FEK, FEK* Ways of Knowing the Sea: The Integration Project

Memorial University of Newfoundland
Hosted by the Community-University Research for Recovery Alliance
February 5th and 6th, 2009

Overview:
This workshop will explore a range of methodological approaches and issues related to Local Ecological Knowledge (LEK) of fishers and fisheries science and management with a focus on the potential role of each in the recovery of marine ecosystems and fishery communities. It is widely acknowledged that fish harvesters have important and valuable knowledge that can contribute to understanding the history and dynamics of marine ecosystems and fisheries. On the management side, they have extensive knowledge about how things work and have worked locally, as well as about alternative management approaches. Some have argued that the knowledge of harvesters and scientists is largely incommensurable and to integrate harvesters into science and management forums can put harvesters and/or the integrity of science at risk. At the opposite extreme are those who argue the most ethical and scientifically defensible approach is to fully integrate harvesters and their knowledge into the science and management framework for fisheries (Soto 2006).

This workshop will involve presentations by CURRA researchers, students, community partners and invited guests from elsewhere. We will open with presentations on a range of different methodologies for doing LEK research and different approaches to combining LEK and science. Using these presentations as a starting point, we will then explore some of the ethical and other issues related to research of this kind and discuss some of the opportunities, risks and challenges associated with what Soto (2006) has called the 'integration project' – i.e. efforts to integrate both fish harvesters and their knowledge into fisheries science and management. On the second day, students will present an overview of the known natural and environmental history of the species they will be studying, as well as their research questions and any preliminary ideas they might have about the best way to answer these questions using LEK and Science.

Structure:

This 1.5 day workshop will be held at MUN; some invited guests will participate by video conference. Invited speakers will present for 45 minutes to an hour, with time for Questions and Answers. Student and community partner presentations will be approximately 20 minutes, with 10 minutes for Q&A/Discussion.

Program

Day 1: February 5, 2009
Morning Session: Boardroom, IIC 1004, Inco Innovation Center

9:00 - 9:30 am
Coffee
Welcome -- Grant Murray and Barb Neis
Introductions

9:30 - 10:00 am
Workshop Overview - Grant Murray

10:00 - 11:00 am
Ahmed Khan, Memorial University of Newfoundland
TITLE: Integrating Knowledge-based Systems as a Decision Support Tool for the Recovery of Northern Gulf Cod Stocks

ABSTRACT: Northern Gulf cod stocks in western Newfoundland collapsed in the early 1990s, with subsequent moratoria in 1994-1996 and in 2003. Decision-making regarding recovery strategies and plans have been challenging, with current stock levels below conservation reference points. Various factors have contributed to this recovery failure and related decision-making challenges, such as ecological constraints, high levels of uncertainty, conflicting views from stakeholders, multiple perspectives, and different ways of learning and knowing. Drawing upon the interactive governance approach and clumsiness theory, I argue in this paper that complex problems such as fisheries recovery planning and implementation need to encompass multiple perceptions from stakeholders as well as interdisciplinary scholarship. Such pluralism in decision-making is normative in principle and invaluable for hypothesis testing and validation, adaptive management, social learning, dialogue and collaborative initiatives for successful recovery. In this contribution, I review and assess the scientific literature on recovery status and prospects of Northern Gulf cod stocks, pre and post collapse, from an interdisciplinary perspective. I identify gaps where knowledge-based integration is pertinent for recovery, with preliminary results revealing five main areas. These are: stock migration patterns, spatial scale of resource assessment and appraisal, local ecological knowledge (LEK) of flora and fauna, criteria for assessing successful recovery, and spatial scale of governing. The potential outcomes of knowledge synthesis are useful and relevant as decision support tools for recovery planning and implementation, and may also promote trust building, compliance, stakeholder partnerships, and civic stewardship.

11:00 - 12:00 am
Grant Murray, Vancouver Island University
TITLE: The Integration Project: a focus on methods and validity

ABSTRACT: This presentation will draw on interdisciplinary research projects in Newfoundland and Labrador, British Columbia, and the State of New Jersey. Each of these projects have involved the collection of oral histories, the use of GIS mapping approaches, and attempts to integrate different types of information, ranging from fisheries science to academic research to experience based knowledge. The presentation provides an overview of 1) the justification and approach in each project; 2) the methods utilized, and 3) issues in terms of validity and reliability. The presentation concludes with a brief discussion of emerging map-based and oral history approaches.

