

## Forum

# Human Dimensions of Great Lakes Fishery Management: New Research Thrust of the Great Lakes Fishery Commission

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*The Great Lakes Fishery Commission, recognizing the importance of social impacts on Great Lakes fisheries and the shortage of information on "human dimensions," launched a new research theme. It seeks to fill knowledge gaps in the areas of legal and institutional frameworks governing fisheries, constructing effective processes that better inform management decision making, and the role and impact of stakeholder involvement in Great Lakes fisheries management.*

**Keywords** fisheries, fishery management, Great Lakes, human dimensions, research

Pluralistic adoption of optimum sustained yield (OSY) over a previous philosophy of maximum sustained yield created enormous challenges related to social considerations in fisheries management (Nielsen 1976). More recent emergence of ecosystem approaches further stimulated renewed interest in how to integrate knowledge of social and ecological systems to manage natural resources (Donahue 1988). Although ecological dimensions often are well researched and continue to be a primary focus of management (Beeton, Sellinger, and Reed 1999), social dimensions typically are the most common barriers to effective decision making (Holling 1995; Lee 1999). Despite the more than 40 years since the introduction of OSY, challenges of integrating ecological and human dimensions of management remain as great today as they were then. The objective of this forum is to convey the scope and rationale for a new social science-oriented research theme of the Great Lakes Fishery Commission (GLFC) that addresses some of these challenges.

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The new research theme seeks to aid in improving sustainability of fisheries in the Great Lakes Basin (herein referred to as the Basin) through decisions that incorporate human dimensions of fisheries management in the Great Lakes ecosystem. We refer to “human dimensions” as the study and practice of human values related to natural resources, how those values impact and are manifested in management, and how humans affect or are affected by natural resources management decisions (Decker, Brown, and Siemer 2001). The human dimensions of fishery management necessarily include cultural, social, and economic values; individual and social behavior; demographics; legal and organizational frameworks of management; communication, education, and citizen participation; and decision-making processes.

Cultural and political boundaries in the Basin create one of the world’s most complex resource management situations. Two nations, two provinces, eight states, a growing number of Indian tribes and First Nations, and scores of agencies and organizations formally participate in Basin fishery management. Various stakeholders, who span a range of interests from commercial resource users to environmental protection, actively seek to affect management decisions. Even though human impacts on the system are ubiquitous and poorly understood, most Basin fishery management has focused on ecological issues pertaining to fish communities. This was the orientation of the GLFC until it decided in 2002 to expand its agenda to include human dimensions research.

The GLFC human dimensions research theme is currently organized around three areas of inquiry: (1) decision-making processes and the role of human dimensions information in fisheries decisions, (2) organizational legal foundations, and institutional structure and behavior for more effective management, and (3) stakeholder involvement in fishery management. Over time, other topics will be added, but these three establish a broad foundation on which to build future research. We now elaborate briefly on issues related to these areas.

Knowledge about common-pool resources has begun to elucidate why people and governments behave the way they do when resources must be managed collectively, as is the case in the Basin. Olson (1965) and Hardin (1968) were pessimistic about people’s willingness to take part in cooperative action because people have a natural incentive to free-ride—that is, to gain benefits without contributions. This behavior leads to the much-debated “tragedy of the commons.” Ostrom (1990) concludes that Hardin’s tragedy is not inevitable. Successful governance regimes have several design principles in common, and are able to overcome tendencies for constituents to free-ride or avoid compliance with rules. Humans may engage in narrow self-interest, but also routinely embrace collective action (Dietz et al. 2002). Research is needed that can improve ways in which management of the Basin’s common-pool resources may be made more effective.

To develop and implement sustainable strategies for public fishery management, biologists and managers must make tough choices involving multiple objectives (human and environmental) and high levels of uncertainty (Hammond, Keeney, and Raiffa 1999). For example, a series of unanticipated exotic species introductions has changed Basin ecology and made forecasting fisheries responses a daunting venture. In such situations, decisions often fail or become ineffectual because designing and choosing among alternative management strategies requires an ability to integrate diverse information (some based on human values, some based on ecological data) and to make defensible decisions in the face of conflicting perspectives and

uncertainties (Gregory, McDaniels, and Fields 2001). Improvements in decision making will help managers to address a variety of related tasks, including clarifying agency management objectives, developing appropriate performance measures, identifying the consequences of management alternatives, recognizing key trade-offs, and consulting effectively with external stakeholders as part of joint decision-making initiatives. Yet research is lacking in the Basin on what types of human dimensions insights or process yield resource decisions that result in more sustainable fisheries.

Research that draws from disciplines such as political science and law is needed to gain better understanding of how people and governments cooperate, and to determine optimal roles and types of institutions in facilitating intergovernmental cooperation. Understanding reasons for adoption of particular approaches or institutions will assist in comprehending existing arrangements as well as speculating on possible enhancements.

Much of the discussion about intergovernmental relations falls within the issues flowing from federalism, where the focus is on cooperation (or lack thereof) between federal and nonfederal governments to develop complementary and mutually beneficial policies (Scheberle 1997). In the United States, for example, a continuing tension exists regarding the locus of authority in decision making for the Basin. The U.S. component is a national asset, yet the eight states bordering the lakes seek to exercise their political power in controlling the Basin's future. In this regard, a number of Great Lakes states/Ontario agreements focused on water quality have been signed (Dochoda and Jones 2002). In light of the multiple government and other policy actors within the Basin, effects of fragmented authority on cooperation are particularly relevant to institutional portions of the human dimensions theme. Analysis of institutional characteristics of the Basin fishery management regime are needed, including legal arrangements and nonbinding and informal arrangements. A broad range of management frameworks, from tribal fisheries agreements to individual lake management committees, merits study. Currently it is not well understood why institutions exist the way they do, how these institutions influence Great Lakes fishery management, or how institutions could be improved to better foster more optimal management outcomes.

Research into stakeholder involvement poses a number of questions (Chase, Decker, and Lauber 2004), including how Basin stakeholders' knowledge can improve management, how communications influence resource managers' ability to cooperate with each other, how stakeholder participation processes affect trust and credibility of resource managers, and how public participation influences success of resource management institutions. Managers are faced with challenges of making high-quality decisions while remaining responsive to citizens affected by those decisions (Beierle 1998). Collaboration therefore has become an important element in Basin fishery management because it encourages affected parties to participate (Ferreri et al. 1999), serves as an effective communication venue for agencies, and legitimizes fishery policies with stakeholders (Krueger and Decker 1999). Decision processes focused on consensus, however, may lead to lower quality policy choices (Gregory et al. 2001), but this hypothesis has not been tested in the Basin. Uncertainty exists about what the best approaches are for stakeholder participation (Chase, Lauber, and Decker 2001), whether consensus is achievable or desirable (Westley 1995), or even whether involving stakeholders leads to better policy choices (Coggins 1998; McCloskey 1996).

Previously, the GLFC focused its research efforts primarily on understanding biological interactions within the Basin. The GLFC's new human dimensions theme recognizes that humans are an integral component of natural systems, and the theme summons an organized, systematic examination into the human dimensions of Great Lakes fishery management. More information, including funding guidelines, is located on the GLFC web site ([www.glfc.int/research](http://www.glfc.int/research)).

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