

Pacific North Coast Integrated Management Area (PNCIMA)
Issues, Challenges & Opportunities:
A Discussion Paper



Acronyms

CCG	Canadian Coast Guard
CMA	Coastal Management Area within a Large Ocean Management Area
DFO	Fisheries and Oceans Canada (commonly referred to as Department of Fisheries and Oceans)
EBM	Ecosystem-Based Management
EC	Environment Canada
FSC	Food, Social and Ceremonial
GHG	Green House Gases
GMA	Geographical Management Area within a Large Ocean Management Area
IMO	International Maritime Organization
LNG	Liquefied Natural Gas
LOMA	Large Ocean Management Area
MCTS	Marine Communications and Traffic Services of the Canadian Coast Guard
NMCA	National Marine Conservation Area
PNCIMA	Pacific North Coast Integrated Management Area
RCA	Rockfish Conservation Area
UNCLOS	United Nations Convention on the Law of the Sea

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1.0 INTRODUCTION AND CONTEXT

1.1 Purpose

This discussion paper provides interested parties with a high-level overview of issues within the Pacific North Coast Integrated Management Area (PNCIMA). The paper identifies the issues, the challenges associated with each issue, and the opportunities to utilize an integrated management approach to address these challenges.

1.2 Ocean Planning Guidance

Key legislation and policy guidance are in place to guide integrated ocean management planning in Canada. The *Oceans Act*¹ affirms Fisheries and Oceans Canada (DFO) as the lead federal authority for oceans, and empowers its Minister to lead the development and implementation of integrated management plans for all activities in or affecting estuaries, coastal waters and marine areas. The *Act* requires “collaboration with other ministers, boards and agencies of the Government of Canada, with provincial and territorial governments and with affected aboriginal organizations, coastal communities and other persons and bodies, including those bodies established under land claims agreements” in these efforts.

Canada’s Oceans Strategy (2002)² provides more specific policy direction and activities for implementing the Oceans Act. In this document, the principles of sustainable development, integrated management and the precautionary approach are further defined, building on the commitment made in the Oceans Act to follow these principles in developing integrated ocean management plans, starting with priority areas. An accompanying Policy and Operational Framework (2002) outlines more specific policy and guidelines for integrated oceans management planning process, structure and objectives, and confirms Large Ocean Management Areas (LOMAs) as the geographical basis for integrated ocean management planning.³ The Policy also provides for more localized planning within a LOMA.

The 2005 Canada Oceans Action Plan identified the PNCIMA area as one of five priority LOMAs for the implementation of integrated ocean management planning.⁴

In 2002, Canada and the Coastal First Nations (then Turning Point Initiative) signed an Interim Measures Agreement to work towards a government-to-government relationship for involvement in marine use planning. On December 11, 2008 the First Nations, represented by Coastal First Nations (CFN) and the North Coast-Skeena First Nations Stewardship Society (NCSFNSS), signed a **PNCIMA Collaborative Oceans Governance Memorandum of Understanding** (MOU) with DFO.⁵ The MOU outlines a DFO/First Nations governance structure and coordinating bodies, and proposes mechanisms for stakeholder engagement in the government-led planning process.

1.3 PNCIMA Overview

The PNCIMA is approximately 88,000 km² in size. It covers the nearshore and offshore areas of the Pacific Coast from Alaska (Canada's jurisdictional limit) down to the south end of Johnstone Strait on eastern Vancouver Island, and to Brooks Peninsula on the west coast of Vancouver Island (see map in **Annex 1**). The PNCIMA boundary reflects a variety of factors, with ecological considerations a major determinant of its southern boundary.

The PNCIMA area is unique due to its inclusion of diverse ocean ecosystems, which provide critical habitat for many species and provide marine resources that contribute to coastal economies and provide communities with a sense of place. It has sustained centuries of First Nations culture and continues to support thirty distinct First Nations. A wide variety of year round and seasonal activities occur in the offshore and coastal areas.⁶ In the nearshore areas, a much broader range of activities occur, such as aquaculture, ecotourism, utility and communications lines, the Port of Prince Rupert, ferry landings, and community harbours.

For planning purposes, the PNCIMA can be divided into different planning levels. The Large Ocean Management Area (LOMA) level covers the entire region and addresses region-wide issues. The Geographical Management Area (GMA) represents sub-regions such as the North Coast or Haida Gwaii, and deals with issues of concern across the sub-region. The Coastal Management Area (CMA) level of planning may occur for smaller coastal areas within GMAs where management of values, uses and activities requires more specific direction.

2.0 MARINE ACTIVITY & USE ISSUES

There are ten marine-related activities or use issues within the PNCIMA. Each issue section contains a general description of the activity or use, including why it is important, where it occurs, and how it takes place or is administered. Each section includes an indication of challenges the activity or use is facing, or poses to other activities and values, and the geographical extent of the challenges within the PNCIMA. The sections and subsections conclude with a brief indication of the planning level(s) that may be appropriate for dealing with the issue, and the opportunities that an integrated management approach provides to address the issue and its challenges.



2.1 Marine Transportation and Vessel Safety

Three patterns of marine transportation are evident in the PNCIMA: 1) local, community-oriented traffic; 2) large-scale commercial and industrial traffic; and 3) transient traffic. Marine transportation facilities such as ports, docks and harbours are included in this issue.

The first transportation pattern, local community-oriented traffic, occurs within inlets and along the coastal zone, among and between PNCIMA communities and harbours. This includes commercial and recreational fishing vessels, ferries, and barges and tugs that transport bulk products, goods, people, cars and passengers from one location to another.

The second pattern is industrial and commercial vessel movement, between locations inside and outside of the PNCIMA. It includes traffic entering and exiting the Port of Prince Rupert, Kitimat and Stewart, aggregate carriers entering and exiting Port McNeill, raw logs and aggregate towed out of the region, and fishing vessels (recreational and commercial) from outside the PNCIMA.

The third pattern is the transiting of vessels through PNCIMA waters, en route from one outside destination to another, and usually without stops in the PNCIMA. This includes cruise ships transiting the Inside Passage between Alaska and southern ports, with occasional stops at coastal communities.

Tanker traffic moving crude oil coming from the Trans Alaska Pipeline Systems (TAPS) from Alaska to southern USA destinations does not enter PNCIMA waters unless there is an emergency. TAPS vessels avoid the PNCIMA due to the voluntary Tanker Exclusion Zone that was established along the BC Coast.⁷ The purpose of the zone is to keep laden tankers west of the zone boundary in an effort to protect the environment and shoreline in the event of a tanker becoming disabled while in transit. The northern portion of the routes is approximately 160 kilometres west of the Queen Charlotte Islands. The southern portion of the routes is approximately 137 kilometres from Cape Scott, 56 kilometres from Estevan Point and 40 kilometres from Amphitrite Point, Vancouver Island.

Primary resource activities such as fishing, logging, aggregate extraction and mining still drive transportation activities in the PNCIMA. However, passenger traffic and transportation of goods and services also ensure a steady flow of vessels. High fishing vessel traffic occurs from Johnstone Strait, through Queen Charlotte Sound, Hecate

Strait and into Dixon Entrance in association with major commercial fishing activity (groundfish, shellfish and salmon fleets). The Inside Passage is used extensively year round, but Queen Charlotte Sound also has significant passenger vessel traffic in the summer, including ferries and cruise ships. BC Ferry Corporation operates three main routes in PNCIMA: Port Hardy- Prince Rupert, Haida Gwaii-Prince Rupert, and Discovery Coast Passage (Port Hardy to Mid-Coast). Smaller ferry operations serve the island communities adjacent to Port McNeill. Numerous water taxi operations service small communities year-round. Large commodity vessels bound for Prince Rupert or Kitimat use an established route through Hecate Strait.

The marine transport industry is a major generator of revenue and employment; as resource-based industries decline it has been a source of economic stability and diversity in a number of PNCIMA communities. It is vital for continuation of servicing communities, through passenger and freight services, and for commercial activities such as marine tourism, fishing and low-cost movement of logs and aggregates. The deep sea port at Prince Rupert is a major trans-shipment point for BC commodities such as grain, coal, ore and timber and for imported goods and commodities. Kitimat Harbour is also an active trans-shipment point for aluminum products and for import of products used in aluminum smelting, as well as methanol and condensate for pipeline transfer. Marine transportation activities are projected to increase substantially in the next fifteen years, particularly with the current expansion of the Port of Prince Rupert, the recently approved liquefied natural gas (LNG) facility and Enbridge's proposal of a twinned oil and condensate pipeline associated with a new marine terminal in Kitimat.

Marine transportation and vessel safety is primarily regulated by federal departments. Programs cover safety, forecasting, and navigational aids. The Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) controls movement of large vessels such as freighters, tankers, cruise ships, and fishing vessels through congested waterways. International laws, including those made under the UN Convention on the Law of the Sea (UNCLOS), also apply to shipping and transportation. Canada has established many regulations and laws to comply with international standards. Important UNCLOS requirements include: allowing foreign vessels "innocent passage" through the territorial sea; allowing Canada to regulate navigation of ships and aircraft through straits used for international passage (e.g. the Inside Passage, Hecate Strait); and requiring Canada to prevent and control marine pollution.

Challenges and Opportunities

Challenges associated with marine transportation and safety issues generally apply throughout the PNCIMA and may best be addressed at the LOMA or GMA levels of planning. They include:

- Increases in large traffic and safety issues resulting from Port of Prince Rupert expansion, particularly in established transit lanes in Hecate Strait;
- Potential increases in large vessel traffic in Douglas Channel, and related safety and environmental risks resulting from proposed developments in Kitimat;
- Impact of marine transportation increases on fisheries and marine resource harvesting activities in both coastal and offshore waters;
- Vessel traffic impacts on marine water quality and marine ecosystems through discharge of waste water and garbage, noise, air emissions, accidental spills, bilge dumping, ballast water discharge and exchange, and vessel wake impacts;

- Vessel traffic conflicts with other human activities;
- Seabird and marine mammal mortalities from vessel discharges and collisions.