12:00 - 1:00 pm
Lunch Break

Afternoon Session: Boardroom 1, Professional Development and Conferencing Services (PDCS), Health Sciences

1:00 - 2:00 pm
Kevin St. Martin, Rutgers, the State University of New Jersey
TITLE: Drawing Communities Together: Maps, Community Based Knowledge, and Participation in Fisheries Science and Management

ABSTRACT: The assessment and management of marine resources is an increasingly spatial affair linked to emerging geo-technologies such as geographic information systems, and as diverse layers of spatial information are being integrated into decision-making. These rapid developments are, however, focused on biophysical processes and data collection initiatives; the social landscape of the marine environment is undocumented and remains a "missing layer" in decision-making. As a result, the resource areas upon which stakeholders and communities are dependent are neither mapped nor integrated into planning processes. The paper reports on a participatory method to map the presence of fishing communities at sea. Such maps work to create new opportunities for linking fishers' knowledge of the marine environment to specific locations, enhancing cooperation between fishing communities and marine scientists and managers, combining social data with biological data in modeling environments, and making management more participatory.

2:00 - 3:00 pm
Teresa Johnson, University of Maine
TITLE: Assessing cooperative research as an approach for integrating fishers' EBK in science and management: Cases from the Northeast U.S.

ABSTRACT: This talk presents the case of cooperative fisheries research in the Northeast US as an approach for integrating fishers' experience-based knowledge (EBK) into the science policy process. Cooperative research, or simply involving fishers in scientific research, emerged in this region in the late 1990s in response to the regional fisheries crisis. Common forms of cooperative research include industry-based surveys, study fleets, tagging studies, gear selectivity research, and advisory panels. Through brief case studies of these different forms, this talk will illustrate various opportunities for integrating EBK into science through cooperative research, as well as the challenges of integrating this information into policy-making.

3:00 - 3:15 pm
Nutrition Break

Remaining Afternoon Session: Boardroom, IIC 1004, Inco Innovation Center

3:15 - 4:15 pm
Erin Carruthers, Ph.D. student, Biology, Memorial University
TITLE: Talking about discards: combining landings data, and information from observers and longliners to identify opportunities for bycatch mitigation.

ABSTRACT: The overall goal of this research is to identify opportunities for bycatch mitigation using information from landings data, fisheries observers and from interviews with longliners. The picture from each is partial, either limited in spatial or temporal extent or limited in the level of detail. Questions about bycatch and discards are contentious, longliners are aware that their fishery is facing increased scrutiny. And yet, these questions provide much needed detail, a forum to challenge perceptions of their fishery, and an opportunity to identify what changes might (or might not) work for bycatch and for their fishery. I will discuss current challenges, methodologies and unexpected benefits of this ongoing work.

4:15 - 5:15 pm
Barbara Neis Memorial University of Newfoundland
TITLE: Getting it right: ethical challenges associated with LEK research and the integration project

ABSTRACT: This talk will introduce the general topic of ethics and human subjects research and talk more specifically about some of the individual and collective ethical issues and challenges that have been identified in the literature on LEK and Science.

5:15 - 6:45 pm
Dinner Break

Evening Session: Boardroom 1, Professional Development and Conferencing Services (PDCS), Health Sciences

7:00 - 8:00 pm
Barbara Neis and Grant Murray
Overview and Synthesis of Workshop Discussion from Day One

8:00 9:00 pm
Steve Sutton, Fishing and Fisheries Research Centre, School of Earth and Environmental Sciences, James Cook University, Townsville, Australia
TITLE: CapReef: Engaging recreational fishers and their knowledge in Great Barrier Reef science and management.

