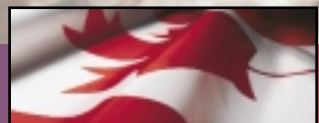


# Wings Over Water

## Canada's Waterbird Conservation Plan



# Wings Over Water: Canada's Waterbird Conservation Plan

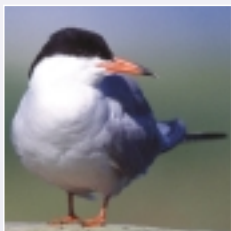
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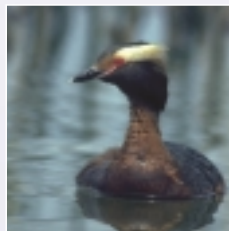
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Common Tern



Razorbill



Horned Grebe

Cover photos: Background Razorbills: Bob Milko  
Tufted Puffin: Moira Lemon  
Least Bittern: CWS – File  
American White Pelican: G.W. Beyersbergen

Inside photos: Background Northern Gannet:  
John W. Chardine  
Common Tern: CWS – Atlantic  
Razorbill: John W. Chardine  
Horned Grebe: G.W. Beyersbergen

Footer photo: Gulls: Bob Milko

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# Summary

## Executive Summary

Wings Over Water (WOW), Canada's Waterbird Conservation Plan, outlines the steps needed to conserve the broad array of species of seabirds, inland colonial waterbirds, marshbirds and other water-related species that are addressed in this plan. Of the 93 species covered by the plan, 30% show negative population trends while another 10% are not well enough known to determine their trend.

Waterbird biologists have made a preliminary list of those species where monitoring, research and conservation should be a priority (Appendix 1). They have also identified the most important factors affecting waterbird populations in Canada. These include, for example, habitat change, oil spills, and fisheries by-catch and competition.

Many waterbird species are shared with other nations, so Canada has chosen to work in a broad continental framework in order to increase the potential for conservation success. To this end, Wings Over Water forms the Canadian component of Waterbird Conservation for the Americas: North American Waterbird Conservation Plan. Accordingly, the Vision of WOW is to ensure populations of waterbirds are sustained or restored throughout their historical range, in Canada and globally.

To attain this Vision, WOW outlines four Conservation Goals that need to be followed. They address population and habitat conservation, information exchange and coordinated action. More specifically the Conservation Goals are:

1. Sustain the natural distribution, diversity and abundance of waterbirds within Canada, and restore populations of priority species and those in decline;
2. Secure and enhance sufficient high quality habitat to support robust populations of waterbirds throughout their ranges in Canada;
3. Ensure that information for the conservation of waterbirds is widely available to decision makers, the public, and all those whose actions affect populations of these birds; and
4. Ensure that coordinated conservation efforts for waterbirds are guided by common principles, and are in place throughout the range of those species that occur in Canada.

The implementation of WOW and its Conservation Goals will be overseen by a National Working Group of partners dedicated to the conservation of waterbirds. They will be assisted by a Science Technical Committee who will provide the technical support and background information needed to make informed conservation actions.

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# Wings Over Water

## Canada's Waterbird Conservation Plan

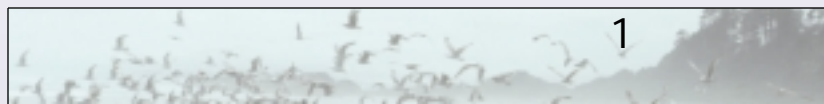
The **Vision** of *Wings Over Water* is to ensure populations of waterbirds are sustained or restored throughout their historical range, in Canada and globally.

The **Mission** of *Wings over Water* is, based on strong science and partnerships, to make informed conservation decisions, take action to maintain and restore species, and collaborate with other countries that share Canada's waterbirds.



Thick-billed Murres – Garry Donaldson

For the purposes of this plan waterbirds include seabirds, inland colonial waterbirds, marshbirds and other water-related species.  
(see Table 1 and Appendix 2)



# Introduction

---

Waterbirds conjure up images as varied as the landscapes and waterscapes in which they are found. Images range from waterbirds nesting on towering seacliffs to views of birds on prairie sloughs or over an expanse of the Canadian Great Lakes, the largest freshwater lake system in the world. They include awe-inspiring sights of hundreds of thousands of seabirds sprawling on coastal cliffs in Atlantic Canada or the Canadian Arctic, or dozens of gannets plunging at dizzying speeds to capture prey off Bonaventure Island. Clouds of American White Pelicans lifting off shimmering prairie lakes, or bitterns with robot-like motion silently stalking their prey in undisturbed wetlands are all part of the vast array of birdlife referred to in this plan as waterbirds.

Waterbirds are found throughout Canada. On the Pacific Coast, the diversity of seabird life is a draw for birders worldwide. The continental interior offers the magnificent sight of flocks of pelicans, coots and grebes foraging on prairie potholes. In the Great Lakes, many islands teem with nesting terns, gulls and cormorants, while seldom seen rails are detected only by their night-time calls. And anyone who has paddled on a northern lake has surely been mesmerized by the lonely cry of the Common Loon.

In addition to the variety and abundance of avian life that they represent, waterbirds are important components of the marine and freshwater environments in which they are found. In many ways, the health of these birds reflects the health of their aquatic environments. Therefore, as human intervention increases, careful vigilance is crucial to ensure that adverse impacts on these birds and their habitats are avoided.



Atlantic Puffins: CWS – File

Although waterbirds are frequently quite numerous, most are sensitive to habitat and population level changes that can rapidly deplete their numbers. This often occurs before we are aware of their plight and before we can react to attempt to reverse it. Today, waterbirds are under pressure from a myriad of human activities that are harmful to their habitats. The logging of Pacific Coast old-growth forests causing the destruction of nesting habitat is the root of population declines in the Marbled Murrelet. This species is now thought to be threatened with extinction in Canada. One of our seabird species has already suffered the ultimate population level impact. In 1852, the last sighting of a Great Auk occurred somewhere in the North Atlantic Ocean. These large flightless seabirds were hunted to extinction by mariners who sought them out as an easily acquired source of food on long voyages and as sources of feathers for mattresses. At the time, the ecological concepts that form the basis of conservation biology doctrines had not yet been developed. Consequently, consideration for the health of Great Auk populations was not thought to be important until far along their road to extinction.

Non-colonial marshbirds are generally less abundant and thought to be in decline or have suffered significant recent decline as wetland habitat has been converted to other purposes. In many cases, their nocturnal activity and often cryptic nature has resulted in there being very little information available on many species although a disproportionately high percentage are already listed as species at risk. Hence information on their distribution, abundance and population dynamics is critical.

Comprehensive conservation initiatives are needed to ensure the well-being of waterbirds in the future. Wings Over Water (WOW): Canada's Waterbird Conservation Plan is a comprehensive effort to provide a framework for partners to take action to ensure the abundance and diversity of these birds and their habitats are maintained or enhanced in the future. Together with its companion conservation initiative - Waterbird Conservation for the Americas: the North American Waterbird Conservation Plan (NAWCP) - for which WOW is the Canadian component, a framework for continental planning within the North American Bird Conservation Initiative is provided.



Eared Grebe – G.W. Beyersbergen

## The Scope of Wings Over Water

Bird conservation in Canada is increasingly being implemented through integrated approaches under the recently developed North American Bird Conservation Initiative (NABCI). Under NABCI, conservation actions will tend to proceed in recognition of the effects of management actions and development on all species in a given area. However, because assemblages of species form different groups that have similar conservation needs, plans have been made and programs are being developed to address the related needs of the different bird groups. In this regard, the North American Waterfowl Management Plan (NAWMP) addresses conservation of ducks, geese and swans, the Canadian Shorebird Conservation Plan (CSCP) has been created for shorebirds, and the Canadian Partners in Flight (PIF) Framework for Conservation in Canada oversees landbird conservation.

The Wings Over Water conservation plan addresses seabirds that are found in marine and coastal areas, inland colonial waterbirds such as terns, gulls and cormorants and other aquatic or wetland related species such as grebes, loons, rails, cranes, coots and bitterns.

Specifically, Wings Over Water includes 93 species in 14 families of birds (Table 1); a complete species list is given in Appendix 1. All of the birds listed in Appendix 1 occur with some degree of regularity within Canadian borders or Canada's 200 mile Economic Exclusion Zone, at some time during the year.



