



NAMPAN



Summary Report for NAMPAN Deep Dive on Ecological Connectivity

Held on April 21, 2021

Summary of Event Program

As part of ongoing network activities, the North American Marine Protected Areas Network (NAMPAN) hosted a Deep Dive on Ecological Connectivity. The 90-min event brought together 101 participants from across Canada, Mexico, and the United States to hear from experts and discuss current efforts and opportunities for collaboration.

The event opened with a panel among cross-sector experts:

- **Andrew Rhodes Espinoza**, Biodiversity and Oceans Coordinator, Ministry of Foreign Affairs of México. IUCN WCPA Member and Member of the WCPA Connectivity Conservation Specialist Group (CCSG) (Moderator)
- **Anna Metaxas**, Professor, Dalhousie University. Member of the Canadian Healthy Oceans Network and Member of the IUCN WCPA CCSG Marine Connectivity Working Group.
- **Ben Haskell**, Deputy Superintendent, Stellwagen National Marine Sanctuary
- **Jorge Torre**, Executive Director, COBI (Comunidad y Biodiversidad)

Following the panel, participants divided into seven binational regional groups focused on the Great Lakes, Gulf/Caribbean, Atlantic, or Pacific regions to meet other managers and share opportunities for collaboration. This report summarizes key points from the panel and discussion for future reference, and is provided along with the recording of the event.

Key Lessons

Defining connectivity is hard - particularly in marine environments

While the event brought people together around the broad theme of ecological connectivity, one of the main items is that connectivity means different things in different places and for different species. As a result, while a shared definition is needed, it should also be pragmatic and reflect a marine context. Many aspects of ecological connectivity evolved from terrestrial examples, where habitat corridors may be more appropriate. In marine environments, multiple groups highlighted that more complex spatial relationships make connectivity more like a matrix.

Connectivity looks different for different groups of flora and fauna - seabirds, marine mammals, finfish and shellfish may connect across different places in very different ways, requiring

different management approaches. Connectivity for a species which migrates may require protection at breeding grounds, during larval development, and as adults. Connectivity for a species which is local but depends on flows of nutrients and sensitive to conditions may require engaging terrestrial stakeholders alongside other marine areas. When talking about connectivity efforts, both to managers and external stakeholders, the term and goals should be defined in context.

Connectivity is a complex tool, not an end unto itself.

Ecologically connective management can strengthen ecosystems and species in many ways, but should be seen as an approach that can support specific conservation outcomes, rather than an end to itself. Partly, this stems from the many definitions of ecological connectivity, as noted above. More importantly, however, a connective management approach requires significant resources for development and enforcement – time, staff, data, etc. Participants emphasized the existing limitations on resources, and the challenge of adding a complex coordinated effort on top of existing work. As a result, managers emphasized the need to be systematic and strategic with how ecological connectivity is pursued. One example might be focusing on areas with importance for a wide range of species, such as upwelling or breeding areas.

Connectivity is about social as well as ecological systems.

While the initial focus of the session was on ecological connectivity, panelists and many discussion groups highlighted that ecological connectivity is intricately linked with social connectivity. Because humans are the primary impact, actions in one human community (direct or indirect) drive changes across connected ecosystems, and effective management requires engaging those communities as well. In some cases this means working with fishers to help them understand how their actions impact fish populations both locally and elsewhere. In other cases on-shore communities can be shown how efforts to reduce pollution can lead to better outcomes for themselves and others in other locations.

Transboundary cooperation is vital and possible - there's so much more we can do together.

One inspiring outcome was the widespread feeling that there are both many examples of existing connectivity work (a full list of cited examples is included below), and many possibilities for additional collaboration, both within and between countries. One participant from Canada noted that while they work across bioregions in the Atlantic, they mostly think within bioregions for specific species. There are many potential benefits from getting beyond site-specific or agency-specific teams to work together, and many opportunities to do so.

Limitations to Connectivity Work

Participants highlighted three areas that are particularly limiting in pursuing more ecological connectivity work: staff capacity, available data, and inconsistent policies.