ABSTRACT: Recreational fishing is a popular activity in the Great Barrier Reef Marine Park, with approximately 180,000 active fishers (representing ~20% of the local population) residing adjacent to the park. In 2004, the CapReef community-based monitoring program was initiated by recreational fishers from the Capricorn Coast of Queensland. CapReef was initiated by community members in response to their perception that lack of community-held knowledge about local fisheries resources inhibited the community's ability to become meaningfully engaged in recent fisheries and marine park management decisions that affected them. CapReef operates in collaboration with universities, state and Commonwealth government natural resource management agencies, and the recreational fishing community to collect information about local fisheries resources and associated recreational fisheries. An important and explicit goal of CapReef is to raise the knowledge level of the local community by disseminating information back to the community in easily accessible formats. This presentation will outline the development and structure of the CapReef program, provide an overview of the types of information CapReef has been collecting, and describe how information is disseminated to the local community. Results of two studies investigating the motivations of CapReef participants and the receptiveness of local recreational fishers to increasing their local knowledge through CapReef will also be presented.

Day 2: February 6, 2009
Genesis Boardroom: IIC 3001, Inco Innovation Center

9:00 - 9:15 am
Overview of the day – Grant Murray

9:15 - 9:45 am
Sherry Glynn, Science Coordinator, Fish, Food and Allied Workers Union (FFAW/CAW)
TITLE: Collection of Traditional Ecological Knowledge for the Newfoundland and Labrador Offshore Fishery.

ABSTRACT: Traditional ecological knowledge (TEK) has already been documented for most inshore fisheries around the province in 1996 to 2004 and is archived by DFO as the Community-based Coastal Resource Inventory. In spring 2007, FFAW/CAW partnered with DFO to develop a protocol for documenting TEK for offshore fisheries and conducted a pilot project to test that protocol in NAFO sub-Division 4Ra. This presentation will review the value of TEK and its uses, the protocol that was developed, the results of the pilot project and next steps.

9:45 – 10:45 am
Student Presentations and Discussion

Victoria Burdett-Coutts, Masters student, Biology, Memorial University
TITLE: The distribution and abundance of different life stages of the American lobster (*Homarus americanus*). Linking Traditional Ecological Knowledge (TEK) and science.

ABSTRACT: The American lobster, *Homarus americanus* fishery is one of the most valuable fisheries in Atlantic Canada and New England. Due to the decline in the harvest of ground fish fisheries, many communities along these coasts are increasingly dependent on this fishery for their livelihood. Bonne Bay, a sub-arctic fjord on the west coast of Newfoundland, creates a comparatively simple study system with respect to larval transport and potential source-sink dynamics. Bonne Bay is comprised of three communities whose fishers depend on lobster for their livelihood. This study aimed to integrate scientific and traditional knowledge to identify potential lobster spawning and nursery habitats. Fishers were able to provide valuable input on the location of 'source' habitats from their knowledge of 'hot spots' for berried female lobsters. This information was complemented scientifically by larval sampling and trap survey data. However, due to the small size of recently settled Young-of-Year (YoY) lobsters most fishers were unaware of their location and distribution. It is well established that YoY lobsters prefer structurally complex habitats such as cobble, thus it may be possible to integrate TEK by examining fisher knowledge of lobster habitat. There is some evidence that YoY lobsters are found in association with older juveniles and thus identifying nursery grounds may also be possible by interpreting fishers' knowledge of the smallest lobsters they are familiar with.

Emile Colpron, Masters student, Biology, Memorial University
TITLE: Determining the distribution and conservation status of deep-sea corals in the northern Gulf of St. Lawrence using scientific records and local ecological knowledge (lek)

ABSTRACT: The deep-sea corals of Atlantic Canada have recently received increased attention due to concerns raised about the impacts of bottom-fishing on benthic ecosystems. Deep-sea corals are structurally complex organisms that provide habitat for a variety of fish and invertebrate species. Despite their importance, a variety of bottom-fishing gears threaten deep-sea corals in terms of physical damage, habitat alteration and coral bycatch. While deep-sea coral distributions have been mapped for a number of regions in Atlantic Canada, no such record exists in the Northern Gulf of St. Lawrence. The distribution of deep-sea coral in the Northern Gulf will be mapped using three sources of information: (1) Survey trawl bycatch records from the Department of Fisheries and Oceans, (2) Fishery observer bycatch records and (3) interviews with local fish harvesters. This presentation will cover the basic biology of deep-sea corals, and give an introduction to current deep-sea coral research with an emphasis on conservation and a developing methodology for LEK research related to these corals.