Long-tailed Jaegers – Ian MacNeil

**Table 1.**  
**List of the families of birds whose species are included in Wings Over Water\***

Family	No. of Species	Seabirds	Inland Colonial Waterbirds	Non-colonial waterbirds
Alcidae	14	auks, murres, puffins		
Diomedidae	3	albatrosses		
Procellariidae	11	shearwaters, petrels		
Sulidae	1	gannets		
Laridae	30	skuas, jaegers, gulls, terns	gulls, terns	
Hydrobatidae	3	storm-petrels		
Pelicanidae	1		pelicans	
Phalacrocoracidae	4	cormorants	cormorants	
Ardeidae	7		herons, egrets	bitterns
Podicipedidae	6		grebes	grebes
Rallidae	6			rails, coots
Gruidae	2			cranes
Gavidae	5			loons

\* some waterbirds are viewed as seabirds or inland colonial waterbirds in Canada depending on the habitat/location

Of the 93 species in WOW 30% are known to have biologically significant or apparent negative population trends. Additionally, another 10% have insufficient data in order to make a determination of population trend. Many of the latter species are difficult to study marshbirds, but those where data is sufficient show a disconcerting tendency of previously un-documented declines. Conservation status of all waterbirds birds also show the plight of these species; over half are of moderate, high concern or highly imperiled, based on criteria used in NAWCP.

In addition to declines, ecological imbalances can also lead to excessive increases in populations that can sometimes lead to problems. For example, Double-crested Cormorant populations on the Great Lakes have dramatically expanded in recent years and are the subject of population control programs at present. Changes in populations of one species can affect populations of other species through increased predation and competition for nesting habitat. These imbalances generally need to be addressed, but they are sometimes self-correcting.



## Conservation Challenges

### Natural Attributes That Confer Risk

The biology of many waterbirds renders them vulnerable to stresses in their environment. Most species covered by this plan concentrate at colonies to breed, hence they are vulnerable to events that take place at or near these nesting areas. As significant proportions of populations may be present at each colony, mishaps such as oil spills, changing wetland levels, disease, or introduction of predators can have significant impacts on a species' survival.

Many waterbirds also congregate at other times of the year, when they gather in moulting, feeding, migrating or over-wintering concentrations. British Columbia's Strait of Georgia, the Niagara River corridor of Ontario, and the shelf-breaks of the outer Bay of Fundy and Grand Banks on the Atlantic coast, play host to globally significant concentrations of many species. Many areas are visited by birds that breed in other countries, such as Greater Shearwaters from the South Atlantic, and Dovekies from Greenland. Because of the stress imposed by winter conditions, increased pressure from human threats can have significant impacts on birds in these situations.

Many species included in this plan have very low reproductive outputs, taking up to 4-6 years to reach the age of first breeding, and then only laying a single egg or a very small clutch each year. Recovery of their populations after declines therefore takes a long time. Many of these birds are also very long-lived, with some individual fulmars, murres and albatrosses

known to have survived at least 30-40 years. This life history pattern makes seabirds and many other colonial species particularly susceptible to the effects of high rates of adult mortality. Direct killing of adults, in fishing nets or direct harvests such as the hunting of murres, have particularly significant effects on populations, which may take many years to reverse. Problems that influence reproduction may not show up as a population decrease for many years, given the buffering effect of the presence of large numbers of the population that are non-breeding. Population monitoring that involves an assessment of reproduction and survival is thus important to track the overall population health of these species.

Many of these birds range over huge distances each year. Northern Fulmar, Arctic Tern, and Buller's Shearwater, migrate across entire oceans, while in the interior, Common Terns and Franklin's Gulls cross huge continental expanses. Large ranges are often through the jurisdictions of many countries requiring international and inter-continental cooperation in order to fully protect them across their range.

The inland aquatic habitats of most waterbirds are generally well understood because of their smaller sizes and their accessibility. Yet the complexities of the aquatic environment and their external influences results in limited knowledge for many aspects of inland water ecology that could affect waterbird survival. Some examples of issues that affect inland species are the effects of pesticides on wetlands, cumulative effects of drought on habitat, and direct alteration of habitat.



Oiled Bird – Jon Stone

## Human Related Risks

Although the species covered by this plan are susceptible to a wide range of effects from human activities, the most significant threats to Canadian waterbirds fall into the following main categories.

### Oil Spills and Discharges

Day-to-day operations of the marine transport and oil industry constitute a deadly risk of exposure to petrochemicals for many species. The most readily visible problem is the release of oil from catastrophic shipping accidents at sea. Canada has witnessed several disasters, such as the oil slick from the grounded *Nestucca* barge which drifted onto the coast of Vancouver Island in the winter of 1989-1990, killing many wintering seabirds. However, a larger problem is the chronic release of relatively small amounts of oil from illegal bilge flushing by tankers, and other industrial releases, such as from drilling platforms at sea. Although each incident may only release a small amount of oil, the sheer number of occurrences add up to a chronic problem, which to date in Canada has been far more severe than the effects of larger spills. Models estimate that about 300,000 birds are killed each year in Atlantic Canada by this deliberate chronic oil discharge.

## Fisheries Bycatch and Competition

Most birds covered by this plan are either fish-eating species or they prey on the same food that fish do. This places them where the fish are, often directly in the path of commercial fish gear that are fatal to birds. Gill nets, including abandoned "ghost nets", and long-line fisheries continue to take their toll of loons, albatrosses, shearwaters, gannets, gulls and alcids on one or both coasts each year.

Fisheries often compete directly with birds for the same stocks of fish, such as capelin or herring, reducing prey availability to levels where species such as Atlantic Puffins and other alcids may suffer near or complete reproductive failure in some years. The global trend towards directly harvesting smaller species that are lower down the food chain, such as sand lance, capelin or krill, will further exacerbate this problem for Canada's seabirds. There is evidence that more fixed gear fisheries, aquaculture and mariculture, may be indirectly affecting the prey base of birds located near these industries.

There is also pressure to eliminate or reduce colonial nesters such as cormorants and pelicans at coastal colonies and on large inland lakes by users of the resources who perceive them as competitors for the same fish resources.

## Predator Issues

Either predators (introduced or native) or competitors whose populations have expanded disproportionately to their natural levels in their environment are a threat to some populations of waterbirds. For example, native Great Black-backed Gull populations often increase in response to discards from fish-processing plants. These predators in turn may impact on populations of other gulls, terns, shorebirds and waterfowl.

Accidental introduction of predators such as raccoons or rats in colonies on the Pacific coast, or intentional release of cats and dogs have historically contributed to waterbird population declines, often proving very difficult to reverse. Recent attempts to remove raccoons from seabird nesting islands on the British Columbia coast have only been successful when concerted multi-year efforts have been focused on the task. Other similar programs, such as rat eradications have proven to be very costly.



Great Black-backed Gulls – CWS-Atlantic

## Habitat Change

Terrestrial habitats are essential for breeding for all species, but are often also attractive for human recreational, residential and urban development. Depletion of wetlands and the alteration of their water levels has resulted in wide-spread declines in many non-colonial marshbirds. Many pelagic species only come to land to breed at specific colony sites. For these birds, the protection of important terrestrial habitats, and adjacent marine areas is essential for their survival. Species that use lakes, ponds and riparian habitats may be forced to cope with a variety of disturbances or development projects that physically alter important habitats. Without adequate landscape management practices, agriculture and forestry have been major causes of wetland loss and degradation. Species such as terns, loons and some herons respond to disturbance by abandoning breeding sites and moving to new areas, making habitat protection difficult, and exposing them to new risks. For many species, the protection of important terrestrial habitats and adjacent

feeding areas is essential for their survival. Sport-fishing lodges located near seabird colonies impair reproductive success through direct physical disturbance and habitat degradation. Changes to wintering habitat have also contributed to population changes identifying the need for international cooperation.



Northern Fulmar – John W. Chardine

## Tourism and Recreation

Interested visitors create a special type of disturbance at colonies. Although conservation-oriented and concerned about the birds they view, visitors in large numbers at some colonies can have negative impacts. Careful control at heavily-visited sites such as Quebec's Bonaventure Island, or New Brunswick's Machias Seal Island can limit these impacts and ensure that visitors have a positive experience, but the risks of significant disturbance makes visits to most colonial waterbird colonies undesirable. Even what appears to be relatively benign visits to cliff-nesting birds by kayakers has been demonstrated to be as disturbing to nesting seabirds as motorized boats. Similarly, negative effects were observed on islands in the prairies where American White Pelicans nest. In this case, regulations restricting access during the breeding season were established. As well, at both fresh and salt water locations, birds resting or feeding on water are disturbed or even killed by high-speed watercraft.