The PNCIMA process provides an opportunity to address existing and potential concerns through the development of policy on vessel interactions with other activities and on safety issues. The PNCIMA process also offers the opportunity to improve vessel traffic management practices and locations by applying knowledge of time and location of potentially conflicting activities and occurrences, such as prime fishery periods, whale migration corridors and periods, and location of sensitive ecosystems and potential MPAs.



2.2 Maritime Defence and Security

Maritime defence and security operations stem from Canada's requirement to maintain national sovereignty. These operations are necessitated in the PNCIMA due to its proximity to international borders and its length of unpopulated, accessible shoreline. Maritime defence and security operations include dealing with situations such as security threats, illegal immigration, encroachment of foreign fishing vessels, drug smuggling, as well as naval exercises to improve combat readiness of Canadian forces.

Maritime defence operations are coordinated by the Canadian Fleet Pacific (CANFLT-PAC) of the Department of National Defence (DND), with the Canadian Coast Guard (CCG), Department of Fisheries and Oceans (DFO), the Royal Canadian Mounted Police (RCMP), Parks Canada Agency (PC), Environment Canada (EC), Canadian Border Agency (CBA), and Canadian Revenue Agency (RCA) providing support on sovereignty patrols. These departments and others also assist in surveillance patrols focused on the detection, reporting and deterrence of illegal activities.

The Port of Prince Rupert also has a security mandate, which includes communications and coordinated enforcement activities with other departments. The Port's main security risk is from cruise ship traffic making berth at the Atlin or Northland Terminals.

Challenges and Opportunities

Challenges associated with maritime defence and security issues apply to the entire PNCIMA, and might be appropriately addressed at the LOMA level. The challenges presented by this issue include:

- Increased security effort and requirement due to future operation of a Kitimat LNG terminal and Enbridge oil terminal;
- Increased demands on customs and security operations due to increases in marine tourism from both large passenger and smaller pocket cruises;
- Increased potential for legal and illegal fishing activities in PNCIMA due to possible species distribution changes;
- Potential interference of naval exercises with other activities and uses, and damage to sensitive marine habitat and species.

An integrated ocean planning process provides a rare opportunity to improve understanding of this important issue in PNCIMA, and to develop means of integrating maritime defence and security activities with those of other user groups. Information on location and timing of important activities and areas, such as whale migrations, peak fishing activity, and sensitive areas can also be means of integrating activities.



2.3 Commercial Fisheries

Commercial fishing activity in this context refers to the regulated harvesting of wild finfish and invertebrate species using a variety of techniques, gear types and vessels, for commercial purposes. Commercial fishing activities have been instrumental in shaping the economy and culture of BC coastal communities, are an important component of coastal First Nations' culture and economy, and make a substantial contribution to the provincial economy. Pacific salmon, halibut, Pacific herring, various rockfish and numerous groundfish and shellfish species, in particular, are keystone species.

The fishing industry, including fish processing, remains one of the most important employers in the PNCIMA (both directly and indirectly), as well as in services and economic value. However, its size and contribution to PNCIMA community economies has declined significantly since the early 1990s due to various government policies and programs, as well as declines in salmon, herring and some shellfish stocks and other factors.

DFO is the lead regulatory agency for sustainable marine fisheries, and has divided the Pacific Region into Pacific Fishery Management Areas (PFMAs) and sub-areas. Opening and closing of these sub-areas to harvesting enables management of harvest rates and efforts on a given stock or species. DFO manages commercial fisheries through such techniques as area closures (including Rockfish Conservation Areas and Marine Protected Areas), trip and monthly catch limits, individual vessel quotas (IVQ) and stock quotas, size and weight limits of fish, gear requirements, port and video monitoring, and experimental fisheries. DFO also develops integrated fisheries management plans. Commercial species are generally managed sustainably with input from government advisory bodies including recreational and commercial fishing sectors and First Nations. Management of some species is also influenced by international governance, such as the Pacific Salmon Commission and the International Pacific Halibut Commission.

A variety of commercial fishing activity takes place within PNCIMA waters. The distribution and fishing effort varies significantly, but PNCIMA overall is a significant catch area for most BC fisheries. It generates 85% of BC's trawl catch (excluding hake), 90% of its hook-and-line catch, 85-90% of the sablefish catch, 85% of the salmon catch, 85% of the spawn on kelp harvest, in many years the majority of the roe herring harvest, 60 % of the geoduck catch, 43% of Dungeness crab catch, 36% of the prawn catch, and almost the entire red and green urchin and sea cucumber catch on the BC coast.⁸

The fishing methods are almost as diverse as the species being fished. The **groundfish trawl fishery** catches a multitude of groundfish species near or at the bottom of the water column, or by a mid-water trawl targeting fish above the sea floor. **Hook and line fisheries**, using longline and handline methods, target halibut, black cod, dogfish, lingcod, inshore rockfish and slope rockfish. The **halibut fishery** is entirely conducted by longline gear. The **sablefish fishery** occurs by trap, longline and trawl, but the majority of allowable catch is allocated to the trap fishery. The **salmon fishery** involves troll, seine net and gill net gear types, with seine fishing taking approximately 50%. The **herring fishery** involves roe, spawn-on-kelp, special use, and food and bait, and uses methods including gill net and seine methods, use of kelp fronds suspended in open waters or in enclosures. There is a growing **sardine fishery**, primarily off Vancouver Island. **Invertebrate fisheries** consist of the geoduck and horse clam fishery, the intertidal clam fishery, squid fishery, shrimp fishery, shrimp trap and prawn trap fishery, crab, sea urchin and sea cucumber fisheries. They are harvested using different prescribed methods, such as diving, hand-picking, seine and trawl fishing, traps and nets. Quotas and harvest periods are also applied, along with permanent closures.

Challenges and Opportunities

Challenges associated with commercial fishing activity occur across the entire PNCIMA, and could be potentially addressed at the LOMA or GMA level. They include:

- Fishery stock abundance changes due to a combination of factors, including but not limited to natural variance in recruitment events, changes to harvest strategies and levels, and evolving biological and oceanographic conditions, including climate change effects;
- Potential changes in species type, abundance and distribution due to climate change and ocean dynamics;
- Potential changes of fishing sectors and sector scales as a result of changes in fisheries policy, market values, and global demand for seafood products;
- Potential conflict with other non fishing commercial and recreational activities such as wind farms and First Nations rights to marine resources;
- Competition amongst different allocations and conservation program objectives, including MPA establishment;
- Impact to bottom and sub-tidal habitat associated with bottom contacting harvesting techniques;
- Seabird mortality incurred due to bycatch in longline fisheries, and entanglement in set net fisheries which conflicts with the *Migratory Bird Convention Act*;
- Conflict and competition between certain gear type fisheries and nearshore uses and activities;
- Incidental take impact caused by some gear-type fisheries on ‘nondirected non-commercial’ species such as eulachon;
- Economic impact of stock declines on fisheries, coastal communities and employment base;

- Impact of marine transportation increases and interactions with commercial fishers and activities.

An integrated ocean management planning approach provides a significant opportunity to evaluate, modify and improve fishery practices and management efforts from an ecosystem-based perspective. It provides an opportunity to develop policy and identify areas that will afford long-term protection from impacts related to fisheries, identify (and restore where possible) areas in need of short and long term protection, and develop fishery management objectives that will assist in meeting future objectives within the PNCIMA area. In particular, coastal communities have the opportunity for involvement in the development of strategies for resilient and sustainable fisheries that will help maintain coastal livelihoods and culture.



2.4 First Nations' Marine Fisheries

Coastal First Nations gather and harvest marine fish, plants and invertebrates for food, social and ceremonial (FSC) purposes. These FSC Fisheries may include the harvesting of salmon, eulachon, ground fish and other finfish, clams, mussels, cockles, barnacles, urchins, sea cucumber, octopus, squid, geoduck, kelp, seaweed, herring roe-on-kelp and other species.

Coastal First Nations have long made use of marine resources for FSC purposes, and they are still an integral part of coastal First Nations' culture. Many coastal First Nations also participated in a trading network with seafood products on the coast and in the BC Interior with other Aboriginal peoples and European settlers, which included the trade of eulachon grease, dried seaweed, halibut, herring roe-on-kelp, as well as salmon and many other marine species. The practices of trading, sharing and gifting continue to supply many First Nations with traditional foods that are not locally available. The First Nations' marine FSC fishery remains culturally important, and is also a significant food source for First Nations' communities within PNCIMA.

In a key 1990 Supreme Court decision (*R v. Sparrow*,) First Nations fishing rights for FSC purposes were confirmed as a priority, after conservation, over other fisheries. In response to the *Sparrow* Court decision, DFO created an Aboriginal Fishing Strategy (AFS) to enhance sustainable aboriginal participation in fisheries, and to act as an interim measure in the absence of treaties. The AFS enables DFO to enter into agreements with aboriginal groups on FSC fishing, and for collaboration with aboriginal groups in the design and implementation of co-operative management programs.⁹ The AFS establishes funding agreements with aboriginal groups for specifically-approved activities that may include management of aboriginal fisheries, habitat restoration, fish enhancement, community-based research, economic development or stakeholder consultation. AFS agreements may also contain provisions describing how First Nations manage their members' FSC fisheries.

An Allocation Transfer Program (ATP) provides aboriginal groups with some employment and income through access to commercial fisheries, and facilitates the voluntary retirement of commercial licences and re-issuance as communal commercial licences to eligible aboriginal groups.

