1	1	1	1	1	1	1	1
56	1	2	1	1	2	0	3	1
57	1	1	1	2	2	2	1	2
60	1	1	1	1	2	2	1	1

Appendix E
Perception of Greatest Threats to Integrity

1=Extremely important; 2=somewhat important; 3=not very important; 4=unimportant

Observation	Fish die-off (Summer or Winter)	Chemical Treatments/Over-management of the Lake/Resivoir	Excessive Boating Activities	Highway/Road Maintenance in the Watershed	Mining Acitivies within the Watershed	Forest Harvest within the Watershed	Aquaculture Operations within the Watershed	Marina Operations
50	1	2	2	2	2	2	2	2
51	2	1	2	1	2	3	1	3
52	1	2	2	2	1	3	2	3
53	3	1	2	1	1	2	1	2
54	1	2	1	1	1	1	2	2
55	1	1	1	1	1	1	2	1
56	2	2	3	3	2	4	4	2
57	1	1	2	1	1	1	2	3
60	1	1	1	2	2	2	3	4

Apendix F
Key for Apendix A

	Attended Session	Annual Household Income	Highest Degree Earned	Discription of Primary Residence	Primary Residence lake front property/ community	Secondary residence lake front property/ community	Condition of Primary Residency Lake Front/ Community Property
0	No information provided	No information provided	No information provided	No information provided	No information provided	No information provided	No information provided
1	I plan to attend	Under $25,000	Did not graduate H.S.	Single family home mixed with other single family homes only	YES	YES	Excellent
2	I attended the session prior to filing out this survey	$25,000 to $49,000	H.S. Diploma/ GED	Single family home mixed multiple family homes only	NO	NO	Good
3	I did not attend the session prior to filling out this survey	$50,000 to $74,999	Associate's Degree	Single family home mixed with single and multiple family homes			Fair
4		$75,000 to $99,999	Bachelor's Degree	Single family home mixed with family homes and retail			Poor
5		$100,000 to $149,999	Master's Degree	Single family home mixed with other single family homes and farms			
6		$150,000 to 199,999	Doctoral Degree	Multiple family home/apartment/condo			
7		$200,000 to $249,999	Professional (MD, DDS, JD, etc.)				
8		Over $250,000					

Apendix F
Key for Apendix A

	Lakes Frequently Used (Overall Condition)	Land Use of primary residence	Use of Lake based on restrictions	Activity Importance	Facility Importance	Perception of Greatest Threats to Integrity
0	No information provided	No information provided	No information provided	No information provided	No information provided	No information provided
1	Excellent	City/urban	Utilize regardless	Extremely important	Extremely important	Extreme threat
2	Good	Suburban	May use, but seek alternative location	Somewhat important	Somewhat important	Somewhat of a threat
3	Fair	Suburban/ rural mix	Would not utilize	Not very important	Not very important	Not much of a threat
4	Poor	Rural		Unimportant	Unimportant	Unimportant
5						
6						
7						
8						

Appendix G

Illinois Lake Management Association ♦ 23 rd Annual Conference
Springfield, Illinois ♦ February 28 – March 1, 2008

Survey of Public Perception Regarding the Integrity of Illinois Lakes and Reservoirs

The Illinois Environmental Protection Agency [has] a variety of monitoring programs that measure the physical, chemical, and biological nature of the stat's water resources in order to assess attainment of clean Water Act (CWA) objectives. Data have been collected for over 20 years on more than 110 lakes and reservoirs in Illinois. These data proved a valuable starting point for determining whether there are regional differences among Illinois lakes. Historical data also can be used to define reference conditions for lakes – the "ideal" or "good lake" qualities we find desirable for our lakes reservoirs. However, while Illinois has accumulated a wealth of scientific data on its lakes, an assessment of the perception of lake users is missing.

So what is a good lake? This survey is an effort to begin gathering data on public perception starting with you, the membership of the Illinois Lake Management Association (ILMA). Your responses will help us understand what makes a lake a valuable resource as well as to help define lakes that are candidates for reference status.

Thank you for taking a few minutes to fill out this survey. We hope to see you at the special "What is a Good Lake?" session and panel discussion on Thursday afternoon, February 28, beginning at 1:00 p.m.! And watch for the results of this project in an upcoming issue of the ILMA newsletter!

Appendix G

Date survey completed: ______________________________________

Check one of the following statements regarding your attendance at the session entitled "What is a good lake?":

______ **I plan to attend the session**
______ **I attended the session prior to filling out this survey**
______ **I did not attend the session prior to filling out this survey**

Age (yrs):	**Gender (check one):**	**Marital status (check one):**
______	___ Male ___ Female	___ Single ___ Married

Annual household income (check one):

______ Under $25,000	______ $25,000 to $49,999
______ $50,000 to $74,999	______ $75,000 to $99.999
______ $100,000 to $149,999	______ $150,000 to $199,999
______ $200,00 to $249,999	______ Over $250,000

Highest degree earned (check one):

______ Did not graduate from high school	______ High school diploma/GED
______ Associate's degree	______ Bachelor's degree
______ Master's degree	______ Doctoral degree
______ Professional (MD. DDS. JD. ect.)	