Staff capacity for science, implementation, and coordination

A lack of flexible staff time limits many sites given the number of priorities relative to available capacity. This is true for all aspects of connectivity, whether on gathering basic data, planning

and implementing new programs, and enforcing additional guidelines - many of which require equipment that is also budget-limited. Participants noted that the need for capacity is particularly acute for efforts that are purely conservation-focused, relative to sites or projects that help manage exploitable species.

Of particular importance for developing more connective management is the need for cross-site coordination capacity, whether at a local level or from a more regional or national office. Finally, given the range of definitions and approaches to connectivity, staff will need training or time to develop new programs, even when clearly tied to existing outcomes.

Data acquisition and access

Data was the most common thread in all group conversations. As with any scientific endeavour, there is a need to collect additional data, across a range of topics, including physical drivers, maps of critical habitats, food webs, or ecological models. While a few locations had significant data to help inform management and decisions, many participants cited specific gaps in understanding that limited their comfort or ability to plan for more connective management, regardless of specific outcome. In some cases, such as in the Sea of Cortez and Pacific, there are species which are suspected to be connected, but missing data to prove linkages.

While there were many needs for additional data - along with equipment and staff time to collect it - participants also cited many examples of datasets from their site which may not be available to other relevant managers. Given the resource costs for data collection, better sharing of information could provide significant information at relatively lower effort. One existing focused example is the Great Lakes' GLATOS network, which focuses on tracking fish using radio telemetry, and makes the information available to a network of users.

Better alignment in regional/national policies.

Finally, several groups noted that existing policies and variations across the three countries make many parts of planning for ecological connectivity harder. Within countries, some policies need to be updated to include the importance of climate change and connectivity to give managers a stronger mandate in planning. Sharing information between agencies can often be frustrating. Because public servants are unable to advocate, finding a way to consistently message these needed changes would be useful.

For transboundary policies, harmonization of monitoring metrics would enable easier tracking of progress across borders. At the bilateral level, one participant noted that there are few effective transboundary agreements, so there can be gaps in data and management (e.g. between Alaska and Washington). There are examples of more terrestrial transboundary cooperation, such as flyways for migratory waterfowl, where all three countries have coordinated due to the shared resource. These examples could be adapted for marine contexts. Finally, frameworks like the Convention on Migratory Species can offer models and a global network, including many countries in Latin America and the Caribbean. However,

because none of the three countries are signatories, there are limited benefits even when there are shared species.

Conclusions

This event was the fifth virtual meeting held through NAMPAN since February 2020, and the first that was topically focused. While there is a regular community of participants in the events, there was also a feeling that these conversations are only a starting point. There are opportunities for NAMPAN to build on this Deep Dive by responding to the limitations noted above. There is also a desire for additional conversations on additional topics in the future, potentially with more time for discussion.

Potential Opportunities

1. Build a directory with information about collected datasets to help managers understand what information may already be available. Collecting information on case studies for ecological connectivity at a range of scales and approaches could also be useful.
2. Identify preferred policies or areas where harmonization is needed across the three countries, and work to advance consistent messaging through NAMPAN or other channels.
3. Identify resources or trainings to help managers develop new skills, including:
 1. Integrating ecological connectivity with social connectivity, both from a management approach and through communication strategy.
 2. Understanding current science to help managers ask appropriate questions and collect missing data.
 3. Including different forms of knowledge in ecological planning, such as natural, social, Indigenous

Appendix A: Specific Cited Examples

Monitoring & Data, Demonstrated Connectivity, Stakeholder Engagement, Policies & Coordination