## Toxics

Since many chemicals accumulate in aquatic and marine food chains, contamination by urban and industrial pollution continues to affect birds throughout many of Canada's waters. American White Pelican populations in Prairie Canada are still recovering from population declines caused by eggshell thinning, a result of DDT exposure. Mercury in freshwater foods is having population level impacts on Common Loons nesting in Nova Scotia. Herons, loons and other fish-eating birds can be poisoned after ingesting a single lead fishing sinker. Pollution in the Great Lakes, first brought to the public's attention by reports of deformities in the region's gulls and cormorants, continues to affect colonial waterbird populations through exposure to industrial organochlorine residues, although biomonitoring programs have shown some recent declines as inputs have been reduced. Even species found in the sparsely populated and largely non-industrialized Arctic are affected by the long-range transport of air pollutants, where some species continue to show increasing concentrations of pesticide and heavy metal residues in their eggs.

## Hunting

The legal hunting of Thick-billed and Common Murres in Newfoundland and Labrador has resulted in past population declines, and prudent ongoing harvest management is essential for these species because of the inability of their populations to recover quickly. Illegal hunting is also responsible for the death of an unknown quantity of waterbirds in some locations.



CWS – Atlantic



## Conservation Planning

Wings Over Water provides a strategic framework that outlines the fundamental requirements for effective waterbird conservation. It presents the concepts and approaches for planning and implementation that can be used at different geographic and political levels. By assisting in identifying the information necessary to make informed conservation decisions WOW will ensure:

- that populations are at ecologically appropriate levels;
- that species are not limited by inadequate habitat quality or availability; and
- that those who interact with waterbirds are aware of the effects of their actions and of ways to interact in a sustainable manner.

Effective conservation planning requires identifying priority needs for waterbirds, starting at the level of the species themselves. This is accomplished by identifying issues that represent the greatest biological concerns and identifying

species that require priority considerations. Being national in scope, WOW has therefore prioritized waterbirds into different conservation priority classes based on a national perspective. (See below: WOW Conservation Programs and Appendix 2).

Conservation planning also considers the main types of habitats on which waterbirds depend, with a focus on those habitat types that may be limiting populations of birds that use them. Planning also considers conservation needs at specific locations in each region that are of particular importance to waterbirds, or that are now at risk from specific threats. Nest sites and other areas of concentration warrant specific attention.

Most of the threats that pose a risk to waterbirds can only be ameliorated through a strong, coordinated conservation effort that identifies threats to birds and their habitats, and predicts the effects of actions on their conservation at

the population level. This requires a good knowledge base upon which to make management decisions and against which conservation actions can be measured. The expanding body of knowledge that we presently have concerning the sensitivities of waterbirds and the effects of the many threats to their populations provide ample evidence of the need to take coordinated conservation action.



Franklin's Gull – G.W. Beyersbergen



Northern Gannets – John W. Chardine

## WOW Conservation Programs

Conservation of Canada's waterbirds will proceed through the implementation of programs for monitoring, scientific research, protection of important habitat, and communications/outreach. These generalized programs, outlined below, should result in similar programs and specific conservation actions at the regional level.

Coordinated monitoring programs are essential to assess trends in population numbers and in key population parameters to determine distributions and to provide a basis for future evaluation programs. Because reliable trend data takes years to accumulate, especially for long-lived species, monitoring efforts must build on existing programs and their historic databases. Preferred survey protocols, common monitoring objectives, and methods of sharing monitoring data must be agreed upon in Canada, in cooperation with other countries, particularly through the continental waterbird monitoring program of NAWCP.

Monitoring of the availability and quality of essential habitats must be conducted together with population monitoring. This will ensure that adequate high-quality habitat is available throughout the annual life cycle of our waterbirds, and will identify those locations where securement or focused action is required to maintain habitat availability.

Species for which monitoring, research and conservation action should be a priority have been identified through a prioritization process. The first step in prioritization is an assessment of conservation status for Canadian waterbirds based on the methods and criteria used in NAWCP, but analyzed in a Canadian geographic context. As a result, some species in WOW will have a different conservation status than found in NAWCP.

The second step entails a determination of the responsibility that Canada has for the species in a global context. A combination of these factors is then used to determine species conservation priorities and the allocation of species into one of three tiers (see Appendix 1 and its Legend for results and more detailed explanation). Species in the higher tiers should be a priority at national levels of planning and conservation implementation. This should not, however, preclude action on species in lower tiers. Other species of particular concern may be identified with input from the Canadian Waterbird Technical Committee and regional implementation teams.

Cooperation among conservation plans, both nationally and internationally, will help focus research direction, and ensure that research results are applied to continental conservation actions. In North America, particular coordination is required with the United States and Mexico through the NAWCP. International cooperation involving Canada outside of North America is coordinated through other arrangements such as the Circumpolar Seabird Group.

Habitat protection programs will require a suite of options due to the varied waterscapes and landscapes occupied by waterbirds and the differences between colonial and non-colonial nesters' habits. Except for some of the more cryptic marshbirds, and less studied boreal and northern areas, most of the important habitats such as nesting sites, the areas used for feeding, resting and chick-rearing, are identifiable. The task of actually identifying this habitat will take a concerted and coordinated effort and achieving their protection is often more difficult. Habitat protection methods could include acquisition, easement, seasonal protection, limitations to access and other stewardship initiatives depending on different landowner constraints. The goal is to have an underlying base of ecosystem-oriented actions to maintain the overall quality and community structure of the wetland, coastal, and marine ecosystems upon which the birds and the other associated plants and animals depend.

Improved flow of information between the scientists and managers responsible for conservation of waterbirds, and those who control the human activities that affect them is an essential cornerstone of the Wings Over Water approach. Communication programs can involve techniques ranging from the distribution of information brochures and the inclusion of decision-makers in implementing conservation actions to building provisions for these species into regulations and guidelines that govern key industries such as commercial fishing, shipping and aquaculture. Education and outreach programs will also be required to inform the general public of the goals and progress of Wings Over Water and to engender support for those programs. An informed public can better support seabird and colonial waterbird conservation through an increased understanding of the birds, their sensitivities and the issues that threaten their survival.



Caspian Terns – Bruce Szczechowski

The implementation of such programs will have many benefits for waterbirds, but in many cases, direct conservation action must be taken. Removal of introduced predators from nesting islands, protection of habitats, construction of new islets for herons to replace those destroyed by human activity, wetland restoration and control of legal harvesting and illegal hunting, are but a few examples.

## The Planning Context

There are two other bird conservation initiatives that were considered when developing Wings Over Water. Wings Over Water is the Canadian component of a continental conservation plan for waterbirds called Waterbird Conservation for the Americas: North American Waterbird Conservation Plan (NAWCP). Canada has been working with partners in the development of this plan, and WOW serves to organize and direct actions specific to Canada while addressing national needs for waterbirds. Both WOW and NAWCP were developed together in the context of the North American Bird Conservation Initiative (NABCI) whose role is to provide for co-ordinated conservation action at the continental level for all birds. NABCI has adopted and developed an approach to the conservation of birds by focusing conservation planning initiatives on different species groups of birds (waterbirds, waterfowl, shorebirds and landbirds).

So while NABCI has in the short term streamlined the approach to planning through the different bird groups, its ultimate goal is a multi-species "all birds" approach to delivering conservation action. NABCI plans to achieve this through regionally-based, biologically-driven, landscape-oriented partnerships across the continent. In order to achieve this, NABCI has developed Bird Conservation Regions (BCRs) for North America, based on an ecological landscape model. The intent of NABCI is for biological planning to occur within the context of these ecological BCR units. Initial mapping of North American BCRs was limited to terrestrial



American Bittern – G.W. Beyersbergen

areas, although many species considered by WOW are influenced more by marine systems. In order to address needs in the marine environment, WOW is initially using the "Large Marine Ecosystem" used by the IUCN, the UN and U.S. NOAA, and now by NAWCP. It is expected that marine BCRs will eventually be developed which will be adopted by this plan.

Regional planning under WOW also uses the waterbird planning regions as developed in NAWCP in order to ensure coordinated efforts in different jurisdictions, particularly when collaborating with the United States. Different regions of Canada are involved in these planning exercises with the United States based on the NAWCP waterbird regions to varying extents depending on both need and resource availability. Additionally, because of the key role and legal responsibility that CWS has for most waterbirds and to assist in ease of administration and planning, plans in some cases are being developed based on CWS regions. But in all cases, the fundamental planning units are being linked to the Bird Conservation Regions (BCR) of NABCI.



