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STRESS-FREE SEAS

Consistent Protection and Governance Standards for Canada's Marine Protected Area Laws

WCELA Submission to the Federal Expert Panel
on Marine Protected Area Standards

July 2018

Today, seas are warming, rising, and becoming more acidic with climate change. Ocean ecosystems are becoming increasingly crowded with human uses, and are less crowded with fish, whales, corals, and seagrasses due to overexploitation and development. Keeping parts of the sea stress–free can protect and restore biodiversity, food, and the climate.

Marine protected areas (MPAs) are tools to reduce and relieve stress imposed on marine life by human activities, known by scientists as "stressors". How to do this? To be effective, MPAs need strong and consistent laws that prohibit damaging activities and provide safe havens in areas specifically reserved for protection.

Basic protections that should be in all of Canada's MPA laws are reviewed in Table 4, including examples from Canada, where they exist, and examples from other countries where these protections are included in the MPA laws.

This submission shows the inconsistency and incompleteness of Canada's MPA laws. It discusses how to improve these laws to provide basic protections, and better follow guidance from the world authority on protected areas, the IUCN. Recommended amendments for standards of protection are also reviewed in the article included at Appendix D.[1]

Government Commitment to A Floor of Basic Protections

Minister LeBlanc said in the House of Commons that the federal government intends to establish "a floor of basic protections" to apply to protection standards for all marine protected areas (MPAs).[2]

Stressful Seas - Canada's MPA Laws Lack Basic Consistent Protection Standards

There is currently no floor of basic protections for MPAs in Canada.

[1] Watson M.S. and Hewson S.M. Securing protection standards for Canada's marine protected areas. *Marine Policy* (In Press)
[2] House of Commons Debates, No 207 (27 September 2017) at 13653 (Hon Dominic LeBlanc).

The following set of tables and Appendices illustrate that:

1. Canada's legal protection standards for MPAs vary widely depending on:
    - The region in which they are located, demonstrated by Appendix C showing that offshore oil and gas in general and oil and gas in MPAs in particular varies widely in Canada's three seas,

    - The federal law used to designate the area, as demonstrated by Tables 1-3 comparing the main MPA laws on the issues of
        - prohibitions on extractive activities,
        - no-take areas, and
        - maintenance of ecological integrity.

    - The content of MPA regulations demonstrated by comparative reports[3] and tables[4],

    - Whether a settled land claim applies, demonstrated by the map included at Appendix B that illustrates the extent of settled land claims, especially in the Arctic, and

    - Whether the site has been co-designated, demonstrated by the examples of Sgaan-Kinghlas MPA and Gwaii Haanas National Marine Conservation Area (NMCA). A map of designated and proposed protected areas has been included at Appendix A.

2. Canada's legal protection standards for MPAs incorporate some, but not all, of IUCN's guidance, as demonstrated by Tables 1-3 comparing IUCN guidance with Canada's main MPA laws.

This Panel has the opportunity to recommend changes to provide the basic protections applicable to all of Canada's MPAs.

[3] CPAWS, 2015. Oceans Report 2015: Dare to be Deep: Are Canada's Marine Protected Areas Really 'Protected'?
[4] WCELA Submission on Bill C-55: Appendix 2, Oceans Act MPA Regulations and Permitted Activities https://www.wcel.org/sites/default/files/publications/2017-11-wcela-brief-fopo-c-55-final.pdf

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TABLE 1. COMPARISON OF CANADA'S MARINE PROTECTED AREA LAWS PROHIBITIONS ON EXTRACTIVE ACTIVITIES IN MPAS

IUCN Guidance	Oceans Act	Canada National Marine Conservation Areas Act	Canada Wildlife Act	Canada National Parks Act
2016 World Conservation Congress Resolution "Calls on governments to prohibit environmentally damaging industrial activities and infrastructure development in all IUCN categories of protected areas."[1]	Contains no outright prohibition on any specific extractive activities in MPAs.	Contains an express prohibition on a class of activities.	Contains prohibitions on several activities. The CWF policy for authorizing prohibited activities states commercial and industrial activities will generally not be permitted.[2]	Permitted activities must not threaten ecological integrity of the protected area.
"[A]s with terrestrial sites, some activities should always be strictly prohibited throughout the marine and coastal protected areas network, for example, damaging coral; taking or harming, rare, threatened or endangered marine species; large-scale extractive activities like mining and industrial fisheries; and the dumping of ship waste, bilge water or toxic substances"[3]	Each Oceans Act MPA is governed by a separate regulation, which • prohibits all activities that disturb, damage, destroy or remove any living marine organism or part of its habitat, and then • lists activities that are allowed despite the prohibition Exemptions on allowable activities vary between MPAs: • E.g. oil and gas exploitation is allowed in certain areas of Tarium Niryutait MPA (Northwest Territories) and the proposed Laurentian Channel MPA (Newfoundland and Labrador); • E.g. bottom trawl fishing is permitted in the Basin Head (Prince Edward Island), Gilbert Bay (Labrador) and Tarium Niryutait MPAs	"No persons shall explore for or exploit hydrocarbons, minerals, aggregates or any other inorganic matter within a marine conservation area." [4]	3 (1) Subject to subsection (2), no person shall, in any wildlife area, (a) hunt or fish, ... (d) damage, destroy or remove a plant, (e) carry on any agricultural activity, graze livestock or harvest any natural or cultivated crop, (k) carry on any commercial or industrial activity, (l) disturb or remove any soil, sand, gravel or other material, or (m) dump or deposit any rubbish, waste material or substance that would degrade or alter the quality of the environment,... unless he does so under and in accordance with a permit issued by the Minister." [5] The Minister will review proposed activities on a case-by-case basis. A permit may be issued only if the Minister is of the opinion that the proposed activities: 1. will benefit wildlife and their habitat, 2. are not inconsistent with the purpose for which the protected area was established, and 3. are consistent with the most recent management plan for the protected area.	National Parks Policy[6] 3.1 Ecosystem Protection 3.1.1 National park ecosystems will be given the highest degree of protection to ensure the perpetuation of natural environments essentially unaltered by human activity. 3.1.2 Human activities within a national park that threaten the integrity of park ecosystems will not be permitted. Where ecosystem integrity is threatened by human activities outside the park, Parks Canada will initiate collaborative action with adjacent land management agencies or owners to try to eliminate or reduce the threat. 3.1.4 Sport hunting will not be permitted in a national park. Sport fishing may be permitted in a national park but will be restricted to designated areas.

[1] WCC-2016-Rec-102-EN Protected areas and other areas important for biodiversity in relation to environmentally damaging industrial activities and infrastructure development. And see IUCN WCPA, 2018. Applying IUCN's Global Conservation Standards to Marine Protected Areas (MPA). Delivering effective conservation action through MPAs, to secure ocean health & sustainable development. Version 1.0. Gland, Switzerland. Under the heading "Effective Management" the IUCN says the MPA:

- overall, has activities and uses that are compatible with and support conservation goals and objectives;
- has extractive activities (where these occur) that have low ecological impact, are compatible with the MPA objective(s), with the IUCN definition and categories, and that are well managed as part of an integrated approach.
- does not have any environmentally damaging industrial activities or infrastructural developments located in or otherwise negatively affecting it, with the associated adverse ecological impacts and effects.

regulates fisheries activities (where these occur) that are low impact, assessed and managed to the highest standards, and that do not impact the ecological integrity of the area, species levels and trophic structure. Any fishing gear used should be demonstrated to not significantly impact other species or other ecological values.

[2] Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated Under the Canada Wildlife Act and Migratory Birds Convention Act, 1994. December 2011.

[3] Barbara J Lausche & Françoise Burhenne-Guilmin, "Guidelines for protected areas legislation No. 81," (Gland: IUCN, 2011) at para 218 [emphasis added].

[4] National Marine Conservation Areas Act, SC 2002, c 18, s 13.

