NATIONAL INDIGENOUS FISHERIES INSTITUTE
INSTITUT NATIONAL DES PÊCHES AUTOCHTONES
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What We Heard

"If they're going to bring marine spatial planning to [our area], we're going to need funding to build capacity."

Technical Interest, Capacity and Expertise in Oceans Management

- Participants included members of three aquatic resource and oceans management groups representing Indigenous communities and peoples in Nova Scotia, New Brunswick, and Prince Edward Island. There was also a participant from a Nation that is not a member of an aquatic resource and oceans management group.

  - Two groups are actively involved in research and other technical activities in the Gulf of St. Lawrence, the Scotian Shelf and the Bay of Fundy. One has a geographic information system (GIS) department for marine spatial planning, marine protected areas, and other marine management issues. The other has GIS capacity for related projects, such as how Indigenous knowledge may be used to support emergency response planning for marine environmental incidents.

  - The third group has extensive experience collecting and analyzing Indigenous knowledge and completing scientific and other research activities in Cape Breton. This includes mapping cultural, economic, and traditional areas of import to member First Nations for traditional use studies.

  - The Nation not presently in an aquatic resource and oceans management group has technical expertise in GIS, cartography, mapping and spatial analysis, and is becoming more actively involved in marine issues.

- All three groups were active participants in the designation of St. Anns Bank as a marine protected area, including in the development of its conservation objectives and the demarcation of its boundaries and zones. At least two were also contracted by the Department to collect information from Indigenous fish harvesters active in certain fishery areas in the Scotian Shelf. Two have also been involved in environmental response projects with Transport Canada to find out where the fish and areas of significance are along the coasts. *"There's more awareness of marine protected areas; especially, among commercial and recreational fish harvesters."*

  - Two groups and the Nation not presently in a group are currently members of the advisory committee related to the Eastern Shore Islands area of interest. *"It's a long, long process if you're going to do it right, which it was for St. Anns Bank."*

Technical Roles

"We tend to work as a team, not in specific roles. We break out in small groups to do the technical work required for each project."

- The majority of participants have a lot of technical capacities to get involved in marine spatial planning, although staff are generally focussed on specific projects:

  - One has an aquatic research and stewardship director to manage programs and analyze data, a communications and outreach manager, an Elder Advisor, and a local Mi'kmaq educator, along with research assistants and a fishery guardian coordinator to plan the activities of member Nation guardians. Research assistants collect data, participate in stock assessments and other research studies, do community coordination, and collect Indigenous knowledge. They also work with fishery guardians in monitoring, evaluation and stewardship activities.

  - Another has a senior director of environment and natural resources to manage programs and project leads for fisheries, coastal restoration, marine protected area, species at risk and other research projects, a communications officer, a community liaison officer, a GIS specialist, and a researcher and spatial planning officer, along with a team of fisheries biologists, research and field technicians, and research and education officers. Data and Indigenous knowledge collection are project based, so there are no permanent roles in the group and no protocol across departments. This group also does not have marine biology or ecology roles for oceans-related projects or translation.

  - A third is designated by their members as the technical body to: analyze data; collect, interpret, store and protect Indigenous knowledge; use GIS, mapping and spatial analysis; perform monitoring, evaluation and stewardship activities; and be involved in marine biology and ecology activities. *"We have a couple of biologists, but we could use more to run more projects – and they would provide the core capacity to feed into marine spatial planning."* This group has no capacity to enforce marine spatial planning rules but it is not clear if they would want to be involved in this activity. *"It depends on the plan."*

  - The fourth has one staff member to do community coordination and communications on a half-time basis, two full-time and one half-time fishery guardians, and a person to do GIS, mapping and spatial analysis. This Nation would like to be involved in data collection and analysis, Indigenous knowledge collection, interpretation, storage and protection, graphic design and translation/interpretation, as well as marine biology.

- A few groups use Membertou Geomatics Solutions to do their GIS activities and to store and protect Indigenous knowledge. *"It would be nice to have our own GIS department."* The GIS specialist in one group serves eight member communities. *"Maybe we should do a needs assessment to see if one GIS specialist is enough."* Another would like a dedicated GIS person on staff. *"We have some GIS capacity, but it's for each project."*

Technical Tools

"Data collection and information management are the foundation of marine spatial planning."

- When considering a range of technical tools that may be used to participate in marine spatial planning, participants have similar needs:

  - All four groups listed database software and storage among their top needed tools:

    "The network is often down, so we have to wait to upload information to our databases or we end up having to enter it twice: once in Excel and after on the network."

    "We need data and knowledge storage devices because there are two offices and we can't access each other's' files. Also, data is project-based, so it's not well organized."

    "Back-up to the cloud gets really expensive."

  - All four groups also want collaborative project management software to make information-sharing easier. *"We use Dropbox and there's not enough space."* They also support building more in-house GIS capacity. For example, one wants GIS and other mapping software, while another wants their GIS staff member to spend more time delivering the service.