In Canada, Wings Over Water joins three other ecosystem-based conservation programs of NABCI whose roles are to set priorities for the different bird groups, and ensure that these are addressed. These include:

- waterfowl (through the North American Waterfowl Management Plan – NAWMP);
- landbirds (through the Partners in Flight program – PIF); and
- shorebirds (through the Canadian Shorebird Conservation Plan).

Delivery of the resulting conservation actions will then take place through the partner jurisdictions, either within each BCR, or within some other management unit such as joint ventures or provinces, depending on their mandate, expertise, resources and opportunity. To increase both efficiency and effectiveness, actions which address the conservation priorities for waterbirds, will be undertaken together with actions for other species groups such as waterfowl, shorebirds, or landbirds

wherever practical. This will enable Canadian natural resource and bird management agencies to fulfill their jurisdictional responsibilities while implementing the BCR priorities.

Building on its partnerships with NAWCP and following the tenets of NABCI, Canada in turn works with other countries, such as Greenland and other circumpolar members of the Conservation of Arctic Flora and Fauna (CAFF) program through its Circumpolar Seabird Working Group, and southern marine nations, to ensure effective conservation over the ranges of Canadian waterbirds. Through formal and informal conservation agreements, all partners will address the conservation priorities of waterbirds, both inside Canada and in other countries.

## Integrated and Regional Delivery

Regional plans are being developed within the broader national context through the active participation of organizations with conservation mandates or those that have expertise or local knowledge. Partnerships with stakeholders will ensure that valuable local knowledge, conservation issues, resources and socio-economic priorities are considered. Involving those whose activities affect waterbirds, or those who regulate these activities, will help to maximize the effectiveness and benefits of this plan.



Arctic Loons – G.W. Beyersbergen

The bird species included in Wings Over Water differ in their geographical distribution across the country. Many of the true seabirds are confined to sea coasts and adjacent offshore areas, while most herons, loons, pelicans, rails, cranes and grebes breed in inland wetlands and lakes, and some, like cormorants, gulls and terns range across most aquatic ecozones. As a consequence, while planning for all WOW species together might be practical in some regions, in others it may be more practical to develop separate conservation plans for inland and marine species in order to work efficiently with the varying partners. Planning in each region will follow the approach that best reflects their local circumstances including the principles and Conservation Goals outlined in WOW.

This broad ecosystem approach, integrated at the level of the landscape and seascape, has significant benefits when looking beyond the conservation of birds towards the conservation of all biological diversity. Conservation projects that protect and improve habitat along with changes to management practices to help conserve waterbirds should be conducted in a way that benefits all species that share their habitats.



Common Loon – Rob Alvo

# Goals

## Conservation Goals

Conservation strategies must be based on rigorous science. An underlying foundation of scientific knowledge about waterbird biology and the threats facing them form the links between broad conservation goals and the specific conservation programs needed to protect bird species and habitats. Effective

conservation of the waterbirds that occur in Canada also requires that the information to make informed conservation decisions is current, complete as possible, and readily available. To achieve this, continued research and monitoring will be needed to clearly identify important population trends, ecological

### Goal 1:

**POPULATION CONSERVATION – Sustain the natural distribution, diversity and abundance of waterbirds within Canada, and restore populations of priority species and those in decline.**

#### Strategies:

- Obtain and maintain information on the distribution, status, and trends of seabird and inland waterbird populations in a coordinated fashion.
- Identify and understand the natural factors affecting seabird and inland waterbird population dynamics, ecology and components of their annual cycles.
- Understand the diverse and cumulative effects of human activities on waterbirds.
- Synthesize information obtained to identify critical factors affecting populations, and implement appropriate conservation actions.
- Monitor, evaluate and build on the results of conservation actions.
- Identify priority species.

#### Results:

- Canada's waterbirds are monitored with sufficient intensity and coordination to accurately determine population trends and evaluate their importance.
- Factors affecting seabird and colonial waterbird populations are better understood.
- Priority species are identified and their populations are restored to appropriate levels.

#### Discussion:

Sound scientific knowledge is the cornerstone of a strong and effective conservation effort.

Critical to effective conservation is the ability to monitor and detect population changes that vary from acceptable levels. Integration among monitoring programs will prevent costly duplication of efforts, and ensure that the resulting data are available in a standardized format. This will involve international cooperation, reflecting the migratory nature of these birds.

Despite an impressive body of information about waterbirds, much remains to be learned in order to assess population-level concerns and implement appropriate conservation actions.

Of great importance is an understanding of how human activities and our changes to the landscapes and seascapes affect the species within them. Pollution, climate change, tourism, fisheries, variable water levels and oil releases are just a few human impacts that affect waterbirds in ways that are not fully understood.

A system to identify priority species is essential to focus research, monitoring, conservation and management efforts. Such a system is being developed for all birds which reflects various risk factors that affect the conservation status of each species. A preliminary conservation status assessment for waterbirds, based on that used in NAWCP but adapted to Canadian distributions has been used in conjunction with Canadian responsibility for a species to prioritize species in Canada (Appendix 1)

sensitivities, and key habitats. These concepts are encompassed within the four Conservation Goals, their strategies for implementing the goals and the expected results of their implementation.



Arctic Tern – Max Finkelstein

## Goal 2:

**HABITAT CONSERVATION – Secure and enhance sufficient high quality habitat to support robust populations of waterbirds throughout their ranges in Canada.**

### Strategies:

- Increase understanding of seabird and inland waterbird habitat requirements throughout the year.
- Identify key marine, freshwater and terrestrial habitats and sites for waterbirds across their ranges.
- Implement management actions that secure important habitats.

### Results:

- Key factors affecting seabird and inland waterbird habitat requirements are understood.
- Important Canadian seabird and inland waterbird sites are identified and secured through legislation or habitat conservation and stewardship programs.
- Best practices are identified to integrate seabird and inland waterbird habitat needs with other uses of the landscape/seascape.

### Discussion:

Uninterrupted access to habitats throughout their annual cycles is essential to the survival of waterbirds and the maintenance or restoration of populations at appropriate levels.

Many key marine, freshwater and terrestrial sites for waterbirds have been identified, and in some cases, some level of protection or recognition has been conferred. Many of these sites have been specifically protected in National Parks, Migratory Bird Sanctuaries, National Wildlife Areas and under provincial and territorial legislation or indirectly, such as on other federal lands.

Stewardship agreements and designation through initiatives such as the Important Bird Areas program are important tools in securing recognition for important habitats. Although these options offer no legislated protection, the power of community involvement and ownership in the conservation process has proven to be an effective long-term strategy.

Still, many important sites remain to be identified and secured in some fashion. Aggregation sites where many birds come together during breeding, moulting, foraging at sea, and migration are key examples.

The greatest challenge may be increasing protection for coastal and marine offshore areas, through new opportunities such as Marine Protected Areas under *Canada's Ocean Act*, Marine Wildlife Areas under the *Canada Wildlife Act* or through the *National Parks Act*. Although many key sites representing important marine habitats for birds have been identified, few have any formal protection.



Ring-billed Gull –  
Ryan Zimmerling



## Goal 3:

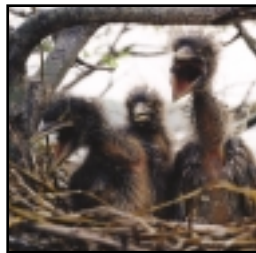
**INFORMATION EXCHANGE – Ensure that information for the conservation of waterbirds is widely available to decision makers, the public, and all those whose actions affect populations of these birds.**

### Strategies:

- Ensure that information on waterbirds and their conservation is available in forms that are useful for planning and management purposes.
- Work with users and managers of seabirds and inland waterbird habitats to promote practices and policies that reduce negative impacts of human activities on the birds.
- Provide information and outreach to influence decision-makers and to educate the public on conservation and resource management needs and policies.

### Results:

- Decision-makers, regulators and industries incorporate seabird and inland waterbird needs into their plans and activities.
- Canadians are made more aware of conservation problems relating to waterbirds and reflect these in their priorities and actions.
- Best practices and policies for the conservation of waterbirds are developed, accepted and widely used.



Black-crowned Night  
Herons – Glenn Barrett

### Discussion:

Information exchange, education and outreach are recognized as crucial factors contributing to the success of bird conservation initiatives.

Canadians need to become aware of the sensitivities of waterbirds and the threats they face. Examples are the release of oil into marine and freshwater environments, the problems associated with commercial fisheries and modification of wetlands.

Managers and land-use planners are increasingly receptive to accommodating the conservation needs of wildlife, but often they lack the necessary information and tools. This information must be accessible in easily-understood forms that can be integrated into their planning processes. Developing electronic databases and documentation on-line is an essential task for Wings Over Water.