Agreements in the PNCIMA include a multi-Nation Skeena River Watershed Agreement and agreements under the Aboriginal Aquatic Resource and Oceans Management Program (AAROM) with individual First Nations in the North Coast, Central Coast and Haida Gwaii. Funding from the AAROM program is designed to accomplish a variety of goals including assistance to aboriginal groups in acquiring the administrative capacity and scientific/technical expertise to facilitate their participation in aquatic resource and oceans management. AAROM funding can also be used to encourage the establishment of collaborative management structures that contribute to integrated ecosystem/watershed management and planning processes such as PNCIMA. In addition to programs such as AAROM, the Pacific Integrated Commercial Fisheries Initiative (PICFI) is an initiative designed to enhance catch monitoring and reporting, the beginnings of a system to trace fish from their harvest to the consumer, a share-based approach to managing commercial salmon fisheries in the region, more collaborative fisheries management and greater First Nations participation in commercial fisheries.

Treaty negotiations between coastal First Nations, Canada and BC are currently being conducted to establish treaties which may, amongst other things, establish and confirm First Nations access to fisheries. In addition, Treaties may include provisions for First Nations to be involved in aquatic resource management and planning. Several PNCIMA First Nations are in various stages of the six-step treaty process with Canada and BC. Some First Nations on Vancouver Island are also subject to existing (Douglas) treaties, which recognize these First Nations' right to carry on their 'fisheries as formerly.'

Challenges and Opportunities

Challenges associated with First Nations' marine fisheries occur throughout the PNCIMA and might be addressed at the more detailed CMA and GMA planning levels. They are:

- Effect of changing abundance of fish stocks on First Nations' fisheries;
- Effect of changing abundance of fish on First Nations' food sources as well as on livelihoods;
- Impact of some gear-type fisheries on abundance and location of species important to First Nations' cultural use, such as eulachon;
- Potential effect of marine uses and activities on health and quality of marine resources consumed by First Nations for FSC purposes;
- Potential effect from the allocation of marine space to other users that may impact access or stock abundance adjacent to important traditional fishing areas;
- Potential friction between First Nations and non-aboriginal fishers resulting from future treaties and Court decisions;
- Potential friction between First Nations and non-aboriginal fishers over potential allowance of First Nations fishing in Marine Protected Areas closed to non-aboriginal fishers;
- Capacity building for First Nations in order to effectively participate in commercial fisheries;

- Impacts of future MPA establishment;
- Impacts of marine transportation increases on First Nations' fisheries activities.

The PNCIMA integrated ocean management planning process is not intended to replace or substitute for government's fiduciary obligations to consult with First Nations on fisheries management issues. However it provides a unique opportunity for dialogue among fishery resource managers and the various industry sectors dependent on common fishery resources. This dialogue may lead to agreement on management practices to avoid conflicts and competition in areas utilized for FSC harvesting, and to reduce pollution and other risks to fishery resources.



2.5 Recreational Fisheries

Recreational fishing (or sport fishing) is the range of activities and experiences that involve fishing for personal leisure, personal consumption or sport purposes. It includes tidal water angling, and the gathering of shellfish. By law, fish caught in recreational fishing cannot be bought, sold or bartered.

DFO regulates and manages BC's tidal water recreational fishing and marine species on a sustainable basis, using its authority to identify closed times and areas where fishing is prohibited, bag limits and size limits for all sport fisheries. The multi-stakeholder Sport Fishing Advisory Board (SFAB) advises DFO on recreational fishing plans, fishery regulations and areas of concern to the recreational fishing community.

The recreational fishery is a significant contributor to the provincial economy. Anglers spend money on transportation, food, accommodation, guiding services, equipment and supplies. The industry also generates many jobs, with lodges and charters representing about 35% of jobs in the industry. The high economic value of this fishery compared to the number of fish caught has influenced some fisheries management policy decisions, which give priority to the recreational fishery over the commercial fishery for some species (chinook and coho salmon).

In the PNCIMA, about 80% of the recreational catch is comprised of chinook and coho salmon. Halibut fishing is also very important in some areas. Rockfish and lingcod fisheries are important. Steelhead, tuna and sablefish are also caught in the recreational fishery. Fishing for prawns, crab, squid and shellfish is increasing. A small sea cucumber recreational fishery also occurs.

The major recreational fishing areas of the PNCIMA are adjacent to major inlets along the North and Central Coast, north Graham Island, the coastline of northern Queen Charlotte Strait, and the entrance to Quatsino Sound. Steelhead is typically caught in non-tidal waters and BC's rivers, such as the Skeena, Nass and Lower Dean River. Recreational fishing has been undergoing a shift in which angling is one part of a broader outdoor adventure. The PNCIMA integrated ocean management plan may provide an ideal opportunity for managers and resource users to respond to this new demand.

The fishing lodge industry has become increasingly important in increasing recreational fishing. In 2006, there were 43 fishing lodges in the PNCIMA. An increase in fishing in Prince Rupert, Haida Gwaii, Bella Bella, Shearwater, Ocean Falls and Bella Coola has also been attributed to cruise ship stop-overs and BC Ferry passenger traffic. Increased yacht traffic cruising the inside passage is also contributing to fishing activity.

Challenges and Opportunities

Recreational fisheries challenges are likely in high use areas of the PNCIMA, as identified above. They could be addressed at both LOMA and GMA planning levels, and include:

- Economic impact on the industry and coastal communities of reduced catch, caused by reduced populations, new conservation measures, MPAs & RCAs, and increased allocation to First Nations;
- Increasing conflict between recreational fishing and other user groups;
- Ability to monitor, and understand sport fishing catch;
- Regulation of sport fishing lodges and charter operators;
- Potential impact of land-based activities on species such as steelhead that utilize freshwater for part of their life cycles;
- Potential friction between recreational fisheries and First Nations fishers resulting from future treaties and Court decisions;
- Impacts of future MPA establishment;
- Impact of marine transportation increases on recreational fisheries activities.

The PNCIMA integrated ocean management plan could provide a means of assessing these challenges and providing recommendations on acceptable fishery practices, resolving conflicts with commercial and First Nations interests, and identifying mutually-agreeable areas for sustainable use, or for conservation and protection purposes. An integrated approach among various stakeholders and governments is an important means of ensuring recreational fishing is a sustainable industry in the PNCIMA.



2.6 Marine Recreation and Tourism

Marine recreation and tourism includes public and commercial activities based on the use of the ocean environment and resources. It involves such activities as ocean kayaking, recreational boating, diving, marine-based camping and visits, private resource harvesting, wildlife viewing, sport fishing and marine cruising by large ships, pocket cruisers and smaller vessels. (Recreational fishing is discussed in section 2.5). The PNCIMA is now world-renowned for many of these eco-based activities.

In the PNCIMA public recreation takes many forms and is carried out by local residents as well as many seasonal visitors who visit or pass through the area, primarily by marine and air transportation. Tourism activities are largely nature-based, although visits for aboriginal culture and community-based experiences also take place. Cruise ship, pocket cruise and BC Ferry-based tourism represent significant contributors to tourism. Tourism activity also coincides with important ecological-based patterns, such as whale migration.

Ocean recreation in BC (which includes recreational fishing) is the greatest contributor of all ocean business sectors in terms of product output, income generation and employment. The cruise industry alone in BC is estimated to be worth approximately \$500 million to the economy. Cruise ships typically benefit and stimulate local economies when they make stops for passenger shore excursions, such as shopping and sight-seeing. Recreation and tourism industries provide important means of diversifying coastal community economies and generating new business opportunities.

Recreational and tourism activities occur throughout the PNCIMA, but there are significant areas of seasonal importance for different activities. For example, sea kayaking activities are concentrated in the summer months in the Broughton Islands and Johnstone Strait. Cruise ship-related excursions occur primarily in the area adjacent to Prince Rupert, while smaller scale cruise visits, known as pocket-cruises have increased tourism in Prince Rupert, Port Hardy, Sointula, Alert Bay, Telegraph Cove and on Haida Gwaii. Pocket cruises to Princess Royal Island and Gwaii Haanas have become increasingly popular with the establishment of new conservancies. Recreation and tourism opportunities are closely linked to shoreline and nearshore facilities which may include boat ramps, docks and marinas, repair and fuelling businesses, campgrounds, marine parks, sheltered anchorages and boat havens.

Most tourism is seasonal, while recreational activity occurs over a more extended period, depending on the nature of the activity. Tourism is generally aligned with cruise ship, pocket cruise and Discovery Passage ferry schedules. Large vessel cruise ships generally travel through the region in the summer months, and stop only in Prince Rupert. The smaller pocket cruise and BC Ferries vessels operate over a longer season.

A number of federal, provincial, local government agencies and regional organizations have programs and responsibilities associated with encouragement and development of marine recreation and tourism. These different organizations result in considerable regional marketing, tourism investment, and infrastructure development to expand recreation opportunities and tourism attractions.

Challenges and Opportunities

Challenges associated with recreation and tourism are likely to occur in areas where activities are currently concentrated. These might be addressed at both GMA and CMA levels and include:

- Potential reduction in cruise and ferry traffic visitors due to economic downturn, higher costs and other factors;
- Potential adverse impact of eco-tourism operations on marine mammals and wildlife through noise and disturbance;
- Environmental impacts of marine facility improvements to service tourism, such as dredging;
- Increased competition with local residents for recreation opportunities and available services;
- Conflicts with large-scale commercial tourism and other industrial and commercial activities, as well as marine traffic increases;
- Increased demands on customs and security operations;
- Developing a year-round recreation and tourism economic base.

The PNCIMA integrated ocean management planning process provides an opportunity to develop integrated strategies for the development and maintenance of a sustainable tourism industry that minimizes conflicts with other uses and benefits local residents. It may provide a useful forum for coordinating tourism marketing and development strategies, and for encouraging the coordination of recreational opportunity development.

2.7 Marine Aquaculture

Marine aquaculture in the PNCIMA consists of finfish (primarily salmon) and shellfish. All of the marine aquaculture sites within the area are found in foreshore and nearshore coastal zones and require federal and provincial approvals.

The PNCIMA is home to about 55% of the finfish aquaculture sites in BC. The majority are in the Central Coast, concentrated in the Broughton Archipelago. Parts of the Central Coast, Queen Charlotte Strait, and Johnstone Strait-Bute Inlet also have a network of farms. Finfish production is primarily Atlantic salmon. Other species being developed for diversification include black cod and rockfish.

