

REVIEW DRAFT II–
**NORTH AMERICAN
WATERBIRD CONSERVATION PLAN
Volume 1: Seabirds and Colonial Waterbirds**

23 October 2001
The North American Waterbird Conservation Plan Steering Committee,
Washington, DC

COMMENT ON PLAN TO WaterbirdComments@USGS.gov

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FORWARD

Conserving waterbirds requires planning and action - planning at continental, regional, and local scales and action through collaboration by all who care about these birds and their habitats. Waterbird conservation requires planning and actions that are coordinated within the larger, continent-wide all-bird conservation, as envisioned by the North America Bird Conservation Initiative and other national and international conservation programs. Conserving waterbirds requires resources, including people and funding. Most importantly, conserving waterbirds requires commitment from individuals, governments, and private organizations.

Volume One of the North American Waterbird Conservation Plan fulfills one aspect of these requirements - an overarching continental framework. It's goal is to inspire conservation action for seabirds and colonial waterbirds from Canada through the Caribbean, from Bermuda through the Pacific Islands, at their nesting sites, during their annual migrations, and during nonbreeding periods. It aims to facilitate continent-wide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection that taken together will maintain healthy populations and habitats for these birds.

The North American Waterbird Plan is the culmination of a multiyear process of collaborative deliberation on the most appropriate approaches and goals to conserve, throughout North America, populations of seabirds, colonial waterbirds, and other marshbirds and the habitats on which they depend. The planning process was possible because of the engagement of hundreds of experts on biology, conservation, and management of waterbirds (recognized in the Acknowledgments). It also was made possible by the firm support of government agencies and private organizations, which provided both moral and financial support. We thank all for their dedication to waterbirds and for their good work.

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CITATION

This document should be cited as follows: Review Draft II - North America Waterbird Conservation Plan, Volume One: Seabirds and Colonial Waterbirds, 23 October 2001, Waterbird Conservation Plan Steering Committee, Washington DC (www.nacwcp.org/).

EXECUTIVE SUMMARY

Across North America, seabirds and colonial waterbirds face significant risks to their populations, habitats and critical areas. Colonially nesting waterbirds share similar risks through their breeding behavior which concentrates breeding populations in few areas, but this behavior also provides a vehicle to accomplish focused multi-species conservation measures at a limited number of sites. Colonially nesting waterbirds also share dependence on aquatic resources, and this characteristic provides the potential for pursuing multi-species waterbird conservation partnerships with other multi-use resource management programs such as wetland regulation, coastal zone management, aquaculture, and inland and offshore fisheries management. The challenge of managing concentrated populations in concert with the potential for effective conservation speak to the need and opportunity for coordinated conservation planning and implementation for these species. Volume One of the North American Waterbird Conservation Plan focuses on the conservation needs of colonially nesting species. A second volume will be developed focusing on non-colonially nesting marshbirds.

The North American Waterbird Conservation Initiative is an independent partnership among individuals and institutions with interest and responsibility for conserving these species and their habitats. Conservation is planned and facilitated by this partnership. The North American Waterbird Conservation Plan is one element in this conservation program. National and regional plans are other elements, as is a continent-wide monitoring partnership. Conservation will occur through international agreements, national and state/provincial governments, non-government organizations, habitat Joint Ventures, Important Bird Areas, individuals, and conservation partnerships, especially the North American Bird Conservation Initiative.

The North American Waterbird Conservation Initiative

- is an independent partnership among individuals and institutions having interest and responsibility for conservation of waterbirds and their habitats in North America,
- provides an organizational framework and infrastructure for implementation in cooperation with other conservation initiatives, especially the North American Bird Conservation Initiative.

The North American Waterbird Conservation Plan, Volume One

- provides a North American framework for conserving and managing colonially-nesting aquatic birds
- aims to facilitate continent-wide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection and management.

The Plan's goal is

- to ensure that diversity and abundance of populations, habitats, and important sites of waterbirds are sustained or restored throughout their ranges in North America.

Geographically, the Plan covers

- 28 countries from Canada to Panama, Bermuda through the Caribbean Basin, US islands in the Pacific, and the near shore and off shore regions of the Atlantic, Pacific, Gulf of Mexico and Caribbean Sea.

Taxonomically, the Plan covers

- 209 species of waterbirds, including seabirds (such as auks, albatrosses, storm-petrels, frigate birds), coastal waterbirds (such as gulls, terns, pelicans and cormorants), wading birds (such as herons, ibises and storks), and some marshbirds (such as certain grebes, bitterns). Volume One covers 165 colonial nesters, including three grebes that nest semi-colonially and Volume Two covers 44 species of marshbirds.

Ecologically, the Plan covers

- the inland, coastal, and pelagic nesting, feeding, and non-nesting habitats and important areas.

Institutionally the Plan calls for development of

- North American Waterbird Council; North American Waterbird Monitoring Partnership; Regional Waterbird Working Groups and regionally based implementation planning; waterbird coordinators in national agencies; waterbird biologists in state/provincial governments, Joint Ventures, and non-governmental agencies; habitat, conservation, and research funding programs; and education and conservation information programs.

Part 1: CONSERVING SEABIRDS AND COLONIAL WATERBIRDS IN NORTH AMERICA

Introduction to Volume One of the Plan

Birds of the water have special meaning to humans. Many are spectacular in appearance and numbers. They have figured in human history as food, ornamentation, folkloric figures, and as symbols of the natural world. Those aquatic birds that aggregate to nest and roost together, because of their conspicuousness, represent the exotic, mystery, and wildness of their aquatic worlds. Waterbirds such as albatrosses, herons, storks, pelicans, puffins, and terns are cherished by human culture, as is suggested by how frequently they are selected as symbols and totems of conservation organizations, environmental programs, and locales. Other colonial waterbirds interact more directly with people, such as gulls at landfills, cormorants at aquaculture ponds, and seabird flocks leading sport fishermen to their catch. Beyond the cultural, other aspects of waterbird biology are useful indicators of environmental quality. Protection, management, and conservation of colonial waterbirds and seabirds can help conserve the broader landscape in which they occur.

Seabirds and colonial waterbirds face threats to stability of their populations. One species is totemic. The last sighting of the Great Auk, in 1852, heralded the extinction of this colonial waterbird species through direct hunting impacts. The Roseate Tern, Laysan Albatross, Short-tailed Albatross, Newell's Shearwater, Black-Vented Shearwater, and Bermuda Petrel, nationally listed as threatened species, could share the Great Auk's fate without proper conservation attention.

Seabirds and colonial waterbirds face threats to the habitats and sites on which they depend. Hydrologic change of freshwater wetlands, degradation of coastal and marine habitats, depletion of the forage base, and contaminants all effect colonial waterbirds and seabirds. Habitat degradation can cause population declines. Logging of old growth forests along the Pacific Coast destroyed nesting habitat of the Marbled Murrelet. The patch-by-patch changes occurring in wetland and other aquatic habitats as they are drained, channelized, manipulated, over-fished, plowed, or altered in response to human pressures, may be the most detrimental to waterbirds as they go unnoticed in the piece-meal fashion of development. For some species, habitat changes have led to population increases and expansion. Artificial food sources have led to increases in Double-Crested Cormorants and Ring-billed Gulls. Habitats have to be appropriately managed to provide the necessities of life for waterbirds.

Seabirds and colonial waterbirds face threats to specific sites or regions, used importantly for nesting, feeding and wintering. Concentrating populations at restricted sites increases the criticality of the importance of these sites. Important areas used by colonial waterbirds must be protected and managed.