Broadening partnerships to include land-managers, and industry representatives will facilitate an understanding of the effects their activities have on waterbirds and of ways to mitigate deleterious effects. Such partnerships make for innovative and effective joint ventures, and will help in resourcing conservation actions.

The participation of volunteers and local communities can provide a formidable conservation force. Comprehensive stewardship programs targeted at the local level will assist land-use managers in delivering initiatives. This will foster sound management practices and help sustain habitats over the long-term. In return, communities may see economic benefits from conservation initiatives through ecotourism, the building of new infrastructure, or related sustainable-use initiatives.

## Goal 4:

**COORDINATED ACTION – Ensure that coordinated conservation efforts for waterbirds are guided by common principles, and are in place throughout the range of those species that occur in Canada.**

### Strategies:

- Develop cooperative regional waterbird plans in Canada, integrating them with other bird-conservation initiatives under NABCI.
- Undertake cooperative actions with organizations concerned with the conservation, research, and management of waterbirds and their habitats, as well as other partners such as industry and aboriginal people.
- Influence environmental and land-use policies and programs that affect waterbird conservation.
- Increase human and financial resources available for waterbird conservation.
- Exchange information and expertise with international partners and develop international plans where required.

### Results:

- Common conservation priorities for Canadian waterbirds are agreed upon nationally and regionally.
- Waterbird conservation plans are developed and implemented at regional levels across Canada, with overall delivery integrated at regional, national and international levels.
- Principals that support waterbird conservation are incorporated into federal, provincial and international agreements and partnerships.
- Non-government groups, industries and aboriginal people play an active role in promoting and implementing seabird and inland waterbird conservation activities in Canada and other countries.
- Priority conservation action is not hindered through lack of human or financial resources.

### Discussion:

Partnerships can make the best use of limited means by pooling ideas and resources. They also ensure that contributing organizations apply their expertise and resources in the most effective way to address a commonly-agreed set of conservation priorities.

As conservation actions under Wings Over Water will take place mainly at local and regional levels, strong regional plans, encompassing the entire country, will deliver this initiative. The national plan will provide consistency and coordination of regional plans, and will provide a focus for integration with international initiatives.

As Wings Over Water addresses conservation for all waterbirds and their habitats, it is essential that partnerships include all jurisdictions: federal, provincial, territorial, municipal governments and aboriginal peoples. At the same time partnerships must also include universities, conservation and naturalist groups, volunteers and those whose activities pose threats to waterbirds, to ensure that all venues for conservation are involved.

Partners in Wing Over Water will collaborate with international conservation programs to foster cooperation in addressing concerns for the conservation of shared species. Beginning with cooperative efforts with NABCI partners, especially through NAWCP, international action will extend to circumpolar countries such as Greenland, as well as other coastal nations in Europe, the Americas and the southern hemisphere.

Much of the important conservation work is carried out by non-government organizations. These groups champion local conservation issues, and rally support for research, conservation projects, education and awareness. As indispensable allies they also influence the development of sound environmental laws, policies and programs.

An important objective of Wings Over Water is to promote policies and practices that have a positive influence on bird conservation and to reduce the application of those that do not. These efforts will be strengthened by taking consistent coordinated approaches among regions and among countries in identifying opportunities and influencing policies from the perspective of waterbird conservation.

# Implementation

## Plan Implementation

### Implementation Strategies

Effective delivery will require a practical and graduated approach, beginning with those projects that build on existing initiatives and those that address the highest conservation priorities. Implementation of these strategic projects will increase partner confidence, engender further financial and operational contributions, and enable partners to move on to addressing other more challenging and broader-scale priorities.

Implementation will predominantly occur at the local and regional level, but coordination is required to ensure that all waterbirds are addressed with the appropriate priority at regional, national and international levels. The following outlines roles at different implementation levels.

**National** – Implementation of Wings Over Water requires overall direction and coordination at two levels. A National Working Group will provide direction, oversight, and strategic guidance, while a Technical Committee will ensure that the plan progresses on a sound scientific basis. As participation at these two levels is not mutually exclusive, individuals may contribute through both committees. National direction will also facilitate the development of appropriate international conservation activities, and links to other NABCI conservation initiatives.

**International** – There are several positions available to Canadians on the NAWCP Waterbird Conservation Council whose role is to facilitate coordinated actions at the continental scale. There is expected to also be more regional involvement with the United States at the waterbird planning regions or BCR levels as cross-border planning and implementation is undertaken.

**Regional** – Implementation will occur at several levels including BCRs, joint ventures, provincial boundaries and traditional CWS regions. Plan delivery will thrive through regional partnerships among major stakeholder groups that participate at management, technical and operational levels. Each region will develop the minimum administrative structure needed to effectively implement its plans in cooperation with other species-group initiatives, in a form that reflects the specific circumstances of the region.



Black Tern – G.W. Beyersbergen

## Implementation Structure

### WOW National Working Group

This management-level committee will determine the plan's overall priorities and program direction, while maintaining the coherence of initiatives at local, national and international levels. The Chair of the National Working Group will serve as the WOW representative on the NABCI-Canada Council. Representatives from major stakeholder groups, including federal, provincial and territorial agencies as well as non-governmental conservation organizations, will participate in this body. Membership will initially be composed of those who have lead in the development of WOW and who served as an Interim Steering Committee. Other members will be sought from partners interested in the plan. Representation on the National Working Group will be sought from biologists, conservationists and management.

The function of the Wings Over Water National Working Group will be to:

- facilitate the development and identification of WOW priorities;
- develop and implement strategies to raise the national profile of Wings Over Water;
- ensure participation and support from key national partners;
- provide direct links to the NABCI and the NAWCP;
- provide effective coordination between Wings Over Water and the other bird conservation initiatives at the national level;

- address institutional and financial barriers to the advancement of the plan;
- develop resourcing strategies for components of the plan, including funding for national projects;
- maintain effective communication among plan partners and with other conservation bodies and agencies;
- represent Canadian seabird and inland waterbird conservation concerns nationally, continentally and globally;
- facilitate the sharing of information, techniques and results of research and management actions; and
- evaluate progress in implementing the plan, and recommend improvements.

### Canadian Waterbird Technical Committee

This scientific committee will identify national conservation issues, monitoring strategies and research needs. It will be composed of two chapters and co-chairs: one chapter will address the inland waterbirds while the other will be specific to seabirds. It is expected due to the distribution and life strategies of some bird species that some species will be addressed by both committees. The Canadian Waterbird Technical Committee will be made up of researchers, biologists and managers with expertise in the biology, ecology and conservation of waterbirds and their habitats, from federal, provincial and territorial wildlife agencies, universities and conservation NGOs. It will provide practical links to regional implementation of the plan, as most of its members will participate in the regional process. As this committee will include





Black Guillemots – Jean François Rail

Canada's experts in the field, the National Working Group will rely on its knowledge base to move conservation planning ahead in a biologically-sound fashion.

The function of the Canadian Waterbird Technical Committee will be to:

- provide technical advice and recommendations to the WOW National Working Group and to regional implementation teams to help meet the goals of the plan;
- ensure the incorporation of WOW priorities into scientific activities;
- assist in the implementation of national and regional conservation projects; and
- foster partnerships with seabird and inland waterbird experts in other nations that share populations of these species with Canada.

## Adaptive Management and Evaluation

The development of this plan is based on the best information currently available, as well as the most appropriate and effective conservation approaches. However, increased knowledge, and changing opportunities and availability of resources, may alter the manner in which conservation can best be delivered in Canada. Once the Conservation Goals of Wings Over

Water are tested in the real world, participants will have a better idea of what can be accomplished in a given time. As specific objectives are reached, the plan will evolve to address new conservation challenges.

Continued evaluation, to determine if conservation actions are successful in moving towards meeting the plan's Conservation Goals is critical for gauging the success of the plan in achieving effective conservation. These iterative assessments will allow for a rethinking of the approaches being used, and their effectiveness, from a practical, operational perspective. They provide an important opportunity to modify approaches, bring in new partners, or re-direct efforts, to maximize the likelihood of conservation success on an ongoing basis.

An evaluation of Wings Over Water will take place after the first three years of operation to assess its progress and chart new courses of action that may be indicated by such a review. This process will be overseen by the National Working Group, with input from the Canadian Waterbird Technical Committee, regional implementation bodies, and political representatives. Once more firmly established, the plan should be evaluated every five years. These periodic re-assessments will ensure that Wings Over Water can respond effectively to changing conservation requirements and opportunities, such as increasing interest in inter-jurisdictional planning, management and implementation, and most importantly, to ensure the highest priority needs for waterbirds are addressed.