Shellfish farms in the PNCIMA represent about 2.5% of the provincial total (currently 11 sites). A number of sites have recently been identified and reserved for First Nations' farming interests. New tenures in the North Coast and Haida Gwaii are anticipated in the near future. Operations include on-beach culture as well as sub-tidal and off-bottom rafting operations. In the PNCIMA existing sites produce Manila clams, mussels, Japanese scallops and Pacific oysters. Other species are being explored for diversification of this sector.



Aquaculture is a major contributor of revenue, employment and a source of economic stability, primarily in the southern part of the PNCIMA. Indirect economic benefits include fish processing, transportation and distribution as well as fabrication.

Open net-cage finfish aquaculture has had a controversial history in BC. There is a comprehensive regulatory and management structure in place for aquaculture, based on sound scientific advice and mitigation of environmental effects. However, acceptance by many resource users remains unresolved. First Nations and stakeholders have raised issues due to concerns that environmental effects of aquaculture may result in negative impacts to marine resources thereby limiting access for their use of the resource.

Future aquaculture opportunity exists as suitable sites exist in certain areas of the PNCIMA for aquaculture expansion. However, in March 2008, the provincial government placed a moratorium on finfish applications in North Coast waters 150 kilometres from the mouth of the Skeena River. Existing and future demand for seafood products is expected and can lead to strengthened and diversified local economies. If innovative technology, financial feasibility and any new environmental performance measures can be achieved, closed containment technologies and integrated multi-trophic aquaculture methodology offer further options for diversification of this sector.

Challenges and Opportunities

Challenges associated with marine aquaculture generally apply to specific coastal areas and might be best addressed in CMA level planning. Many are addressed through government's review and referral processes for applications. They may include:

- Competition for sites for use by other resource users;
- Potential loss of access to sites for public use, anchorage, safe havens, recreation, and fishery;
- Potential social effects due to odour, noise, and modified views on adjacent landowners, boaters, marine tourism operators, and the public;
- Potential environmental effects on the public resource including water quality, fish habitat, fish health (including genetic effects) and fish populations as well as cumulative and ecosystem effects;
- Water quality monitoring required to open areas for cultured shellfish product and monitoring for harmful algal blooms;
- Aquatic invasive species, like colonial tunicates, and their impact on cultured shellfish stock;
- Climate change effects on the aquaculture industry, including ocean acidification and water temperature increases;
- Establishment of escaped species being cultured (i.e., Atlantic salmon).

The integrated ocean management planning process has the potential to complement, inform and improve existing government policy on aquaculture, improve communications and understanding of aquaculture, and to provide for strategies for consideration by ocean resource managers for adaptation to possible climate change effects on aquaculture in the PNCIMA.



2.8 Renewable Ocean Energy

Renewable ocean energy addresses commercial activities as well as research and development activities related to wind, wave and tidal energy resources. Offshore wind energy is used by wind turbines installed to the ocean floor to generate electricity. Tidal and ocean energy can be utilized to generate electricity by using tidal currents to drive turbines or other techniques. Wave power harnesses the energy in waves, using either onshore-fixed or offshore-floating technology. While commercial offshore wind farms exist off the coast of Western Europe, wave and in-stream current technologies are at an early stage of development and most of these technologies are still at the testing or demonstration phase.

Projects require a variety of provincial and federal approvals, depending on their type, size, and location. The federal government will have greater regulatory responsibilities with respect to offshore renewable energy in provincial waters than it might for a typical renewable energy project onshore. This is due to the federal government's responsibilities for a number of marine-related issues, including (but not limited to) oceans management, fisheries, navigable waters, and migratory birds.

Although the management of electricity generation and transmission is normally a provincial responsibility, offshore renewable energy is unique in that facilities can be placed in areas outside the jurisdiction of any province. In this case, the federal government would have exclusive jurisdiction over the project. Ultimately, however, the power generated in these areas will be delivered to electricity systems managed and regulated by provincial governments, who maintain a number of important regulatory responsibilities with respect to these projects. Natural Resources Canada is currently leading the development of a comprehensive legal framework to manage offshore renewable energy on federal Crown lands in partnership with the provinces and other federal departments.

In terms of provincial government policy, interest in renewable ocean energy is reinforced in the 2007 BC Energy Plan¹⁰ and the policies of BC Hydro. The Energy Plan commits to advancing BC's electricity self-sufficiency by 2016, using a diversity of technologies, including wind, large ocean wave and tidal energy sources. BC Hydro's policies and proposal calls encourage the production of energy from 'green' or renewable energy projects.

The Canadian Wind Atlas¹¹ identifies wind potential within the PNCIMA. In general terms, the areas of highest mean wind energy and mean wind speed are located around the northern tip of Vancouver Island, and in Queen Charlotte Sound and Hecate Strait. Mean wind energy in these areas ranges from 400-900 watts/square metre, and mean wind speed ranges from 6.5 to 10 metres per second. A recent assessment of energy potential and estimated costs of wind power generation prepared for BC Hydro indicated a total rated energy capacity of 0.6 gigawatts (GW) for Vancouver Island sites and a capacity of 0.5 GW for onshore and 1.4 GW for offshore sites in the North Coast.¹² The Nai Kun Wind Farm proposed for Hecate Strait is the only offshore wind project proposed within the PNCIMA boundaries. If the Nai Kun project proceeds as planned, it would be the first offshore wind power farm in North America. This project is currently undergoing a joint federal-provincial environmental assessment.

In the PNCIMA, both North and Central Vancouver Island have been identified for good tidal energy potential. A feasibility study has also been completed for Haida Gwaii. There are currently a number of tidal and wave technology demonstration projects in various locations off the coast of Vancouver Island. One of the most promising sites in the PNCIMA region is at Discovery Passage, between the Strait of Georgia and Johnstone Strait.

The BC mainland and Vancouver Island coasts have potential to supply a major portion of the ocean energy resource. However, the development of wave energy systems has been hampered by high costs and BC Hydro funding policy.

Many coastal communities, including those on Haida Gwaii and many First Nations' communities are highly dependent on diesel fuel for electricity generation. Renewable ocean energy projects have the potential to reduce this dependency, as well as lower energy costs to residents, generate employment in construction, manufacturing and maintenance, and reduce carbon dioxide emissions. The production of reliable and lower-cost energy could also increase economic investment in smaller coastal communities. In the short term, these benefits are more likely to be realized from the development of wind energy. In the longer term, Canada is well placed to become a global wave and tidal technology leader due to its geography, raw resource base and existing expertise in ocean engineering and offshore operations. Ocean renewable energy and offshore wind energy are largely regarded as a relatively low impact activity that in many cases will be compatible with other ocean uses, including conservation and environmental protection measures like MPAs.

Challenges and Opportunities

Challenges associated with the development of renewable ocean energy will generally be confined to the relatively few areas with known high potential for development, and might best be addressed at the GMA or CMA planning level. Challenges are:

- Competition for high potential sites from other marine and coastal user groups, as well as from potential MPAs, particularly with tidal energy projects, which are less flexible in location than wind and wave technologies;
- Restriction on development in existing parks and conservancies;
- Potential interference with transportation routes and navigation and air traffic;
- Visual, aesthetic impacts and noise impacts;
- Potential conflict with other commercial and recreational activities and First Nations rights to marine resources;
- Potential impacts as a result of laid and buried transmission cables on fish distribution and migration and conflicts with fishing activity;
- Loss of fishery habitat and area available for recreational and commercial fishing;
- Potential impact on migratory birds.

The PNCIMA integrated ocean management process provides an opportunity to evaluate existing high potential areas, determine the extent of community support, and establish mapping and policy guidance for avoiding conflicts and competition with different uses and interests. PNCIMA recommendations may also be helpful input in future government review and assessment of proposals. The PNCIMA plan may also assist key agencies such as BC Hydro in evaluating its longer term policies on alternative energy, and to implement provincial goals, many of which rely on collaboration with federal departments and First Nations.



2.9 Non-Renewable Ocean Energy

Non-renewable ocean energy refers to liquids, gases and solids buried beneath the ocean floor that are used for generating energy and are non-replenishing. Non-renewable ocean energy sources in the PNCIMA are primarily potential petroleum and natural gas deposits.

Within the PNCIMA, the Queen Charlotte Basin (QCB) is the most important geological area with potential petroleum and natural gas deposits. The QCB underlies Dixon Entrance, Hecate Strait, Queen Charlotte Sound and parts of Haida Gwaii to the northern tip of Vancouver Island. A 1998 Geological Survey of Canada report indicated a petroleum resource potential for the QCB of 9.8 billion barrels of oil and 25.9 trillion cubic feet of gas. However these hydrocarbon assessments remain highly speculative due to the relatively low level of available information.

Petroleum reserves in the offshore areas of the PNCIMA represent a potentially valuable energy resource and economic opportunity for coastal communities and BC residents. However there is a long history of debate over offshore oil and gas development, due to the possibility of adverse environmental, social and cultural effects and the high risk in BC of tectonic activity and major weather events in the PNCIMA.

In 1972, the federal government halted offshore exploration through a federal moratorium. A number of review panels have addressed the issue, including: a 1984 independent federal-provincial Environmental Review Panel; a 2001 BC-appointed independent scientific panel and MLA community meetings; and a 2003 federally-appointed review of Canada's moratorium through a scientific review, a public review process, and a First Nations engagement process. Coastal First Nations have expressed strong views on this issue, and undertaken various reviews of the topic, due to potential effects on environment, community and culture. These studies have generally opposed lifting of the moratoria, and some First Nations (including the Haida) have declared their own moratoriums on offshore exploration and development in their traditional territories.

