

Protecting Canada's Coastal and Marine Environment



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The major threats to the health, productivity and biodiversity of the world's oceans result from human activities in coastal areas and farther inland.

The Global Picture

It is estimated that 80 percent of the pollution in the oceans originates from land-based activities.

Oceans are the final destination for municipal, industrial and agricultural wastes and run-off, as well as atmospheric pollutants. These contaminants have an effect on the most productive areas of the coastal and marine environment, including estuaries and nearshore coastal waters.

Once released into the environment, such pollution can seldom be controlled. Efforts need to focus on preventing pollution rather than trying to clean it up after the fact.

The marine environment is also threatened by physical alterations of the coastal zone and destruction of habitats of vital importance to maintain ecosystem health. Alterations and destruction of habitat are often caused by human activities, such as shoreline construction and coastal dredging.

According to the United Nations Environment Programme (UNEP), over one billion people around the world live in coastal urban centres. Development-related activities threaten almost 50 percent of the world's coasts. The health, well-being and, in some cases, the livelihood of coastal populations depend upon the conditions of coastal systems such as estuaries, wetlands,

mangrove forests and coral reefs. The intense pressures on these coastal systems require serious commitment to take preventive action at all levels – local, regional, national and global.

Over one billion people around the world live in coastal urban centres.

As part of an international initiative to address major threats to coastal and marine environments, Canada, along with over 100 other nations, adopted the *Global Programme of Action for the Protection of the Marine Environment from Land-based Activities* (GPA) in November 1995.



Canada's National Programme of Action

Canada was the first country to develop a national programme in response to this global initiative. *Canada's National Programme of Action for the Protection of the Marine Environment from Land-based Activities* (NPA) is a partnership between federal, provincial and territorial governments aimed at addressing the interface between fresh and salt waters, river basins and coastal environments to prevent marine pollution from land-based activities and to protect habitat in coastal zones of Canada. As a national framework and plan, the NPA provides an assessment of the state of Canada's coastal and marine environment and identifies the management objectives, strategies and priority actions that need to be implemented.

Development-related activities threaten almost 50 percent of the world's coasts.

The NPA is based on the principles of sustainable development, integrated management and the precautionary approach. The two primary strategies for protecting the marine environment from land-based activities are *pollution prevention* and *integrated management* of activities within estuarine, coastal and marine waters. Through coordinated actions at local, regional, national and global levels, the NPA responds to Canadian values and expectations for a clean coastal and marine environment and sustainable coastal and oceans development.

Canada's Coastal and Oceans

Canada is a Maritime Nation



Canada has the longest coastline of any country (243,797 km). Stretched out as a single continuous line, Canada's coastline would circle the Earth more than six times. Canada also has the second largest continental shelf in the world (3.7 million sq km) and a total offshore marine area equal to 40% of Canada's land mass (6.5 million sq km).

Canada's coastline contains complex ecosystems such as estuaries and wetlands that connect inland freshwater systems to nearshore salt waters as well as a wealth of geological and ecological diversity.

Eight of Canada's ten provinces and three territories border three oceans: the Pacific, Arctic and Atlantic.

Approximately 60% of Canadian freshwater flows north towards the Arctic Ocean and Hudson Bay.

Canada's Arctic islands form the largest archipelago in the world, covering 1.4 million sq km.

Canada's Exclusive Economic Zone extends 200 nautical miles from the Baseline of the Territorial Sea and is equivalent in size to over 30 percent of Canada's total landmass.

Canada's five major drainage basins are named after their final destinations: Atlantic (includes the Great Lakes and the St. Lawrence River), Pacific, Hudson Bay, Arctic and the Gulf of Mexico.

Facts



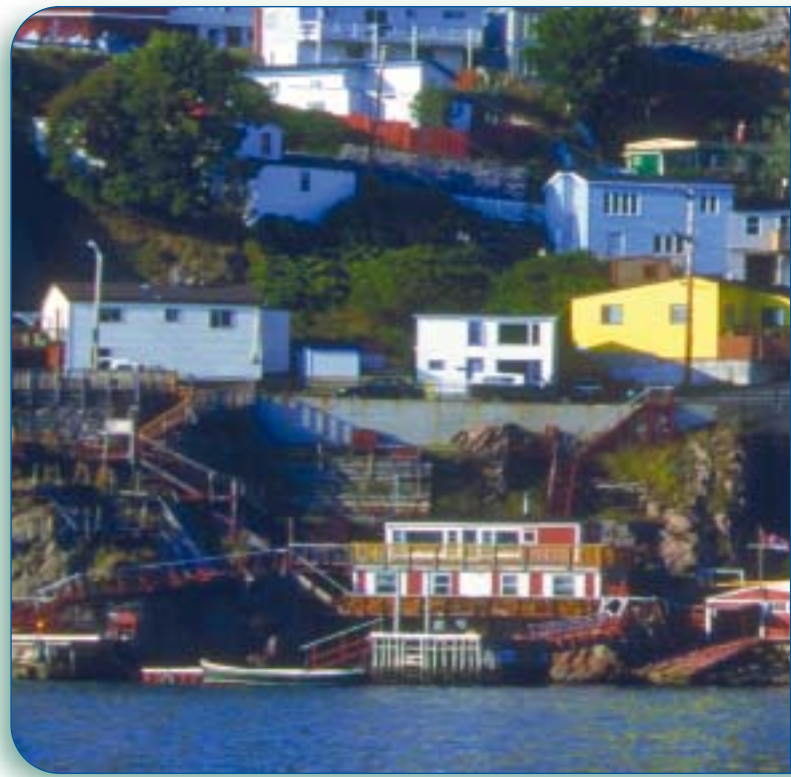
Photo: © Jim Moyes (2002)

About 7 million Canadians live in coastal areas (defined as areas within 60 km of the coast), where many depend on the coastal zone and the ocean for their livelihoods.

