Summary Report for NAMPAN's Second Deep Dive on Ecological Connectivity

Held on October 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 150-min event brought together 89 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:

- **Barbara Lausche,** Director of the Marine Policy Institute; Lead Author, IUCN Rules of Thumb on Marine Connectivity
- **Eduardo Ponce,** Director of Species at Risk and Species Conservation Programs, Comisión Nacional de Áreas Naturales Protegidas (CONANP)
- **Fred Whoriskey,** Executive Director, Ocean Tracking Network

Following the panel, participants were divided into two rounds of working groups, first by geographic region, and second by thematic interest. Both rounds had six groups with brief project presentations by pre-selected MPA practitioners, followed by group questions and discussion. A final plenary discussion provided an opportunity to synthesize ideas from across the breakouts.

This report synthesizes key points from across the panel, discussions, and closing plenary. The focus was on sharing experiences and existing projects between peers rather than highlighting opportunities and next steps for the network. The report is available alongside a list of presented projects and attendees (Appendices A & B), summary slides for those projects (translated), and recordings and trilingual transcripts for the panel and plenary.

Key Challenges

Connectivity is still an emerging space for MPA practitioners.
Ecological connectivity and corridors are recognized as important for many different reasons, but understanding how to integrate connectivity with MPA management is still a very new area. Only two of the 16 projects highlighted during the Deep Dive were started before 2010, with most starting in 2015 and later, and the majority of projects were from academic or non-governmental organizations. The IUCN's recent Rules of Thumb are some of the first meta-analyses of global best practices, and will take time to consistently implement. All

outcomes from this session, including challenges should be seen through the lens of how new this area is for MPA practitioners.

There is still an overwhelming need for long-term data and sustainable funding commitments to help gather it.
Data is the underlying need for both establishing and demonstrating the effectiveness of MPAs, but good data requires both significant and long-term funding commitments. Developing these networks, particularly for highly mobile species that require individual tags and continual renewal, is resource-intensive to both start and maintain. In addition, regional networks will need to adapt or better interlink as climates change. The Ocean Tracking Network has helped to coordinate sensor networks and data sharing, but is limited in its ability to create robust regional networks. Additional long-term funding from governments or committed philanthropic partners will be necessary.

Scalability is a lurking challenge, whether in practice, communication, or data collection.
Several participants noted that individual connectivity projects do not easily scale - an effective MPA or program for one place generally needs to be replicated with new relationships, new data, and new local MPA managers to increase impact, rather than growing the initial program. Scale is a similar problem for data, as additional data collection sites do not necessarily reduce per-sensor costs or the effort required to process a growing set of tag detections. Finally, other participants saw issues of scaling up communication – successful work may not be widely known, regardless of how replicable it might be.

MPA practitioners are increasingly being asked to pursue large goals, both quantitative ones such as 30x30, and qualitative ones such as connectivity, representative biodiversity, or interfacing with industrial fisheries. Finding more holistic ways to pursue scale can help meet these goals. This could include bridging gaps in data, including information on other governance schemes; better involving all sectors of society; promoting other effective area-based capacity measures (OECMs); or building capacity to efficiently manage for connectivity.

Key Opportunities

Robust and long-term data is key for decision-making; MPAs and good data collection can reinforce each other.
Access to consistent or robust data has been the most common point of frustration among Deep Dive participants. While there are a growing set of areas with relatively robust sensor networks – notably the Great Lakes, Canadian Maritimes, southeastern Atlantic, and southern British Columbia – there are many more areas, including much of the Pacific coastline, with few active sensors or long-term data.

One crucial question for all three countries is identifying where new MPAs should be placed, particularly in light of 30x30 commitments. Several projects, and the Rules of Thumb, highlight ways to use gathered data in concert with modelling to identify key areas for protection, focusing on breeding grounds, feeding grounds, and key migratory corridors. In the other

direction, MPAs need to provide consistent data collection locations to help evaluate outcomes and where adaptive management or new MPAs are required.

Connectivity successes need partnership and collaboration – which take time to build. While connectivity almost inherently includes multiple locations, almost every project presented was also cross-sector collaboration, variously connecting academic researchers, government practitioners, local communities including Indigenous peoples, and environmental NGOs. Replicating slowly-built collaborations for charismatic species such as whales among many more areas and for species shifting due to climate change will require relatively urgent action by many institutions, both for durability and because of the diversity of knowledge needed.