To this day, the Government of Canada maintains its federal policy decision not to convert existing offshore British Columbia permits to exploratory licenses. The provincial government has recently committed, through the 2007 BC Energy Plan¹³, to continue to work to lift the federal moratorium on offshore exploration and development and simultaneously lift the provincial moratorium.

Challenges and Opportunities

Some challenges faced by the potential development of non-renewable ocean energy are generally applicable to the offshore areas of the PNCIMA, and might be best addressed at the LOMA and GMA planning levels. These challenges include:

- Potential environmental and species impacts from new seismic surveys (e.g., noise impacts, fish kills, sediment);
- Safety and security of ocean oil & gas installations due to major storm and earthquake events;
- Economic and social effects of accelerated oil and gas activities on coastal communities;
- Increased marine tanker and vessel traffic to communities receiving petroleum products;
- Impact of MPA establishment on future non-renewable resource exploration and development opportunities;
- Potential increase in accidental oil spills from operations and pipelines and effects on marine environment.

The PNCIMA approach to integrated ocean management planning may be of assistance in integrating any future development into existing and future uses.



2.10 Existing Land and Coastal Plans

Several parts of the PNCIMA have been the subject of significant planning effort in both terrestrial areas and the coastal zone, primarily at the ‘strategic’ level.

The Vancouver Island Summary Land Use Plan, approved in 2000,¹⁴ identified land zoning, objectives and strategies, and coastal areas for future planning. A 2001 Central Coast Coastal Zone Strategic Plan¹⁵ was approved in principle by the BC government, and included objectives and strategies for marine protection, marine biodiversity, and coastal uses. Coastal plans for Quatsino Sound, the North Island Straits and Johnstone-Bute areas (2002-2005)¹⁶ were completed between 2002 and 2005, to assist the provincial government in decisions on applications for foreshore and nearshore tenures. A 2006 Coast Land Use Decision¹⁷ was based on the 2005 Central and North Coast Land and Resource Management Plans (LRMPs). The LRMPs and Coast Decision established land use designations, new conservancies and ecosystem-based management (EBM) areas. Objectives and strategies were also included. Many of the new conservancies have a marine component, with additional marine foreshore areas still to be added. A 2007 Haida Gwaii Strategic Land Use Agreement¹⁸ established objectives for ecosystem-based forest management and increased protected areas on Haida Gwaii to nearly 50% of the land. It committed to a marine planning analysis (now underway) to determine how far into the coastal zone the new conservancies should extend.

Many First Nations in the PNCIMA have also embraced formal planning in their traditional territories. This includes the 2000 Kitasoo/Xaixais Land and Resource Protection and Management Plan.¹⁹ Other First Nations have terrestrial plans underway to address forest resource and cultural value management, in accordance with land use agreements and protocols with the BC government on the Central and North Coast LRMPs.²⁰ Many coastal First Nations have now initiated marine and coastal plans, including the Haida, Haisla, Heiltsuk, Wuikinuxv, Gitga'at, Metlakatla, Gitxaala, Kitsumkalum, and Kitselas.

Local governments have also developed official community plans, zoning by-laws, and mapped important areas within their boundaries. These include the Strathcona Regional District, Mount Waddington Regional District, Central Coast Regional District, and the Skeena-Queen Charlotte Regional District. Some have established guidance for developments in the coastal zone.

Challenges and Opportunities

The presence of existing, new or ongoing plans creates challenges in the area covered by the plans. Consequently the CMA level of planning is where these might likely be addressed. They include:

- Reliability of older plans information and recommendations in light of newer information, government policy changes and shifts in community preferences;
- Emergence of new ocean uses and activities that may conflict with, or are absent from existing coastal planning recommendations (e.g., wind, wave, tidal power);
- Reconciling issues of scale between the plans and planning areas;
- The complexities of trying to integrate PNCIMA recommendations with those of existing and proposed terrestrial and coastal/marine plans.

The PNCIMA integrated ocean management planning approach provides an excellent opportunity to update and integrate these plans and build upon their outcomes. It offers the chance to fully integrate terrestrial and marine plans and to integrate objectives from plans by different governments, and has the potential to increase collaboration in future CMA-level plans or plan updates. It will provide incentive for collaborative decision-making among governments on uses and activities that require multi-jurisdiction approvals.

3.0 MARINE ENVIRONMENT & CULTURE ISSUES

Chapter 3.0 outlines seven issues associated with the marine environment and culture within the PNCIMA. Each section generally describes the issue, stating what it is, why it is important, current status, and how it is administered. Each section includes an indication of challenges, and the geographical extent of the challenges within the PNCIMA. The sections conclude with a brief indication of the planning level(s) that may be appropriate for dealing with the issue, and the opportunities that an integrated management approach provides to address the issue and its challenges.



3.1 Marine Protection Tools

A variety of marine protection tools have been used to establish and protect sea surface, water column, seabed, and/or associated plant and animal life, recreational, scientific, cultural and historical features by limiting or restricting activities in the area. In PNCIMA, different protection tools have been established or proposed for such areas as: unique coastal inlets, bays or channels; representative marine areas; boat havens with important anchorages; marine-oriented wilderness areas; cultural heritage features; critical spawning locations and estuaries; species-specific harvesting refuges; seabird colonies; ecologically and biologically significant areas; and ecologically significant species. Areas for marine protection can be designated under a variety of federal and provincial legislative authorities, and the term MPA is used generically in this document, as opposed to referring to *Oceans Act* MPA designations.

Federal efforts to establish MPAs are directed by a 1995 federal Marine Protected Areas Strategy²¹ that is based on the programs of DFO, Parks Canada Agency (PCA) and Environment Canada (EC). There are currently no *Oceans Act* MPAs in PNCIMA (the Bowie Seamount MPA is in adjacent waters), but DFO has established 59 Rockfish Conservation Areas²² (RCAs), some of which could eventually be incorporated into a formal MPA network. DFO is also considering large glass sponge reef complexes in Queen Charlotte Sound and Hecate Strait as a potential Areas of Interest (AOI) for MPA designation. There are no EC National Wildlife Areas (NWAs), Marine Wildlife Areas (MWAs) or Migratory Bird Sanctuaries (MBSs) in PNCIMA at this time, although a yet-undetermined area around the Scott Islands has been proposed for MWA designation. Previous federal-provincial and PCA-Haida Nation agreements have led to the development of the Gwaii Haanas National Marine Conservation Area (NMCA) proposal adjacent to the Gwaii Haanas National Park Reserve. This NMCA is advanced in its development and is expected to be affirmed under legislation in the near future.

The BC government has yet to establish a formal MPA policy, but has many provincial parks, ecological reserves and conservancies in the marine environment. A significant increase in these areas has occurred due to recent land use agreements in the Central and North Coast and in Haida Gwaii. Some areas could benefit from complementary federal protection and management measures.

The federal and provincial governments have made a number of significant efforts to develop a joint or collaborative MPA strategy, going back to 1995. A 2004 *Canada-BC Memorandum of Understanding Respecting Implementation of Canada's Oceans Strategy on the Pacific Coast of Canada*²³ led to a draft sub-agreement on MPAs. Although this MPA sub-agreement remains unsigned, federal and provincial agencies have continued to work together, and have produced a draft implementation plan for evaluation of existing MPA, as well as an analysis of gaps in existing MPA representation and management tools. First Nations and stakeholders have yet to be engaged in this initiative.

The federal timetable for creation of additional MPAs is based on international commitments, which include a target to establish a network of marine protected areas by 2012.²⁴ In 2008, the federal government also committed to establish nine new MPAs, including six *Oceans Act* MPAs, across Canada by 2012.

Challenges and Opportunities

Challenges facing MPA identification and establishment in PNCIMA might be best addressed at the LOMA and GMA levels, and include:

- Fully accounting for and incorporating costs and benefits, including socioeconomic values, into MPA selection and decision-making;
- A change in factors influencing previous identification of candidates, warranting new or larger areas (e.g., fishery population decline, climate change effects, etc.);
- Incorporating the fluid and dynamic nature of ecological systems and human use impacts;
- Relationship and value of PNCIMA process-generated MPA proposals to the broader BC coast and national MPA network;
- Ability to identify and implement necessary 'interim protection measures' while the PNCIMA plan undergoes development, approval, and implementation;
- Concerns about future zoning and management restrictions on current uses and activities;
- Involvement of fisheries and other stakeholders and First Nations in the MPA selection process.

The PNCIMA integrated ocean management planning process provides an opportunity to implement the federal MPA Strategy, which commits to using integrated management planning as the prime vehicle for MPA site identification, and to develop mechanisms or procedures for collaboration with other jurisdictions. An opportunity also exists to discuss and gain support for existing candidates and areas of interest (such as Scott Islands, and Hecate Strait/Queen Charlotte Sound glass sponge reefs), and to identify new areas for further consideration. The PNCIMA process will also contribute to the establishment of an MPA network for northern coastal waters. It can assist in public, community and First Nations' consultation for such areas before their legal establishment.



3.2 Cultural Resources

Cultural resources in PNCIMA are heritage features that reflect the culture of past and existing aboriginal and non-aboriginal society. They can be grouped into three categories: archaeological sites, First Nations traditional use sites, and historic sites. In some situations they can be found together.

Archaeological sites are those which show physical evidence of past human activity, such as old burial/grave/internment areas, old village sites, shell middens, house depressions, culturally modified trees (CMTs), pictographs and petroglyphs. All sites are considered First Nations in origin. First Nations traditional use sites include geographically defined sites (on land or water) used traditionally by aboriginal people. These sites may lack the physical evidence of human-made artefacts or structures, yet maintain cultural significance to existing communities. Examples include fishing sites, hunting camps, traditional trails, berry picking areas, and legend/sacred sites. Historic sites identify significant post-contact heritage events and may be non-aboriginal or aboriginal in nature. These include historic cannery sites, abandoned communities, shipwrecks and former military installations.