[5] Wildlife Area Regulations, CRC, c 1609

[6] Parks Canada Guiding Principles and Operational Policies. Part II - Activity Policies: National Parks Policy. http://www.pc.gc.ca/eng/docs/pc/poli/princip/sec2/part2a/part2a5.aspx

TABLE 2. COMPARISON OF CANADA'S MARINE PROTECTED AREA LAWS REQUIREMENTS FOR NO-TAKE AREAS IN MPAS

IUCN Guidance	Oceans Act	Canada National Marine Conservation Areas Act	Canada Wildlife Act	Canada National Parks Act
"All activities that are allowed to take place within a protected area must be compatible with its stated conservation management objectives regardless of the IUCN category. If categories are assigned according to the management objective of an MPA, the issue of whether it is no-take should not be a priority during the assignment process, as strict regulation of exploitation is a management action that then must follow on from this particular objective."[1]	No requirements for no-take areas. Individual MPAs may have, but do not have to have, no-take zones set out by regulation.[2]	Requires at least one zone within the protected area designated as a no-take zone.	Wildlife areas are generally entirely no-take areas.	Allows for the designation of Wilderness Areas within National Parks
Fishing: "Since commercial and recreational fishing always has some level of ecological impact, these activities are considered inconsistent with the objectives of MPAs in categories Ia, Ib and II, and III. However, use of MPAs in categories Ib and II by indigenous people for traditional spiritual and cultural values and for sustainable resource use, if carried out in accordance with cultural traditions may be acceptable if subject to a formal agreement guiding these activities. Recreational fishing is usually considered inappropriate in categories Ia and Ib and II MPAs."[1] Mining and oil and gas extraction: "In accordance with IUCN policy on mining in protected areas, these activities should not be permitted in category I to IV MPAs."		4(4) Each marine conservation area shall be divided into zones, which must include at least one zone that fosters and encourages ecologically sustainable use of marine resources and at least one zone that fully protects special features or sensitive elements of ecosystems, and may include other types of zones. No-take zones vary between NMCAs. For example, the Gwaii Haanas NMCA Interim Management Plan in 2010 designated 3% of the marine area as 'no-take', a percentage proposed to increase to 40%, with the draft Land-Sea-People Plan, now out for public consultation. Still, protection for the marine environment in this protected area varies considerably compared to the 97% full protection afforded the terrestrial area.	General prohibition (unless permitted) of many activities in all National Wildlife Areas (NWAs and marine NWAs) in regulations, including: 3 (1) Subject to subsection (2), no person shall, in any wildlife area, (a) hunt or fish,	14 (1) The Governor in Council may, by regulation, declare any area of a park that exists in a natural state or that is capable of returning to a natural state to be a wilderness area. (2) The Minister may not authorize any activity to be carried on in a wilderness area that is likely to impair the wilderness character of the area. (3) Notwithstanding subsection (2) but subject to any conditions that the Minister considers necessary, the Minister may authorize activities to be carried on in a wilderness area for purposes of (a) park administration; (b) public safety; (c) the provision of basic user facilities including trails and rudimentary campsites; (d) the carrying on of activities in accordance with regulations made under section 17; or (e) access by air to remote parts of the wilderness area.

[1] Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas, at pg.28.
[2] National Marine Conservation Areas Act, SC 2002, c 18.

TABLE 3. COMPARISON OF ECOLOGICAL INTEGRITY IN CANADA'S MARINE PROTECTED AREA LAWS

IUCN Guidance	Oceans Act	Canada National Marine Conservation Areas Act	Canada Wildlife Act	Canada National Parks Act
One of the objectives of IUCN Protected Area Category II is to maintain viable and ecologically functional populations and assemblages of native species at densities sufficient to conserve ecosystem integrity and resilience in the long term. Additional guidance from the CBD in Aichi Target 10: Vulnerable ecosystems: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.[1] Parties to the CBD adopted the updated and elaborated Programme of Work on Marine and Coastal Biological Diversity. This Programme of Work continued the call for "integrated networks of marine and coastal protected areas" and adopted the 2012 target for building marine and coastal protected area networks comprised of representative areas where extractive uses might be allowed as long as managed for sustainable use, and other representative areas where extractive uses would be excluded "to enable the integrity, structure and functioning of ecosystems to be maintained or recovered".[2]	Bill C-55, *An Act to amend the Oceans Act and the Canada Petroleum Resources Act*, adds a new purpose for which MPAs can be designated: *S.35 (1)(f) The conservation and protection of marine areas for the purpose of maintaining ecological integrity.*[3] Bill C-55 also adds a definition at Section 35 subsection (1): *(1.1) For the purpose of paragraph (1)(f), ecological integrity means a condition in which:* *(a) the structure, composition and function of ecosystems are undisturbed by any human activity;* *(b) natural ecological processes are intact and self-sustaining;* *(c) ecosystems evolve naturally; and* *(d) an ecosystem's capacity for self-renewal and its biodiversity are maintained.*[3]	*4 (3) Marine conservation areas shall be managed and used in a sustainable manner that meets the needs of present and future generations without compromising the structure and function of the ecosystems, including the submerged lands and water column, with which they are associated.*[4]	No requirement	Requires the maintenance or restoration of ecological integrity as a first priority for all aspects of parks management: *s8(2) Maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks.* *s4(1) The national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment, subject to this Act and the regulations, and the parks shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations.*[5]

[1] CBD. Quick guide to the Aichi Biodiversity Targets: Target 10 Pressures on vulnerable ecosystems reduced. https://www.cbd.int/doc/strategic-plan/targets/T10-quick-guide-en.pdf
[2] Operational objective 3.1. from Part III, Chapter 2: Special issues for marine protected areas, pg 247-8 IUCN Guide to Protected Areas Legislation, citing UNEP/CBD/COP/DEC/VII/5 Page 4
[3] Bill C-55, An Act to amend the Oceans Act and the Canada Petroleum Resources Act https://www.ourcommons.ca/Committees/en/FOPO/StudyActivity?studyActivityId=9716604
[4] Canada National Marine Conservation Areas Act (S.C. 2002, C. 18) http://laws-lois.justice.gc.ca/eng/acts/C-7.3/
[5] Canada National Parks Act (S.C. 2000, c. 32) http://laws-lois.justice.gc.ca/eng/acts/N-14.01/

TABLE 4. RECOMMENDED PROHIBITIONS FOR CANADA'S MPA LAWS

Prohibited Activity in MPAs	Legal examples from other Countries	Legal examples from Canada
No oil and gas in MPAs **Prohibitions on offshore oil and gas activity in designated areas or entire offshore area**	**Mexico** Banned oil and gas exploration and extraction activities within all MPAs.[1] **United States** Many National Marine Sanctuaries designated under the *National Marine Sanctuaries Act* prohibit oil and gas extraction.[2] **Belize** Banned oil and gas activities from its oceans entirely in 2017.[3] **New Zealand** Introduced a ban on granting new offshore oil and gas exploration permits in April 2018.[4]	The *National Marine Conservation Areas Act* prohibits exploiting hydrocarbons, minerals, aggregates or any other inorganic matter within a marine conservation area.[5] **Pacific** A federal moratorium in place since 1972 and a provincial moratorium since 1989.[6] **Arctic** Federal ban on offshore oil and gas activity, reviewable every 5 years.[7] **Atlantic** **Gully Marine Protected Area** The Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) has not allowed petroleum activities in the Gully MPA since 1998 when it was first identified.[8] **Georges Bank** A jointly declared federal-provincial moratorium in a valuable marine ecosystem and a productive fishing ground, the current agreement expires in 2022.[9]

Undersea mining	**Australia** *Great Barrier Reef Marine Park Act* 1975 specifically prohibits all mining within the boundaries of the Great Barrier Reef Region.	*National Marine Conservation Areas Act* prohibits exploiting hydrocarbons, minerals, aggregates or any other inorganic matter within a marine conservation area.[10]
No wind or tidal power plants in MPA	**Spain** Royal Decree 1028/2007 provides that developers can only apply for a license to investigate wind resource outside of "exclusion zones' established by the Strategic Environmental Assessment of the Spanish Coast for the Installation of Offshore Wind Farms, which are areas where offshore wind farms would have significant environmental effects[11] and which include areas that are part of the Natura 2000 network: Sites of Community Importance (SCI), Special Areas of Conservation (SAC), and Special Protection Areas for Birds (SPAs).[12]	No known example.
No commercial fishing in MPA	**United States** Regulations for the Papahanaumokuakea Marine National Monument were amended by Proclamation in 2006 to phase out all commercial fishing by 2010. Non-commercial fishing, such as recreational fishing and the removal of fish and other resources for native Hawaiian cultural practices, is allowed by permit, as is scientific research.[13]	No known example of complete closure of an entire MPA to all commercial fishing. **Hecate Strait Glass Sponge Reefs MPA** The Core Protection Zones are closed to all commercial, recreational, and Aboriginal fishing.[14]