Seabirds and colonial waterbirds face threats directly from people. Conflicts exist or are imagined wherever human industry and colonial waterbirds attempt to coexist. Large numbers of seabirds are killed by long-line and gill net fisheries and at aquaculture facilities. Fishermen compete with seabirds for their food supply. Herons, cormorants, terns, and pelicans take advantage of food concentrated in aquaculture ponds and raceways, to the distress of fish farmers, sometimes resulting in destruction of the birds. Colonial waterbirds choosing to nest or roost in urban and suburban environments conflict with aesthetic standards. Oil spills and

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan chronic bilge discharge maim and kill tens to hundreds of thousands of seabirds and colonial waterbirds and their chicks. Contamination by pesticides and other chemicals caused population declines in Double-crested Cormorants and Brown Pelicans in the 1970s. Threats continue throughout the continent.

Conservation of seabirds and colonial waterbirds is an international matter. Many species range through the countries of North and Central America and the Caribbean, and some North American species are also found in Europe, South America, and the Pacific. Northern Fulmars cross the Atlantic and Pacific Oceans. Arctic Terns transit the Pacific from north to south. Maintaining North American populations of seabirds and colonial waterbirds at levels required for their long-term conservation depends on inventory, monitoring, management action, and planning carried out on a continental scale. Conservation at this scale is addressed in Volume One of the North American Waterbird Conservation Plan.

Conservation of seabirds and colonial waterbirds is a national matter. Most national governments have responsibility for managing birds, especially endemic and migratory species. In Canada, the United States, and Mexico, the national government is responsible for migratory birds. In the United States, the Federal government is responsible for species listed under the Endangered Species Act. National governments are also responsible for habitat management on government lands, such as parks and sanctuaries, and in varying degrees for regulation of habitat quality, such as pollution, wetlands, and land development. Conservation at this scale is addressed in this volume of the North American Waterbird Conservation Plan and also will be addressed in national colonial waterbird plans, as desired by coordinating nations.

Conservation of seabirds and colonial waterbirds is a regional matter. Seasonally and between years, many populations shift among local sites within a larger geographic or ecological region, making these regional conservation units biologically meaningful. Regional conservation action is often highly effective because it falls within the responsibility of a single political unit such as a state or province. Ecological regions often encompass more than a single regional political unit, requiring cooperation. Conservation at this scale is to be addressed in Regional Waterbird Plans.

Conservation of seabirds and colonial waterbirds is a state and provincial matter. State and provincial governments are responsible for non-migratory birds, for development, planning, and environmental regulation. In Canada, provincial governments have principal responsibility for habitat and for some colonial waterbirds. State governments manage wildlife, hunting, parks, sanctuaries and other issues important to colonial waterbirds. State and provincial governments are close to the people whose engagement is critical to long-term conservation of these species. Conservation at this scale will be addressed by each province and state in their nongame wildlife planning.

Conservation of seabirds and colonial waterbirds is a local matter. Nesting and roosting seabirds and colonial waterbirds are particularly affected by local conditions. Concentration behavior provides opportunities for effective, efficient conservation action at the local scale. Because different species similarly utilize the same habitats, common conservation principles and similar management themes can be enacted that affect a suite of species. Conservation at this scale should be addressed through local planning and actions of local constituencies.

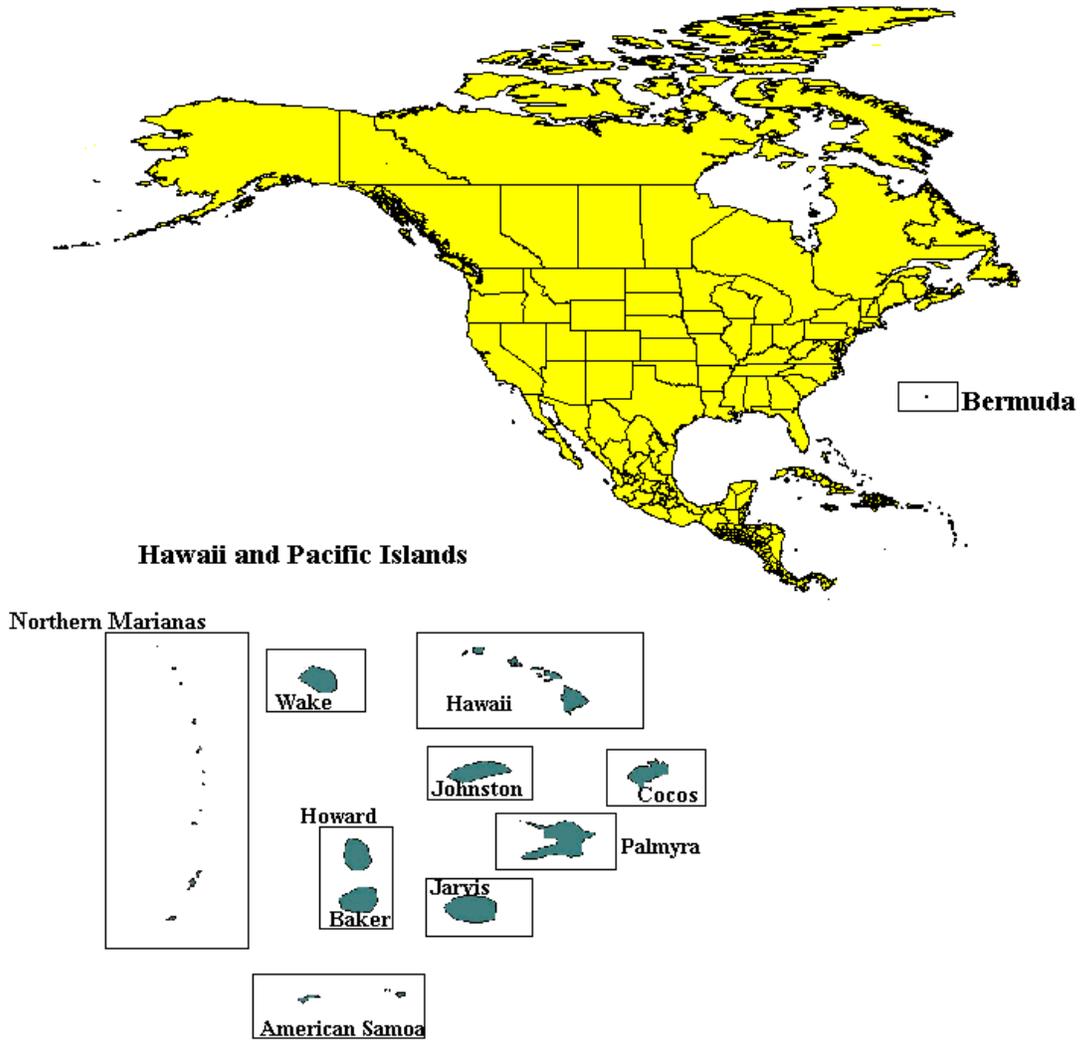
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Geographic Extent of Plan

For the purposes of the North American Waterbird Conservation Plan, North America is defined to include the North American continent proper, Central America through Panama, Atlantic and Caribbean Islands from Bermuda through the Caribbean Basin, and the Hawaiian and other Pacific Islands associated with the United States government.

Countries within the Plan area are (North to South) Canada, United States of America (including Puerto Rico, US Virgin Islands, and US Pacific islands such as American Samoa, Baker and Howland Islands, Commonwealth of the Northern Mariana Islands, Guam, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Atoll, Palmyra Atoll, and Wake Island), Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Bermuda, Bahamas, Jamaica, Cuba, Haiti, Dominican Republic, Anguilla, Antigua & Barbuda, St. Kitts & Nevis, Montserrat, Dominica, St. Lucia, St. Vincent & the Grenadines, Barbados, Granada, Trinidad & Tobago, The Netherlands (including Aruba, Bonaire, Curacao, Saba, St. Eustatius, St Maarten), France (including Martinique, Guadeloupe, St. Martin, St. Barthelemy), Great Britain (including Turks & Caicos, Cayman Islands, British Virgin Islands). Excluded from the Plan area are Greenland and islands in the Caribbean associated with South American nations.