The Pacific coastline stretches more than 27,000 km, includes highly diverse habitats, significant aquatic resources, over 6,500 islands, and many distinctive features, such as fjords or inlets. British Columbia's coastal area supports 75% of the population and over 70% of the province's economic activity.

The Atlantic coastline stretches 40,000 km and has varied physical features such as deep fjords carved from granite in Newfoundland, rocky shores along southern Nova Scotia, vast marshes and barrier island systems in New Brunswick, red sandy beaches in Prince Edward Island, and vast mud flats in the Bay of Fundy. The Gulf of St. Lawrence constitutes one of the world's largest semi-enclosed seas, a highly productive ecosystem, and a major area of commercial fishing activity in Atlantic Canada.

The Arctic coast features habitats such as tidal flats, saltmarshes, cliff shorelines and river deltas. It is a vast, sparsely populated part of the country, with only 76 communities and a total population of approximately 70,000 people. Approximately 50 communities are located either directly on the coast or in the Mackenzie River watershed, a major riverine input to the Arctic Ocean. These communities are highly dependent on coastal and marine resources for subsistence and development. The other major riverine input to the Arctic Ocean is the Hudson Bay drainage system, extending southward from the Arctic Ocean by more than 2,000 km.



The NPA responds to Canadian values and expectations for a clean coastal and marine environment and sustainable coastal and oceans development.

The Key Issues

The NPA focuses on addressing problems within 14 categories under the broad themes of *contaminants* and *physical alteration and destruction of habitat*. These categories include:

- **Contaminants** – sewage, persistent organic pollutants, radionuclides, heavy metals, oils/hydrocarbons, nutrients, contaminated sediments and litter.
- **Physical alteration and destruction of habitat** – shoreline construction/alteration, inter-tidal and sub-tidal alteration, mineral and sediment extraction/alteration, wetland and saltmarsh alteration, marine waters and coastal watershed alteration, and biological alteration.

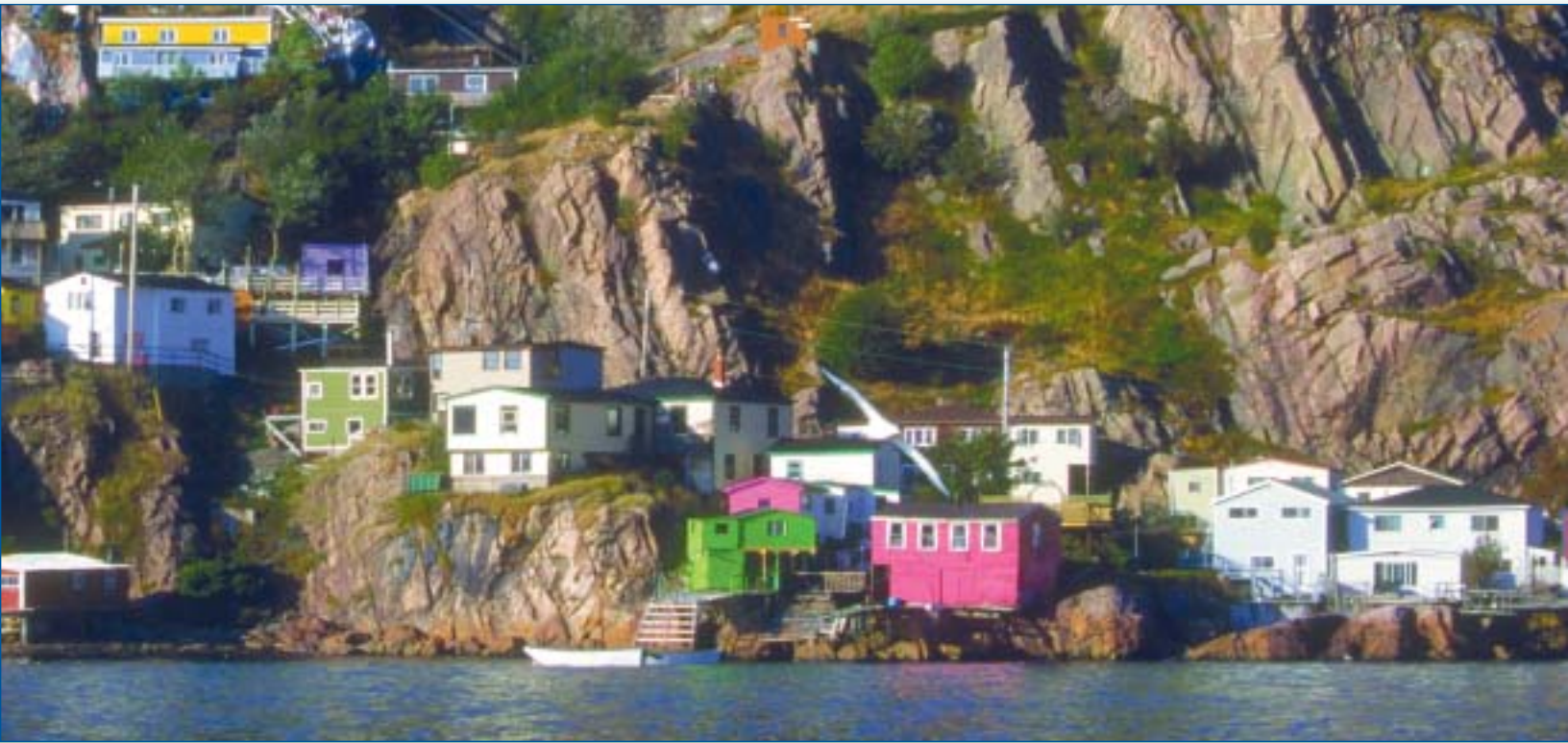
For each of these categories, the NPA identifies national and regional problems, priorities, goals and objectives, strategies and actions, and next steps.