10:45 - 11:00 am
Nutrition Break

11:00 am – 12:30 pm
Student Presentations and Discussion Continued

Jennifer Dawe, Masters student, Environmental Science, Memorial University
TITLE: The use of FEK to improve the understanding of interactions between three species of wolfish and fisheries in the Northern Gulf of St. Lawrence.

ABSTRACT: While there is no fishery for the three species of wolfish found in the northern Gulf of St. Lawrence, these fish are caught as bycatch in many gear types. Interactions between fish harvesters and wolfish are common, and potentially harmful to both. Thought of as a nuisance or pest, they decrease catches when hauled up and pose problems with attempts to release. This presentation will discuss the life history of the three wolfish species, review the recent listing of wolfish under SARA discussing some of the data that was used to support the listing and describe the methodology and ethical issues associated with a project to use fish harvesters' LEK to improve our understanding of wolfish-fisheries interactions in the Northern Gulf of St. Lawrence.

Michelle Caputo, Masters student, Biology, Memorial University
TITLE: The life history of anadromous salmonids and their role in the recreational fishery of Gros Morne National Park, Newfoundland, and surrounding areas.

ABSTRACT: Brook trout is salmonid species found widely in Newfoundland that has varying life history patterns in which some individuals migrate to sea and others remain in natal waters, often referred to as partial migration (see Jonsson and Jonsson, 1993). Anadromous fish, those that go to sea, benefit from the increase in food abundance but face many potential consequences including increased possibility of interaction with fisheries and potential for death (Jonsson and Jonsson, 1993). In areas with high fishing pressure it is essential to study the migration patterns of any species that are at risk in order to reduce impacts of fisheries and ensure the health of fish stocks. The current study will be focused on anadromous populations of brook trout in Gros Morne National Park, Newfoundland. The objectives of the study are: 1) to determine the complexity in life history strategies of brook trout in western Newfoundland as well as habitat use using otolith microchemistry and acoustic telemetry, as well as local ecological knowledge; and, 2) to determine the potential for interactions between migrating brook trout and fisheries in the western Newfoundland area using fisher surveys. The results from this study will allow managers to limit or alter fisheries in the area to reduce impact on brook trout populations and give researchers a greater understanding of anadromy in brook trout.

Allison Bryan, Masters student, Sociology, Memorial University
TITLE: Implications of Local Forestry Management: the Newfoundland Context

ABSTRACT: Forests are ecologically and economically important in Canada, where 91% of the world's natural forests are found, and globally. Forests convert carbon dioxide to oxygen, protect soil integrity, and provide habitats for a variety of wildlife. Forests are also essential for livelihoods providing materials that meet local and trade needs. In 2008, for example, the forestry industry was responsible for 2.2% of Canada's GDP. On Newfoundland's Eastport Peninsula part of the coniferous forest has reached the age of harvest maturity. Local residents appealed to develop a viewscape management plan with the Department of Natural Resources and it was granted. Now issues of use, biodiversity, and ecosystem stability are playing out in the context of community participation. My research is focused on the participatory planning aspects of community development, particularly co-management in the natural resources field. It will consist of a case study of the forestry industry on the Eastport Peninsula in Newfoundland, taking in part of the area covered by the Model Forest Network of Newfoundland and Labrador initiative. The central research question is: What are the core values held by the different stakeholders in the forestry industry, and how does the Forest Communities Network approach to management and conflict resolution represent the interests of these various stakeholders? How do relations of power impact decision-making in the forestry industry? The research will entail an overview of the conflicting usage values that exert pressures on the direction of development in the forestry industry and an in-depth analysis of the models of management and conflict resolution that are being applied and explored in order to mediate the often contradictory interests of the diverse stakeholders. Particular attention will be paid to the role of Local Ecological Knowledge and the benefits of incorporating knowledge from various social scales into a co-management strategy in the forestry industry. The overall analysis will allow me to explore the role that social, political, economic, cultural, and environmental values and affiliations play in the decision-making processes. This presentation will explore some of the theoretical and ethical implications of LEK in forestry co-management.

12:30-1:00 pm
Workshop Wrap-up