A consistent message across groups is that communities are generally interested in knowing more about local ecosystems, but that building those connections takes time, particularly when there are histories of conflict involved – such as with many Indigenous communities. However, given the need for community buy-in for the success of any MPA, early and genuine community engagement is vital, especially when community practices are – or seem to be – in tension with MPA objectives. Practitioners should invite the community in as early as possible, learning from existing projects that have focused on social connectivity.

The diversity among North America's MPAs can be a long-term strength. Participants, and NAMPAN overall, encompass a huge range of contexts – freshwater or marine, different national and sub-national governments, different focal species sizes, different climate impacts. Across these diverse contexts are shared goals (e.g. responding to invasive species) and barriers (e.g. robust data), but also differential skill sets. Expertise in network data and technical modeling from Dalhousie and North Atlantic MPAs is distinct from the community engagement and sociological work done by MPAs in the Gulf of California in partnership with NGOs. Effective ecological connectivity work will require many different skills and tools, particularly with the complexity and difficulty in scaling work that participants consistently highlighted. Having this range of skills and examples within one network such as NAMPAN can help all participants access the examples and resources needed to succeed, if opportunities to find and share those skills are available.

Conclusions

This event was the sixth virtual meeting held through NAMPAN since February 2020, the second that was focused on ecological connectivity, and the first focused on sharing specific projects and best practices. There is a growing set of regular participants, and clear value from convening practitioners at the international level. Ecological connectivity is an issue that NAMPAN is especially well-positioned to focus on. The consistent message from participants has been that managing connectivity requires access to a wide set of tools and skills, many of which – such as data standards and transparency – can improve outcomes in general. Beyond the physical aspects that cross borders, having a trilateral network of MPA practitioners helps all participants share these tools and skills, while also identifying areas where policy changes and alignments are necessary. There are many opportunities for NAMPAN to build on this Deep Dive as it formulates new programming for 2022 and beyond.

Appendix A: Presented Projects

Project details are available in these slides. Links to project websites are provided where available; presenter affiliations are included in Appendix B.

Example Name & Brief Notes	Region	Dates	Presenter
Ocean Tracking Network's Arctic Work – Tracking movement and connectivity of commercial, subsistence and threatened species in the Canadian Arctic	Arctic	2010 - Present	Nigel Hussey
Cross-Boundary Connectivity – Predicting connectivity of deep-water corals in OECMs and identify larval sources across protected areas in the Northwest Atlantic	North Atlantic	2014 - Present	Anna Metaxas
Connectivity in a proposed coastal MPA – Comparing methods for measuring connectivity of kelps and associated invertebrates at a local scale.	North Atlantic	2016 - Present	Arieanna Balbar
Connectivity in the Northwest Atlantic revealed though an ensemble approach – Developing practical connectivity for spatial conservation planning by blending habitat modelling, population genetics, and biophysical models	North Atlantic	2018 - Present	Ryan Stanley
Dam Removal and Diadromous Fish Restoration – NOAA program which has completed 344 fish passage projects including 150 dam removals so far	North Atlantic	1995 - Present	John Catena
Great Lakes Hydrological Connectivity – Quantify connectivity in tributaries of the Great Lakes Basin, Ontario	Great Lakes	2015 - 2017	Cindy Chu
Fishwerks – Developing a database and tool to track barriers in rivers within the Great Lakes Basin, to help plan removals.	Great Lakes	2015- Present	Peter McIntyre
Great Lakes Acoustic Telemetry – A bi-national network of researchers using acoustic telemetry to inform fishery management	Great Lakes	2013- Present	Tim Johnson
Veracruz Reef System PN – Carry out exchanges of experiences as a management strategy to promote fishing refuges in the Veracruz Reef System PN	Gulf of Mexico	2020- Present	Cintia Landa
Hypoxic Threats and Safe Havens – Increasing understanding on coral reef community resilience, considering climate change	Caribbean	2016- Present	Mary Collins
RedGolfo – A new MPA network to improve management of migratory species in the Gulf of Mexico	Gulf of Mexico	2015- Present	Fernando Bretos
Connectivity of nearshore invertebrate communities – Assess connectivity using a biophysical model to support MPA network planning in Pacific Canada	North Pacific	2016- Present	John Cristiani
MPA Suitability and Interconnectedness – Project changes for adult benthic communities to inform MPA management in Pacific Canada	North Pacific	2017- Present	Sarah Friesen
Applied California Current Ecosystem Studies (ACCESS) - Studying connectivity and effective interventions for reducing whale deaths, particularly from ship strikes	South Pacific	2004- Present	Jaime Jahncke
Value Rescue from Bass – Incentivize conservation and fisheries management through community market incentives	South Pacific	2018- Present	Rocío Rivera
Covid & Community Resilience – Economic reactivation of the riparian fishing in the Northern Gulf of California, and lessons from the Puerto Peñasco-Lobos Fishing Biological Corridor for community well-being and sustainable fishing	Gulf of California	2015- Present	Nelidas Barajas Acosta