Conservation needs of North American waterbirds do not stop at the borders of these nations. Where appropriate waterbird conservation planning will connect to nations not included in the continental plan area. For example, bird management in Greenland will be connected to bird management in Canada and conservation in Pacific island nations will be considered in Pacific regional planning as appropriate and acceptable.

Geographic Extent of North American Waterbird Conservation Plan



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Species Included in Volume One of the Plan

For the purposes of Volume One of this Plan waterbirds include: *colonial waterbirds* that nest colonially and are dependent on water to complete portions of their life cycles; *seabirds* (such as auks, albatrosses, storm-petrels, frigate birds), *coastal waterbirds* (such as gulls, terns, pelicans and cormorants), *wading birds* (such as herons, ibises and storks), and some *marshbirds* (such as certain grebes and bitterns). Table 1 lists the families with species considered to be colonial waterbirds for purposes of Volume One of this plan. The 165 species of colonial nesters are listed in Appendix One.

Not all waterbirds are covered in the North American Waterbird Plan. Some songbirds, raptors and waterfowl fit definition of waterbirds but are not covered because they are included in planning initiatives such as Partners in Flight and the North American Waterfowl Plan. Other birds covered by this plan include marshbirds will be covered in Volume Two (see Appendix 2) and also in Regional Waterbird Conservation Plans. Regional waterbird planning and implementation in Mexico, Central America and the Caribbean may include an even wider array of aquatic birds, as is appropriate and useful in each area.

Table 1. Bird families of species included in Volume One	
Family	Species
Podicipedidae	select grebes
Diomedidae	albatrosses
Procellariidae	shearwaters, petrels
Hydrobatidae	storm-petrels
Phaethontidae	tropicbirds
Sulidae	boobies, gannet
Pelicanidae	pelicans
Phalacrocoracidae	cormorants
Anhingidae	darters
Fregatidae	frigatebirds
Ardeidae	herons, egrets, bitterns,
Threskiornithidae	ibises, spoonbill
Ciconiidae	storks
Phoenicopteridae	flamingo
Laridae	jaegers, skuas, gulls, terns, skimmers
Alcidae	auks, murre, puffins

Biological Bases for Conservation Action

Many opportunities and challenges face conservation action for seabirds and colonial waterbirds. The very characteristics that make this group of species unique, their dependance on water and the preponderance of colonial nesting species, provide opportunities, in addition to creating challenges. The Plan advocates that the following biological characteristics be considered in planning and implementing waterbird conservation throughout North America.

Distribution and Range

- As with most bird species, many waterbirds have large ranges that cross national and even continental borders and individuals may cover enormous distances.
- Breeding, wintering and migratory distributions are changing for both natural and human caused reasons.
- Some species use recognizable migration flyways.
- Many species spend only part of the year within the Plan area.
- Because of concentration, certain areas are disproportionately important to populations.

Coloniality-Concentration

- Concentration at colonies is the defining biological characteristic of the birds covered in this volume of the Plan (please note: for ease of planning, there are a few species included in this volume that do not nest colonially, such as the Marbled Murrelet).
- Colony site character changes naturally and artificially.
- Some species are faithful to nesting sites, others change sites frequently.
- Concentration at feeding sites makes sites important at a local scale.

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- Many waterbirds concentrate at roosting and loafing sites.

Dependence on Aquatic Systems

- Birds use aquatic habitats, such as ponds, rivers, lakes, wetlands, coastal and offshore marine systems.
- In habitat patches that are relatively unaltered, birds depend on maintenance of natural conditions.
- Most wetland systems in North America have been altered - in altered or exploited habitat patches, birds may depend on active management.

Demography

- Many colonial waterbird and seabirds are long lived, having low annual reproductive output and high adult survivorship.
- Naturally low annual productivity and high juvenile mortality means that reproductive success in any one year may not be critical to the population trend.
- When modeling populations, adult mortality is generally found to be the most critical factor affecting population change.
- Because of delays in seeing the effects of reproductive failure and the existence of nonbreeding buffers, population trend data alone are insufficient to monitor the health of these populations - demographic monitoring is also essential.
- Population trends are easier to detect in long-lived birds, such as many seabirds, because inter-year variability is low, reducing the background “noise”.

Population Trends

- The status of population information and trend information for most species is inadequate to detect continental population changes.
- Wintering population information is lacking for most species and most areas.
- A continent-wide, coordinated long-term program to monitor and evaluate population sizes and trends is needed.
- Knowledge of population sizes is needed to assess conservation risk and to determine the relative importance of defined geographic areas to the species.

Scientific Knowledge Base

- Sound conservation requires scientific knowledge and practical experience.
- For many species and in many areas, basic biological information is sufficiently strong to support immediate conservation action.
- Local knowledge is often sufficiently robust to extrapolate to other populations, other species or other areas.

Overall Goal and Objective the Plan

The overall vision is that populations of waterbirds (both colonial and solitary nesting species) are sustainable throughout their ranges. This vision requires habitats (breeding, migratory, and wintering) and important areas for waterbirds to be sustained or restored and that issues negatively affecting populations are managed appropriately.

This vision will be achieved by creating a broadly-participatory, regionally-based, cohesive, multi-national partnership that uses strong scientific knowledge and practical experience to make informed decisions to conserve and manage waterbirds, their habitats, and sites throughout North America.

Conservation strategies must be based on rigorous science and practical knowledge. An underlying foundation of scientific knowledge about seabird and colonial waterbird biology and the threats facing them forms the link between broad conservation goals and the specific conservation programs needed to protect bird species and their habitats. Effective conservation of the waterbirds that occur throughout North America also requires that knowledge to make informed conservation decisions is current, as complete as possible, and readily available. Planning for the conservation of species that often move nesting locations will require us to understand populations at many scales. To achieve this an adaptive management model requiring continued research, monitoring, and experiential learning will be needed to clearly identify important population trends, ecological sensitivities, key habitats, and important areas. These concepts are encompassed within the following four goals, the strategies for implementing these goals, and the expected results of their implementation.

The goal of the North American Waterbird Conservation Plan is to ensure that the distribution, diversity, and abundance of populations and habitats (breeding, migratory, and nonbreeding) waterbirds is sustained or restored throughout North America.

The objective of the North American Waterbird Conservation Plan is to create a cohesive, multi-national, multi-scale conservation planning and implementation infrastructure that uses collaboration, partnership, scientific and practical knowledge, and appropriate tools to conserve and manage waterbirds, their habitats, and important areas, throughout North America.

Species and Population Goal

GOAL: To have sustainable distributions, diversity and abundance of waterbirds throughout North America and to restore populations of priority species for conservation and those in decline.

Strategies

- Determine population status for all species of waterbirds throughout North America and globally.
- Institute a continent-wide, dispersed, partnership-based population monitoring system in North America.
- Initiate monitoring of demography, habitats, wintering range, and important threats, such as seabird bycatch as appropriate for species and areas.
- Develop analytical tools and analytical schemes to determine and assess population trends against trend goals for each species.
- Develop a global perspective on populations; this will aid in interpretation of population trends.

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- Synthesize information to identify critical factors affecting populations in order to inform appropriate conservation action.

Results

- Waterbirds, their habitats, and threats are monitored with sufficient intensity and coordination to accurately determine population size, trend, and causes for trends.
- Factors influencing waterbird populations are sufficiently understood to inform conservation action.
- The influence of wetland complexes at different spatial scales on breeding and dispersal dynamics is better understood.
- Habitat source and sinks are recognized.
- Species of concern are identified, status assessments and management plans are developed, and their populations are restored to appropriate levels.