A key output of UNEP's First Intergovernmental Review Meeting on the Implementation of the Global Programme of Action, which was hosted by Canada in 2001, was the global recognition that priority actions need to be taken in 2002–06

to address the impacts of sewage, nutrients and the physical alteration of coastal and marine ecosystems. Under the NPA, Canada has assigned sewage, persistent organic pollutants and habitat alteration/destruction as high priorities for action. As a result of the UNEP meeting, Canada is reassessing its priority ranking for nutrients.

Contaminants

In recent years, Canada has taken progressive measures locally, provincially, territorially, nationally and internationally to control land-based sources of contaminants through various programs, policies and legislative measures. Various departments within each province and territory, such as fisheries, environment and resource departments, share administration and responsibility of oceans-related legislation. Legislation generally covers land and water use planning, environmental protection, environmental assessment and waste management.



At the national level, the *Fisheries Act* includes provisions, administered by the Minister of Environment, to prevent pollution of waters inhabited by fish. The *Canadian Environmental Protection Act, 1999* is aimed at protecting the Canadian environment and human health by managing toxic substances, marine pollution, disposal at sea and other sources of pollution. The purpose of the *Canadian Environmental Assessment Act* is to ensure that federally funded or regulated projects do not cause significant adverse environmental effects.

The following sections describe the NPA contaminant categories and provides examples of ongoing actions.

Sewage

Municipal wastewater effluents are a significant point source of sewage and one of the largest sources of pollution to Canadian waters. Sewage is released from wastewater treatment plants,

and sometimes from combined sewer overflows during heavy rainfalls. Municipal effluents are complex mixtures originating from residential, industrial and commercial sources. They can include nutrients, oil and grease, pathogens, suspended solids, persistent organic pollutants and dissolved metals. Non-point sources of sewage include animal wastes (manure) from agricultural lands and leakage from septic systems located along the coast or entering freshwater systems that discharge to marine waters. Non-point sources of sewage generally carry nutrients and viral and bacterial pathogens.

The management of municipal wastewater in Canada involves a number of complex and interrelated issues and requires governments to work together to develop a common approach. In November 2003, the Canadian Council of Ministers of Environment agreed to work together to develop a national strategy for the management of municipal wastewater effluents. This agreement is a significant breakthrough, which will result in the better protection of our environment.

Persistent Organic Pollutants

Persistent Organic Pollutants (POPs) are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and can be toxic to humans and wildlife.

POPs are generally synthetic organochlorine compounds and other organic compounds that are manufactured for use as pesticides or other uses (e.g., PCBs, DDT). They are formed as unintended by-products (e.g., dioxins and furans) or derived from incomplete combustion either naturally or by human activities (e.g., PAHs).

While most POPs have been banned or severely restricted in Canada for years, they are still produced, used and released in a number of other countries. With the evidence of long-range

transport of these substances to regions where they have never been used or produced and the consequent threats they pose to the environment, the international community is taking global action to reduce and eliminate releases of these chemicals. Canada was the first country to sign and ratify the global

There is evidence of long-range transport of POPs to regions where they have never been used or produced.

Stockholm Convention on Persistent Organic Pollutants (POPs), in 2001. This agreement aims to reduce or eliminate 12 toxic substances known as the “dirty dozen,” including DDT, PCBs, and dioxins and furans. The *Stockholm Convention* entered into force in May 2004.

Canada is also providing resources to combat POPs from foreign sources. The Canada POPs Fund is a \$20 million, 5-year fund to support capacity building and help find alternatives for the use of POPs in developing countries and countries with economies in transition. Canada also contributes directly to the Global Environmental Facility, which supports efforts of developing countries to implement international conventions including the *Stockholm Convention*.

Radionuclides

Radionuclides are substances that emit radiation. They exist both in natural and human-made forms and range from low-level radiation emitters such as radon to high-level emitters such as plutonium.

Releases to freshwater may result in downstream effects in marine environments. In Canada, sources of radionuclides to the marine environment are monitored by the government and are very low. Canada continues to regulate the use of nuclear energy and materials to protect health, safety, security and the environment and to respect Canada’s international commitments on the peaceful use of nuclear energy.

Heavy Metals

Many metals are essential to life (e.g., copper, zinc, iron, chromium) but are toxic in excess amounts. Other metals, such as cadmium or mercury, are biologically non-essential and are toxic at relatively low concentrations. Organic metals such as organotin are also toxic in small amounts. Metals and their compounds, both inorganic and organic, are released to the environment as a result of a variety of human activities, such as ongoing and former mining activities, foundries, smelters and incinerators; and diffuse sources such as eroded piping, product constituents and combustion by-products. However, metals also enter the environment through the natural weathering of rock. Relatively volatile metals and those that become attached to airborne particles can be widely dispersed. Metals conveyed in aqueous and sedimentary transport (e.g., river runoff) enter the normal coastal biogeochemical cycle and are largely retained in the sediments of nearshore and shelf regions. Metals and metallic compounds entering the marine environment may pose a risk to human health through the consumption of seafood from contaminated areas.

Canada, along with 21 other countries, has ratified the 1998 Protocol on Heavy Metals to the United

Nations Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution (LRTAP). The Protocol came into force in December 2003, and aims to reduce emissions from industrial sources, combustion processes and waste incineration.

To follow-up on the commitment under this Protocol for the three specified heavy metals (cadmium, lead and mercury), Canada will: (1) control atmospheric emissions from new plants in designated industrial sectors; (2) reduce atmospheric emissions from existing facilities by 50% (based on 1990 values); (3) control lead content in gasoline and mercury content in alkaline batteries; and (4) develop and maintain emission inventories for these heavy metals.

Oil and Hydrocarbons

While most of us associate oil pollution with major incidents such as the *Exxon Valdez*, most oil pollution in the marine environment comes from chronic small spills and discharges from both marine transportation and land-based sources. Common sources from land are road runoff, discarded used oil in sewers, leaks from vehicles and equipment, and accidental spills.

Oils can foul marine life, taint seafood and the general environment, contaminate water supplies and smother aquatic communities and habitats.