Example Name & Brief Notes	MD	DC	SE	PC
Acadia National Park - Connecting freshwater and saltwater habitats; researching range shifts using genetic tools for intertidal species	X			
California managers at DFW are working to extend academic and state reserves into federal waters, blending eDNA, tagged animals, autonomous ROVs for ongoing monitoring and research. These ecosystems are well-studied and successful because of partnerships with UC system and NGOs	X	X	X	
Stellwagen Whale Alert App - Tool used to inform mariners on whale conservation. 'One stop location' to find info on protecting whales. The app uses real time data from gliders on NARW locations to inform vessel operators.	X		X	
Ocean Tracking Network - Acoustic tracking and collaboration has helped evaluate animal movement and habitat use within Atlantic Canada. Leveraging the OTN we are able to understand cross regional connectivity	X	X		
Large Marine Ecosystem (LME) Project (GEF) : GEF's role towards sustainable development of LMEs is second to none in the global arena. Their International Waters finance fills a crucial niche, catalyzing the development of transboundary Strategic Action Programs (SAPs) signed at the ministerial level.		X	X	
RedParques : Red Parques coordination within CONANP demonstrates connections with Cuba and NGOs			X	X
Marine Protected Area Agency Partnership (MPAAP) with IUCN: IUCN is an historical partner of the MPAAP and contributes to build this network of Agencies in charge of MPA management, sharing best practices and lessons learnt. IUCN is providing this web space to host the PAAP official webpages and serve as a reference point for external audiences as well as to facilitate exchanges between members.			X	X
DFO's Bioregions : In 2009, Canadian Science Advisory Secretariat advice identified 13 regions in Canada's waters that are defined by their attributes and similarities, and which inform marine planning exercises such as MPA network development.				X
Assessment of Laysan and Black-Footed Albatrosses : In Mexico, they focused on Albatros by assessing the migration routes and connection with Hawaii. Their work involves telemetry studies to understand the connection within the national park; and between the Gulf of California and coast of mainland Mexico; and connections within the region (e.g., Panama, Galapagos, etc)--Marine Corridor for the Tropical Pacific.	X	X		
Great Lakes Fishery Commission (GLFC) : Fisheries of the Great Lakes are managed by provincial, state, and tribal agencies, with support from the Canadian and U. S. federal governments. Management of Great Lakes fisheries occurs cooperatively for fish populations that support recreational, commercial, or subsistence fisheries or support having a well-balanced and productive fish community.		X		
Great Lakes Acoustic Telemetry Observation System (GLATOS) : A network of researchers who work collaboratively using acoustic telemetry in order to understand fish behavior in relation to Great Lakes ecology and provide information useful to fish managers in their decision making.	X	X		
Fish and Climate Change Database (FiCLI) : Provides a comprehensive database of peer-reviewed literature available on how climate change has impacted and will continue to impact inland fishes worldwide.	X			

Lakebed 2030 : Lakebed 2030 is dedicated to bringing together new and existing bathymetric data to create a map of the lake floor that's easy to use and open to everyone.	x		x	
Great Lakes, Great Protected Areas (GPLAN) : An informal group with members from Canadian and U.S. resource management agencies which aims to improve communication and information exchange related to Great Lakes Coastal and Marine Protected Areas.		x		x
Key Biodiversity Areas Programme : Supports the identification, mapping, monitoring and conservation of KBAs to help safeguard the most critical sites for nature on the planet.	x			
Binational.net : A collaboration between the United States Environmental Protection Agency and Environment and Climate Change Canada to provide a single window on joint work undertaken by the Governments of the United States and Canada in support of achieving the purpose of the Great Lakes Water Quality Agreement.				x