Cultural resources are an important issue for PNCIMA because of their economic, social and cultural, as well as legal significance. Economically, historical sites and some archaeological sites provide tourism opportunities and related employment, such as Haida village sites, abandoned communities and shipwrecks. From a social viewpoint, cultural resources provide a sense of heritage and tradition for all residents, and a foundation for continuing cultural practices of First Nations, which include food, social and ceremonial practices, trade with other First Nations, and continuation of oral history, legends and family/clan rights and privileges. From a legal perspective, cultural resources are important to many First Nations as part of their efforts to confirm specific aboriginal rights in response to land and resource development proposals by government and industry. As such they may be a critical factor in ongoing and future legal claims to title over traditional territories and resources.

Information on cultural resources includes written and oral sources on traditional use, mapped overview assessments and more specific assessments associated with development plans. Many resources, such as CMTs and midden sites are not fully protected when identified, but are inventoried and recorded for First Nations' evidence of rights or title. Many First Nations in PNCIMA have initiated or completed traditional use studies. Several archaeological overview assessments have been prepared. However, First Nations keep confidential the location of many archaeological sites due to concerns about desecration or alteration by the general public.

Most aboriginal cultural sites in the PNCIMA are located along the coastline, in estuaries, protected inlets, or headlands with prominent views. These locations reflect the connection of aboriginal peoples to the ocean for transportation, food sources and protection from weather and invaders. Sites reflect different seasonal uses. There are numerous historic sites in the PNCIMA representing past industries and settlements, such as Ocean Falls, Port Essington, Hospital Island and Wales Island. Many shipwrecks have been documented in the PNCIMA, particularly off Vancouver Island, and surrounding Haida Gwaii. Many historical, cultural and archaeological features and uses are now represented in provincial marine parks, new conservancies, and in Gwaii Haanas.

Archaeological sites and historic sites are generally administered by the BC government under key legislation and policy, notably the Heritage Conservation Act, which provides automatic protection for some cultural heritage resources. Many government departments follow consultation and accommodation guidelines for identifying and properly managing cultural resources. Formal treaties and interim treaty agreements may also include specific obligations for federal and provincial governments for cultural resources (e.g., Nisga'a). Cultural resources in provincial and federal parks and conservancies are administered by the responsible agency, often in collaboration with First Nations and in accordance with approved management plans. Many First Nations in the PNCIMA have land use plans and agreements with the province that provide direction for the management and protection of sites known to each First Nation.

Challenges and Opportunities

Cultural resources are prone to a number of challenges, usually associated with specific areas and might be addressed in CMA or GMA planning. They are:

- Potential loss of archaeological sites due to increasing storm events and sea level rise associated with climate change, particularly in the North Coast and Haida Gwaii;
- Lack of formal protection of many historic and archaeological sites, such as underwater shipwrecks;
- Lack of inventories for some areas particularly intertidal and underwater sites such as clam gardens;
- Potential destruction and loss of archaeological sites due to increased human disturbance and activities, and lack of adequate surveillance and management;
- Encouraging more economic opportunities associated with cultural resources, including aboriginal tourism, ecotourism and diving;
- Maintaining and reinforcing Aboriginal traditional use and cultural values.

The PNCIMA integrated ocean management planning process provides a unique opportunity for a collaborative approach that balances economic, social, and cultural values with competing activities. It may yield strategies and actions for benefiting from existing cultural resources, prioritizing actions for protecting and inventorying known sites, and recommending new collaborative management approaches.



3.3 Accidental Marine Spills

Marine spills are large and small petroleum and chemical product spills into the ocean from marine vessels or marine-based infrastructure, and from shore-based facilities. Marine spills represent an important issue in PNCIMA due to their adverse environmental, community, health and social effects, which vary in accordance with type of product spilled, volume of spill, and location of spill. Major spills have potentially high cleanup costs, may contaminate local seafood sources, and create human health hazards along with marine species mortality and ecosystem damage. Non-petroleum based oil spills from bulk freighters loading and transiting the PNCIMA (e.g., Canola and palm kernel oils) also pose a hazard, as they can smother large areas and affect fish, invertebrates, marine mammals and birds. These vegetable oils are also known for their persistence in the marine ecosystem.

The potential for a marine oil spill is present in PNCIMA, and related to the volume and nature of vessel traffic, location and proximity to rescue facilities (i.e. tugs), and the likelihood of collision, grounding or sinking. The highest potential for petroleum spills comes from barges that transport refined petroleum products to coastal communities on a regular basis, or from sinking of other recreational or commercial vessels. The possibility of spills from oil tankers transiting the PNCIMA area is generally low, as they generally respect the Voluntary Tanker Exclusion Zone (TEZ), maintaining their distance approximately 160 kilometres or more offshore. Shore-based marine spill potential in PNCIMA is due to regular petroleum and chemical product transfer between ships and shore-based storage facilities at the larger facilities in Prince Rupert, Kitimat and Stewart and to a lesser extent at small craft harbour facilities.

Marine spill potential will increase if the approved LNG project and the proposed Enbridge oil pipelines into Kitimat begin operations. Condensates are already shipped into Kitimat by tanker, where they are offloaded and transported by pipeline to the Alberta oil sands. Although more volatile than most petroleum products, they are considered highly toxic. Potential may also increase if future Arctic petroleum development occurs and utilizes tankers using West Coast routes. The potential impact of spills of chemical products such as LNG is much lower and more localized than for crude and heavy oil products. The likelihood of spills from offshore oil and gas exploration and development facilities will be determined by the future of current provincial and federal moratoria on these activities.

Marine spill issues are addressed in three ways: prevention, preparedness and response. Prevention focuses on activities that reduce the risk of spills and minimize potential impacts, such as reduced oil dependency, vessel traffic management, improved technology and safety measures. Spill preparedness involves development of contingency and cleanup plans, risk assessment, mapping of sensitive beaches and ecosystems, and identification of appropriate cleanup measures. Spill response involves the actions to contain and reduce impacts of spills when and where they occur.

The polluter, or Responsible Party, is responsible for responding to a spill from a ship. The first responder is whomever is closest to the spill and has the resources. On the west coast, Transport Canada has certified Burrard Clean Operations (BCO) as the Response Organization with whom polluters may contract to address marine oil spills. In PNCIMA, BCO may contract this role out to local companies, in accordance with response plans in place for each of North Vancouver Island, Prince Rupert and Haida Gwaii.

Both federal and provincial governments have marine oil spill programs. The BC government program includes shoreline inventory, sensitivity assessment and shoreline cleanup plans, and a Marine Oil Spill Response Plan.²⁵ The federal oil spill response regime directs Transport Canada to lead in planning and prevention efforts, while the Canadian Coast Guard leads spill response for spills from ships and mystery spills in the marine environment. Environment Canada has a national contingency plan and coordinates a federal Regional Environmental Emergency Team (REET) in support of response efforts by either the Response Organization or the Canadian Coast Guard. Canada is party to the Canada-United States Joint Contingency Plan for marine pollution incidents in Canada-United States contiguous waters. BC has a major cooperation agreement with nearby US states through the Pacific US States/British Columbia Oil Spill Task Force.²⁶

There are many smaller spills that are generally undetected, or detected but not responded to because of their size and/or location or lack of recoverable product. These smaller spills have a cumulative impact that, coupled with accidental spills, can be more significant in terms of environmental effect than the larger more catastrophic spills, over the longer term.

Challenges and Opportunities

Marine spills present considerable challenges throughout the PNCIMA and might be best addressed at the LOMA or GMA planning level. These include:

- Maintaining a high level of preparedness for response to potential oil and chemical spills in the PNCIMA;
- Level of cooperation and preparedness among industry, federal and provincial governments, First Nations and local communities;
- Impact of spills on marine ecosystems, habitats, species mortality, human health and safety.
- Effects of new spills into the marine environment associated with increased vessel traffic impacts, particularly from Prince Rupert port expansion and new product trans-shipments at Kitimat;
- Outdated risk assessments and response plans and equipment;
- Maintaining adequate levels of enforcement and surveillance as a deterrent;
- Education of industry and public.

Other marine planning processes have provided important policy direction to governments on marine spills, although usually as strategies or actions under broader ecosystem health objectives. The PNCIMA process offers similar opportunities for policy recommendations aimed at improved prevention, preparedness and response. Integrated planning may also serve as a catalyst for spill response cooperation agreements among industry and governments that promote effective deployment of resources and personnel.



3.4 Marine Pollution

Marine pollution refers to the contamination of marine ecosystems and species health from a wide variety of biological, chemical, hydrocarbon and organic discharges on sea or land (point source) and from non-specific land locations (non-point source). Key contaminants affecting the PNCIMA are urban and rural sewage, persistent organic pollutants (POPs), heavy metals, shore-based and ship-source discharge of oils and hydrocarbons, nutrients, contaminated sediments, and litter. These contaminants enter the marine environment through atmospheric discharge, stream discharge and runoff from land, and from direct dumping from ocean and land-based activities. Shore-based and ship marine spills are described in more detail in the previous section of this report.

Point-source pollution comes from such activities in the PNCIMA as log dumps and sorting grounds, pulp and paper mill discharges, past and present mining operations, ocean dumping of dredged and contaminated material, ship-source discharge of waste oils, urban and vessel wastewater and sewage, waste disposal at sea, fish farms and fish processing plants, air and waste emissions associated with marine vessels and port operations, and recreational activities on beaches and foreshore (e.g., kayaker stop-overs). Non-point source pollution occurs as a result of land-based activities within and outside the PNCIMA, and includes wastewater, run-off and sewage from urban, industrial and agricultural activities.