Oils can also be toxic to aquatic life when ingested or absorbed through the skin or gills and can interfere with respiratory systems. It can have a serious impact on all types of marine resources, including mammals, birds, algae and plankton.

Canada has a good regulatory system to control discharges from oil refineries under the

Fisheries Act. However, education of the general public on their use and disposal of waste oils is an essential next step in reducing oil in the nearshore.

Nutrients

Nutrients are chemicals or simple compounds formed from elements (e.g., nitrogen or phosphorus) that are needed by plants for growth and reproduction. Nutrients are available to plants from the air, soil and water, and are both naturally present and added by human activities. Generally, eutrophication (the overstimulation of plant production to the detriment of other species) is confined to the area of coastal discharges. Sources of excess nutrients to the coastal zone include atmospheric deposition, surface runoff from agriculture, sewage, waste products from food manufacturing plants and fish processing plants, finfish aquaculture operations, and forestry and mining operations.

Oils can also be toxic to aquatic life when ingested or absorbed through the skin.

A 2001 science assessment, entitled *Nutrients and Their Impact in the Canadian Environment*, provided information on sources of nutrients (nitrogen and phosphorus) to Canadian air, water and soil, and effects of these emissions on human

health and ecosystems. The assessment resulted in the development of a Federal Nutrients Agenda, which is strengthening and promoting coordinated

federal action to reduce the environmental impact of nutrients from all sectors.

Mitigating the negative impact of excess nutrients from agriculture on water quality is a major focus of Canada's Agricultural Policy Framework, announced in June 2002.

It prescribes the development of environmental farm plans, environmental management standards and best practices,



supports the polluter pays principle, internalizes the costs of environmental protection into farm planning decisions and defines areas where the government can provide assistance. Several Canadian provinces are adopting a more aggressive approach to environmental measures and controls to address the effects of agricultural practices. The province of Ontario has taken significant action in managing nutrients through the enactment of the *Ontario Nutrient Management Act*.

The NPA will continue to monitor the various nutrient initiatives underway in Canada, because of their significant impact to the coastal zone.



Contaminated Sediments

Sediments are aquatic clays, silts, sands, gravels and rocks, and organic matter that settle at the bottom of the ocean floor. Sediments provide habitat for aquatic and burrowing organisms and are known to be both the source of and sink for various contaminants. Contaminants can find their way into sediments from various human activities, where they accumulate over time. Once in sediments, they can be transported by waves or storms or consumed by organisms. Contaminants can also become less available to living things by binding to the organic or inorganic components of sediments. Contaminated sediments are of concern to bottom-feeding organisms that are directly exposed to them. Where contaminants

are bioaccumulative, they can get passed up the food chain and be a concern to larger aquatic organisms and potentially to marine mammals, birds and ultimately humans. Elevated concentrations of contaminants (e.g., heavy metals or POPs) are associated with major coastal industrial areas because of land-based activities and, to a lesser extent, marine transportation. However, the environmental processes that transport contaminants over long distances will place, over time, more remote areas at risk.

The management of sediments focuses on reducing contaminant sources and containing or mitigating contaminated sediments. For example, disposal at sea of dredged material from marine ports and waterways is subject to a permit system under the *Canadian Environmental Protection Act, 1999*. The Disposal at Sea program ensures that contaminated sediments are not deposited in open water where contaminants can be more widely dispersed, creating problems in new areas. The program sets conditions on the disposal of clean sediments so that they do not cause conflicts with other legitimate uses of the sea. Governments at both the federal and provincial levels are exploring means to better manage contaminated dredged material.

Litter

Marine debris or litter can include anything we throw away in our day-to-day lives, such as fast food containers, aluminum cans, plastic bags, coffee cups, tires, motor oil bottles, rope, fishing line, and many other items. It also includes accidental losses of equipment and materials, such as fishing gear damaged by storms and spills of plastic pellets used in plastics manufacturing.

As consumers, we all benefit from synthetic materials such as plastic. However, synthetic materials do not readily breakdown and tend to remain in the marine environment for a number of years. Once in the marine environment, debris harms both wildlife and people. Marine debris

also respects no borders. Garbage tossed out to sea in one part of the world may drift by way of ocean currents and eventually be found in other parts of the world.

Despite its global nature, marine debris is something Canadians can work to prevent by participating in local beach or park clean-up activities. Many groups sponsor and organize these events from the spring to fall seasons. Participating in a local clean-up demonstrates first hand the extent of the marine debris problem at a community level, while at the same time revealing the far-reaching sources of such debris.



Physical Alteration and Destruction of Habitat

In recent years, Canada has taken progressive measures locally, provincially, territorially, nationally and internationally to control physical alteration and destruction of habitat through various programs, policies and legislative measures. This theme is relatively broad and divided into six categories. However, many activities, programs and legislation aimed at protecting and conserving habitat touch on more than one of these NPA habitat categories.

At the national level, the *Fisheries Act* contains habitat protection provisions, administered by Fisheries and Oceans, which prohibit any project or activity that would harm, alter, destroy or disrupt fish habitat. In support of the Act, the *Policy for the Management of Fish Habitat* provides a comprehensive framework for the conservation, restoration and development of fish habitat.

In 1997, Canada made a commitment to modern oceans management and governance through the *Oceans Act*. The Act is based on sustainable development, integrated management and the precautionary approach. The implementation of the Act is supported by integrated management initiatives, marine protected areas and marine environmental quality programs.

The purpose of the *Canadian Environmental Assessment Act, 1999* is to ensure that federally funded or regulated projects do not cause significant adverse environmental effects.

In October 1996, federal, provincial and territorial ministers responsible for wildlife signed the *Accord for the Protection of Species at Risk*.

The accord lays out the basic principle of species conservation as well as a number of commitments to protect species at risk and their habitat. The *Species at Risk Act* is part of the Government of Canada's strategy for meeting its commitments under the Accord. The Act assists in the recovery of species at risk and the protection of their critical habitat.