Balancing Subsistence & Sustainability – Working with coastal communities to share knowledge and solutions that promote sustainable fishing practices	Gulf of California	2020-Present	Francisco Fernandez
Connectivity in Marine Protected Areas – Conserving the biodiversity and promoting the sustainable use of marine and coastal resources of the Eastern Tropical Pacific Marine Corridor	South Pacific	2020-Present	Betsabe Luna

Appendix B: Attendees

Given Name	Family Name	Organization	Title	Country
Karel	Allard	ECCC	CWS Atlantic Region, protected area practitioner	Canada
Arieanna	Balbar	Dalhousie University	PhD candidate	Canada
Arieanna	Balbar	Dalhousie University	Graduate Student w/ Anna Metaxas	Canada
Natalie	Ban	University of Victoria	Professor	Canada
Lori	Bilecki	ECCC	Marine - Protected Areas Establishment	Canada
Midoli	Bresch	Fisheries and Oceans Canada	Biologist	Canada
Cindy	Chu	DFO	Research Scientist	Canada
John	Cristiani	UBC	PhD Student	Canada
Caleigh	Delle Palme	Parks Canada	Marine advisor	Canada
Cherisse	du Preez	DFO	DFO, Science	Canada
Ryan	Eagleson	Parks Canada	Ecosystem Scientist	Canada
Marie	Fernandes	Parks Canada	Management Planner	Canada
Marie-Josee	Fortin	University of Toronto	University Professor	Canada
Sarah	Friesen	DFO	Research Scientist	Canada
Nicole	Goñi	CEC	Assistant, Ecosystems Division	Canada
Karen	Hartley	Ontario Parks	Senior Ecologist, Protected Areas Section	Canada
Jordan	Hoffman	Canada	Marine Ecologist	Canada
Nigel	Hussey	University of Windsor	Professor	Canada
Tim	Johnson	OMNRF	Research Scientist	Canada
Marty	King	DFO	MPC, Maritime Region	Canada
Nick	Mandrak	University of Toronto	Professor, Dept of Biology	Canada

Clayton	Manning	Fisheries & Oceans Canada	Biologist	Canada
Anna	Metaxas	Dalhousie University	Professor	Canada
Hali	Moreland	Parks Canada	Marine advisor	Canada
Elizabeth	Nelson	Parks Canada	Science Advisor	Canada
Candace	Newman	Parks Canada	Manager of Protected Areas Establishment	Canada
Chantal	Ouimet	Parks Canada	Project Manager	Canada
Scott	Parker	Parks Canada	Regional coordinator, Great Lakes	Canada
Lucie	Robidoux	CEC	Head of Unit - Ecosystems	Canada
Chris	Robinson	Parks Canada	Ecologist	Canada
Lauren	Roy	CEC	Project Lead	Canada
Emily	Rubidge	DFO	Research Scientist	Canada
Bethany	Schroeder	DFO	Team Lead, Marine Planning and Conservation	Canada
Pippa	Shepherd	Parks Canada	Senior Marine ecosystem scientist	Canada
Ryan	Stanley	DFO	Research Scientist	Canada
David	Tavares	Parks Canada	Science Advisor, Conservation Planning	Canada
Chantal	Vis	PCA	Marine Ecosystem Specialist	Canada
Fred	Whoriskey	Ocean Tracking Network	Executive Director	Canada
Benito	Bermudez	CONANP	Director Regional Península de Baja California y Pacífico Norte	Mexico
Alejandra	Calzada	WWF	"Costas Listas" Project	Mexico
Domingo	de Jesus Zatarain Gonzalez	CONANP	Encargado del Despacho de la Dirección de la RB Isla San Pedro Mártir	Mexico
Evangelina	Diaz Lopez	CONANP	Analista de Area Protegida	Mexico
Jose	Eduardo Ponce	CONANP	Director Especies Prioritarias	Mexico
Francisco	Fernández-Rivera Melo	Comunidad y Biodiversidad AC	Catalizador de Cambio	Mexico
Carlos Ramón	Godinez Reyes	CONANP	APFF Cabo San Lucas y Cabo Pulmo	Mexico