Habitat Goal

GOAL: To secure, maintain, and enhance sufficient high quality habitat throughout the year to achieve and maintain sustainable populations of waterbirds throughout North America.

Strategies

- Identify key marine, freshwater, and terrestrial habitats for waterbirds, including breeding, wintering, roosting, and foraging habitats.
- Increase understanding of waterbird habitat requirements, threats to habitat quality, and habitat interaction at different scales.
- Implement management actions that secure important habitats.
- Develop and implement habitat management plans for waterbirds for each bird conservation region.
- Develop and maintain a communication network among habitat managers for waterbirds.

Results

- Important waterbird habitats are secured and habitat programs are properly managed.
- Key factors affecting waterbird habitat requirements are understood.
- Best practices are identified to integrate waterbird habitat needs with other uses of the landscape/seascape and with other bird conservation initiatives.

Area Goal

GOAL: To identify, protect, maintain, and enhance important areas needed to maintain sustainable populations and habitats of waterbirds throughout their ranges in North America.

Strategies

- Identify, inventory and document sites that potentially qualify as global, continental, national, and regional Important Bird Areas for waterbirds.
- Refine and continually update the list and description of Important Bird Areas for waterbirds.
- Develop and maintain a communication network among Important Bird Area managers for waterbirds.

Results

- Important Bird Areas for waterbirds are identified and catalogued.
- Important Bird Areas are secured through stakeholder engagement, legislation and/or site management programs.
- Threats affecting Important Bird Areas are documented, understood and managed and a network of area managers exists.

Education Goal

GOAL: To ensure that information for the conservation of waterbirds is widely available to decision makers, the public, and all those whose actions affect seabird and colonial waterbird populations.

Strategies

- Ensure that information on waterbird conservation is available in a form that is useful for planning, implementation, and management purposes.

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- Increase effectiveness of communication by partnering with outreach activities for other birds and for other environmental programs.
- Develop relationships with educators of all levels and participate in programs that increase awareness and improve education.
- Determine and communicate widely educational information on habitat conservation strategies.
- Work with users of waterbird habitats to promote practices and policies that reduce impacts on the birds.

Results

- Decision makers and regional planners incorporate waterbird needs into their plans and actions.
- Citizens, conservationists, and resource managers are made more aware of conservation problems relating to waterbirds.
- Increased public awareness and appreciation of waterbirds is generated.
- Best practices and policies for the conservation of waterbirds are known, accepted and widely used.

Coordination and Integration Goal

GOAL: To ensure that coordinated conservation efforts for waterbirds continue and are guided by common principles throughout the range of those species that breed or winter in North America and result in integrated waterbird conservation actions.

Strategies

- Establish cooperative actions with organizations concerned with the conservation, research, and management of waterbirds and their habitats.
- Establish cooperative actions with other bird conservation initiatives, particularly the North American Bird Conservation Initiative.
- Exchange information and expertise with international, national, regional (Bird Conservation Region, Joint Venture, or others), state/provincial and local partners.
- Develop waterbird plans, where appropriate, at the national, Bird Conservation Region, Joint Venture, and state/provincial levels throughout North America.
- Influence environmental policies and programs to positively affect waterbird conservation.
- Participate in international programs in ways that enhance the conservation of waterbirds.
- Increase human and financial resources available for waterbird conservation.

Results

- Waterbird conservation plans are in place and coordinated at the continental, national, regional, and state/provincial levels as appropriate.
- Principles that support waterbird conservation are incorporated into international, national and state/provincial legislation, agreements and partnerships.
- Waterbirds are fully considered in all bird conservation programs continentally, nationally, regionally, state/provincially and locally.
- Non-government groups play an active role in promoting and implementing waterbird conservation activities throughout North America.
- Priority conservation action is not hindered through lack of human or financial resources.

Premises Underlying Strategies for Conservation

In developing a Waterbird Conservation Plan for North America, certain premises were accepted as underlying the Plan's strategies, processes, and implementation. Effective waterbird conservation requires a dynamic, iterative process of planning, implementation, evaluation of the implementation, and revision. Planning sets a framework that provides guidance for managers and conservationists to proceed with actions that are likely to benefit waterbirds. Conservation cannot always wait for information, although available scientific information and practical experience must be used to inform all management. By evaluating the effects of conservation action, the results can set the agenda for needed research, provide needed data for adaptive

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan management models, further inform subsequent management action, and influence the revision process. The following bullets describe the underlying premises for waterbird conservation.

Science

- Conservation action will be based on strong science knowledge where possible and research on waterbirds will be expanded and targeted to meet the increased demands of conservation management.

Partnership

- The Plan will be written and implemented through an integrated continent-wide network of partners. Partnership is a key strategy for successfully implementing conservation action for seabirds and colonial waterbirds. No single institution or person can accomplish all that is required and educators at all levels will be one of the driving forces.

Scale

- The planning and implementation process will address multiple scales of conservation needs and actions. Waterbirds can be conserved only by coordinated action taken at the continental, national, regional, and local scales.

Planning

- The main purpose of planning is to facilitate on-the-ground conservation action. Conservation action is most effectively planned on a regional basis or through the Bird Conservation Regions defined by the North American Bird Conservation Initiative (CITATION).

Integrated Bird Conservation

- The Plan is to be part of the integrated planning efforts under the auspices of the North American Bird Conservation Initiative, especially using Bird Conservation Regions as integrating geographic entities where they work for the implementing country. The wisest course is for habitats and landscapes to be managed with respect to all species simultaneously, increasing efficiency and effectiveness, while reducing costs.

Implementation

- Conservation action is most effectively implemented at the local scale. It is at the scale of the local habitat, colony site, roosting site, feeding site, or landscape matrix of such sites, that effective conservation occurs. Furthermore, it is at a local scale that conservation delivery can be most effectively integrated across bird species groups. Because of the multi-national nature of waterbird conservation efforts, the geographic scale and strategies selected for implementing projects will vary considerably.

Evaluation

- Progress in meeting goals of the Plan should be evaluated periodically by Regional Working Groups and the North American Waterbird Conservation Council and strategies modified accordingly.

Revision

- The Plan will be revised continuously and as a minimum be subject to full review and revision every five years to facilitate an adaptive management approach.

Part 3: COLONIAL WATERBIRD CONSERVATION – THE NORTH AMERICA SCALE

Volume One of the North American Waterbird Conservation Plan has as its first focus, the identification and facilitation of conservation action at the continental scale. Some issues, such as fisheries and migratory bird habitats transcend local, regional, or national boundaries. Some activities, such as coordination with international bird conservation initiatives and monitoring,

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan must be continent-wide in scope. Populations of and conservation threats to waterbirds that migrate predominantly within North America are evaluated at the continental scale. Thus, the first level of infrastructure to facilitate meeting the plan's goals must be international. This section provides evaluations and considers conservation needs at the North American scale.

Species Conservation Status in North America

The conservation status of 165 species of seabirds and colonial waterbirds has been evaluated for North America. A committee developed a process for assigning conservation ranks to colonial birds. The protocol was adapted from the Partners in Flight and US Shorebird Conservation Plan guidelines and accommodates the special conservation issues of species that aggregate during the breeding season and/or utilize extensive marine habitats. Species are classified in one of five categories according to the conservation threats they face, these rankings are:

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

Species of High Concern: Populations of these species are known or thought to be declining, and have some other known or potential threat as well.

Species of Moderate 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; c) relatively small; d) relatively restricted; and e) declining but with no other known threats

Species of Low 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.