At the provincial and territorial level, legislation is being enacted that enshrines integrated planning as the basis for regulatory decisions and conservation and restoration activities.

An example is the Nunavut Wildlife Management Board. The board's mandate is to ensure the protection and wise use of wildlife and wildlife habitat for the long-term benefit of Inuit, as well as other residents of Canada. The role of the board includes providing advice and recommendations to governments on adjacent marine zones and approving plans for the management and protection of particular wildlife

Synthetic materials do not readily breakdown and tend to remain in the marine environment for a number of years.

and wildlife habitat. Wildlife management boards across the country have similar roles.

The following sections describe the six categories under the NPA theme of physical alteration and destruction of habitat and provides examples of ongoing actions.

Shoreline Construction/ Alteration

Shoreline construction and alteration includes urban development, ports, harbour works, erosion control, wharves and breakwaters. In general, this category is meant to capture those alterations that change coastal features largely for the purpose of human development. Protective measures intended to harden shorelines against natural

erosive forces are also included, since these measures are often required to protect human amenities that were placed in vulnerable locations.

Ongoing activities to minimize the impacts from shoreline construction and alteration are in place at all levels of government. Examples include environmental assessment programs for new

development projects, land-use planning, regulations, permitting systems and municipal by-laws.

Inter-tidal and Sub-tidal Alteration

Inter-tidal and sub-tidal alteration includes effects related to fixed fishing gear, docks and piers as well as certain types of land-based aquaculture devices and facilities. Concerns involve the loss of key habitat for native fish species, including areas required for migration, spawning and nurseries.



The harvesting of marine plants from intertidal and sub-tidal zones can result in alteration or loss of habitat for other species, decreased biodiversity, or unsustainable use of the resource.

Mineral and Sediment Extraction/Alteration

Harbour dredging and sediment disposal are common on all three Canadian coasts, but existing controls limit the severity of impacts. The NPA is concerned with cases where dredging and disposal occur in inter-tidal or nearshore zones. Sand and gravel extraction has not yet become a common activity, mostly because of limited distribution of economically viable deposits. Nevertheless, in the areas where sand and gravel extraction occurs, there can be localized habitat destruction. Coastal mining is not a widespread activity in Canada. However, land-based mines and mills have occasionally disposed of tailings and other wastes into the marine environment, resulting in significant alteration through burial of nearby habitats and alteration of downstream habitats.

Wetland and Saltmarsh Alteration

Since the earliest coastal settlement in Canada by Europeans, wetlands and marshlands have been altered or destroyed. Today, less than 30% of the original habitat remains. Losses are greatest in areas of intense urbanization and agriculture. Other forms of alteration continue, such as harvesting of marsh grasses and other vegetation, draining to control insect populations, and engineering works to create waterfowl habitat.

Canada is taking action to protect these areas. For example, the *Federal Policy on Wetland Conservation* outlines seven strategies that provide practical direction, support, and tools for the use and management of wetlands so that they will continue to provide a broad range



of functions (water quality and quantity and wildlife habitat) on a sustainable basis. The policy also addresses wetlands science and public awareness actions.

Marine Waters and Coastal Watershed Alteration

Coastal watershed and marine waters alteration include damming, water intakes, thermal pollution, water diversion and extraction. Alteration of marine waters and coastal watersheds can alter the salinity, temperature and, in some cases, the amount of nutrient and sediment in coastal watersheds and marine waters. These changes can directly affect native marine life and alter habitat conditions, particularly sensitive habitats such as nursery areas and seagrass beds.

Over the last hundred years, expanding urbanization and development such as industry, agriculture and forestry, have placed ever-growing pressures on the coastal and marine environments and the adjacent ecosystems. For example, the human population in the lower basin of the Fraser River Watershed in British Columbia is growing at one of the highest rates in Canada.

In order to counter such pressures, the Fraser River Estuary Management Plan brings together the agencies responsible for setting and enforcing environmental legislation and policy with those responsible for land and water management. The plan has seven action programs that are always being updated: integration/sustainability, water

and sediment quality, fish and wildlife habitat, dredging and navigation, log management, industrial and urban development and recreation.

At the regional level, the International Joint Commission is conducting a study to assess the outflow of water from Lake Ontario through the St. Lawrence River. Part of the study will evaluate the impacts of changing water levels on environmental factors, shore erosion and flood damage.

Biological Alteration

Biological alterations in coastal waters are often caused by the accidental transport of exotic or non-native species of plankton, crustaceans, pathogens and parasites in the bilge and ballast water of large tankers and freighters on international routes. Much of this problem results from ballast water exchange offshore and does not fall directly within the responsibility of the NPA. However, the NPA addresses species introduced from ballast water discharges within ports. For example, the extensive spread of zebra mussels within the Great Lakes has resulted in significant environmental and economic impacts on that aquatic ecosystem.

While not directly impacting the marine environment, there are effects on the Great Lakes watershed.

The introduction of disease to local species resulted in the closure of some shellfish areas on Canada's east coast. Ship-based sources, including ballast water or fouled hulls, are implicated although the source is not verified.

The expansion of nearshore finfish aquaculture has introduced concerns for habitat loss as a result of accumulation of waste material under the caged fish, which alters the habitat under these cages. The finfish aquaculture industry is regulated at the federal, provincial and territorial level by a number of pieces of complimentary legislation.

Today, less than 30% of the original wetland and saltmarsh habitat remains.

What is being done?

Putting the NPA into Action

In Canada, the protection of the coastal and marine environment is a responsibility shared by all levels of governments. The federal government, provinces and territories are all important players in the conservation and protection of the coastal and marine environment under their own land, water-use planning, environmental and other resource-related legislation. Responsibility is also shared with Aboriginal peoples in land claims settlement areas. Municipal governments, industry, non-governmental organizations, communities, and individual Canadians are also important partners in protecting the coastal and marine environment.