# Appendix 1

## Appendix 1 Names, Population Statistics, Conservation Status and Priorities of Waterbirds

Conservation Status Assessment Factor Scores and Categories of Concern <sup>5</sup>															
English Name <sup>1</sup>	Scientific Name	Estimated Population in North America <sup>2</sup>	Canadian as % N American <sup>3</sup>	Canadian as % Global <sup>4</sup>	PT	PS	TB	TN	BD	ND	Category	Rule	Priority (Tier) <sup>6</sup>	Comments	
Sandhill Crane	<i>Grus canadensis</i>	not completed	>70%	>70%	2	1-2	1-2	2	2	3	Not currently at risk	5	3		
Whooping Crane	<i>Grus americana</i>	not completed	100%	100%	1	5	5	5	5	5	High	2b	1		
Yellow Rail	<i>Coturnicops noveboracensis</i>	not completed	>70%	>70%							IL	IL	1		
King Rail	<i>Rallus elegans</i>	not completed	<10%	<1%	4	5	4	4	5	4	high	2b	2		
Virginia Rail	<i>Rallus limicola</i>	not completed	10-30%	10-30%							IL	IL	2		
Sora	<i>Porzana carolina</i>	not completed	50-70%	50-70%							IL	IL	2		
Common Moorhen	<i>Gallinula chloropus</i>	not completed	<10%	<10 %	3-4	?	3	3	4	4	moderate	3b/3c	3		
American Coot	<i>Fulica americana</i>	not completed	30-50%	30-50%	2	1-2	2	1	1	2	Not currently at risk	5	3		
Great Skua	<i>Stercorarius skua</i>	Insufficient information	>70%	30-50%	3	4	na	2	na	3	Moderate	3c	2		
South Polar Skua	<i>Stercorarius maccormicki</i>	Insufficient information	?	<10%	3	4	na	2	na	1	Moderate	3c	IL		
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	20,000-40,000 breeders	50-70%	30-50%	3	3	3	2	1	1	Low	4a	3		
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	Insufficient information	50-70%	30-50%	3	3	3	2	1	1	Low	4a	3		
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	>150,000 individuals (?)	50-70%	30-50%	3	2	3	2	1	1	Low	4a	3		
Heermann's Gull	<i>Larus heermanni</i>	350,000 breeders	<10%	<10%	3	2	4	5	5	4	Moderate	3b	1		
Mew Gull	<i>Larus canus</i>	160,000 - 240,000 breeders	30-50%	10-30%	4	2	1	1	2	2	Not currently at risk	5	3		
Ring-billed Gull	<i>Larus delawarensis</i>	~1,700,000 breeders	50-70%	50-70%	1	1	1	1	2	2	Not currently at risk	5	3		
California Gull	<i>Larus californicus</i>	~414,000 breeders	30-50%	30-50%	3	2	5	2	2	3	Moderate	3b	2		
Great Black-backed Gull	<i>Larus marinus</i>	121,430 breeders	30-50%	10-30%	2	2	2	2	3	2	Not currently at risk	5	3		
Glaucous-winged Gull	<i>Larus glaucescens</i>	380,000 breeders	10-30%	10-30%	3	2	2	2	3	3	Low	4a	3		
Western Gull	<i>Larus occidentalis</i>	>77,000 breeders	<10%	<10%	2	2	2	2	4	4	Low	4b	3		
Glaucous Gull	<i>Larus hyperboreus</i>	169,200 breeders	>70%	10-30%	3	2	1	1	1	1	Not currently at risk	5	3	possible declines	
Iceland Gull	<i>Larus glaucoides</i>	>100,000 individuals	>70%	30-50%	3	2	3	3	3	2	Low	4a	3		
Thayer's Gull	<i>Larus thayeri</i>	<10,000 in Canada	>70%	>70%	3	3	3	5	3	2	Moderate	3c	1		
Herring Gull	<i>Larus argentatus</i>	>246,000 breeders	>70%	10-30%	4	2	3	2	1	1	Moderate	3b	2	declines in Nfld, G. St. Lawrence, Belchers, Great Lakes	
Black-headed Gull	<i>Larus ridibundus</i>	40 breeders, 400 non-breeders	>70%	<10%	3	5	3	3	4	3	Moderate	3d	3	possibly high given small local populations	
Bonaparte's Gull	<i>Larus philadelphia</i>	Insufficient information	>70%	>70%	?	3	3	3	1	2	Moderate	*	1	>100,000 in Canada	
Franklin's Gull	<i>Larus pipixcan</i>	315,608 - 990,864 breeders	10-30%	10-30%	3	1-2	4	3	2	2	Moderate	3b	3	high concern in prairies - little boreal info	
Little Gull	<i>Larus minutus</i>	100-200 breeders	<10%	<1 %	4	5	3	1	5	4	High	2a	2		
Ivory Gull	<i>Pagophila eburnea</i>	>2,400 breeders	100%	10-30%	4	4	3	3	4	1	High	2a	1		
Ross's Gull	<i>Rhodostethia rosea</i>	<200 breeders	100%	<10%	4	5	2	3	4	1	High	2a	2		
Sabine's Gull	<i>Xema sabini</i>	200,000-400,000 breeders	>70%	50-70%	2	2	2	4	2	1	Low	4b	3		
Black-legged Kittiwake	<i>Rissa tridactyla</i>	3,126,000 breeders	10-30%	10-30%	3	1	2	2	2	1	Not currently at risk	5	3		



Conservation Status Assessment Factor Scores and Categories of Concern<sup>5</sup>