Species not known to be at risk: all other species

Classification was accomplished by evaluating population trend and population trend uncertainty, relative abundance, threats to breeding, threats to non-breeding, breeding distribution, and non-breeding distribution. These factors were determined for each species and scored within each factor by individual experts and from the literature.

FACTOR SCORES: Six variables are considered when evaluating the conservation status of the species at the continental scale. Three factor scores are based on quantitative information (Relative Abundance, Breeding Distribution, Non-breeding Distribution) and three are qualitative (Population Trend, Threats to Breeding, Threats to Non-breeding). All variables are scaled from 1-5, with 5 indicating greatest vulnerability. Each species is assigned to a category of conservation concern (such as *Highly Imperiled*, *Species of High Concern* etc.) based on these factor scores.

1. **Population Trend (PT):** This variable uses existing information on waterbird species to estimate categories of population decline. The time period over which trend should be estimated for most species is 1970 to present (as data are available).

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

1a. **Population Trend Uncertainty (PTU):** This variable rates the relative level of uncertainty associated with the estimate of population trend. These are meant to identify the need for additional monitoring but are not used for determining conservation priority at the continental scale.

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- 5 very uncertain; no data exist
- 4 uncertain; but data exist to allow estimation
- 3 relatively certain; data exist at 10 year intervals for most of population
- 2 certain; data exist at <10 year intervals for most of population
- 1 well-documented; annual data available for total North American population

2. **Relative Abundance** (RA): This variable provides information on the current (1990-present) abundance of each species within North America. Species experts are asked to estimate the North American population of their species (in numbers of individuals) and to assign the appropriate score. For species that breed in North America, if estimates include non-breeding individuals, please indicate the proportion of total that are breeding, and identify data sources. For species that do not breed in North America, experts are asked to provide estimates of the numbers that use North American habitats during their non-breeding season. Log-transformed population data produced a normal distribution. The 1-5 scale represents quintiles of the range of log-transformed values. If information is inadequate to estimate total population, experts are asked to provide estimates for geographic areas where data exist.

- 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

3. **Threats to Breeding** (TB): This variable 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) is considered when scoring this factor. Species that do not breed in North America receive 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

4. **Threats to Non-breeding** (TN): This variable rates the threats known to exist for each species during their non-breeding season. The scores are the same as the above threats to breeding, but without the additional risk due to concentration during breeding.

5. **Breeding Distribution** (BD): This variable estimates the vulnerability to population loss due to small breeding distribution. Total *land-based* breeding area in North America is reported in square kilometers. The species are ranked on a scale from 1-5 in order of decreasing distribution. Breeding ranges were determined by Manomet using range maps primarily from Seabirds: an identification guide (Harrison, 1985) and from BNA accounts. Grids were used to estimate the number of square kilometers that each species occupies during breeding season. The 1-5 scale was created, as above, with log transformed data. Harrison's guide uses a Mercator projection for range maps, and

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan although data generated from these are adequate for comparing relative distribution at a continental scale, range data should not be interpreted as actual spatial occurrence. Range maps are currently being digitized to assist planning at multiple geographic scales. Actual range data from this effort may be substituted when available, although factor scores are unlikely to change. Species that do not breed in North America receive a Not Applicable (NA) for this score.

- 5 highly restricted (up to 450,000 km²)
- 4 local (450,000 km² – 1,500,000 km²)
- 3 intermediate (1,500,000 km² – 5,000,000 km²)
- 2 widespread (5,000,000 km² – 16,000,000 km²)
- 1 very widespread (16,000,000 km² – 52,500,000 km²)

6. **Non-breeding Distribution** (ND): This variable estimates the vulnerability to population loss due to small non-breeding distribution. Total area occupied by non-breeding birds (including wintering, migratory, and in some cases breeding areas) in North America is reported in square kilometers. Manomet determined non-breeding ranges using standardized procedures described above. The species are ranked on a scale from 1-5 in order of decreasing distribution. Non-breeding ranges were determined by using range maps primarily from Seabirds: an identification guide (Harrison, 1985) and from BNA accounts. The same method was used as for determining breeding distributions.

- 5 highly restricted (up to 1,300,000 km²)
- 4 local (1,300,000 km² – 4,200,000 km²)
- 3 intermediate (4,200,000 km² – 13,600,000 km²)
- 2 widespread (13,600,000 km² – 44,000,000 km²)
- 1 very widespread (44,000,000 km² – 140,000,000 km²)

REFERENCES: Experts were asked to list any references used for reviewing species profiles. Data sources may include peer-reviewed and/or gray literature, or informed expert opinion. Species are currently sorted taxonomically by their Sibley/Monroe number (Sibley/Monroe World List of Bird Names; <http://www.itc.nl/~deby/SM/sm.html>)

CATEGORICAL RANK: Experts were asked to use the scores given in the above variables to place the species in an appropriate conservation category. If both Population Trend and Relative Abundance could not be estimated, species were not ranked. The categories are:

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

- a. PT = 5 and either RA, TB, TN, or BD = 5

2. **Species of 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.

- a. PT = 4 or 5 and either RA, TB, TN, or BD = 4 or 5; or
- b. RA = 4 or 5 and either TB or TN = 4 or 5

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3. **Species of 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.

- a. PT = 5 and either RA, TB, TN, BD, or ND > 1; or
- b. PT = 4 and either RA, TB, TN, BD, or ND > 2; or
- c. PT = 3 and either RA, TB, TN, BD, or ND = 4 or 5; or
- d. RA = 4 or 5 and either BD or ND > 3

4. **Species of 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.

- a. PT = 3 and either RA, TB, TN, BD, or ND = 3; or
- b. PT = 2 and either RA, TB, TN, BD, or ND = 4 or 5; or
- c. RA = 3 and either TB, TN, BD, or ND = 4 or 5

5. **Species not at risk:** all other species

Global Distributions

Global Distributions (GD) are broad categories concerning the world wide distributions of species. They are North America (NA), Western Hemisphere (WH), Northern Hemisphere (NH), Cosmopolitan (COS) and Peripheral (PER).

Panels of species and geographic experts evaluated and refined the scoring (see Acknowledgments) providing the data to be evaluated following the classification protocol. The North American conservation status of the species covered in this Plan is shown below, as is the percentage breakout by category.

Table One: Categorical Ranks and Global Distributions of North American Colonial Waterbirds

Category	North America	Western Hemisphere	Northern Hemisphere	Cosmopolitan	Peripheral
Highly Imperiled	Ashy Storm-Petrel Newell’s Shearwater Townsend’s Shearwater	Black-capped Petrel Hawaiian Petrel	Black-footed Albatross	Audubon’s Shearwater Bnd-rmp Storm-Petrel	Phoenix Petrel Tahiti Petrel Polynesian Strm-Ptrl
Species of High Concern	Bermuda Petrel Black-vented Shearwater Brandt’s Cormorant Cassin’s Auklet Craveri’s Murrelet Kittlitz’s Murrelet Least Storm-Petrel Xantus’s Murrelet	Bare-thrt Tiger-Heron* Black Skimmer Black Storm-Petrel Blue-footed Booby Blue Noddy Christmas Shearwater Greater Shearwater Jabiru Least Tern Little Blue Heron Magnificent Frigatebird	Aleutian Tern Ancient Murrelet Laysan Albatross Marbled Murrelet Pelagic Cormorant Pigeon Guillemot Red-faced Cormorant Red-legged Kittiwake Ross’s Gull Short-tailed Albatross	Arctic Tern Bridled Tern Brown Booby Masked Booby Red-billed Tropicbird Red-footed Booby Roseate Tern White-tailed Tropicbird	Little Gull Little Tern