Canada's NPA complements these initiatives and provides an opportunity for increased collaboration by identifying common goals and shared priorities that can be integrated into new and existing programs. Efforts are currently underway to integrate NPA objectives into programs such as Ecosystem Initiatives and Integrated Management Initiatives.

By providing a national window to promote the integration of land, freshwater, coastal and marine management mechanisms, the NPA encourages governments to cooperate on and integrate freshwater and coastal marine programs and initiatives at a regional and national level. An important example of this collaboration is Canada's Oceans Strategy

A key focus for the NPA over the coming years is to promote a more integrated approach to coastal and river basin planning and management.

(COS) which the Government of Canada launched in July 2002. Some of the key activities under the COS include increasing our understanding of marine ecosystems, reducing

marine pollution, and using integrated management to resolve conflicts and manage human activities. The strategy provides policy direction on coastal and oceans matters and assists in building and enhancing partnerships at all levels of government, with industry,

non-governmental organizations and with coastal communities. Following from this, the Government of Canada made a commitment in early 2004 to develop an Oceans Action Plan which will increase emphasis on opportunities to maximize the sustainable development of Canada's coastal and offshore areas. The NPA is engaged in the development of the Oceans Action Plan to build awareness and understanding of the interface between fresh and marine waters, river basins, and coastal environments and to ensure actions that are taken address an integrated approach to coastal area and river basin management.

The NPA also recognizes the need for collaboration between freshwater and coastal marine programs. A key focus over the coming years is to promote a more integrated approach to coastal and river basin planning and management to ensure that the health, productive capacity and biodiversity of coastal and marine

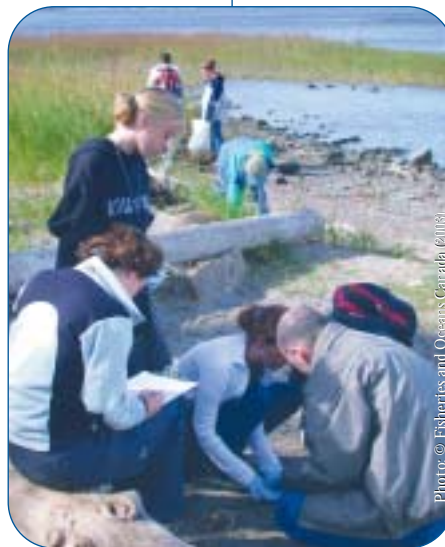


Photo: © Fisheries and Oceans Canada (2009)



ecosystems are balanced with sustainable resource use and development. To promote this integration, the NPA is working closely in the development of a Federal Water Framework, which aims to facilitate more integrated action by federal departments in meeting the challenges of water management in areas of federal responsibility.

As the leads for the NPA, Environment Canada and Fisheries and Oceans Canada are working, in partnership with other federal departments, provinces and territories through the NPA Advisory Committee and its regional teams, to implement the NPA. To guide implementation activities for the three-year period from 2003 to 2006, a national action plan was developed. Priority actions include assessing the adequacy of current pollution prevention and habitat protection guidelines, building broader awareness, understanding and engagement in implementing the NPA, and developing a national approach to reporting on contaminant and habitat priority initiatives. Reporting on progress is important to help understand how Canada's collective efforts are contributing to marine environmental protection.

At a regional level, the NPA Pacific, Arctic, St. Lawrence and Atlantic regions are working through ongoing programs and/or through NPA regional action plans to guide priority activities and address local issues. Priority areas for action range from the contamination of nearshore waters resulting from sewage and nutrients, to the degradation of shoreline habitat from shoreline construction/alteration and wetland and saltmarsh alteration.

On the Atlantic coast, nutrient enrichment from land-based activities is identified as a priority area of concern. The 2001 report, *Nutrients and their Impact on the Canadian Environment*, outlines

the major concerns regarding nutrient enrichment in Canada, but also points to an incomplete understanding of point and non-point source discharges to the marine environment. The NPA Atlantic Regional Team considered those nutrient source discharges that were not being addressed and where action could be taken at a local level. As a result, the Team initiated projects to assess the significance of nutrient discharges from seafood processing operations.

On the Pacific coast, a federal study on fish processing operations was recently completed. The study was conducted to generate a current industry profile and characterize effluent quality and quantity, effluent treatment systems and best management practices. The study will enhance understanding of contaminant loadings discharged to coastal waters from this industry sector.

At the provincial level, New Brunswick established a working group on seafood processing, consisting of industry, government, technical and scientific experts and community representatives. Their effort resulted in the release of *Best Management Practices: Marine Products Processing* in January 2003, which are customized to the industry in that province.

These are just some examples of how the NPA is collaborating and mobilizing efforts to protect and conserve Canada's coastal and marine environment. As implementation advances, the NPA will work to: promote awareness and understanding of key issues; broaden engagement and partnerships with industry, non-government organizations, communities, and the Canadian public; build capacity to address local concerns and problems; and report on how Canada's efforts are contributing to prevent marine pollution from land-based activities and protect habitat in coastal and marine areas.

What you can do

Take Action!

Everyone has a role to play in protecting the coastal and marine environment from land-based sources of pollution, whether you live in a coastal region or farther inland. We are all connected!

This section provides examples of brochures, guides, science

Everyone has a role to play in protecting the coastal and marine environment.

reports and best practices that have been produced by NPA partners and communities to help reduce and prevent pollution and habitat alteration in their day-to-day activities. These documents range from participating in beach-cleanups, to building environmentally sensitive cottage docks.

Sewage

Water Quality Clean Water... It Starts with You

Author: Government of British Columbia, Ministry of Water, Land and Air Protection (2001)

Website: wapwww.gov.bc.ca/wat/wq/brochures/sewage.html

Small amounts of pollution created by individuals may not seem to be a problem. However, the combined effects of pollution from almost four million British Columbians are threatening our clean water resources. Closed beaches, contaminated shellfish beds, fish kills and unsafe drinking water are just some of the environmental impacts.