Cintia	Landa	FMCN	Intercambio de Experiencias	Mexico
Ana	Luisa Figueroa	CONANP	Director Regional Noroeste y Alto Golfo de California	Mexico
Betsabé	Luna	Fondo Mexicano para la Conservación de la Naturaleza	Oficial de Conservación	Mexico
Veronica	Mendieta	CONANP	Analyst, Climate Change Strategies	Mexico
Julio	Montoya	Islas	Director de Proyecto Isla Guadalupe	Mexico
Sergio Alejandro	Perez Valencia	CONANP	Encargado del Despacho de la Dirección de la RB Alto Golfo de California y Delta del Rio Colorado	Mexico
Rodrigo	Pérez Weil	CONANP		Mexico
Jose Eduardo	Ponce	CONANP	Director, Species Programs	Mexico
Carlos	Ramón Godinez Reyes	CONANP	APFF Cabo San Lucas y Cabo Pulmo	Mexico
Rocío	Rivera	SmartFish Rescate de Valor AC	Subdirectora	Mexico
Jane	Eisenhardt	UNEP	Ecosystems Management Consultant	UNEP
Barbara	Hendrie	UNEP North America	Director	UNEP
Jacoby	Baker	Monterey Bay Aquarium Research Institute		United States
Lindsay	Bonito	California Natural Resources Agency	MPA Manager	United States
Fernando	Bretos	The Ocean Foundation	Program Officer	United States
Chris	Caldow	US NOAA	ONMS-CINMS	United States
Zac	Cannizzo	NOAA	MPAC	United States
John	Catena	NOAA Restoration Center	Northeast and Great Lakes Regional Supervisor	United States
Mary	Collins	Marine Connectivity Working Group	Graduate Associate	United States
Lauren	Divine	Aleut Community of St. Paul Island Tribal Government	Director, Ecosystem Conservation Office	United States
Sandra	Fogg	OPC	CASG State Fellow	United States

Karen	Grimmer	Monterey Bay National Marine Sanctuary	Resource Protection Coordinator	United States
Nicole	Gustine	US Fish and Wildlife Service	Conservation Planner	United States
Jaime	Jahncke	Point Blue	Director, California Current Group	United States
Cathy	Johnson	NPS	Regional Coastal Ecologist	United States
Gabrielle	Johnson	NOAA		United States
Jamie	Kilgo	NPS	Marine Ecology	United States
Jenn	Latusek	Lindahl Reed		United States
Aaron	Laur	Center for Large Landscape Conservation	Manager, International Connectivity Program	United States
Barbara	Lausche	Marine Policy Institute	Director	United States
Pete	Leary	US FWS	Marine Program Coordinator	United States
Jacob	Levenson	BOEM	Marine Biologist	United States
Christine	Lipsky	US NPS	Marine Ecologist	United States
Michelle	Marraffini	University of Santa Barbara	Postdoctoral Researcher	United States
Luke	McEachron	Florida Fish and Wildlife Conservation Commission	Research Administrator	United States
Peter	McIntyre	Associate Professor	Cornell University	United States
Nicole	Palma	MPA Collaborative Network	Program Manager	United States
Elizabeth	Pope	California Department of Fish and Wildlife	Environmental Scientist	United States
Kimberly	Puglise	NOAA	NCCOS	United States
Amelia	Ritger	UCSB	Graduate Student	United States
Ronnie	Sanchez	US Fish and Wildlife Service	Refuge Supervisor	United States
Amanda	Van Diggelen	California Department of Fish and Wildlife	Environmental Scientist	United States
Lauren	Wenzel	US NOAA	MPAC	United States
Sara	Worden	California Department of Fish and Wildlife	Environmental Scientist	United States