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		Pink-foot Shearwater Snail Kite Snowy Egret Tricolored Heron Wood Stork			
Species of Moderate Concern	American White Pelican California Gull Heermann's Gull Western Grebe Yellow-footed Gull	Anhinga Bonaparte's Gull* Brown Pelican Elegant Tern Franklin's Gull Grey-backed Tern Neotropic Cormorant Reddish Egret Roseate Spoonbill White Ibis Yell-crn Night-Heron*	Bonin Petrel Common Murre Crested Auklet Dovekie Great Skua Horned Puffin Ivory Gull Least Auklet Northern Fulmar Razorbill Thayer's Gull Thick-billed Murre Tristram's Storm-Petrel Whiskered Auklet	Black-crn Night-Heron Black Tern Black Noddy Bulwer's Petrel Caspian Tern Common Tern Cory's Shearwater* Eared Grebe Great Cormorant Great Frigatebird Manx Shearwater Red-tailed Tropicbird Royal Tern Sooty Shearwater Sooty Tern South Polar Skua White Tern	Black-headed Gull Great Crested-Tern Herald Petrel Juan Frnandez Petrel Less Black-back Gull
Species of Low Concern	Clark's Grebe Green Heron Western Gull	White-faced Ibis	Glaucous-winged Gull Iceland Gull Parakeet Auklet Rhinoceros Auklet Tufted Puffin	Flsh-foot Shearwater Glossy Ibis Greater Flamingo* Gull-billed Tern Herring Gull Leach's Storm-Petrel Long-tailed Jaeger Parasitic Jaeger Pomarine Jaeger Sabine's Gull Wdg-rmp Strm-Petrel Wdg-tld Shearwater	White-necked Petrel
Species Not at Risk	Double-crested Cormorant Forster's Tern Ring-billed Gull	Great Blue Heron Laughing Gull Northern Gannett	Atlantic Puffin Black Guillemot Black-legged Kittiwake Fork-tail Storm-Petrel Glaucous Gull Great Black-back Gull	Brown Noddy Cattle Egret Great Egret Mew Gull Sandwich Tern Wilson's Strm-Petrel	Buller's Shearwater Cook's Petrel Short-tail Shearwater
No Information		Agami Heron Boat-billed Heron Fasciated Tiger-Heron Green Ibis Rufescent Tiger-Heron Striated Heron			Capped Heron Cocoi Heron Kermadec Petrel Mottled Petrel Nazca Booby Scarlet Ibis Slaty-backed Gull Western Reef-Egret White-winged Petrel

Bold type = does not breed in North America

*Species fits into a range of categories because of a missing factor score (see factor scores). Currently in most conservative concern category.

Global Occurrence. For many species included in the Plan, North American populations are part of broader distributions that include South America, continents of the Northern Hemisphere, or

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan that are cosmopolitan. The distributions of twenty-two species are limited to North America and associated oceanic regions. Therefore, the relative responsibility and importance of conservation planning efforts in North America to global biodiversity varies by species. Accordingly, the species included in the Plan have been placed in global distribution categories to facilitate prioritization of conservation strategies. Global distribution categories are broadly defined as:

North America (NA)—Includes all species that breed and winter only in North America (and associated oceanic regions).

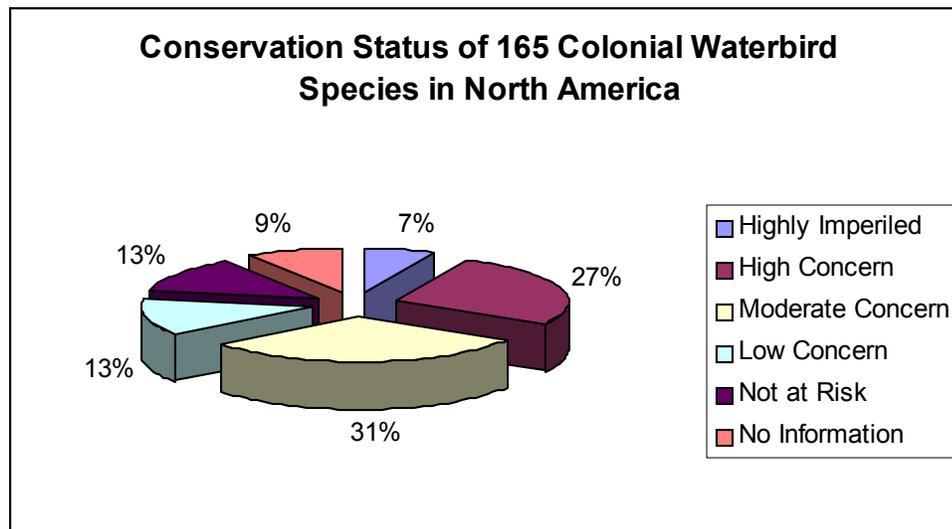
Western Hemisphere (WH)—Includes all species that breed and winter in North America and South America (and associated oceanic regions).

Northern Hemisphere (NH)—Includes all species, except those included in the above categories, which breed and winter in the Northern Hemisphere.

Cosmopolitan (COS)—Includes all species that breed and winter in most hemispheres including North America (and associated oceanic regions).

Peripheral (PER)—Includes all species that occur largely outside North America but with non-breeding ranges that overlap peripherally with North America (and associated oceanic regions).

Figure 2



Population Status in North America

Current Populations

Current North American population estimates (Appendix 4) were obtained from species experts and the literature. The precision and accuracy of this information varies widely. For the majority of species, these data derive from colony-based monitoring programs of varying intensity that estimated breeding pairs during the 1990s. Therefore, population estimates best reflect breeding populations. In cases where non-breeding individuals also are present at colony-sites, these estimates may approximate total North American populations. Population estimates for approximately 18% of species, including most species not breeding in North America, are not provided due to missing or low quality information.

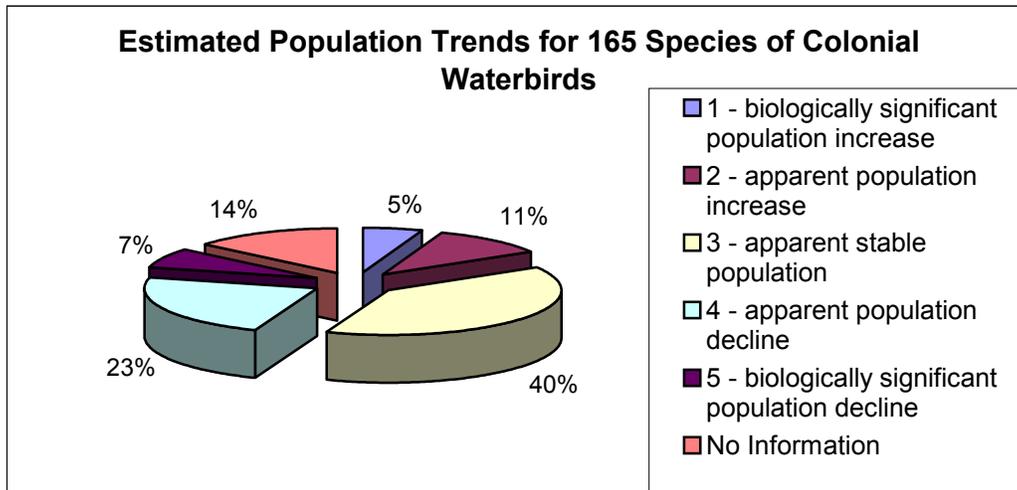
Historical Populations

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Historical continental estimates are largely not available. Nevertheless, significant attempts to estimate populations occurred during the 1970s and 1980s and data are available at the regional/BCR scale.

Population Trends

Current North American population trend estimates were obtained from species experts and the literature as part of the species conservation status (Appendix 4). The summary results are shown below.