Sewage and run-off systems from larger communities in the PNCIMA can include a toxic mix of nutrients, oil and grease, viral and bacterial pathogens, suspended solids and dissolved metals. Non-point sources in rural areas can include animal wastes from agricultural lands and leakage from septic systems. Non-point sources of sewage generally carry nutrients and viral and bacterial pathogens. POPs are chemicals that remain intact in the environment for long periods, generally associated with pesticides and preservatives. Most have been banned or restricted (e.g., DDT, PCB, dioxins) but persist in the PNCIMA and continue to be transported globally in the atmosphere. Heavy metals include those toxic in excess amounts (e.g., copper, zinc, iron) or toxic at low levels, and enter the marine environment by streams, atmosphere and direct runoff. Oil and hydrocarbons enter the PNCIMA through chronic small spills and discharges from marine and land-based sources, including road runoff, discarded used oil, vehicle and equipment leaks and other land-based non-point sources. Nutrient sources in the PNCIMA include atmospheric deposition and surface runoff. Sediments building up on the ocean floor and can often absorb and store contaminants, which are transported or consumed by organisms, entering the food chain and dispersing to other areas. Marine litter from marine vessels and land-based sources includes cans, bottles, plastics, tires and fishing line and can persist in the marine environment.

These contaminants can be toxic to marine organisms, fish and mammals, hazardous to human health, and can affect recreation, tourism and aesthetic values. POPs such as PCBs are known to accumulate in the fatty tissue of living organisms and can be toxic to marine mammals and humans. Heavy metals and compounds entering the marine environment may pose a risk to human health through the consumption of sea food from contaminated areas. Oils can foul marine life, taint seafood, contaminate water supplies and smother aquatic communities and habitat. Nutrients like nitrogen and phosphorus stimulate plant growth and reproduction, but when

discharged in coastal areas can over-stimulate marine plant and algae production, leading to eutrophication. Excess nutrients from non-point sources can cause deterioration of water quality in poorly flushed areas and closure of shellfish harvesting in more populated areas. Contaminants in sediments may be passed up the food chain and be a concern to larger aquatic organisms, marine mammals, birds and humans.

Responsibilities for point and non-point discharge and impact control rest with numerous federal, provincial and local government authorities involved in human health, safety and environmental protection. Key federal legislation is the *Canadian Environmental Protection Act* (CEPA 1999), the *Fisheries Act*, the *Migratory Bird Convention Act* and the *Canada Shipping Act* (CSA). As part of an international initiative, Canada has developed a National Programme of Action for the Protection of the Marine Environment from Land-based Activities (NPA). Implementation to date has focused on regionally-based, multi-partner, action-oriented projects (i.e., activities within the Georgia Basin Action Plan) with national goals in mind. The NPA has achieved increased collaboration and partnerships between all levels of government, industry, organizations and the public, in order to address land-based sources of marine pollution. Work is underway to review the current approach in light of rapidly evolving coastal and marine governance approaches.

Challenges and Opportunities

Marine pollution poses many challenges throughout the PNCIMA but particularly in the coastal zone where the effects of land-based pollution are most strongly felt. They might be best addressed in LOMA or GMA planning and are summarized as:

- Impact of marine pollution on marine species populations and health, and human health;
- Potential increase in water, air and noise pollution from increased recreational boating, shipping and vessel traffic, increased industrial and community development;
- Impacts of marine pollution on marine fauna including, migratory birds, sea mammals, shellfish and finfish aquaculture;
- Impacts of marine facility improvements, such as dredging;
- Inability to directly control atmospheric pollution sources from outside PNCIMA;
- Managing the cumulative effect of marine pollution from all sources;
- Compounding effect on ecosystems and species of marine pollution stressors combined with the stress of climate change effects.

An integrated ocean management planning approach provides an opportunity in the PNCIMA to develop a collaborative and complementary approach among various authorities and jurisdictions for reducing marine pollution. It may lead to identification of remediation priorities and programs for polluted areas, improved monitoring programs, and recommendations aimed at reducing pollution levels from various sources in the PNCIMA.



3.5 Marine Climate Change Effects

The observed and predicted effects of global climate change on the Pacific Ocean include sea level rise, ocean warming, ocean acidification, reduction in mixing and oxygenation of waters, creation of dead zones, and shifts in marine species distributions. These effects are compounded by climate change on land as well as in the oceans.

Climate change effects in the PNCIMA will likely pose significant challenges and present some opportunities to marine ecosystems, species, economic activities, social and cultural fabric, and community infrastructure. For example, current fish species (e.g., salmon) may move northward to cooler waters, but new commercial species may migrate into PNCIMA. Commercial shellfish species may expand their range of productivity northward, but increased acidity of the ocean could reduce growth rates and lead to the disappearance of many key species of invertebrates, which play a number of roles in marine ecosystems. In some parts of the PNCIMA, sea level rise in combination with storm events may increase erosion of coastal infrastructure, requiring expensive reconstruction. Coastal archaeological sites may be lost, and productive, low-lying habitat may be submerged or altered.

Uncertainty exists about potential climate change effects in the PNCIMA due to its dynamic oceanographic conditions and lack of basic information about many ocean, ecosystem and species characteristics. The ‘thresholds’ to trigger changes are not well known for the PNCIMA. Public understanding of climate change is limited and often displaced by more pressing concerns. In addition some effects are more likely in some parts of the PNCIMA than others and may be masked by natural climate cycles.

Most government action and commitment has focused on ‘mitigation’ actions aimed at reducing GHG emissions. However, even with dramatic action to reduce emissions, the global climate will continue to change in the next two decades in response to past emissions. Many scientists and ocean managers are pressing for ‘adaptation’ actions that will allow ecosystems, species, economic sectors and communities to adjust and respond to the changes that will take place in the oceans. Adaptation measures can include risk assessments by area, creation of MPAs to maintain ecosystem function and diversity, reduction in non-climate stressors on ecosystems, such as over-harvesting and habitat loss from development, and reduction of land-based pollution.

Challenges and Opportunities

Challenges from climate change effects exist throughout PNCIMA and might best be addressed in LOMA and GMA planning. These include:

- Lack of public understanding of climate change effects;
- Lack of sustained political will and funding for climate change actions;
- Changes to commercial species distribution and viability of related industries;
- Increased threats to community infrastructure, and increased costs of maintenance;
- Loss of important First Nations archaeological and cultural sites;
- Loss or destruction of key habitat for fish, birds and other species;

- Potential effects on the aquaculture industry, such as increased ocean acidification, hypoxia, algae blooms & water temperature;
- Management of human stressors to offset stresses generated by climate change, including vessel traffic and land-based pollution, and accidental spills.

The PNCIMA integrated ocean management planning process provides an opportunity to develop climate change mitigation and adaptation actions in collaboration with governments and participants, for a wide variety of uses and activities, including fisheries and aquaculture. It also provides an opportunity to foster collaborative efforts to set aside key ecosystems and habitats as MPAs for species adaptation away from human stressors.



3.6 Aquatic Invasive Species

Aquatic invasive species are non-native species, whose unintended or uncontrolled introduction affects marine ecosystems and native species, the economy and/or human well-being. Aquatic invasive species thrive in the absence of their native predators. Harmful invasive species have been responsible for significant devastation of some native fish species and fisheries across Canada. Annually, the problem costs billions of dollars in lost revenue and control measures.

To date, a number of harmful invasive species have been identified in coastal waters along BC, including the North American green crab (*Carcinus maenas*), varnish clam (*Nuttallia obscurata*), a colonial tunicate (*Didemnum vexillum*), & Japanese oyster drills. The green crab is an efficient predator and colonizer that threatens Pacific coast shellfish. Japanese oyster drills bore holes into young oysters and feed on them, causing significant damage to the oyster industry.

Aquatic invasive species pose a threat in the PNCIMA due to the presence of pathways that allow their entry. Significant pathways in the PNCIMA are shipping, recreational and commercial boating, the use of live bait, live food fish, and unauthorized introductions and transfers of species. The shipping pathway is considered the largest single source of new aquatic invasive species. Ballast water taken on in foreign ports for ship stability and safety at sea is discharged in Canadian waters, along with undesirable foreign species ranging from bacteria to larger organisms. Insufficient awareness of the issue also compounds the risk.

Numerous jurisdictions, from the local to the international level, play a role in prevention, monitoring and management activities. Within the federal government, primary responsibility rests with DFO and EC, but management actions can also involve Transport Canada and other departments. Provincial and territorial governments share the responsibility with industry, non-governmental organizations, First Nations and stakeholders. The Canadian Action Plan to Address the Threat of Aquatic Invasive Species outlines a national approach for managing invasive species.

The IMO adopted a Convention for the Control and Management of Ships' Ballast Water and Sediments in 2004. The Convention sets standards for acceptable numbers of organisms to be present in ballast water and establishes a timetable for compliance. Transport Canada has proposed revisions of the *Canada Shipping Act Ballast Water Regulations* to reduce potential for introduction of invasive species. A National Code on Introductions and Transfers of Aquatic Organisms governs authorized introductions, which can be made for such purposes as aquaculture, increasing fish stocks, and biological control.

Prevention of harmful new invasions is the first priority. Once species are established, the tools used to manage invasive species must be carefully analyzed for effectiveness, costs, and potential impact on the rest of the ecosystem. For example, efforts to stem the spread of a species may require the use of toxic chemicals, hamper trade in certain commodities, or increase shipping costs.

Challenges and Opportunities

Harmful aquatic invasive species represent a challenge across the PNCIMA and might be addressed at the LOMA planning level. Potential challenges are:

- Increased introduction due to expansion of shipping activities, and through ocean climate changes that induce migration of non-native species into the PNCIMA;
- Potential economic impact on existing and developing shellfish aquaculture;
- Potential impact on marine ecosystems and biodiversity.

An integrated ocean management planning process may allow different marine users and activity groups to collaborate on evaluating risk, identifying preventative measures, and determining roles that can be played to prevent or reduce the risk of invasive species introduction in the PNCIMA.



3.7 Species at Risk and Species of Concern

Species at risk and species of concern are ocean-dependent birds, fish and mammals officially recognized as rare, endangered, threatened or vulnerable at federal, provincial or international levels. They are typically managed in a special way and/or afforded protection by government, using such legislation as the federal *Species at Risk Act* (SARA), *Migratory Birds Convention Act*, *Fisheries Act*, and the provincial *Wildlife Act*.