You can reduce pollution. You can make a difference as an individual or by joining or

forming a community stewardship group that cares for a local water body. The Ministry of Water, Land and Air Protection, Government of British Columbia has produced five "Clean Water" brochures: non-point source pollution, urban runoff, on-site sewage systems, agriculture and pleasure boating. All brochures provide tips that people can follow to reduce or prevent pollution. These brochures focus on on-site sewage systems and water quality.

Persistent Organic Pollutants

Canadian Arctic Contaminants Report II – Highlights Report

Author: Indian and Northern Affairs Canada (2003)

Website: www.ainc-inac.gc.ca/ncp

The North is particularly vulnerable to certain contaminants. POPs disappear more slowly and persist longer than in southern regions. Traditional foods are a major route for human

contaminant exposure and Aboriginal northerners have fewer acceptable alternatives to these foods than do most other Canadians.

Description continued on page 17.





The traditional knowledge of northern Aboriginal peoples, together with western science, have made valuable and complementary contributions to defining the problem of contaminants in northern Canada and in setting priorities under the National Contaminants Program. This grassroots perspective involves connecting with people in communities, addressing concerns, and conducting research to provide answers about traditional foods.

This report presents, in plain language, the main results of four technical reports: (1) *Human Health*; (2) *Occurrence, Trends and Pathways in the Physical Environment*; (3) *Contaminant Levels, Trends and Effects in the Biological Environment*; and (4) *Knowledge in Action*.

Oils and Hydrocarbons

Oil, Water and Chocolate Mousse

Author: Environment Canada (1994)

Website: www.ec.gc.ca/ee-ue/pub/chocolate/toc_e.asp

Oils and hydrocarbons are viewed as a common problem resulting in resource use conflicts such as degraded fish habitat, oiled beaches and tainted seafood. Fish kills, oiled seabirds and hydrocarbon contamination in harbours are also of concern. Improved measures are needed for urban runoff, spill response, proper handling and storage of oils and hydrocarbons.

This booklet explains what happens when oil is spilled in our waterways, how we prevent large

and small oil spills, how we prepare for oil spills, and what Canadians can do to limit the environmental damage oil spills can cause. Most oil spilled in Canada is from small accidents rather than the major spills reported in the news. Spills can occur at any point at a production site or a neighbourhood gasoline station. This booklet offers some basic oil spill and oil cleanup facts and what you can do to prevent oil spills.



Nutrients

Best Management Practices: Marine Products Processing

Author: Fisheries and Oceans Canada - Gulf Region (2003)

Website: www.glf.dfo-mpo.gc.ca/sci-sci/effluents/bmp-e.html

This guide was developed for seafood processing plants in New Brunswick. This industrial activity is a very important component of the provincial economy, comprising nearly 900 million dollars of exports and providing work to thousands of local residents. The processing of marine products results in large volumes of effluent. The discharge of these effluents in harbours and bays can have an impact on environmental and public health.

Reading this guide will help you to discover the benefits that your seafood processing plant can gain, in terms of environmental and economic performance, by adopting best management practices aimed at better controlling the raw product, quantity of water used, and effluents.



Litter



Beach Sweeps Information Kit

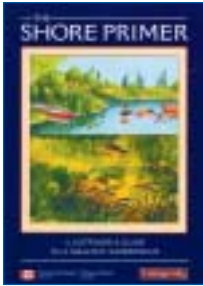
Partners: Fisheries and Oceans Canada, ACAP Saint John, N.B. Department of Environment and Local Government (2000)

Website: www.glf.dfo-mpo.gc.ca/sci-sci/beach-rivage/index-e.html

Litter from land-based sources is common to all regions and results in reduced amenities, property damage, and entanglement and loss of marine life. Enhanced public awareness and adequate disposal facilities are effective measures to reduce litter.

This information kit from Atlantic Canada provides information for community members who are concerned about the extent of garbage and want to get involved by cleaning up local shores and beaches.

Shoreline Construction and Alteration



The Shore Primer: A Cottager's Guide to a Healthy Waterfront

Partners: Cottage Life, Fisheries and Oceans Canada (1999)

Website: www.cottagelife.com/shoreprimere.pdf

Shoreline construction and alteration activities are a common problem in Canada. Results include a cumulative, wide-scale loss of valuable coastal habitat with losses measured in both environmental and economic terms.

This guide shows cottagers and other landowners how to protect shorelines and gives solutions for restoring an altered shoreline to its former health and beauty.



Shoreline Structures Environmental Design – A Guide for Structures along Estuaries and Large Rivers

Partners: Fisheries and Oceans Canada, Environment Canada, North Fraser Port Authority, Fraser Port Authority, BC Ministry of Water, Land and Air Protection (2002)

Website: www.stewardshipcanada.ca/sc_bc/stew_series/bc_stewseries.asp#steward

This guide demonstrates that shoreline environments are composed of many interdependent biological and physical components and that impacts to any one component will have a decided effect on others.

This guide provides detailed environmental design concepts that demonstrate to local governments, developers and community stewardship groups how to mitigate the negative impacts that shoreline developments can have on

fish and wildlife habitats. The lower Fraser River and its estuary were the original focus of this guide; however, during its development, it became apparent that many of the environmentally friendly design concepts presented in this guide would be applicable to any large river or estuary. Thus, despite the numerous references to the Fraser River and its estuary, the guide can be applied to shoreline projects within large rivers and estuaries throughout coastal British Columbia and other areas.

Wetland and Saltmarsh Alteration

Working Around Wetlands? What you should know

Author: Canadian Wildlife Service, Ontario Region

Website: www.on.ec.gc.ca/wildlife/docs/working-e.html#toc

Wetlands are essential to the health of our lakes, rivers and streams. The survival of hundreds of plant and animal species depends on the unique and specialized habitats found only in wetlands. Wetlands also play a critical role in maintaining our water supply, cleaning up polluted waters and reducing flood damage. Exceptionally beautiful, remarkably productive and valuable, wetlands are a precious resource.