No bottom trawl fishing in MPA	**United Kingdom** The South Arran Marine Conservation Order 2015 details prohibitions on trawl fishing gears within protected areas.[15] The Inner Dowsing, Race Bank and North Ridge European Marine Site (Specified Areas) Bottom Towed Fishing Gear Bylaw (UK) 2013 (s2). South-East Commonwealth Marine Reserves Network Management Plan 2013–23 (Cth), s 5.5.4 **European Union** Fishing bans apply to a marine protected area in Swedish waters and to Danish Natura 2000 sites of the Baltic Sea. The protection measures prohibit fishing with bottom trawling gears or - in some cases – any kind of fishing. *(8) The recommended measures comprise the prohibition of fishing activities with mobile bottom contacting gear in reef zones (under habitat type 1170) and the surrounding buffer zones.* *(9) Bottom fishing activity with mobile bottom contacting gear has a negative impact on reef habitats, as such activity affects both the reef structures and the biodiversity found at the reefs. Therefore the prohibition to fish with such gears in the relevant Danish reef areas, as set out in the joint recommendation, should be included in Delegated Regulation (EU) 2017/117.*[16] **United States** Georges Bank trawl ban zones implemented with accompanying fishery regulations including reduced effort, trip limits and increased minimum mesh size since 1994.[17] **New Zealand** Under the MPA Protection Standard, Type 2 protected areas are established outside of the Marine Reserves Act but provide enough protection from adverse effects of fishing to meet the MPA Protection Standard, including bans on commercial fishing gears such as trawls.[18]	**St. Anns Bank MPA** Regulations exclude trawling by omitting it as a permitted activity: ***5*** *The following activities may be carried out in the Marine Protected Area if they are carried out in accordance with the provisions of the Fisheries Act, the Coastal Fisheries Protection Act and their regulations:* ***(a)*** *fishing, other than commercial fishing, that is authorized under the Aboriginal Communal Fishing Licences Regulations;* ***(b)*** *fishing for seals and any related activity that is authorized under the Marine Mammal Regulations or the Aboriginal Communal Fishing Licences Regulations;* ***(c)*** *in Zone 2, commercial or recreational fishing by means of a pot, trap, rod and reel, harpoon, bottom longline, handline, gill net or by diving;* ***(d)*** *in Zones 3 and 4, commercial or recreational fishing by means of a pot, trap, rod and reel, harpoon, bottom longline or handline.*[20]

	South Georgia and South Sandwich Islands Prohibition of all bottom trawling and a ban on bottom fishing at depths less than 700 m. No-take zones (IUCN Category 1) were created around South Georgia, Clerke Rocks,Shag and Black Rocks and the South Sandwich Islands, totalling 20,431 km2.[19]	
No open net-pen aquaculture in MPA	**United States** Aquaculture facilities are prohibited in Gulf Exclusive Economic Zone marine protected areas, marine reserves, habitat areas of particular concern (HAPCs), Special Management Zones, permitted artificial reef areas, and coral areas, and all facilities must be built to withstand hurricanes.[21]	No known example.
No anchoring in MPA	**Bonaire** It is prohibited to anchor in the Marine Park, except where specific island resolutions permit anchoring in certain areas.[22]	**Hecate Strait Glass Sponge Reefs MPA** Anchoring and cable installation, maintenance, and repair are prohibited in the Core Protection Zones.[23]

[Table 4]

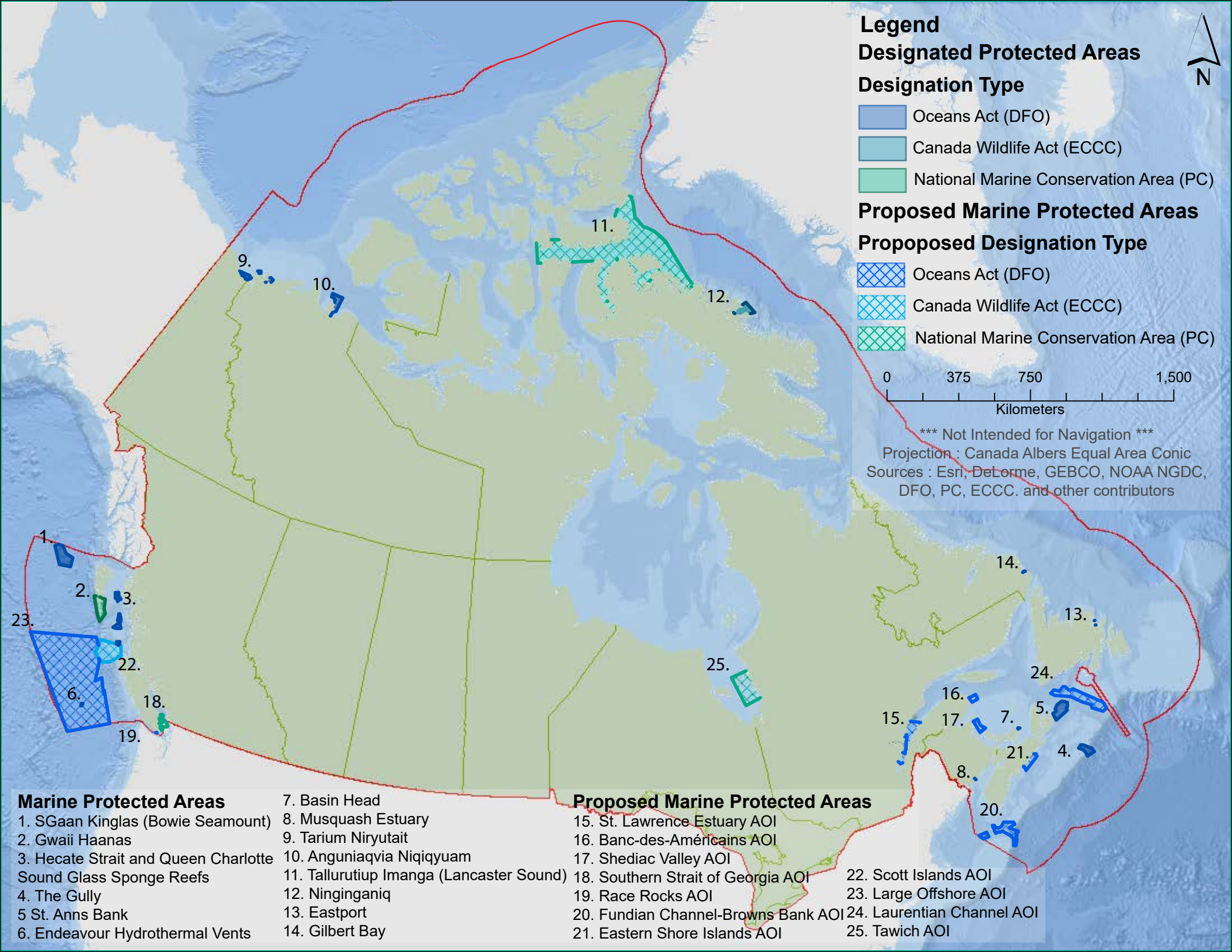
No shipping in MPA	The International Maritime Organization (IMO) can impose mandatory Areas to be Avoided (ATBA) to protect MPAs and other areas from the negative impact of international shipping. **New Zealand** New Zealand has mandatory ATBAs around the Three Kings Islands Nature Reserve and Poor Knights Islands Marine Reserve prohibiting ships in transit from entering the areas. In the case of the Poor Knights Islands, the restriction applies to every ship of more than 45 metres in length, except for fishing vessels and barges under tow (so long as their cargo does not include oil or other harmful liquid substances). The restrictions around the Three Kings Islands apply to all ships of 500 gross tonnes or more. **United States** The Olympic National Marine Sanctuary has an ATBA **Italy** The Miramare Marine Protected Area has an ATBA.[24]	**Gully MPA** No regulatory restrictions in place. However, the Notice to Mariners provides that: "Vessels should avoid passage through this area if possible. Avoidance is the most effective means to eliminate or reduce acoustic disturbances and vessel collisions."[25]
No personal watercraft in MPA	**United States** Monterey Bay National Marine Sanctuary regulations limited the operation of motorized personalized watercraft (defined to include jet skis, wet bikes, surf jets, miniature speed boats, air boats, and hovercraft) to four designated zones and access routes. A court found that the National Oceanographic and Atmospheric Administration (NOAA) did not act arbitrarily by restricting motorized watercraft without also regulating other types of vessels in Monterey Bay National Marine Sanctuary.[26]	**Saguenay-St. Lawrence Marine Park** *14.4 It is prohibited, in the park,* *(a) to use a personal watercraft, as defined in subsection 1(1) of the Small Vessel Regulations;* *(b) to use an air cushion vehicle;* *(c) to conduct a water sport activity using a vessel or any other motorized system as a method of traction; or* *(d) to offer any commercial services related to hunting migratory birds.*[27]