English Name <sup>1</sup>	Scientific Name	Estimated Population in North America <sup>2</sup>	Canadian as % N American <sup>3</sup>	Canadian as % Global <sup>4</sup>	PT	PS	TB	TN	BD	ND	Category	Rule	Priority (Tier) <sup>6</sup>	Comments
Caspian Tern	<i>Sterna caspia</i>	66,000 - 70,000 breeders	30-50%	<10%	2	<b>3</b>	4	2	2	2	Low	4b	<b>3</b>	
Roseate Tern	<i>Sterna dougallii</i>	16,000 breeders	<10%	<10%	<b>5</b>	4	5	5	3	3	<b>Highly imperiled</b>	<b>1a</b>	<b>2</b>	
Common Tern	<i>Sterna hirundo</i>	300,000 breeders	50-70%	10-30%	<b>3</b>	2	5	4	2	1	<b>Moderate</b>	<b>3b</b>	<b>2</b>	
Arctic Tern	<i>Sterna paradisaea</i>	Insufficient information	>70%	30-50%	4	<b>2</b>	<b>3</b>	2	1	1	<b>Moderate</b>	<b>3b</b>	<b>2</b>	Canadian pop >100,000
Forster's Tern	<i>Sterna forsteri</i>	47,000 - 51,500 breeders	30-50%	30-50%	4	3	3	2	2	2	Moderate	3b	<b>1</b>	
Black Tern	<i>Chlidonias niger</i>	100,000-500,000 breeders	50-70%	10-30%	<b>5</b>	2	4	3	2	2	<b>high</b>	<b>2a</b>	<b>1</b>	declines in Great Lakes, St. Lawrence
Dovekie	<i>Alle alle</i>	1,000 breeders	>70%	<10%	3	4	2	3	5	2	Moderate	3c	<b>3</b>	
Common Murre	<i>Uria aalge</i>	4,250,000 individuals	10-30%	<10%	<b>2</b>	1	4	4	3	2	<b>Low</b>	<b>4b</b>	<b>3</b>	trends vary on location - overall apparently stable
Thick-billed Murre	<i>Uria lomvia</i>	8,000,000 breeders	10-30%	10-30%	3	1	4	4	2	2	Moderate	3c	<b>2</b>	
Razorbill	<i>Alca torda</i>	76,000 breeders	>70%	<10%	<b>2</b>	2	4	5	4	<b>4-5</b>	<b>Low</b>	<b>2b</b>	<b>3</b>	
Black Guillemot	<i>Cephus grylle</i>	100,000-200,000 breeders	>70%	30-50%	2	2	3	3	2	1	Not currently at risk	5	<b>3</b>	
Pigeon Guillemot	<i>Cephus columba</i>	<69,000 breeders	30-50%	10-30%	4	3	3	2	3	3	Moderate	3b	<b>2</b>	
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	300,000 - 800,000 individuals	10-30%	10-30%	5	2	4	2	3	4	High	2a	<b>1</b>	
Xantus's Murrelet	<i>Synthliboramphus hypoleucus</i>	6,000 - 7,000 breeders	<10%	<10%	4	3	5	4	5	5	High	2a	<b>2</b>	
Ancient Murrelet	<i>Synthliboramphus antiquus</i>	1,300,000 breeders	30-50%	30-50%	4	1	5	4	4	3	High	2a	<b>1</b>	
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	3,200,000-3,570,000 breeders	>70%	>70%	3	1	4	2	4	3	Moderate	3c	<b>1</b>	
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	922,000 breeders	30-50%	30-50%	2	1	4	2	3	3	Low	4b	<b>3</b>	
Atlantic Puffin	<i>Fratercula arctica</i>	750,000 - 760,000 breeders	>70%	<10%	<b>2</b>	2	4	4	3	2	<b>Low</b>	<b>4b</b>	<b>3</b>	
Horned Puffin	<i>Fratercula corniculata</i>	1,000,000 breeders	<10%	<10%	<b>3</b>	<b>5</b>	4	2	3	2	<b>High</b>	<b>2a</b>	<b>2</b>	marginal species in Canada
Tufted Puffin	<i>Fratercula cirrhata</i>	2,750,000-3,000,000 breeders	<10%	<10%	<b>4</b>	<b>2</b>	4	2	2	2	<b>Moderate</b>	<b>4b</b>	<b>3</b>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	not completed	10-30%	<10 %							<b>IL</b>	<b>IL</b>	<b>3</b>	
Red-necked Grebe	<i>Podiceps grisegena</i>	not completed	>70%	30-50%	<b>1</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>Not currently at risk</b>	<b>5</b>	<b>3</b>	
Horned Grebe	<i>Podiceps auritus</i>	not completed	>70%	30-50%	<b>4</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>moderate</b>	<b>3b</b>	<b>2</b>	
Eared Grebe	<i>Podiceps nigricollis</i>	3,500,000 - 4,100,000 individuals (fall population)	10-30%	10-30%	3	1	2	4	2	3	Moderate	3c	<b>2</b>	
Western Grebe	<i>Aechmophorus occidentalis</i>	>110,000 breeders	10-30%	10-30%	3	2	4	4	3	3	Moderate	<b>3c</b>	<b>1</b>	
Clark's Grebe	<i>Aechmophorus clarkii</i>	10,000 - 20,000 individuals	10-30%	10-30%	3	3	3	3	3	3	Low	4a	<b>3</b>	
Northern Gannet	<i>Morus bassanus</i>	155,456 breeders	100%	10-30%	1	2	3	3	4	2	Not currently at risk	5	<b>3</b>	
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	151,200 breeders	<10%	<10%	4	<b>4</b>	5	4	4	4	High	2a	<b>2</b>	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	>740,000 breeders	30-50%	30-50%	1	2	2	2	2	2	Not currently at risk	5	<b>3</b>	
Great Cormorant	<i>Phalacrocorax carbo</i>	11,600 breeders	>70%	<10%	3	3	2	2	4	4	Moderate	3c	<b>3</b>	



Conservation Status Assessment Factor Scores and Categories of Concern<sup>5</sup>

English Name <sup>1</sup>	Scientific Name	Estimated Population in North America <sup>2</sup>	Canadian as % N American <sup>3</sup>	Canadian as % Global <sup>4</sup>	PT	PS	TB	TN	BD	ND	Category	Rule	Priority (Tier) <sup>6</sup>	Comments
Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	<69,000 breeders	<10%	<10%	4	3	4	4	3	3	High	2a	2	
Great Blue Heron	<i>Ardea herodias</i>	83,000 breeders	10-30%	10-30%	1	2	2	2	2	3	Not currently at risk	5	3	
Great Egret	<i>Ardea alba</i>	>180,000 breeders	<10%	<1 %	1	2	2	2	?	?	Not currently at risk	5	3	
Cattle Egret	<i>Bubulcus ibis</i>	1,160,000 breeders (Texas only)	<10%	<1 %	2	1	2	2	3	3	Not currently at risk	5	3	
Green Heron	<i>Butorides virescens</i>	Insufficient information	<10%	<10%	2	3	2	3	2	4	Low	4c	3	
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	>50,000 breeders (doesn't include Central America)	<10%	<10%	4	3	3	3	2	3	Moderate	3b	3	
Least Bittern	<i>Ixobrychus exilis</i>	not completed	<10%	<10%	4	4	4	4	2	2	high	2a/2b	2	
American Bittern	<i>Botaurus lentiginosus</i>	not completed	50-70%	50-70%	4	2-3	3	3	1	1	moderate	3b	1	
American White Pelican	<i>Pelecanus erythrorhynchos</i>	>120,000 breeders	50-70%	50-70%	3	2	4	3	2	2	Moderate	3c	1	
Red-throated Loon	<i>Gavia stellata</i>	not completed	>70%	30-50%	3	3	3	3	2-3	?	low	4a	3	
Arctic Loon	<i>Gavia arctica</i>	not completed	50-70%	30-50%							IL	IL	2	
Pacific Loon	<i>Gavia pacifica</i>	not completed	>70%	?							IL	IL	2	
Common Loon	<i>Gavia immer</i>	not completed	>70%	>70%	3	2	4	4	1	2	moderate	3c	1	
Yellow-billed Loon	<i>Gavia adamsii</i>	not completed	>70%	30-50%							IL	IL	2	
Northern Fulmar	<i>Fulmarus glacialis</i>	2,100,000 breeders	10-30%	10-30%	3	2	2	3	3	1	Not currently at risk	5	3	
Mottled Petrel	<i>Pterodroma inexpectata</i>	Insufficient information	?	<10%							IL	IL	2	
Murphy's Petrel	<i>Pterodroma ultima</i>	ranges off B.C.	?	<10%							IL	IL	2	
Cory's Shearwater	<i>Calonectris diomedea</i>	Insufficient information	?	?	3	4	3	3	na	2	Moderate	3c	IL	
Buller's Shearwater	<i>Puffinus bulleri</i>	2,500,000 individuals	?	<10%	?	1	na	2	na	1	Not currently at risk	**	2	
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	1,500,000 individuals	?	<10%	3	1	na	3	na	2	Low	4a	3	
Pink-footed Shearwater	<i>Puffinus creatopus</i>	35,000 - 50,000 individuals	50-70%	50-70%	4	3	na	4	na	2	High	2a	1	
Greater Shearwater	<i>Puffinus gravis</i>	Insufficient information	>70%	50-70%	3	1	na	4	na	2	Low	4c	3	
Sooty Shearwater	<i>Puffinus griseus</i>	2,800,000 individuals	>50%	10-30%	4	1	na	3	na	1	Moderate	3b	2	
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>	30,000,000 individuals	<10%	<10%	3	1	na	2	na	1	Not currently at risk	5	3	
Manx Shearwater	<i>Puffinus puffinus</i>	360 breeders	>70%	<10%	4	5	3	2	5	2	High	2a	2	
Short-tailed Albatross	<i>Phoebastria albatrus</i>	~1,300 individuals	?	?	2	4	na	5	na	2	High	2b	2	
Black-footed Albatross	<i>Phoebastria nigripes</i>	148,000 breeders	30-50%	30-50%	5	2	5	5	4	2	Highly Imperiled	1a	1	
Laysan Albatross	<i>Phoebastria immutabilis</i>	1,100,000 breeders	<10%	<10%	4	1	4	4	4	2	High	2a	2	
Wilson's Storm-Petrel	<i>Oceanites oceanicus</i>	50,000-100,000 non-breeders	<10%	<10%	3	2	na	2	na	1	Not currently at risk	5	3	
Leach's Storm-Petrel	<i>Oceanodroma leucorhoa</i>	15, 275,000 breeders	30-50%	30-50%	4	1	4	3	2	2	High	2a	1	
Fork-tailed Storm-Petrel	<i>Oceanodroma furcata</i>	5,000,000 - 6,000,000 breeders	<10%	<10%	1	1	4	2	3	2	Not currently at risk	5	3	





## LEGEND FOR APPENDIX 1

- 1 Common names as used in the North American Waterbird Conservation Plan (NAWCP).
- 2 Population numbers from NAWCP.
- 3&4 Populations and percentages: populations for seabirds are based on best knowledge focusing on estimated population numbers for seabirds and predominantly as percentage of range for inland waterbirds due to lack of population data for many inland species.
- 5 Based on Conservation Status Assessment Protocol from NAWCP; presented in Appendix 2. Included are definitions for factor scores [Population Trends (PT), Population Size (PS), Threats to Breeding (TB), Threats to Non-breeding (TN), Breeding Distribution (BD), Non-breeding Distribution (ND)], and conservation concern categories. Factor scores, Categories and Rules that differ from NAWCP are in bold.
- 6 Priority Tiers: the prioritization should be viewed as an ongoing process to be refined as more information and time is devoted to gathering data and re-assessment.

