NATIONAL INDIGENOUS FISHERIES INSTITUTE
INSTITUT NATIONAL DES PÊCHES AUTOCHTONES
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Assessing Indigenous Technical Capacity
to participate in Marine Spatial Planning
Moncton – March 19, 2019

What We Heard

"There are a lot of ships in the St. Lawrence and no government-wide approach to manage them."

Technical Interest, Capacity and Expertise in Oceans Management

- Participants included members of four aquatic resource and oceans management groups in Quebec, Newfoundland and Labrador, and Prince Edward Island.
    - All of the groups have some technical expertise in geographic information systems (GIS), mapping, and planning for sustainable economic activities, including fishing, aquaculture, and products made from marine plants.
    - All of the groups also have technical expertise studying the impact of industrial activities on marine resources; especially, culturally significant species, plants and habitats. *"We have a lot of technical data that shows eelgrass beds are disappearing in places where wharfs serve the big ships."* In addition, some are involved in managing protected areas.
    - Groups still prioritize building more technical capacity within their organizations and member Nations to be involved in marine spatial planning and oceans management.
- Participants stress the importance of fisheries and diverse economic ventures in their communities, as well as the sustainability of oceans areas and aquatic resources. *"We need a major program to protect the oceans for all Nations across Atlantic Canada."*
    - Member Nations of one group are concerned about the increase in the number of container ships and cruise ships that now transit the St. Lawrence and would like to be actively involved in monitoring these vessels to prevent oil spills and other environmental damage to this waterway. Member Nations of another group also want to revive the Aboriginal Fishery Guardian program to increase monitoring activities.

Technical Roles

"We need to coordinate the efforts of all the Nations to get more advanced so the project [opportunities] come to our communities to do."

- Participants have varying technical capacities to participate in marine spatial planning:
    - Two groups have GIS departments, one group has recently been trained to use GIS, and the marine biologist in the fourth group has taught himself to use basic GIS.
    - Three groups have extensive experience collecting Indigenous knowledge from their member Nations. For example, one has fishing captains record information during their fishing trips, such as water temperatures and species information. The fourth group has *"ad hoc, but sustained"* Indigenous knowledge projects.
    - At least three groups need more technicians for data collection and Indigenous knowledge collection. *"We have over 2,000 kilometers of coastline that we need to*

cover, so we need a lot of people." One specifically listed the need for year-round science capacity monitoring positions. *"Right now, it's only me!"*

- There are differences in the number of employees that each group has to fill specific technical roles:
    - Two have personnel to do multiple roles. For example, the project manager in one group manages programs, community coordination and communications, data collection and analysis, as well as GIS, cartography and mapping/spatial analysis. The biologist in the other group does program management, minimal data collection and analysis, marine biology, and GIS, cartography and mapping/spatial analysis.
    - Two assign specific personnel to complete technical tasks. For example, one group has several directors, an assistant director and a project manager to manage programs and analyze data, technicians to collect data, two Elder committees to inform Indigenous knowledge collection and interpretation, and fishing captains for monitoring, evaluation and stewardship. The other has a director and individual coordinators serving program management roles, a community coordinator, data collection technicians, and a GIS cartographer and spatial analysis specialist. In this group, multiple personnel do data collection and analysis, as well as Indigenous knowledge collection and interpretation.
- One participant thinks the role of fishing captains should be added to the worksheet. Another supports adding Information Technology experts (or departments) to the sheet.

Technical Tools

"We see that scientists have not succeeded in protecting our fisheries or oceans so we have to incorporate Indigenous knowledge – they've never used this knowledge in the past."

- Participants have different needs when considering a range of technical tools that may be used to participate in marine spatial planning:
    - For one, the top three tools needed are: collaborative project management software, environmental or biological modelling software, and database software. This group has most of the other tools listed on the worksheet, except a sharing protocol/policy for Indigenous knowledge, sensor technologies, and a mobile tracking device.
    - For another, the top three tools are: inshore vessels, environmental or biological monitoring and sampling equipment, and sensor technologies. *"We need vessels and gear to be able to do our own research projects without always having to partner."* This group is willing to share an Indigenous knowledge sharing protocol as well as most of the other items on the worksheet.
    - For the third, the top three tools are: vessels capable of verifying the safety of ships (e.g., vessels equipped with radar and other navigation instruments and camera equipment), a drone, and an underwater vehicle to access remote locations. *"We need equipped vessels so they can be mini-research centers."* This group also needs environmental or biological modelling software and a mobile tracking device.
    - For the fourth, the top four tools needed are: camera equipment (such as a drone), a mobile tracking device, environmental / biological modelling software and collaborative project management software. *"We could really use a drone: I walked for hours in a*

river last summer and a drone would save a lot of time when mapping." This group is also willing to share an Indigenous knowledge sharing protocol.