[1] Ley de Hidrocarburos, 2014. DOF 11-08-2014, Articulo 4, 41, 42.
[2] National Marine Sanctuary Program Regulations. §922.61 Prohibited or otherwise regulated activities.
https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=c5dc3424ae799143c42a14559dafc551&mc=true&r=PART&n=pt15.3.922#se15.3.922_161
National Marine Sanctuaries Foundation. 2018. Administration's offshore energy proposal could open National Marine Sanctuaries. https://marinesanctuary.org/news/offshore-energy/
[3] Government of Belize, Petroleum Operations (Maritime Zone Moratorium) Act, 2017.
[4] New Zealand Government. 2018. Planning for the future – no new offshore oil and gas exploration permits. https://www.beehive.govt.nz/release/planning-future-no-new-offshore-oil-and-gas-exploration-permits
[5] National Marine Conservation Areas Act at S. 13
[6] Government of British Columbia. Offshore Oil & Gas in BC: A Chronology of Activity.
http://www.empr.gov.bc.ca/Mining/Geoscience/MapPlace/thematicmaps/OffshoreMapGallery/Pages/chronologyofactivity.aspx
[7] CBC News. Trudeau announces review of Arctic strategy, joint drilling ban with US. December 2016. http://www.cbc.ca/news/politics/trudeau-obama-arctic-1.3905933
[8] https://www.cnsopb.ns.ca/environment/marine-protected-area
[9] CBC, 2015 <http://www.cbc.ca/news/canada/nova-scotia/georges-bank-moratorium-extended-1.3338283>
[10] National Marine Conservation Areas Act at S. 13
[11] Royal Decree 1028/2007 of 20 July, Which Establishes the Administrative Procedure for the Processing of Applications for Authorization of Electricity Generation Facilities in the Territorial Sea. BOE-A-2007-14657. Available online: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2007-14657
[12] Salvador, Santiago, Luis Gimeno, and F. Javier Sanz Larruga. "The influence of regulatory framework on environmental impact assessment in the development of offshore wind farms in Spain: Issues, challenges and solutions." *Ocean & Coastal Management* 161 (2018): 165-176.
[13] Monument Management Plan. Appendix C: Presidential Proclamations 8031 and 8112.
https://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_1/Midway_Atoll/Documents/Volume%20III%20App%20C.pdf
Proclamation 8031 is amended to read, "Establishment of the Papahanaumokuakea Marine National Monument Federal Register / Vol. 71, No. 122 / Monday, June 26, 2006 / Commercial Fishing 1. The Secretaries shall ensure that any commercial lobster fishing permit shall be subject to a zero annual harvest limit. 2. Fishing for bottomfish and pelagic species. The Secretaries shall ensure that: (a) Commercial fishing for bottomfish and associated pelagic species may continue within the monument for not longer than 5 years from the date of this proclamation provided that: (i) The fishing is conducted in accordance with a valid commercial bottomfish permit issued by NOAA; and (ii) Such permit is in effect on the date of this proclamation and is subsequently renewed pursuant to NOAA regulations at 50 CFR part 660 subpart E as necessary. (b) Total landings for each fishing year may not exceed the following amounts: (i) 350,000 pounds for bottomfish species; and (ii) 180,000 pounds for pelagic species. (c) Commercial fishing for bottomfish and associated pelagic species is prohibited in the monument after 5 years from the date of this proclamation.
[14] Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas Regulations, SOR 2017-15. S. 6 Prohibited Activities.
[15] The South Arran Marine Conservation Order 2015 No. 437, at Section 4.
[16] North Sea: Commission Delegated Regulation (EU) 2017/1181 of 2 March 2017 amending Delegated Regulation (EU) 2017/117 establishing fisheries conservation measures for the protection of the marine environment in the Baltic Sea and repealing Delegated Regulation (EU) 2015/1778; Commission Delegated Regulation (EU) 2017/117 of 5 September 2016 establishing fisheries conservation measures for the protection of the marine environment in the Baltic Sea and repealing Delegated Regulation (EU) 2015/1778
Baltic Sea: Commission Delegated Regulation (EU) 2017/1180 of 24 February 2017 amending Delegated Regulation (EU) 2017/118 establishing fisheries conservation measures for the protection of the marine environment in the North Sea: Commission Delegated Regulation (EU) 2017/118 of 5 September 2016 establishing fisheries conservation measures for the protection of the marine environment in the North Sea. Reported here: The EU adopts new conservation measures for the protection of the marine environment 06/09/2016, https://ec.europa.eu/fisheries/eu-adopts-new-conservation-measures-protection-marine-environment_en
[17] Murawski et al. 2000. Large-scale closed areas as a fishery-management tool in temperate marine systems: The Georges Bank Experience. Bulletin of Marine Science, 66(3): 775-798.
[18] New Zealand Department of Conservation. Type 2 Marine Protected Areas. https://www.doc.govt.nz/nature/habitats/marine/type-2-marine-protected-areas/
[19] SGSSI Marine Protected Areas Order 2012 https://www.gov.gs/docsarchive/Legislation/SGSSI%20Marine%20Protected%20Areas%20Order%202012.pdf
[20] St. Anns Bank Marine Protected Area Regulations (SOR/2017-106)
[21] National Oceanic & Atmospheric Administration, Dept. of Commerce, Fisheries of the Caribbean, Gulf, and South Atlantic; Aquaculture, 81 Fed. Reg. 1762 at 1765 (Jan. 13, 2016), codified at 50 C.F.R. §§ 622.100- 622.109 (2017)
[22] Bonaire Marine Environment Ordinance (A.B 1991 Nr.8), Article 6 1.
[23] Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas Regulations, SOR 2017-15. S. 6 Prohibited Activities.
[24] Italian Coast Guard Trieste VTS. Users Handbook January 2018. http://www.guardiacostiera.gov.it/mezzi-e-tecnologie/Documents/manualiVTS/ManualeUtenteVTSTriesteinglese.pdf
[25] NOTICES TO MARINERS 1 TO 46 ANNUAL EDITION 2018 SECTION A – AIDS TO NAVIGATION AND MARINE SAFETY Fisheries and Oceans Canada Official Publication of the Canadian Coast Guard DFO/2018-2001 A2 – Notice 5A - Page 1 5A General Regulatory Requirements for all Oceans Act Marine Protected Areashttps://www.notmar.gc.ca/publications/annual-annuel/section-a/a5a-en.pdf
[26] Personal Watercraft Indus. Ass'n v. Dep't of Commerce, 48 F.3d 540, 542, 25 ELR 20681 (D.C. Cir. 1995).
[27] Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations (SOR/2002-76)

TABLE 5. COMPLETE NO-TAKE MARINE PROTECTED AREAS

Country	Details of Protected Area
United States	The US has "395,000 sq km of fully protected no-take reserves – about 3 % of U.S. waters"[1] through a variety of legal mechanisms The following protection apply to the Papahānaumokuākea Marine National Monument (partial list):[2] • All commercial fishing eliminated in 2010 • All extractive activities restricted • Access only by permit or notification • No mining, drilling or exploring for oil or gas • No anchoring on coral.
Pitcairn Islands	**Pitcairn Islands Marine Protected Area** *8. Subject to section 9, no person may undertake any of the following activities in the Pitcairn Islands Marine Protected Area:* *(a) fishing* *(b) any mining activity;* *(c) the disturbance of, or the removal of non-living natural material from, the seabed or subsoil;* *(d) the dumping of waste or other matter (including from vessels or structures);* *(e) the causing of vibrations (other than vibrations caused by the propulsion of a ship) in a manner that is likely to have an adverse effect on marine life;* *(f) any other activity specified as a prohibited activity under any Marine Conservation Regulations.*[3]
Palau	Palau National Marine Sanctuary Act provides that: • 80% of Palau's EEZ is a no-take area protected from all exploitation • Domestic fishing limited to 20% of Palau's EEZ and • The commercial export of fish from Palau with limited exceptions will be prohibited.[4]