Appendix G

County in which your primary residence is located: ______________________________

How would you describe your primary residence (check one):

______ single family home mixed with other single family homes only

______ single family home mixed with multiple family homes only

______ single family home mixed with single and multiple family homes

______ single family home mixed with multiple family homes and retail

______ single family home mixed with other single family homes and farms

______ multiple family home/apartment building/condominium

****

Would you describe your primary residence as lake front property or as part of a lake community (i.e., one in which the lake resource is within walking distance of your home)?

______ yes ______ no

If no, do you have a secondary residence that you would describe as lake front property or as part of a lake community?

______ yes ______ no

****

How would you best describe land use in the area of your primary residence (check one):

______ city/urban ______ suburban

______ suburban/rural mix ______ rural

Appendix G

If your primary residence is lake-front or located in a lake community, please.

- identify the lake by name and Illinois count in which it is located.

- provide general perception of the overall condition of the lake using one of the following numbers:

1 = excellent, 2 = good, 3 = fair, 4 = poor

Lake/Reservoir Name (country of location)	**Condition**
____	__________

****

Regardless of the location of your primary residence, please:

- identify by name the *three* lakes or reservoirs *IN THE STATE OF ILLINOIS* that you utilize most frequently and the Illinois county in which each is located

- estimate the *<u>number of times per year you visit</u>* each body of water

- indicate the approximate *<u>distance (miles) of each from your primary residence</u>*

- provide your general perception of the overall condition of each lake using one of the following numbers:

1 = excellent, 2 = good, 3 = fair, 4 = poor

Lake/Reservoir Name (county of location)	**Visits/year**	**Distance**	**Condition**
____	________	________	________
____	________	________	________
____	________	________	________

Appendix G

Place a number 1 through 3 in the blanks, indications your attitude towards utilizing a lake upon which the following restrictions are applied.

1 – I would utilize the lake or reservoir, regardless of this restriction.
2 – While I might utilize a lake or reservoir with this management feature, I would seek an alternate location.
3 – I would not utilize a lake or reservoir with this management feature

______ Fish consumption advisories (mercury, pesticides)
______ Fishing restriction (creel, minimum length, or slot limits)
______ Motor size restrictions
______ Motors prohibited
______ No-wake (entire lake)
______ No-wake (zones, e.g., near shore)
______ No-wake (timed, e.g. before 10am and after 4pm)
______ No access zones (e.g., wildlife preserve etc.)
______ Occasional swimming beach closures

Appendix G

Please evaluate each of the following activities relative to your enjoyment of a visit to one of your favorite lakes or reservoirs. Place a number 1 through 4 in the blanks, indicating the degree to which each activity contributes to our recreational experience.

1 – Extremely important
2 – Somewhat important
3 – Not very important
4 – Unimportant (not a recreational activity in which I participate)

______ Activities on a maintained beach

______ Bird watching

______ Camping

______ Canoeing/kayaking

______ Fishing (bank)

______ Fishing (boat)

______ Fishing (ice)

______ Hiking

______ Hunting (waterfowl)

______ Ice skating

______ Jet skiing or personal water craft

______ Picnicking

______ Pleasure boating

______ Sailing

______ Scuba

______ Swimming

______ Water skiing, tubing, knee-boarding

______ Wind surfing

______ Other ________________________________

______ Other ________________________________

Appendix G

Please provide information regarding your perception of the greatest threats to the integrity of Illinois lakes and reservoirs by rating each of the following items.

1 – Extremely important
2 – Somewhat important
3 – Not very important
4 – Unimportant

______ Agriculture (cropland) within the watershed

______ Agriculture (livestock operations) within the watershed

______ Algal blooms

______ Aquaculture operations within the watershed

______ Aquatic habitat destruction

______ Chemical treatments/over-management of the lake/reservoir

______ Decreased water clarity

______ Excessive boating activities

______ Exotic plants and animals (e.g., zebra mussels, Asian carp. milfoil)

______ Fish die-off (summer or winter)

______ Forest harvest within the watershed

______ Highway/road maintenance in the watershed (e.g., deicing)

______ Litter and debris

______ Loss of native aquatic plants/animals

______ Marina operations

______ Mining activities within the watershed

______ Nutrient (phosphorus, nitrogen) inputs

______ Sediment contamination

______ Sediment import from watershed and/or loss of lake volume

______ Septic contamination (e.g., malfunctioning septic tanks)

______ Shoreline development

______ Shoreline erosion

______ Urbanization or industrialization within the watershed

______ Other ____