Appendix B: Attendees

First Name	Last Name	Organization	Title	Country
Cristopher	A. González Baca	CONANP	Director Arrecifes de Veracruz	Mexico
Kathie	Adare	Parks Canada	IMPAC 5 Secretariat	Canada
Edmundo	Aguilar	CONANP	PN Huatulco	Mexico
Javier	Alejandro Gonzalez Leija	CONANP	Parque Nacional Revillagigedo:	Mexico
Karel	Allard	ECCC	CWS Atlantic Region, protected area practitioner	Canada
Pamela	Allen	DFO	DFO, Science, National	Canada
Martha	Allen	Parks Canada	Resource Conservation Manager	US
Christian	Alva	CONANP	Dirección Regional Península de Yucatán Y Caribe Mexicano	Mexico
Mónica	Alvarez	CONANP	Contacto NAMPAN	Mexico
Denisse	Angeles Solis	CONANP	RB Banco Chinchorro PN Arrecifes de Xcalak	Mexico
Hannah	Avenant	ECCC	CWS Pacific Region, mpa technician	Canada
Laura	Beauregard	US FWS	Senior Policy Advisor	US
Diane	Blanchard	Parks Canada	Marine Establishment	Canada
Jason	Boire	Parks Canada	Manager, Marine Conservation	Canada
Andrew	Boyne	ECCC	CWS Atlantic Region, manager, protected areas	Canada
Chris	Caldow	US NOAA	ONMS-CINMS	US
Fernando	Camacho Rico	CONANP	Director General de Fortalecimiento Institucional y Promoción	Mexico
José	Carlos Pizaña Soto	CONANP	Director Regional Planicie Costera y Golfo de México	Mexico
Mark	Carr	UC Santa Cruz	Professor, Ecology and Evolutionary Biology	US
Laura	Cerasi	Secretariat of the Convention on Migratory Species	Fundraising and Partnership Officer	Mexico
Cndy	Chu	Fisheries and Oceans Canada	Research Scientist	Canada

Gonzalo	Cid	US NOAA	MPAC	US
Alexander	Dale	MIT Solve		US
Eva	DeDonato	US NPS	Chief, Ocean and Coastal Resource Program	US
Caleigh	Delle	Parks Canada	note-taker - Great Lakes	Canada
Christie	Deloria	US FWS	Great Lakes Coastal Program Coordinator	US
Sandra	Demberger	FWS	Knauss Marine Policy Fellow	US
John	Dettmers	Great Lakes Fishery Commission	Director of Fisheries Management	US
Cherisse	du Preez	DFO	DFO, Science	Canada
Elizabeth	Edmondson	DFO	DFO, MPC, national	Canada
Jane	Eisenhardt	UNEP	Environmental Communications Specialist	UNEP
Joe	Fader	US NOAA	Knauss Marine Policy Fellow	US
Marie-Josée	Fortin	University of Toronto	University Professor	Canada
Aubrie	Fowler	MPA Collaborative Network	South Coast Specialist	UNEP
Renee	Gagne	DFO	DFO, MPC, Quebec	Canada
Kara	Gonzales	California Department of Fish and Wildlife	Environmental Scientist	US
David	Gutierrez	CONANP	Proyectos Especiales	Mexico
Cavan	Harpur	Parks Canada	Parks Canada, Bruce Peninsula NP	Canada
Karen	Hartley	Ontario Parks	Senior Ecologist, Protected Areas Section	Canada
Ben	Haskell	US NOAA	ONMS	US
Sharon	Hayes	Parks Canada	Parks Canada, Northern Ontario	Canada
Dan	Horsfall	US NOAA	MPAC	US
Pilar	Jacobo Enciso	CONANP	Director, Climate Change Strategies	Mexico
Jennifer	Janes	DFO	MPC, Nfld Region	Canada
Shelley	Jepps	Fisheries and Oceans Canada	Integrated Coastal Zone Coordinator	Canada
Gabrielle	Johnson	US NOAA	International Capacity Building	US