[1] Our Ocean Conference. 2016. http://ourocean2016.org/marine-protected-areas/
[2] Papahanaumokuakea National Marine Monument Protective Designations. https://www.papahanaumokuakea.gov/wheritage/measures.html
[3] Pitcairn Islands Marine Protected Area Ordinance 2016. http://www.government.pn/Laws/Cap%2048%20-%20Pitcairn%20Islands%20Marine%20Protected%20Area%202017%20Rev%20Ed.pdf
[4] Republic of Palau, Office of the President. Senate Bill 9-30, SD2, HD3 - Palau National Marine Sanctuary Act http://palaugov.pw/wp-content/uploads/2015/10/RPPL-No.-9-49-Palau-National-Marine-Sanctuary-Act.pdf



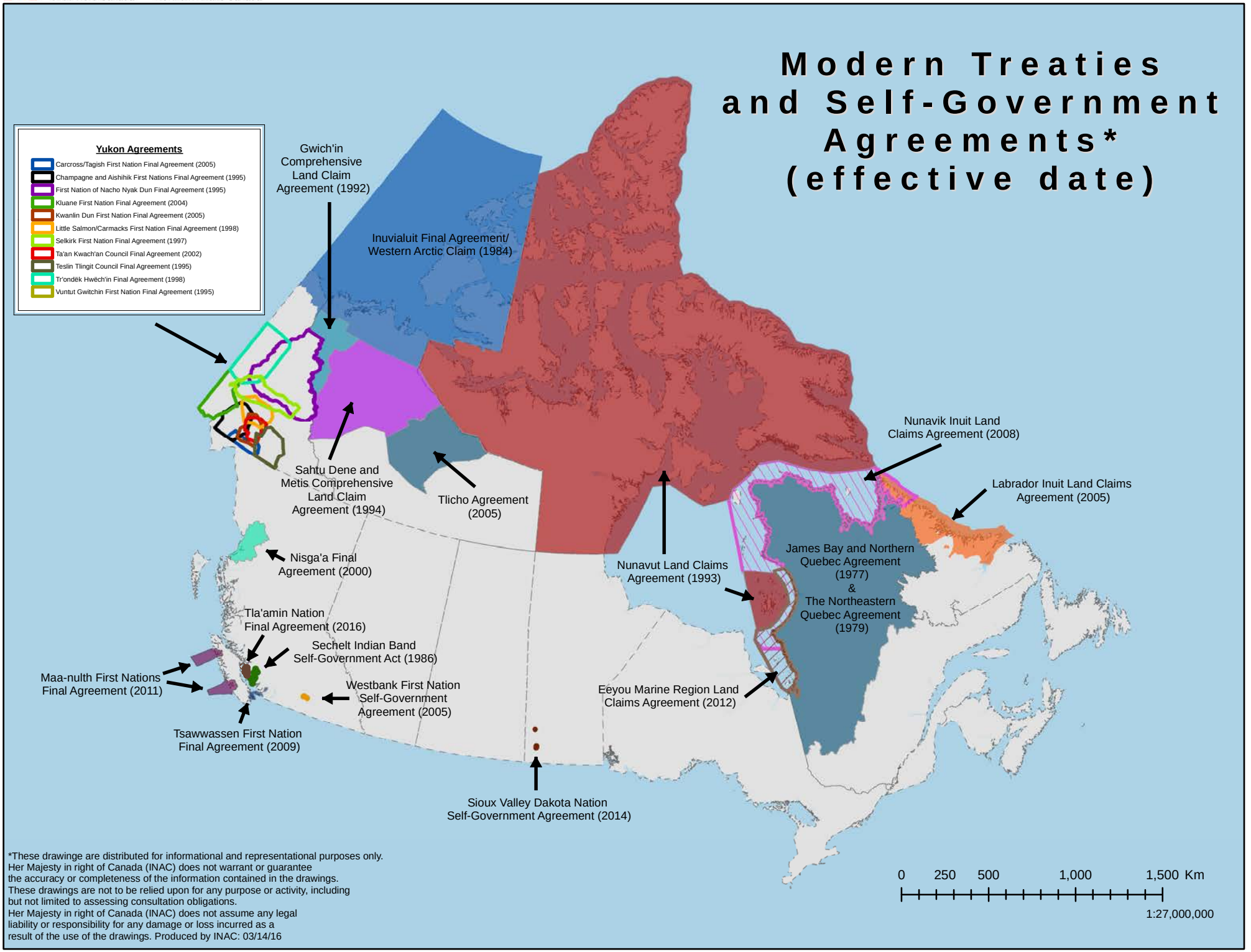
Marine Protected Areas

1. SGaan Kinglas (Bowie Seamount)
2. Gwaii Haanas
3. Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs
4. The Gully
5 St. Anns Bank
6. Endeavour Hydrothermal Vents
7. Basin Head
8. Musquash Estuary
9. Tarium Niryutait
10. Anguniaqvia Niqiqyuam
11. Tallurutiup Imanga (Lancaster Sound)
12. Ninginganiq
13. Eastport
14. Gilbert Bay

Proposed Marine Protected Areas

15. St. Lawrence Estuary AOI
16. Banc-des-Américains AOI
17. Shediac Valley AOI
18. Southern Strait of Georgia AOI
19. Race Rocks AOI
20. Fundian Channel-Browns Bank AOI
21. Eastern Shore Islands AOI
22. Scott Islands AOI
23. Large Offshore AOI
24. Laurentian Channel AOI
25. Tawich AOI

Modern Treaties and Self-Government Agreements* (effective date)



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Oil and Marine Protection Don't Mix: Inconsistent Regulation Across Canada

WEST COAST Environmental Law

1 Tallurutiup Imanga / Lancaster Sound

Proposed National Marine Conservation Area

In 2016, Shell Canada relinquished 30 offshore exploration permits (860,000 ha) , allowing for expansion of proposed NMCA boundaries.[5]

2 Laurentian Channel

Proposed Marine Protected Area

Regulations proposed in 2017 would allow oil and gas drilling in 88% of the MPA.[6]

3 The Gully

Designated Marine Protected Area

The Canada-Nova Scotia Offshore Petroleum Board has maintained a moratorium on activities within the Gully since 1998.[7]

4 Northeastern Newfoundland Slope

Designated Marine Refuge

In 2018, the Canada-Newfoundland and Labrador Offshore Petroleum Board put out a call for oil and gas exploration licences, permitting activity in 35% of the marine refuge area.[8]

5 Georges Bank

A jointly declared federal-provincial moratorium, in place since 1988 to protect this productive fishing area, has been extended until at least 2022.[9]

Bill C-55 - An Act to amend the *Oceans Act* and the *Canada Petroleum Resources Act*

Proposed amendments to the *Canada Petroleum Resources Act* (CPRA) will allow the government to

- Issue an order to prohibit oil and gas activities within *Oceans Act* MPAs,
- Cancel oil and gas interests within certain Arctic areas

Gaps remain:

Amendments do not automatically protect any MPAs from oil and gas development. The amendments will not protect MPAs in Nova Scotia and Newfoundland & Labrador from oil and gas development at all, or prevent environmentally harmful seismic testing anywhere in Canada.