Species at risk or of concern are important for a number of reasons. They are important for biodiversity of marine ecosystems and maintenance of ecosystem health and balance. They are often the basis of commercial recreation, tourism and sightseeing opportunities, and, in some cases, important symbols of the Pacific Coast.

Thirty-three marine bird species or subspecies occurring in PNCIMA have been listed as species of conservation concern by the BC Conservation Data Centre, by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), by SARA and/or the International Union for Conservation World Conservation (IUCN). The PNCIMA contains most of the major seabird colonies that occur in BC, such as in the Scott Islands, Haida Gwaii, Queen Charlotte Sound, Quatsino Sound, and near Brooks Peninsula. As a result, 95% of all of BC's breeding seabirds occur in the PNCIMA.²⁷ Included are: all of the known nesting areas within Canada of Ancient Murrelets (most of which occur on Haida Gwaii); all of BC's population of Common Murres (Triangle Island and Kerouard Islands); more than 99% of the BC's nesting Cassin's Auklets, Rhinoceros Auklets, Fork-tailed Storm-petrels, and Horned and Tufted Puffins; 97% of the province's Leach's Storm-petrels and 85% of its nesting population of Pigeon Guillemots. Small numbers of Great Blue Heron have been noted in the Broughton Archipelago and Skidegate Inlet, and observed in association with reefs and kelp beds along the Central and North Coast.

Of more than twenty-five species of marine mammals and reptiles found within the PNCIMA, thirteen are listed under SARA. Of the SARA-listed species, blue, fin, and sei whales are found along the western boundary of the PNCIMA. Dixon Entrance is an important area for blue, humpback, and resident killer whales. The east coast of Haida Gwaii is important for gray whales and leatherback turtles, as well as harbour porpoises. The mainland coast is important for resident killer whales, and portions of this area are important for humpback, gray, and fin whales, and sea otters. Sea otters were reintroduced to the Pacific Coast on the northwest coast of Vancouver Island, and are expanding their habitat. The PNCIMA contains the three main Steller sea lion breeding rookeries on the coast, and foraging habitat. Fish species of conservation concern are primarily inshore rockfish, for which DFO has established a number of Rockfish Conservation Areas to encourage population recovery.

EC's Canadian Wildlife Service (CWS) is responsible for the protection and management of migratory birds, nationally important wildlife habitat, and endangered species. Under SARA, DFO is responsible for the protection and recovery of aquatic species at risk and Parks Canada Agency is responsible for the management and recovery of species found in national parks and lands administered by the Agency. DFO manages marine mammals under the *Fisheries Act*. Federal and provincial government agencies, industry and non-governmental organizations are generally involved in habitat protection, recovery strategies and plans. Strategies for several species are in place or being developed, including those for northern and southern resident killer whales, blue, fin, sei and right whales, sea otters and leatherback turtles, and Marbled Murrelet.

Challenges and Opportunities

Species at risk and species of concern face a number of management challenges throughout the PNCIMA, but especially in the identified areas of critical or important habitat. They might be addressed at LOMA, GMA and CMA levels and include:

- Mortality, sub-lethal effects, and habitat degradation resulting from human activities, including oil and chemical spills, pollutants and contaminants, fisheries by-catch, competition for prey with fisheries, illegal harvesting, ship strikes, seismic activities, and entanglement in gear and plastics;
- Potential adverse impact of eco-tourism operations through noise & disturbance;
- Potential impacts from non-renewable energy exploration and development activities;
- Critical habitat loss due to rookery predators (e.g., rats, raccoons), land development, and spread of non-native vegetation;
- Climate change effects on breeding cycles, habitats, foraging success, prey sources, predators, food abundance and distribution;
- Impacts on species that slow population recovery and health, such as human-generated marine noise and disturbance, vessel traffic increases and accidental spills that affect marine water quality and marine ecosystems.

The PNCIMA integrated ocean management planning approach provides a forum to develop policies and strategies to address these issues and support recovery efforts. A collaborative approach may set priorities for recovery actions, identify protection measures for critical habitat and use migration and behaviour patterns of species to minimize conflicts with human activities.

4.0 JURISDICTIONAL & LEGAL CONTEXT

4.1 PNCIMA Collaborative Governance

The considerable overlap of jurisdiction and management authority on the sea surface, water column and seabed necessitates a concerted effort by federal, provincial and First Nations' governments to achieve mutually desired & priority objectives for the PNCIMA.

While the federal government has jurisdiction over the sea surface, water column, and sea bed from the high tide mark to Canada's 200 nautical mile limit, court decisions have found BC to have jurisdiction over coastal waters, including intertidal areas and inland waters. These intertidal and inland waters have been further defined by the courts to include the straits and water bodies between mainland coast and the Vancouver Island, and areas between headlands. This jurisdiction includes any water surface occupied by uses that are affixed to provincially-owned seabed. Provincial jurisdiction over the waters of Dixon Entrance, Hecate Strait and Queen Charlotte Sound has not been confirmed.

As a result, both provincial and federal agencies have many overlapping roles and responsibilities, which require 'harmonization' of effort. This has been evidenced in a number of prior and proposed agreements on ocean management and planning as well as resource development, particularly the 2004 *Memorandum of Understanding regarding Implementation of Canada's Oceans Strategy on the Pacific Coast*.²⁸

In addition, most coastal First Nations in the PNCIMA have never signed treaties or ceded their aboriginal title or rights over land and resources in their traditional territories, which in some cases extend into the ocean areas. A number of First Nations are in litigation on land and resource jurisdiction, and others are engaged in the treaty process with Canada and BC. These cases and treaty discussions reinforce the need for governments to collaborate with First Nations in the PNCIMA, as has been evident in the development of the approach to the PNCIMA integrated ocean management planning process.

4.2 First Nations' Rights and Relationships

In Canada, section 35 of the 1982 *Constitution Act* recognizes and affirms a spectrum of aboriginal and treaty rights and provides constitutional protection to these rights and title. In its landmark 2004 decision in *Haida v. BC*, the Supreme Court of Canada emphasized that the honour of the Crown is always at stake in its dealings with aboriginal peoples, and that the honour of the Crown may require the Crown to consult with and reasonably accommodate aboriginal interests pending resolution of claimed aboriginal rights and title.

Accordingly, the relationship between governments and First Nations in the PNCIMA is different than that between governments and stakeholders. This special relationship has been reinforced by the *Oceans Act* and related policy, which affirms a desire to engage and collaborate with First Nations in ocean decisions and integrated management planning processes.

Canada and First Nations each bring authorities and mandates to the PNCIMA initiative that the other may respect and benefit from. The PNCIMA process represents an opportunity to lead Canada in implementing a model for integrating broader aboriginal rights within ocean-related governance mechanisms.

5.0 CONCLUSION

This discussion paper has identified seventeen marine-related issues for inclusion in integrated oceans management planning within the PNCIMA. Some may be relevant topics for regional large ocean management (LOMA) planning, while others may be more appropriately addressed in sub-regional geographic management area (GMA) plans or local coastal management area (CMA) plans. Some issues may be dealt with at all planning levels, with the level of treatment reflecting the scale and nature of the plans e.g., broad policy at the LOMA level, and more specific guidelines and area designations at the CMA scale.

Ten issues are categorized as Marine Activity and Use Issues. Challenges associated with these issues include competition and conflict among different uses and activities, their potential impact on the marine environment and species, their sustainability as a basis for economic activity, and changes in ecosystems and species. Seven issues are identified as Marine Environment and Culture Issues. Challenges associated with these issues include adequate protection and management of ecosystems and species, risk associated with increased marine activities and uses, and adequacy of policies, plans and programs for mitigation and adaptation to potential effects.

The integrated management process provides an excellent opportunity for federal, provincial, First Nations and local governments and stakeholders to address these issues. Environmental, social, cultural and economic outcomes may include:

- Reduction in conflicts and competition between user groups and activities;
- Ensuring that activities are sustainable and support coastal economies;
- Identification of ‘best management practices’ for marine activities;
- An integrated review of proposed marine transportation increases;
- Space and time-related allocations of marine areas for uses, activities and/or protection;
- Integration of existing terrestrial plans with adjacent marine plans and updating of existing coastal plans;
- Development of site recommendations for an MPA network;
- Identification of sensitive ecological areas;
- Improvement of spill prevention, preparedness and response;
- Pollution prevention and reduction measures;
- Development of climate change adaptation actions;
- Identification of measures to reduce invasive species introductions; and
- Development and support for species at risk recovery efforts.

A key commitment in integrated management planning processes is to promote integration of existing management structures and processes, as well as to develop mechanisms for greater collaboration and participation in regulatory decisions by all participants. The considerable overlap of jurisdiction and management authority in the PNCIMA necessitates a concerted effort by all governments to achieve mutually desired and priority objectives in collaboration with stakeholders. The PNCIMA integrated ocean management planning process also represents an opportunity to develop an effective model for integrating broader First Nations rights within ocean-related governance mechanisms.

ANNEX 1 BOUNDARY OF THE PNCIMA AREA



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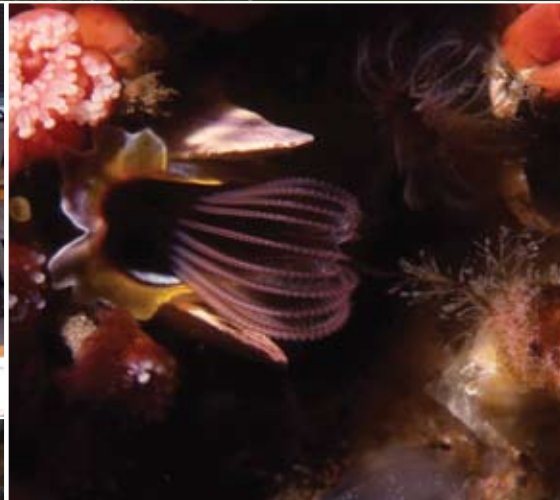


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