

Improving the American Eel Fishery through the Incorporation of Indigenous Knowledge into Policy Level Decision Making in Canada

Amber Giles, MMM, Dalhousie University, Halifax, Nova Scotia

The findings of this research address the second core FishWIKS questions: **Can varied IKSs be used to improve the effectiveness of fisheries governance at national, regional, and local scales in Canada and internationally?**

A brief introduction on the specific issue being addressed

The American eel has been important to the Mi'kmaq for thousands of years for medicinal, subsistence, health, social and ceremonial as well as economic purposes. Over the past several decades, directed commercial fisheries, habitat destruction and fragmentation from hydro dams and other anthropogenic factors have led to the decline in abundance and distribution of the American eel. This decline has led the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) to recommend listing the American eel as threatened, and has triggered consideration of a listing under Canada's 2003 Species at Risk Act (SARA).

Why it was important to address this issue

Aboriginal people have the right to fish, hunt and gather for food, social or ceremonial purposes, the right to self-governance, a legal stake in resource conservation and management decisions, and a responsibility to their territory and all of its inhabitants. The implications of a threatened designation under SARA could significantly affect Mi'kmaq ability to access the resource, maintain their relationship with the American eel, and exercise their Aboriginal and Treaty rights and responsibilities. Although the value, importance, and benefits of the incorporation of indigenous knowledge, particularly of traditional ecological knowledge into western science-policy decision-making have been well recognized over the past few decades, suitable mechanisms for collecting and incorporating indigenous knowledge into policy level decision making are not yet well understood. The work by Giles et al. (2016) addresses this gap.¹

What are the key findings from the research?

This case study allows for an exploration of the challenges arising from differing worldviews and possible mechanisms for meaningful integration of indigenous values into governmental policy level decision-making. Table 1 illustrates Mi'kmaq practice consistent with indigenous values while Table 2 presents recommendations for western-style management consistent with Mi'kmaq practice.

Table 1 Eskasoni Mi'kmaq eeling practices and associated community beliefs and values.

Eeling Practice	Community Beliefs	Values Expressed
Sharing eels with family, elders and community	<ul style="list-style-type: none"> Share with those not able to fish Showing respect for Elders 	<ul style="list-style-type: none"> Kinship Reciprocity Generosity
Observing before eelers begin to eel	<ul style="list-style-type: none"> Develop proper skills so eels will not get harmed Learning how to identify habitat Patience 	<ul style="list-style-type: none"> Respect for the eel Oral tradition M'sit No'kamaq
Deciding to leave the commercial eel fishery	<ul style="list-style-type: none"> Commercial fishery is hurting eel populations 	<ul style="list-style-type: none"> Thinking 7 Generations Netukulimk
Using spears over nets	<ul style="list-style-type: none"> Nets catch too many eels Only take what you need 	<ul style="list-style-type: none"> Respect for the eel Netukulimk
Keeping all eels caught during winter	<ul style="list-style-type: none"> Eels will die if put back, it is wasteful 	<ul style="list-style-type: none"> Respect for the eel M'sit No'kamaq
Not fishing; taking only for elders during low years	<ul style="list-style-type: none"> Not right to eel when population are low Still want to respect elders 	<ul style="list-style-type: none"> 7 Generations
Visiting eeling sites only once in a cycle	<ul style="list-style-type: none"> Avoid overexploiting Avoid too much pressure 	<ul style="list-style-type: none"> Netukulimk Relationship with territory Respect for place
Taking the "good sized ones" only during summer	<ul style="list-style-type: none"> Leave the smaller eels to have a chance to grow and reproduce 	<ul style="list-style-type: none"> Netukulimk Respect for the eel

¹ Giles, A., Fanning, L., Denny, S., & Paul, T. (2016). Human Ecology, 44(2), 167-183.

Table 2 Management Recommendations Incorporating an IKS Approach to the Eel Fishery

Eeling Practice	Management Recommendations
Sharing eels with elders, family, and community members	Minimum FSC level ensured
Undertaking a period of observation before eelers begin to eel	Courses for fishers which include Mi'kmaq cultural awareness
Deciding to leave the commercial eel fishery	Conservation objectives
Using spears over nets	Gear restrictions
Keeping all eels caught during winter spearing	Change to seasonal management for fishers Varying size limitation of seasonal periods
Not fishing or only taking enough for the elders during years of low populations	Adaptive management Monitoring programs based on Food, Social, and Ceremonial needs
Visiting eeling sites only once in a cycle	Conservation objectives
Being extremely selective during summer fishing, only taking the "good sized ones"	Size limits for summer eeling

What are some of the main policy Implications arising from the findings

a) Fisheries Management Recommendations

Currently, the full understanding of a Mi'kmaq knowledge system is not reflected in management decisions. The practices of aboriginal eel fishers contain management decisions, based on the indigenous values and beliefs (Table 1). Currently the Department of Fisheries and Oceans is in talks with various aboriginal organizations to update the American eel Integrated Fisheries Management Plan (IFMP) for the Maritimes region. The plan is used by DFO to guide the conservation and sustainable use of marine resources. The update provides the opportunity to explore the complementarity among the First Nations and western scientific approaches to management while allowing for value systems and beliefs among the different knowledge systems to be respected (Table 2).

b) COSEWIC and SARA Process Recommendations

An in-depth examination of the COSEWIC and SARA process identified seven distinct areas in the assessment of the American eel that could lead to an

increase understanding and the incorporation traditional knowledge in the decision making process. These are within the three Aboriginal Knowledge gathering components of the process, ATK Sub-Committee (ATKSC), National Aboriginal Council on Species at Risk (NACOSAR) and Aboriginal Funding for Species at Risk (AFSAR), and the development of management scenarios, recovery potential, consultation and socio-economic analysis conducted by the responsible DFO region. Of the three components, the ATKSC provides the opportunity to ensure all aspects of traditional knowledge are considered early in the advisory process undertaken by COSEWIC. The latter two components serve to ensure the continuous involvement and input of traditional knowledge to inform the decision-making process of the Minister and continued engagement in the development of recovery plans once a decision has been made.

An additional three components centered around the recovery potential assessment, consultation and socioeconomic analysis all provide additional opportunities to expand the discussion with aboriginal communities in terms of sharing indigenous knowledge. These also represent areas where more aboriginal input can be incorporated into the process through membership on these information-gathering advisory committees. The seventh component aimed at developing management scenarios for potential listing provides an excellent opportunity to embrace Indigenous knowledge systems and the corresponding management responses into management scenarios and in the updating integrated plan for the American eel. Aboriginal communities already have adapted management practices in response to observed decline in the American eel and have indicated a willingness to limit its exploitation. These management adaptations could work to enhance sustainability of species and provide added opportunity for cross-cultural understanding between the government and aboriginal communities.

Support for this research was provided by the Social Sciences and Humanities Research Council of Canada (SSHRC) Partnership Grant #895-2011-1007.