[1] Map data retrieved from NRCan Grid Areas of the Canada Oil and Gas Land Regulations <https://open.canada.ca/data/en/dataset/87ef7c55-23f1-4912-8dde-4941cf99148b> [2] BC Government <http://www.empr.gov.bc.ca/Mining/Geoscience/MapPlace/thematicmaps/OffshoreMapGallery/Pages/chronologyofactivity.aspx> [3] Government of Canada, 2016 <https://pm.gc.ca/eng/news/2016/12/20/united-states-canada-joint-arctic-leaders-statement> [4] C-NLOPB <http://www.cnlopb.ca/>; CNSOPB <https://www.cnsopb.ns.ca/> [5] CBC, 2016 <http://www.cbc.ca/news/canada/north/shell-lancaster-sound-permits-1.3620681> [6] Hakai Magazine, 2017 <https://www.hakaimagazine.com/news/canadas-new-marine-less-protected-it-could-have-been-area/> [7] CNSOPB <https://www.cnsopb.ns.ca/environment/marine-protected-area> [8] CBC, 2018 <http://www.cbc.ca/news/canada/nova-scotia/marine-protected-areas-offshore-exploration-oil-gas-1.4647484> [9] CBC, 2015 <http://www.cbc.ca/news/canada/nova-scotia/georges-bank-moratorium-extended-1.3338283>

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Securing protection standards for Canada's marine protected areas

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ABSTRACT

In 2015, the Government of Canada committed to protecting 5% of marine and coastal areas by 2017, and 10% by 2020. While admirable progress towards this target has been made, less attention has been given to improving the quality of protection afforded to marine areas. Extensive scientific study supports that several factors are critical to the success of Marine Protected Areas (MPAs) for marine biodiversity conservation and management objectives, including no-take areas and prohibitions on extractive and industrial activities. However, the majority of Canada's MPAs allow extractive uses within their boundaries. As Canada works toward international and national commitments to marine protection targets, it is critical to consider the degree of protection afforded by the legal designations used to create these areas. This paper reviews the current inconsistent standards of protection across marine protected areas (MPAs) designated under the *Oceans Act*, Canada's flagship legislation for marine protection. Recommended amendments to the law include standards of protection that would exclude all extractive industrial activities from MPAs in order to better guide the designation and decision-making processes for marine protection.

1. Introduction

Marine protected areas (MPAs) are a powerful tool for the conservation and management of marine biodiversity [1]. MPAs can conserve biodiversity, improve fisheries, mitigate climate change, reduce disaster risk, and restore ecosystems, among other benefits [2]. Based on the evidence of these benefits, the Conference of the Parties to the *Convention on Biological Diversity* (CBD) established marine conservation targets in 2011 aimed at protecting ten percent of state marine and coastal waters. In 2015, Canada's federal government made a public commitment to reach the CBD's Aichi Target 11 by protecting 5% of Canada's marine and coastal areas by 2017, and 10% by 2020 [3]. The Canadian federal government has made great progress in achieving this quantity target for MPAs over the past two years. This article examines how a uniform legal prohibition against damaging human activities in MPAs through amended federal marine laws would more effectively protect marine biodiversity in Canada by focusing on both quantity *and* quality of protection.

For MPAs to provide the benefits listed above, they require effective protection from human influence [4]. Currently, the levels of protection afforded to MPAs varies greatly, from full protection, often no-take or even no-entry areas, to strong protection, where all commercial activity is prohibited but some recreational and subsistence fishing is allowed, and finally to light or partial protection, which may include certain prohibitions, but permit significant extractive activities [5].

The effectiveness of implementing full protection to MPAs is well-established. Though several factors may influence the trajectory and speed at which protection benefits accrue [6,7],[1] fully-protected, and well-enforced areas have been shown to achieve significant ecological gains, including increased biomass, abundance and species biodiversity than unprotected areas [8 10]. Fully protected MPAs have also been shown to provide support to coastal communities and local fisheries, by improving fish populations, creating new jobs, and supporting ecotourism [11].

Despite the clear benefits of designating strongly protected MPAs, only a fraction of the oceans globally receive such protection. The World Database on Protected Areas quantifies global coverage of MPAs at 7.26% from government reports. However, a recent initiative of the MPAtlas found that, as of February 2018, 3.7% of the world's oceans are strongly protected,[2] only 2% of which are protected as no-take marine reserves [11]. The reason for this discrepancy appears to arise from the stricter standards used by the MPAtlas analysis. MPAtlas excludes the following: MPAs that are proposed but not yet designated; MPAs that are designated but whose management measures are not yet implemented; MPAs that allow damaging activities such as certain

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times of fishing and oil and gas development; and temporary spatial protections such as fisheries closures.[3] This discrepancy between reports of global protection highlights the gap between conservation goals and implementation of meaningful protection measures.

Similar inconsistencies between conservation objectives and actual protection exist for MPAs in Canada. Canada's legal regime for marine protection lacks consistent binding standards to protect MPAs from harmful human activities. The vast majority of Canada's MPAs allow extractive uses within their boundaries, including oil and gas and fishing activities [12 14].

One way to establish strong protections within all of Canada's MPAs is to create and enforce a baseline prohibition on all industrial activities within MPAs. We refer to this baseline as protection standards. While some activities may be found, with scientific study, to be consistent with ecosystem protection goals for an MPA, there are a number of industrial and commercial human activities which are known to consistently negatively impact and pose serious risks to marine ecological integrity, including commercial bottom trawl fishing, and oil and gas exploration and development. Consistent with the best available science on this issue, prohibitions on extractive activities should be included within MPA legislation as protection standards, thus creating a baseline for protection across all MPAs.

2. Inconsistent protections in Canada's MPAs

Canada's flagship legal tool for creating federal MPAs is the *Oceans Act*, administered by Fisheries and Oceans Canada (DFO).[4] DFO has designated eleven MPAs under the *Act* since its introduction in 1997 (Table 1). However, the *Oceans Act* has been referred to as skeletal because it lacks specific statutory requirements for selecting new MPAs and for determining appropriate restrictions within a protected area [15]. This is problematic because, by itself, designation of an MPA does not prohibit specific activities within the boundaries of the area.

Instead, the level of protection varies and is laid out in each MPA's specific regulation. There are common features in all of these regulations: each defines the geographical boundaries of the MPA and prohibits activities which disturb, damage or destroy living marine organisms, any habitat, and the seabed. Each regulation then lists exceptions for activities that would otherwise be prohibited, such as fishing. Exceptions are determined at the Minister's discretion on a case-by-case basis. Common exceptions include commercial fishing and recreational fishing, if they are carried out in accordance with relevant federal legislation.

This process of determining prohibited and allowable activities in an MPA on a site-by-site basis has failed to provide a baseline level of protection across Canadian MPAs [16]. In theory, by allowing regulatory prohibitions to be created for each individual MPA, the *Oceans Act* allows for the creation of unique regulatory regimes to match the specific conservation objectives of each area. In practice, however, the current process entails lengthy negotiations with representatives from extractive industries and other stakeholders. This can result in DFO granting weaker protection by allowing extractive industrial activities within MPAs, and contributes to the time it takes to establish an MPA, which is on average 7 years [17]. The current designation process also creates uncertainty over the level of protection that will be provided in an MPA, which negatively affects all stakeholders, including coastal communities, First Nations, commercial fishermen, and the general public.

Table 1.
Canada's *Oceans Act* Marine Protected Areas (as of January 2018).

Marine Protected Area	Region Province/ Territory	Year Designated	Size (km^2)
Anguniaqvia niqiqyuam	Arctic - NWT	2016	2361
Basin Head	Atlantic - PEI	2005	9.23
Eastport	Atlantic - NL	2005	2.1
Endeavour Hydrothermal Vents	Pacific - BC	2003	98.5
Gilbert Bay	Atlantic - NL	2005	60
Gully	Atlantic - NS	2004	2364
Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs	Pacific - BC	2017	2410
Musquash Estuary	Atlantic - NB	2006	
Sgaan Kinghlas/ Bowie Seamount	Pacific - BC	2008	6000
St. Ann's Bank	Atlantic - NS	2017	4364
Tarium Niryutait	Arctic - NWT	2010	1800

3. Two examples of insufficient MPA standards

Two *Oceans Act* MPAs in Canada from the west and east coasts of the country, SGaan Kinghlas-Bowie Seamount and the proposed Laurentian Channel MPA, highlight the diverse and inconsistent protections that arise from the lack of statutory standards.

3.1. SGaan Kinghlas-Bowie Seamount

SGaan Kinghlas-Bowie Seamount is an MPA located in the Pacific Ocean, off the coast of British Columbia. In 1997, the Council of the Haida Nation designated the offshore seamount near Haida Gwaii known as SGaan Kinghlas as a Haida marine protected area. A year later, DFO followed suit by proposing to create an MPA around the seamount. SGaan Kinghlas-Bowie Seamount was officially designated as an MPA in 2008. Since 2007, the Council of the Haida Nation and Canada have worked together on a management board tasked with finalizing a management plan for SGaan Kinghlas by 2010. This management plan is still in progress and is now expected to be completed in 2018 [18].