Figure 3



Habitat Use in North American

Breeding Habitats

Protecting and managing habitats where seabirds and colonial waterbirds nest is essential to sustaining healthy populations throughout North America. Where nesting habitats become limiting, management or protection will probably be required. Colonies on artificial sites must be actively maintained.

Protecting Foraging Habitats

Foraging habitats are vital to the reproductive efforts of seabirds and colonial waterbirds. Commuting distances to foraging grounds from colonies ranges from a few kilometers in some wading birds to thousands of kilometers for some pelagic species. Planning for habitat conservation around colonies should factor the distance birds fly to feed, and the amount and quality of habitat required throughout the nesting season. Feeding habitat is vital year round, and non-nesting habitat requirements have to be factored into the year-round habitat needs of species.

Non-nesting Habitats

Wintering and other non-nesting habitats are critical to the long-term conservation of seabirds and colonial waterbirds. Presently, there is little information on habitat needs outside of the breeding season. Waterbird conservation programs must establish non-breeding season monitoring programs, which target habitat use away from the breeding colonies. Information

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan from these programs will assist managers in identifying and managing habitats that provide suitable sites for foraging, roosting and breeding waterbirds.

Migratory Habitats

Even less is known about habitats for migrating waterbirds. Waterbird conservation strategies must include activities to identify, manage, and preserve key habitats used during migration.

Information on the habitat use and requirements for waterbirds in North America are shown below.

NEED TO HAVE A TABLE LIKE THE CONSERVATION STATUS TABLE AND A PIE DIAGRAM OF HABITATS USED BY WATERBIRDS BASED ON AN ANALYSIS OF THE APPENDIX 6 TABLE

Important Bird Areas for Waterbirds in North America

Important Bird Areas (IBAs) are areas recognized as critical to the conservation of continental populations of waterbirds. The principal reason for identifying such sites is to attain their recognition, protection, and, when required, management. Global and continental important IBAs are recognized through application of quantitative criteria based on numbers of birds using the site following criteria of BirdLife International and its partners around the world.

- Globally Important Waterbird Area – The site is known to hold or thought to hold on a regular basis 1% or more of the global population or 20,000 or more waterbirds.
- Continentally Important Waterbird Area – The site is known to hold or thought to hold on a regular basis 1% or more of the continental population or 15,000 or more waterbirds.
- Regionally Important Waterbird Area – Regionally derived criteria used to identify Important Waterbird Areas within Waterbird Regions (Practical Units for Planning – see page ??)

Potentially important areas for waterbirds will be identified and evaluated according to IBA criteria. The BirdLife database will be used to maintain the inventory of Important Bird Areas for waterbirds in North America and National Audubon Society's database of Important Bird Areas will be used to maintain the inventory of Important Bird Areas for waterbirds at the regional scale.

The National Bird Conservation Strategy in Mexico is the Áreas de Importancia para la Conservación de las Aves program (AICA), which is Mexico's IBAs program. Mexico will deliver bird conservation for waterbirds utilizing AICAs to focus conservation strategies.

Action Recommendations for Seabird and Colonial Waterbird Conservation in North America

Conservation of waterbirds in North America requires attention to many issues and concerns that are shared across the continent. The details of these issues are too long and complex to explicate here. However, all known issues require that those planning and implementing waterbird conservation take action.

- Population conservation – The essence of waterbird conservation is maintenance of the overall continental populations of the species. In many cases both setting population goals and determining trends is not possible due to poor information.

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- The goal of population conservation of colonial waterbirds and seabirds is to maintain sustainable populations throughout the historic or expanding range in North America.
- Population monitoring is required on a continent-wide basis having sufficient precision to detect a 50% decrease over a 25 -year period, or having sufficient precision to understand what is a trend, and what is natural variation within the population.
- Demographic conservation – Understanding the demographics of colonial waterbirds and seabirds is essential to proper conservation. Present evidence suggests that adult mortality is the most critical demographic parameter in determining population stability. This means, conversely, that reduction of nestling/ juvenile mortality may not have as strong an effect. However, in many cases the only management available is at the colony site.
 - Unless shown otherwise, the presumption is that conservation should be aimed at reduction of adult mortality to levels that achieve a sustainable population.
 - Conservation aimed at reducing juvenile mortality may be justified in absence of alternatives.
 - Additional study, through banding and modeling, is needed to understand seabird and colonial waterbird population biology.
- Disturbance – Disturbance can be due to intrusion on the ground, water or air. Examples of disturbance are kayaks and jet skis that allow close approach, low flying aircraft, pets and feral animals, off-road vehicles, and other outdoor activities. However, habituation to non-intrusive disturbance is common, and many colonies persist and thrive in highly populated areas. There are situations where promoting controlled disturbance is desirable to assure habituation occurs. Research involves purposeful disturbance to waterbirds that includes nest disruption, capture, banding, marking, handling, and attaching transmitters, extracting blood and so forth. These methods are necessary, but must be carried out with care and be assessed as to their conservation impact.
 - Intrusive, disruptive disturbance must be tightly managed at all sites where it occurs.
 - All colony and roost sites need to be inventoried, identified to the public, posted, patrolled and anti-disturbance policies enforced.
 - Unless there is evidence to the contrary, human disturbance at congregatory sites (colonies, roosts, feeding areas) should be assumed to adversely affect the well being of the birds.
 - Depending on the colony site, human intrusion for research, monitoring or environmental education in colonies is not necessarily detrimental, so long as the disturbance caused is not unduly disruptive, but these visits should be managed for potential disturbance.
 - Disturbance must be managed by agencies responsible for colonial waterbirds, including researchers; each situation must be evaluated individually with a balanced approach to conservation costs and benefits.
- Nesting habitat conservation and avoiding loss of colony sites – Colony sites can be destroyed by drainage, forestry practices, agriculture, aquaculture, pollution, and development for domestic or industrial purposes. A surprising number of colonies are on artificial sites, such as spoil islands, dikes, bridges and causeways, fill, even rooftops. Colonies also change character due to vegetation death or succession, often caused by the birds themselves.
 - In each region, colony sites should be categorized for management purposes as: 1. Traditional Sites, 2. Intermittent Sites (used in cycles of years to decades), 3. Potential Sites (not used, but suitable), and 4. Historic Sites (previously, but not presently used; these categories should be used for site management planning . **(NEED CITATION)**
 - A matrix of colony sites consisting of used and potentially used sites needs to be maintained across the regional landscape.
 - Colony sites require continual proactive maintenance by those responsible for colonial waterbird conservation; some require intensive vegetation management action and/or predator control, including the control of other bird species.
 - Public and private agency managers should undertake to enhance the quality of selected colony sites using a variety of manipulations, including vegetation and substrate as appropriate.
 - Results of management actions in colony sites need to be monitored.
 - Where appropriate colonies should be re-established through human intervention.
 - Importance of manmade sites to waterbirds within a region must be determined with protection provided to waterbirds using regionally important man-made sites.
 - The need for alternative sites should be determined on a regional scale.

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- Beach management and “nourishment” – Open sandy beaches throughout North America are heavily used by bathers, off road vehicles, fishermen, and are subject to development, all of which may compete for space with nesting and loafing waterbirds. Massive projects restoring beaches or managing coastal beach movement are often undertaken by local authorities.
 - All beach sites used by colonial waterbird need to be identified and managed by responsible authorities.
 - Site protection, appropriate sand and vegetation management, closures and enforcement, predator control, and monitoring are required to appropriately manage for and conserve waterbirds.