  - All four prioritize having a sharing protocol or policy for Indigenous knowledge and spatial data. *"There are trust issues – and that would help us advance."* One group has such a policy and is willing to share it with other groups. Another recommends using international best practices, such as those put forward by the United Nations Institute from Training and Research. *"We need to be careful about how [Indigenous knowledge] is used because a lot of programs are jumping on the band wagon."*

  - Two need environmental or biological monitoring and sampling equipment (e.g., marine probes) and sensor technologies (e.g., gas, nutrient) – and two others want vessels and/or other vehicles. *"We will need some large capital expenditures to work on marine spatial planning, such as a vehicle to access remote locations."*

- Environmental and biological modelling software, website content management system, graphic design software, and in-house printing capabilities, are among the other technical tools needed by participants.

  - One has an in-house small printer company, as well as an online journal to keep communities informed about technical activities, and each of their members has community newsletters. Others want their own printing capabilities because *"waiting for this often causes other delays."*

- Participants have other tools that they think would be useful in marine spatial planning:

  - One uses Mylar over maps when conducting interviews to collect Indigenous knowledge and data, as well as consent forms and specific questions that are first approved during an ethics review by Indigenous leadership. *"There are different interview questions and maps according to the work being done and the data being collected."* The consent forms and approval are part of a well-defined protocol regarding the collection, storage, immediate and future use(s), and protection of the knowledge gathered for each project. Interviews are conducted in Mi'kmaq and, often, held in groups *"because it sparks a lot of conversation and make some people more comfortable to speak."* Information collected stays within the group and is shared only according to the agreed-upon project and consent form. *"It's about trust. We try not to*

take up too much of their time and we let them talk. We do the listening and the recording." As a result of their Indigenous knowledge collection activities, this group has produced a number of booklets which explain the importance of species to the culture and survival of Mi'kmaq people. *"The ability to read, write, and understand Mi'kmaq is an important tool."*

- Another thought Transport Canada's marine awareness information system and automated identification system (AIS) for smaller vessels using VHF transceivers could be a useful tool in marine spatial planning.

Technical Training

"The Bedford Institute of Oceanography could hold short courses – and we all could come."

- Participants (or members of their Nations) have taken a lot of the training listed on the worksheets.

    - All four have a marine biology Bachelor of Science, have taken 'working with Elders' training, and have some safety training, such as Pleasure Craft Operators' card and wilderness first aid.

    - Two have also taken training to use monitoring and sampling equipment, analyze water samples (including through the Canadian aquatic monitoring program), and use sensor technologies.

- Most note that while they personally may have taken training courses and long-term education, other staff members may still need the training. Ongoing Indigenous knowledge training is especially important. *"This training is simple, but it takes time for knowledge holders to develop a comfort level and willingness to share."*

- Participants all prioritize the need for software and computer training; particularly, collaborative project management software (e.g., SharePoint). There is also strong support for more GIS and ocean mapping training, as well as training on cataloguing and database use and storage. *"We'd like training to manage our own database."*

    - Among the other top training needs, participant chose training related to environmental and biological planning and modelling, using underwater cameras and drones, and communications, translation and graphic design.

    - One places multi-lateral diplomacy in their top five training courses: *"All those involved in marine spatial planning should take some sort of multi-stakeholder engagement / conflict resolution training."* Others want more project management training. *"Dalhousie has a management without borders program which covers project management broadly."*

- Participants prefer using local training facilities, universities and other academic institutions, as well as having training on reserve. Potential training partners included Cape Breton, Acadia, Dalhousie, St. Mary's, and New Brunswick universities, as well as online training, such as courses offered by ArcGIS.

    - One also wants access to training facilities overseas to learn directly how the Europeans or New Zealanders do marine spatial planning.

Partnerships

"Partnerships between Nations is really important."

- Participants support more partnerships with:
  - other aquatic resource and oceans management groups
  - other Nations and/or among member Nations in their groups
  - federal departments and agencies, such as the Canadian Coast Guard, Fisheries and Oceans Canada, Transport Canada, Social Sciences and Humanities Research Council, Environment and Climate Change Canada, Parks Canada *"Gulf and Maritimes Regions at DFO also have 'swim throughs'"*
  - universities and other academic institutions, including the International Oceans Institute
  - non-governmental organizations and local activities, such as the Clean Foundation and *Adopt-A-Stream*, and the Bay of Funding Ecosystem Partnership
  - local Indigenous businesses, such as Membertou Geomatics Solutions and Mi'kma'ki All Points Services Society

- Some groups already collaborate with one other; meeting for fisheries-related symposiums and research related projects. They may also conduct the same research or carry out a similar project, but in a different area of the Province, such as salmon tracking in partnership with the Oceans Tracking Network.
  - The majority of participants want to learn from the one group's Indigenous knowledge protocol. *"This may be a best practice – and could be shared with other AAROMs."*

  - One also recommended that the results of the Fish-WIKS research be reviewed as a best practice. Fish-WIKS sought to understand how Indigenous and western knowledge systems can be used to improve the sustainability of Canadian fisheries by exploring the commonalities and differences in Indigenous knowledge systems across the Pacific, Arctic, Inland and Atlantic regions.