This brochure provides some of the basic information you will need when working around wetlands, as well as some important considerations to ensure their conservation and protection. It is possible to reduce or eliminate potential negative impacts through careful planning and by using environmentally sound practices. If you have a wetland on your property, there are also actions that you can take to protect or improve it.



Integrated Coastal Management and Stewardship

Integrated Management for Everyone: Methodology for the Coastal Communities of the Marine Portion of the St. Lawrence

Author: Fisheries and Oceans Canada, Quebec (2003)

Website: Not yet available

The paper provides a simple and practical approach to integrated coastal zone management in Quebec. This approach requires the involvement of coastal communities in the development and implementation of integrated management processes. The greatest advantage of this approach is that it will consider the characteristics and needs

of each region. The community-based approach outlined in this document also draws on the traditional knowledge of local populations, promotes the involvement of community groups in the management of their coastal zone, and allows for the practical application of this management approach at a local level.



Coastal Shore Stewardship: A Guide for Planners, Builders and Developers on Canada's Pacific Coast

Author: Province of British Columbia

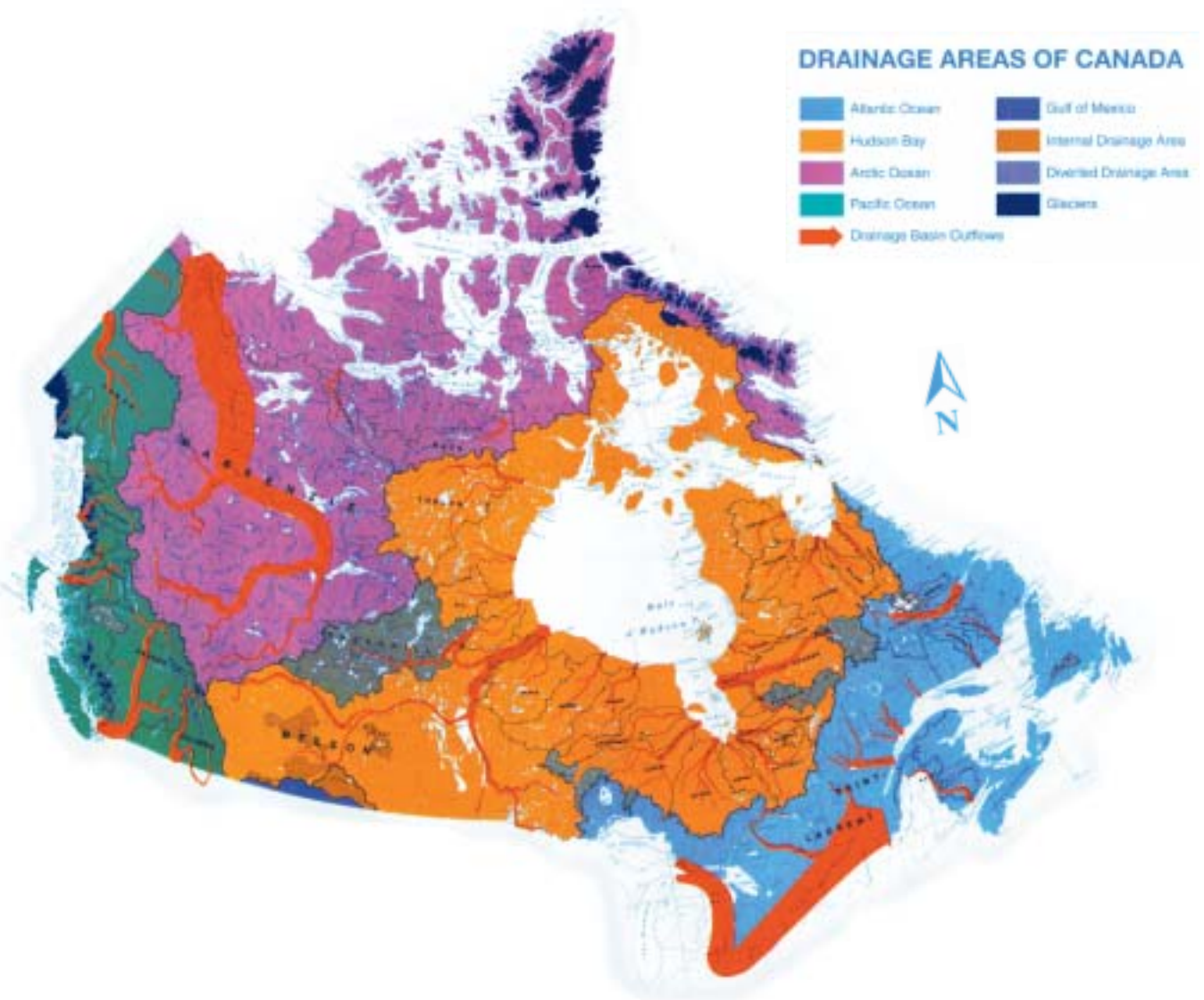
Website: www.stewardshipcentre.bc.ca/sc_bc/stew_series/bc_stewseries.asp#grass

This guide shows that the planning and development of coastal areas requires a careful understanding of how the living systems of coastal shores work. Shores usually change very gradually, but occasionally these changes are dramatic and seemingly unpredictable. We may not be able to forecast the timing or severity of storms or beach erosion but we have a good idea of

what can be done to reduce the impacts on people, plants, wildlife and coastal areas. This guide is about a cautious approach to the development of our coastline and recognizes that "when an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."



You Are Connected



Canada's National Programme of Action for the Protection of the Marine Environment from Land-Based Activities (NPA)

The NPA Secretariat would like to acknowledge the contribution of materials from the NPA Advisory Committee and the GPA Coordination Office, The Hague, in developing this product. This map is based on information taken from the National Atlas of Canada.

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