Kevin	Kalasz	FWS	Coastal Program Coordinator - South Florida/Everglades	US
Tanya	Koropatnick	DFO	Senior Biologist	Canada
David	Kushner	US NPS	CINP	US
Aaron	Laur	Center for Large Landscape Conservation	Manager, International Connectivity Program	UNEP
Barbara	Lausche	Mote Marine Laboratory	Director of Marine Policy Institute	UNEP
Pete	Leary	US FWS	Marine Program Coordinator	US
Chris	Lemieux	Wilfred Laurier University	Assoc. Professor, Director for CCEA	Canada
Christine	Lipsky	US NPS	Marine Ecologist	US
Erika	Lok	ECCC	CWS Pacific Region, protected area practitioner	Canada
Ana	Luisa Figueroa	CONANP	Director Regional Noroeste y Alto Golfo de California	Mexico
Shannon	MacPhee	DFO	DFO, Science	Canada
Nick	Mandrak	University of Toronto	Professor, Dept of Biology	Canada
Susanne	Mark	DFO	Biologist	Canada
Nadia	Menard	Parks Canada	Atlantic Coordinator, Marine Conservation	Canada
Jennifer	Mendez	US NOAA	Intern	US
Verónica	Mendieta Siordia	CONANP	Analyst Climate Change Strategies in Protected Are	Mexico
Anna	Metaxas	Dalhousie University	Professor	Canada
Abe	Miller-Rushing	US NPS	Science Coordinator, Acadia National Park	US
JEZAHHEL	MIRANDA ZACARIAS	CONANP - PNSAV	Monitoreo	Mexico
Hali	Moreland	Parks Canada	Policy Officer	Canada
Maria	Morgado	UNEP	Programme Management Officer	US
Candace	Newman	Parks Canada	Manager of Protected Areas Establishment	Canada
Lisa	Nyman	Parks Canada	Parks Canada, Northern Ontario	Canada

Becky	Ota	California Resources Agency	CA Resources Agency	US
Scott	Parker	Parks Canada	facilitator - Great Lakes	Canada
Katherine	Patterson	Parks Canada	Parks Canada, Georgian Bay and Ontario East	Canada
Brittany	Petersen	FWS	Refuge Manager, NE Canyons & Seamounts	US
Jean-Francois	Rail	ECCC	Section Évaluation de la Faune et de l'Habitat, CWS	Canada
Carlos	Ramón Godinez Reyes	CONANP	APFF Cabo San Lucas y Cabo Pulmo	Mexico
Andrew	Rhodes	Ministry of Foreign Affairs of México	Biodiversity and Oceans Coordinator	Mexico
Karen	Richardson	Parks Canada	Ecosystem Scientist	Canada
Lucie	Robidoux	CEC	Head of Unit - Ecosystems	Canada
Noemie	Roy	Parks Canada	Junior Analyst	Canada
David	Sanchez	CONANP	Dirección Regional Península de Baja California y Pacifico Norte	Mexico
Bethany	Schroeder	Fisheries and Oceans Canada	A/Team Lead, Marine Planning and Conservation	Canada
Vittoria	Semplici	Secretariat of the Convention on Migratory Species	CMS Consultant	Mexico
Nancy	Shackell	DFO	DFO, Ocean and Science Division, Atlantic	Canada
Chenchen	Shen	California Department of Fish and Wildlife	Environmental Scientist	US
Fernando	Spina	Secretariat of the Convention on Migratory Species	Head of Science Bird Migration ISPRA Italy	US
Philippe	St-Onge	Parks Canada	Parks Canada, New Brunswick North	Canada
Ryan	Stanley	DFO	Ocean and Ecosystem Science, Maritime Region	Canada
Dave	Tavares	Parks Canada	Science Advisor, Conservation Planning	Canada
Caleb	Taylor	CMTS	Sea Grant Knauss Fellow	US
Jorge	Torre	Comunidad y Biodiversidad	Director General	Mexico
Samuel	Turgeon	Parks Canada	Parc marin Saguenay-St.Laurent	Canada

Amanda	Van Diggelen	California Department of Fish and Wildlife	Environmental Scientist	US
David	VanderZwaag	Dalhousie University	Director, Marine & Environmental Law Institute	Canada
Chantal	Vis	Parks Canada	facilitator - Atlantic - bilingual	Canada
Jenny	Waddell	US NOAA	Research Ecologist, Olympic Coast National Marine Sanctuary	US
Lauren	Wenzel	US NOAA	MPAC	US
Stephen	Wertz	California Department of Fish and Wildlife	Senior Environmental Scientist Supervisor, MPA Project,	US
Elle	Wibisono	US Senate Commerce, Science , and Transportation Committee; Oceans Subcommittee	Knauss Fellow	US
Sarah	Wong	ECCC	CWS	Canada
Sara	Worden	California Department of Fish and Wildlife	Environmental Scientist	US