The northern seamount sablefish trap-fishery, which uses weighted traps dropped onto the seafloor, was the only active commercial fishery within the boundaries of SGaan Kinghlas-Bowie Seamount at the time of designation. Following negotiations with the sablefish industry, DFO controversially allowed this activity to continue after MPA designation, and made it the subject of further scientific research [19].

In the years following the MPA's designation, scientific monitoring showed that the traps were damaging ecologically important sessile organisms (corals and sponges). As a result, in 2018 DFO and the Council of the Haida Nation jointly decided to close all bottom-contact fishing at SGaan Kinghlas-Bowie Seamount while the governments finalize the

[1] These factors include the size of the MPA, life histories of protected species, time since designation, historical level of exploitation prior to establishment, management and enforcement resources, and availability of monitoring resources etc.).

[2] In MPAtlas, strong protection includes no-take MPAs as well as large, isolated MPAs.

[3] For more information, see MPAtlas, Our Data, available online: http://www.mpatlas.org/about/data/.

[4] *Oceans Act*, SC 1996, c 31. Three different federal bodies can create MPAs in Canada. The *Oceans Act* gives authority to Fisheries and Oceans Canada (DFO) to designated marine areas as MPAs; the *Canada National Marine Conservation Areas Act* and the *Canada National Parks Act* gives Parks Canada responsibility for creating National Marine Conservation Areas and national parks, respectively; and the *Canada Wildlife Act* and the *Migratory Birds Sanctuary Act* allows the Environment and Climate Change Canada to protect habitat for a variety of wildlife, including migratory birds and species at risk. Provincial and Indigenous governments also have authority to create MPAs.

MPA's management plan, which is expected to include longer-term measures to protect seafloor habitat [20]. This closure shows an adaptive management approach, with protection standards that finally meet the MPA's conservation objectives. However, the fact that the commercial sablefish fishery was allowed to continue at all over the past decade points to a lack of precaution, and demonstrates the uncertainty in MPA negotiation processes that stems from the lack of protection standards in the legislation.

3.2. Laurentian Channel

The proposed Laurentian Channel MPA, an area in the Atlantic Ocean near Newfoundland and Labrador, further illustrates the problems created by the absence of statutory protection standards in the *Oceans Act*. Concessions made to the fishing and oil and gas industries during negotiations over the Laurentian Channel MPA's boundaries significantly reduced the conservation benefits of the proposed reserve [21].

Most notably, DFO adjusted the protection measures within the proposed MPA after representatives from the oil and gas industry raised concerns with respect to limitations on potential future activities [22]. Consultations with industry representatives also resulted in an allowance for seismic testing, an activity with known serious negative consequences for marine life [23], to occur within the proposed MPA at any time within an eight-month window of the year [22]. As a result, oil and gas exploration and drilling would be permitted within 88% of the proposed MPA. Important habitat areas for delicate soft coral will be off limits to drilling equipment, but directional drilling from just outside that inner boundary will still allow the oil and gas industry to extract fossil fuels from 98% of the MPA [24].

Furthermore, in response to concerns from the fishing industry, DFO renegotiated the boundaries of the MPA [22]. Commercial fishing will not be allowed within the MPA, but prime fishing areas originally included in the proposed area were removed from the MPA boundaries in the finalized plan.

3.3. Effects of insufficient MPA standards

The processes for the designation of the SGaan Kinghlas-Bowie Seamount MPA, and the (not yet finalized) Laurentian Channel MPA demonstrate how negotiations and discretionary decisions, made possible by the lack of statutory protection standards, scaled back the conservation benefits that each MPA was meant to achieve. This issue is not unique to these two MPAs, but is a feature of many *Oceans Act* MPAs. Taken together, the inconsistency of protections may result in Canadian MPAs failing to have the positive effects that the federal government and the Canadian public expects [25].

4. Calls for protection standards for MPAs

Recognition of the need for protection standards for MPAs has been growing. The IUCN has recently stated that [a]ny environmentally damaging industrial activities and infrastructural developments, with the associated ecological impacts and effects, are not compatible with MPAs [2]. These activities include large-scale extractive activities such as mining and industrial fishing, as well as the dumping of waste or toxic substances [26]. In 2016, the IUCN called on governments to prohibit environmentally damaging industrial activities and infrastructure development within all protected areas [27].

These international requirements can and should be adopted into Canadian law as protection standards for MPAs. In June 2017, fifteen Canadian scientists signed an open letter to the federal Ministers responsible for MPA designation, urging that Canada's *Oceans Act* be amended to include minimum protection levels for marine protected areas, similar to terrestrial parks, such that activities known to impact marine ecosystems are excluded [28]. Legislating protection standards would create a clearer and more prescriptive legal framework to guide MPA planning and management [29].

The Canadian government has indicated interest in establishing protection standards. In September 2017, the Canadian Minister of Fisheries and Oceans said in the House of Commons that the federal government intends to establish a floor of basic protections to apply to all MPAs [30]. To this end, the Minister has established a National Advisory Panel on Marine Protected Area Standards. Protection standards also received support from the House of Commons Standing Committee on Environment and Sustainable Development, which unanimously recommended that the government confirm minimum conservation standards of protection for each category of federal protected area to meet accepted international standards [31].

5. Recommended protection standards for MPAs

5.1. No-take zones

Recommendations for consistent protection standards from fishing activities include the designation of highly protected, no-take zones within MPAs where all large-scale habitat disturbances by industrial activity and commercial resource extraction are prohibited, including fishing activities [26,32]. The benefits of fully-protected areas, also known as marine reserves, have been shown to be significantly greater than in areas with only partial protection [8,33].

International area-based targets have been used as a tool to motivate action on marine protection. Many countries have committed to the current CBD target of protecting 10% of oceans and coasts by 2020. However, analyses of protection and spatial targets have resulted in recommendations that protection of at least 30% of the oceans is needed to achieve conservation goals [34]; in 2016 the IUCN World Conservation Congress passed a motion recognizing the need for protection goals exceeding the CBD target and recommending that by 2030 at least 30% of each marine habitat be designated in a network of highly protected MPAs with no extractive activities permitted [35].

Science-based guidelines for designing networks of MPAs (a collection of individual MPAs designed to interact, and act more effectively than individual MPA sites alone) also recommend that proportions of these networks be designated as no-take areas [36,37]. Recognition of insufficient protection for marine biodiversity resulted in significant increases in areas designated as no-take marine reserves in Australia's Great Barrier Reef Marine Park and in California's state-wide MPA network [38,39]. The successful increase in no-take zones for both the Great Barrier Reef and the California MPA network has been attributed in large part to extensive and early engagement of stakeholders and the public [32,38,40], highlighting the importance of building public support to implement strong protection standards.

5.2. Industrial fishing activity

Protection standards should include prohibitions on industrial fishing activity within MPAs. Industrial fishing impacts much of the world's oceans [41]. Fishing activities can impede marine conservation objectives within MPAs both through the direct depletion of target and non-target (bycatch) fish populations, and also through indirect impacts of fishing gear on marine habitats [42,43]. The term industrial fishing has not yet been defined by the IUCN and a definition would greatly assist with the application of protected area guidelines. Suggested definitions include any commercial fishing that has not been

identified as artisanal (i.e. small-scale, low-technology, low intensity undertaken by individuals) [44].

Bottom trawl fishing gears in particular have been shown to cause large-scale and long-lasting damage to seabed habitats and habitat-forming species, and have lower selectivity toward target species [e.g. 45]. Prohibiting all bottom trawling within MPAs would create a protection standard that would safeguard marine habitats. This type of ban is found in MPAs internationally, including MPAs in Scotland, Australia, and New Zealand.[5] In Canadian MPAs, bottom trawl fishing is not specifically prohibited and thus could occur in any *Oceans Act* MPAs that allows commercial fishing, including Basin Head (Prince Edward Island), Gilbert Bay (Labrador) and Tarium Niryutait (NWT) MPAs.

5.3. Large-scale resource extraction

Finally, MPAs should be protected from all large-scale resource extraction activities, particularly oil and gas and undersea mining. Documented impacts of activities associated with offshore exploration and extraction of oil and gas on marine life include noise pollution from seismic surveys, threats from platform infrastructures, and the risk of oil spills [46 48]. Mexico has banned oil and gas exploration and extraction activities within all MPAs in recognition of their incompatibility with protecting marine ecosystems, and Belize has banned oil and gas activities from its oceans entirely [13,49,50].