### Priority tiers are delimited by the following:

#### Tier 1

Globally listed (Birdlife International) for which Canada has >10% global population  
Highly imperiled or high concern conservation status, >10% global population  
Moderate concern conservation status, >50% global

#### Tier 2

Other highly imperiled or high concern conservation status, or globally listed  
Moderate concern conservation status and >10% global population  
Information lacking but responsible for >30% of global population

#### Tier 3

All others for which information is sufficient to make a determination

### Other Symbols

- IL Information Lacking
- na not applicable: species does not breed in plan area
- ? unknown
- \* reflects range due to unknown factor score
- \*\* recommended by specialist group



Double-crested Cormorant –  
CWS, Ontario

# Appendix 2

## Conservation Status Assessment Protocol for Colonial Waterbirds in North America

### Assessment Process

A committee of the North American Waterbird Conservation Plan developed a process for assigning colonial birds to categories of conservation concern. This protocol was adapted from the Partners in Flight and U.S. Shorebird Conservation Plan guidelines and accommodates the special conservation issues of species that aggregate during breeding season and/or utilize extensive marine habitats. Conservation status was determined by evaluating six factors that reflect vulnerability to population decline. These factors were scored and each species was assigned to a category of conservation concern using a step-wise categorization process. All factor scores were derived within the spatial context of the Plan area (e.g., they do not reflect global status for those species occurring outside of the Plan area). Moreover, factor scores are relative to each other and are not benchmarks, meaning that species will occur in all categories, including those of lower conservation concern.

### Factor Scores

Six factors were considered when evaluating the conservation status of a species at the continental scale. Three factors are based on quantitative information (Population Size, Breeding Distribution, Non-breeding Distribution) and three on qualitative information (Population Trend, Threats to Breeding Populations, Threats to Non-breeding Populations). All factors are scaled from 1 to 5, with 5 indicating greatest vulnerability. Each species was assigned to a category of conservation concern based on these factor scores.

### Population Trend (PT):

This factor reflects estimated population trends based on existing information. The time period over which trend was estimated for most species was 1970 to present.

- 5 biologically significant population decline
- 4 apparent population decline
- 3 apparently stable population
- 2 apparent population increase
- 1 biologically significant population increase

### Population Size (PS):

This factor provides information on the current (1990-present) abundance of each species within North America. Log-transformed population data produced a normal distribution, and the 1 to 5 scale represents quintiles of the range of log-transformed values.

- 5 up to 480 individuals
- 4 480 – 5,800 individuals
- 3 5,800 – 69,200 individuals
- 2 69,200 – 832,000 individuals
- 1 832,000 – 10,000,000 individuals



Black-legged Kittiwakes – CWS-Atlantic



### Threats to Breeding (TB):

This factor rates the threats impacting most or all of the total North American population of each species during their breeding season. The importance of vulnerability due to concentration (coloniality) was considered when scoring this factor. Species that do not breed in North America received a Not Applicable (NA) for this score.

- 5 Known threats are actually occurring and can be documented; concentration results in actual risk
- 4 Significant potential threats exist, but have not actually occurred; concentration results in high potential risk
- 3 No known threats, or information not available; concentration not a risk
- 2 Threats assumed to be low from all factors including concentration
- 1 Demonstrably secure

### Threats to Non-breeding (TN):

This factor rates the threats known to exist for each species during their non-breeding season. The scores are the same as for the Threats to Breeding factor, but without the additional risk due to concentration during breeding.

### Breeding Distribution (BD):

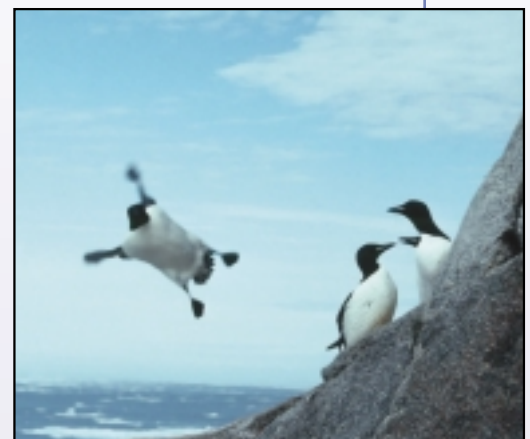
This factor reflects the vulnerability to population loss due to a small breeding distribution. Total *land-based* breeding area in North America was estimated in square kilometers. Breeding ranges were determined using range maps (primarily from Harrison, P. Seabirds: an identification guide. Boston: Houghton Mifflin Company; 1985. 448 p. and from the American Ornithological Union's Birds of North America accounts). The 1 to 5 scale was created with log-transformed data. Species that do not breed in North America receive a Not Applicable (NA) for this score.

- 5 highly restricted (up to 450,000 km<sup>2</sup> )
- 4 local (450,000 km<sup>2</sup> – 1,500,000 km<sup>2</sup> )
- 3 intermediate (1,500,000 km<sup>2</sup> – 5,000,000 km<sup>2</sup> )
- 2 widespread (5,000,000 km<sup>2</sup> – 16,000,000 km<sup>2</sup> )
- 1 very widespread (16,000,000 km<sup>2</sup> – 52,500,000 km<sup>2</sup> )

### Non-breeding Distribution (ND):

This factor reflects the vulnerability to population loss due to small non-breeding distribution, that is, the total area occupied by non-breeding birds (including wintering, migratory, and in some cases breeding areas) in North America. Non-breeding ranges were determined using the standardized procedures and the sources described above.

- 5 highly restricted (up to 1,300,000 km<sup>2</sup> )
- 4 local (1,300,000 km<sup>2</sup> – 4,200,000 km<sup>2</sup> )
- 3 intermediate (4,200,000 km<sup>2</sup> – 13,600,000 km<sup>2</sup> )
- 2 widespread (13,600,000 km<sup>2</sup> – 44,000,000 km<sup>2</sup> )
- 1 very widespread (44,000,000 km<sup>2</sup> – 140,000,000 km<sup>2</sup> )



Thick-billed Murres – Garry Donaldson



## Categories of Conservation Concern

Five categories of conservation concern were developed, and species were assigned to them using a categorical approach. The categories and the series of categorization rules are presented below. Some species could not be categorized because inadequate data were available to assess risk.

- 1. Highly Imperiled:** This includes all species with significant population declines and either low populations or some other high risk factor.

**Rule 1a.** PT = 5 *and* either PS, TB, TN, or BD = 5

- 2. High Concern:** Species that are not Highly Imperiled. Populations of these species are known or thought to be declining, and have some other known or potential threat as well.

**Rule 2a.** PT = 4 or 5 *and* either PS, TB, TN, or BD = 4 or 5; or

**Rule 2b.** PS = 4 or 5 *and* either TB or TN = 4 or 5

- 3. Moderate Concern:** Species that are not Highly Imperiled or High Concern. Populations of these species are either a) declining with moderate threats or distributions; b) stable with known or potential threats and moderate to restricted distributions; or c) relatively small with relatively restricted distributions.

**Rule 3a.** PT = 5 *and* either PS, TB, TN, BD, or ND > 1; or

**Rule 3b.** PT = 4 *and* either PS, TB, TN, BD, or ND > 2; or

**Rule 3c.** PT = 3 *and* either PS, TB, TN, BD, or ND = 4 or 5; or

**Rule 3d.** PS = 4 or 5 *and* either BD or ND > 3

- 4. Low Concern:** Species that are not Highly Imperiled, High Concern or Moderate Concern. Populations of these species are either a) stable with moderate threats and distributions; b) increasing but with known or potential threats and moderate to restricted distributions; or c) of moderate size with known or potential threats and moderate to restricted distributions.

**Rule 4a.** PT = 3 *and* either PS, TB, TN, BD, or ND = 3; or

**Rule 4b.** PT = 2 *and* either PS, TB, TN, BD, or ND = 4 or 5; or

**Rule 4c.** PS = 3 *and* either TB, TN, BD, or ND = 4 or 5

- 5. Not Currently At Risk:** All other species for which information was available.

**Rule 5:** Does not meet any previous rule

**Information Lacking:** If both Population Trend and Population Size could not be estimated, species were not ranked.



American White Pelicans – G.W. Beyersbergen