- Indigenous knowledge is recognized by all groups to be a key tool for marine spatial planning and other oceans management activities.
    - Two groups have advanced georeferenced databases to show Indigenous sites and uses in the St. Lawrence: One has completed an atlas[1] which identifies marine sites of importance to member communities both traditionally and for contemporary activities. The atlas serves as a tool to help communities plan a rapid and effective response to an incident, such as an oil spill, and to facilitate decision-making connected to consultation processes and development initiatives. Another is presently working on their atlas project,[2] which includes training of personnel on GIS and drafting a protocol for information sharing. This group has two Elder committees to inform Indigenous knowledge collection: one with four women and one with four men. *"We get more data that way because men are always thinking about what we're going to eat tomorrow, while the women are concerned about the long-term vision."*
    - A third group has been collecting, compiling and archiving Indigenous knowledge; especially, through one-on-one interviews of Elders about where the traditional uses areas are located. They are presently creating GIS maps of traditional land uses but would like to do this in the ocean. *"This is more about information-sharing and awareness – not yet for decision-making."*
    - All four groups emphasize the importance of collecting, analyzing, and making better use of Indigenous knowledge in management decisions. *"It's difficult to collect Indigenous knowledge because it's all oral knowledge."* They also think the knowledge of fish harvesters should be collected; particularly, in offshore areas. *"We need to get out on the water to take notes with the people who have been at it their whole lives."*
- Participants found a number of ways that they could work together to share expertise and tools. For example, one could share software, while the other could share vessels, to meet the technical tools needs of each other. Two others found that they could share drones, protocols for sharing Indigenous knowledge, and data collection cards given to commercial fish harvesters.
- One participant thinks a national, accessible database should be compiled listing all of the software that aquatic resource and oceans management groups have, as well the projects that they have completed and/or are engaged in. *"This would reduce duplication."* Another sees a need for more data storage and protection options. *"If there's an incident, we're in trouble because our knowledge is in one place."*

Technical Training

"We have training on how to meet an Elder in terms of protocol and respect – and could share it with others."

- Participants (or other staff in their groups) have taken GIS mapping software training and a range of other training courses. For example, one has taken training to use

[1] Arsenault, L.M. Racine, M.-J. and Lambert Koizumi, C. (2017) *Atlas of Marine St. Lawrence Mi'gmaq and Maliseet Sites and Their Uses by the Gesgapegiag, Gespeg and Viger Communities*. Mi'gmaq Maliseet Aboriginal Fisheries Management Association. 46 p.
[2] http://l-amik.ca/projet/atlas-indigenous-sites-uses-saint-lawrence-river-2016-18-ongoing/?lang=en

environmental / biological modelling software, to work with Elders, and to operate a vessel safely. Another has been trained to use environmental / biological mapping software, sensor technologies, and underwater camera and drones. A third has taken training on how to catalogue and use databases, use monitoring and sampling equipment, and take and analyze water samples. The fourth has taken all of the Indigenous knowledge collection and environmental/biological technical training courses listed on the worksheet.

- In terms of training needs, participants still want more GIS and ocean mapping training; especially, to use specific geographic information systems and/or for more personnel to be trained to use GIS in their group. *"Give basic training to other staff so they can become more familiar using GIS."*
    - Among the other training courses desired by participants (for themselves or for other personnel in their group), the top choices are: database set-up and use, remote operator vehicle (underwater, drone, etc.) use, communications (including science communications) and graphic design, website design and information technology, learning from knowledge keepers, and using monitoring and sampling equipment. *"We have one information technology person on reserve and we need more."*
- Participants strongly support mentorship programs and activities to incent youth to study biology and mapping, such as workshops and presentation at high schools.
    - One shared how fathers in their community taught the current generation how to fish. *"We were taught not to take the first fish or the first trap of crab to protect the resource."* This group adapted the local fishing school program to train fish harvesters in their communities to fish, including in Indigenous languages. *"We have biologists that could adapt other training."*
- Participants listed the local and/or preferred training facilities as the Marine Institute at Memorial University, Holland College, Unama'ki College, Dalhousie University, University of New Brunswick, and a multi-functional adult learning center in Sept-Île. *"We always go to the Marine Institute and they develop the course. They're so versatile."*
- Two participants want officials at Fisheries and Oceans Canada to be trained to better work with Indigenous groups. *"Regional staff generally do not have a lot of exchanges with First Nations – we could have more effort by DFO on the Gulf of St. Lawrence."*

Partnerships

"We work together with other aquatic resource and oceans management groups. It's about Mi'kmaq traditional territory – not Canadian geographic boundaries."

- Participants support more networking and partnership opportunities among aquatic resource and oceans management groups and First Nations, including through more workshops such as this one.
    - One group recently worked with a First Nation in another Atlantic province to learn from their experience running a large fish restoration project and their technical expertise using tagging antennas. *"They were very forthcoming about the costs and equipment needed to do this type of project. Within the region, we see a willingness to share with other Nations."*

- Participants also see potential for partnerships with: academic institutions, industries (e.g., commercial fishery and aquaculture businesses), and municipal, provincial, territorial, Indigenous, and federal governments; especially, Fisheries and Oceans Canada, the Canadian Coast Guard, and Transport Canada. *"We're lucky. We have very good working relationships with governments, smaller non-governmental organizations and the Port Authority in [our province]."*
- There was some discussion about partnering among aquatic resource and oceans management groups to develop a protocol for storing and sharing Indigenous knowledge:
    - One thought storage options could be developed with an academic institution, while another thought options should be discussed by uniting all of the Elders. *"It seems like we're talking about one protocol, but there's not one way of collecting this data or storing it or sharing it. Therefore, it takes a lot of thought."*
    - A third participant suggested looking at the United Nations Educational, Scientific and Cultural Organization for ways to improve the value of Indigenous knowledge.
    - A fourth recommended linking Indigenous knowledge collection needs with Heritage Canada's priority: *"It's the year of Indigenous languages – maybe we could get some funding to collect Indigenous knowledge this year in Atlantic Canada."*