For some *Oceans Act* MPAs, oil and gas exploration has been explicitly permitted. The regulations for Tarium Niryutait MPA include exceptions that specifically permit exploratory drilling, production, and construction and maintenance of pipelines for oil and gas. The management plan for The Gully MPA states that oil and gas exploration may be possible, as long as it does not disturb, damage, destroy or remove marine animals or their habitat.

Other MPAs lack outright prohibitions on oil and gas, leaving open the possibility of exploitation. For some, the seabed and subsoil are protected to specified depths of two metres (Musquash Estuary, Gilbert Bay, Eastport, Basin Head), 5 m (St. Anns Bank, Anguniaqvia niqiqyuam), or 20 m (the Gully, Hecate Strait Glass Sponge Reefs). This limitation could conceivably allow directional drilling into the seabed of an MPA. The regulations for Endeavor Hydrothermal Vents MPA implicitly prohibit oil and gas production through a prohibition on disturbing, damaging, destroying or removing any part of the seabed or subsoil, however the lack of express prohibition leads to ambiguity and the potential for exploitation in the future.

Undersea mining has not yet been addressed in Canadian legislation; however mining is developing internationally - the United Nation's International Seabed Authority (ISA) has just released draft regulations for exploiting minerals within the areas of seabed beyond national jurisdiction, and has already issued several exploitation permits for undersea minerals [51]. As with oil and gas activities, the absence of express prohibitions on undersea mining within MPA legislation leads to the potential for these activities to be permitted within MPAs in the future.

6. Legislative options for MPA protection standards

A number of legislative options exist to achieve these standards.

6.1. Legislating for protection standards

Perhaps the strongest option available to protect MPAs is an amendment to the *Oceans Act* that prohibits all industrial activities within MPAs, including harmful industrial fishing, oil and gas and undersea mining. A similar prohibition already exists in a related federal law, the *National Marine Conservation Areas Act,* which reads: No persons shall explore for or exploit hydrocarbons, minerals, aggregates or any other inorganic matter within a marine conservation area. [6]

Alternatively, the government could introduce a regulation under the *Oceans Act* outlining the prohibited activities that applies to all MPAs. Though this would be weaker and more easily reversed than a statutory amendment, it would still provide consistent and certain protection across all MPAs.

6.2. Ecological integrity

Another option is the introduction of protection standards against which to evaluate permitted activities, such as the principle of ecological integrity. International environmental bodies, such as the CBD and the IUCN, have used the term ecological integrity in guidance documents and directives on protected areas [52], though the term is not currently defined in international law. Since 2000, the principle of ecological integrity has appeared domestically in federal protected area legislation, namely the *Canada National Parks Act,* which is primarily used to designate terrestrial protected areas.[7]

The principle of ecological integrity also appears in the proposed amendments to the *Oceans Act* in Bill C-55.[8] However, the role of the principle in the *Oceans Act* is quite limited as compared to its importance in the *Canada National Parks Act*. Ecological integrity is the first priority for the management of national parks under section 8(2) of the *Canada National Parks Act.*[9] However, under Bill C-55, the role ecological integrity is currently limited to one of the purposes for which the Minister may designate an MPA, but neither the current *Oceans Act* nor the Bill provide a requirement equivalent to section 8(2) of the *Canada National Parks Act.*[10]

This is despite a 2017 report on federal protected areas from the Canadian Parliamentary Standing Committee on Environment and Sustainable Development, which recommended that the Government of Canada amend the *National Marine Conservation Areas Act* and the

[5] The South Arran Marine Conservation Order 2015, Scot SI 2015/ 437; The Inner Dowsing, Race Bank and North Ridge European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw (UK) 2013, s 2; South-East Commonwealth Marine Reserves Network Management Plan 2013 23 (Cth), s 5.5.4; Government of New Zealand, Type 2 Marine Protected Areas, online: http://www.doc.govt.nz/nature/habitats/marine/type-2-marine-protected-areas/.

[6] *National Marine Conservation Areas Act*, SC 2002, c 18, s 13.

[7] *Canada National Parks Act*, SC 2000, c 32, s 2(1): ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes. The principle of ecological integrity first appeared in Parks Canada's Guiding Principles and Operational Policies in 1979. In 1998, the then Minister of Canadian Heritage Sheila Copps convened a Panel on the Ecological Integrity of Canada's National Parks. The Panel recommended that the principle of ecological integrity be adopted into law as the first priority for national parks. See Parks Canada, *Conserving ecological integrity with Canada's national parks, Volume II: Setting a new direction for Canada's national parks*, (Ottawa: The Panel, c 2000).

[8] *Bill C-55, An Act to amend the Oceans Act and the Canada Petroleum Resources Act*, 1st Sess, 42nd Parl, 2018 [*Bill C-55*], cl 4(1): ecological integrity means a condition in which (a) the structure, composition and function of ecosystems are undisturbed by any human activity; (b) natural ecological processes are intact and self-sustaining; (c) ecosystems evolve naturally; and (d) an ecosystem's capacity for self-renewal and its biodiversity are maintained.

[9] *Canada National Parks Act*, *supra* note 7, s 8(2): Maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks. .

[10] *Bill C-55*, *supra* note 8, cl 4(1), amending s. 35(1) of the *Oceans Act*.

Oceans Act to [e]nshrine the restoration and maintenance of ecological integrity as the overriding priority for Canada's marine conservation areas in parallel with the *Canada National Parks Act* [31].

Though the current amendment is welcome, it may not be enough to ensure that MPAs are fully protected from damaging activities. Including maintenance of ecological integrity as the top priority in the designing and management of MPAs under the *Oceans Act,* similar to the *Canada National Parks Act*, would set a standard to guide decision-making on allowable activities beyond the baseline protection prohibitions.

6.3. Precautionary principle

Canada's *Oceans Act* currently includes the precautionary approach as a basis for decisions on marine conservation and management.[11] Further, one of the proposed amendments to the *Oceans Act* in Bill C-55 uses the definition of the precautionary approach for MPA designation without directly referencing the principle.[12] This welcome addition to the Act could be used to strengthen the level of protection afforded to MPAs upon designation. For example, had this provision existed when SGaan Kinghlas-Bowie Seamount MPA was designated, the uncertainty over the impacts of the sablefish trap-fishery would not have been a reason to allow the fishery to continue, and the MPA could have been afforded full protection immediately.

Including a clear definition of precaution in the Oceans Act would clarify the principle's importance in both designating and managing MPAs and would clearly link the proposed and existing provisions mentioned. It could also be used to protect MPAs from all potentially damaging activities upon designation, as is evident in the example from the SGaan Kinghlas MPA, above. This principle has been defined in international law, including the *Rio Declaration on Environment and Development*, and the *Convention on Biological* Diversity.[13]

6.4. Obstacles to protection

The political obstacles facing protection standards are largely based on resistance from industry and other levels of government, who wish to maintain resource exploitation and development throughout the ocean. This controversy has manifested in a decision by the Offshore Petroleum Boards of both Nova Scotia and Newfoundland and Labrador to accept bids for oil and gas leases within an area that DFO has designated as a fisheries closure and counted towards its marine conservation target [53]. Similarly, provincial leadership in the Atlantic provinces has not been supportive of restricting oil and gas drilling within marine conservation areas [54]. Perhaps the most significant political obstacle of all is the influence and access of the fishing and oil and gas industries to government, which outweigh the political influence and access of environmental groups, academics, and even the public [55].

7. Conclusion

Canada's ocean laws and policy have lagged in their alignment with ocean science [42], and implementation of the *Oceans Act* has not yet lived up to its goals [43]. Incorporating protection standards into law can enhance Canada's revived leadership in oceans management, evident from the rapid expansion of federal MPAs in the past two years from less than 1 7.75% [56]. Clear, legally binding standards of protection covering no-take areas, industrial fishing and large-scale resource extraction can ensure that MPAs achieve conservation objectives as well as spatial targets. In other words, legal amendments can ensure both quantity and quality for MPAs. To truly thrive, Canada's oceans need strong legal protection.

Uncited reference

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