- Dredged material management – Maintenance dredging of boat channels provides opportunity for island creation and management of nesting and roosting colonial waterbirds. Resolving competition for this resource with “beach nourishment” programs is needed in some areas. Where natural beaches are under development pressures, dredge islands may be the prime nesting and roosting sites for colonial waterbirds in the region.
 - Opportunities for the creation of colonial waterbird habitat from dredging operations should be pursued at every opportunity.
 - In the United States, the Army Corps of Engineers should have the establishment of colonial waterbird habitat as a priority when conducting maintenance dredging activities.
 - Siting of dredged material sites should be carefully considered to enhance their success and to avoid conflicts with other resources or people.
 - Created sites require continued management, and assuring this occurs should be the primary responsibility of the organization creating the habitat.
 - Beach restoration and management projects should explicitly consider colonial waterbird conservation issues.

- Roost site conservation – Colonial waterbirds and seabirds are congregatory throughout the year. In non-nesting seasons, they occupy roosts and loafing areas. These require both protection and management.
 - Roost and loafing sites should be inventoried and monitored on a regional basis.
 - Roost and loafing sites should be protected and managed as necessary to maintain their use.
 - Disturbance to roost and loafing sites should be forbidden and enforced.

- Guano mining – Guano mining at islands in Mexico and in Latin America can adversely affect seabirds.
 - The effects on colonial waterbirds of guano mining need to be understood in each case and must be wisely managed for sustainability of colonial waterbird populations.

- Predator management – At many colony sites - beaches, coastal islands, seabird sites, inland pothole regions, and even remote Alaskan islands - mammalian and avian predators kill nesting colonial birds, their eggs, and/or chicks. In most cases the presence or numbers of predators and the ease of accessibility of sites are not natural. Sometimes it is only a few individuals that cause damage.
 - Responsible authorities should consider predator control for waterbirds restricted to few sites, when appropriate.
 - Techniques should be used that thwart predators or target individual predators.
 - Where predation is natural and does not adversely affect sustainability of the affected population, predator control is not warranted.
 - Introduced predators should be eradicated from colony sites.

- Diseases and parasites – Diseases such as Newcastle’s disease, avian cholera, and perhaps West Nile Virus affect waterbirds. Die-offs occur, such as in the Salton Sea, sometimes of unknown causes. Waterbirds may harbor human pathogens such as tick borne diseases.
 - The human health effects of colonial waterbird concentrations should be studied in particular situations.
 - Habitat management should be undertaken to avoid the occurrence of avian diseases.
 - Human health issues should be resolved by assuring human avoidance of colonial waterbird sites, rather than destruction of sites.

- Exotics and Invasive species – Exotic and invasive species can be particularly detrimental to colonial waterbird and seabird habitat, especially on islands. Like introduced predators, exotic predators can depress or even eliminate populations. Herbivores and exotic plants can degrade or eliminate habitat quality. Insects can serve as vectors for diseases.

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- As a general policy, invasive exotic plants and animals should be eliminated in colonial waterbird and seabird habitat.
- Nuisance congregation sites – Colonial waterbirds can establish roosts and colonies in close proximity to human habitation leading to conflicts, including a reduction of property values. Lacking evidence of health effects, aesthetic considerations predominate in such conflicts.
 - Congregatory sites used by colonial waterbirds should not be eliminated for aesthetic reasons.
 - Such sites should be managed to reduce human engagement and also as environmental education opportunities.
 - Colony and roost sites should be protected not only during nesting season but also year round, and their off-season destruction should not be permitted.
- Fisheries and ocean resource exploitation – Marine fisheries exact a significant, and perhaps unsustainable, toll on pelagic seabirds through incidental catch of seabirds in fishery longlines, gillnets, and other fishing gear and the reduction of food supplies. The estimated take of Black-footed Albatross in the Hawaii-based longline fishery between 1994 and 1998 was 1,831 individuals per year (Western Pacific Regional Fisheries Management Council 2000). Longline and Driftnet Fisheries are the most potentially serious global threat faced by albatrosses and other procellariiform taxa. The by-catch of forage fish deprives seabirds of food sources. Trawls that affect the seabottom, alter habitat on which the prey of seabirds and coastal waterbirds depend.
 - The unsustainable bycatch of birds by fisheries must be eliminated through employment of new fishing methods, mitigating equipment, education within the affected fisheries, on-ship monitoring programs.
 - The by-catch of forage fish that affect seabird and coastal bird food sources must be reduced to levels supporting conservation of seabirds.
 - Fishing operations that adversely affect the carrying capacity of seabottom for prey of seabirds and coastal birds need to be altered to reduce or eliminate the impact.
 - Fishing nations should write and implement sound Plans of Action that reduce seabird bycatch below levels that adversely affect the conservation of seabird populations.
 - Fishing nations should enact international agreements that require conserving seabird populations as essential goals and outcomes of all fisheries programs.
 - Studies are required to increase understanding of population dynamics that determine sustainable mortality.
 - High seas fisheries must be brought under international regulation.
 - Where possible, seabird and waterbird conservation action should work in partnership with the fishery industry.
- Contaminants and eutrophication – Pesticides, fertilizers, biocides, metals, and industrial chemicals have added large nutrient and toxic burdens to freshwater and coastal estuaries and even the open oceans and have affected colonial waterbird individuals and populations.
 - The effects of contaminants need to be better understood, especially population implications.
 - Monitoring of contaminant loads in colonial waterbirds and their effects is required throughout North America.
 - We need to better understand the contamination source, pathway to the birds, sublethal effects and synergistic affects.
 - Changes in habitat due to water quality alterations are to be avoided or reversed in waterbird habitat.
 - The contamination of retired or active military bases on islands must be addressed; research is necessary to understand contaminant sources and pathways to birds, including sub-lethal and synergistic effects.
- Oil and chemical related activities – Oil is a major environmental threat to oceanic and coastal species. Threats include platform construction, drilling in wetlands and offshore, shipping and spillage, and chronic, low-level seepage from surface runoff or subsurface sources. Marine birds are commonly injured by oil spills, chronic oil discharge in bilge water, and hazardous material releases, with effected birds numbering in the hundreds of thousands in some cases. Injuries can lead directly to mortality or have indirect effects through habitat degradation, lost reproductive success, or contaminated food supplies. As upper trophic level feeders, marine birds rely on a healthy marine environment to provide the prey base necessary for reproduction, migration and general maintenance.
 - The effects of oiling on populations needs to be better understood.

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- Death and morbidity of colonial waterbirds to oiling need to be monitored.
- Oil effects on colonial waterbirds must be minimized through safe operational procedures, spill clean up, and when effective, rehabilitation.
- Aquaculture – Aquaculture provides artificially concentrated food supplies, such as crawfish, shrimp, catfish, tropical aquarium fish, juvenile trout and salmonids, baitfish, mussels, and oysters. National and state governments in the Plan area are encouraging the development of aquaculture activities. These can affect the continental distribution and population size of colonial waterbirds, which shift to take advantage of new food sources. Demand is great to control these birds. In the Southeastern United States, 108,000 birds were legally killed between 1987 and 1995. Many more are undoubtedly killed illegally. Such levels of take may be unsustainable over the long term. Techniques for reducing real economic impact are available, including barriers, bird-unfriendly pond construction and even colony site translocation.
 - Colonial waterbird conservation action should work in partnership with the aquaculture industry finding solutions of common benefit.
 - Illegal killing of colonial waterbirds at aquaculture sites should not be allowed, and should be vigorously prosecuted when discovered.
 - Where depredation permits are granted, economic impacts must be demonstrated before issuance; the burden of proof must be on the aquaculture industry to demonstrate economic harm on a case-by-case basis.
 - Again, where permitted, anti-depredation permitting must factor the cumulative impact of all permitting on sustainability of the colonial waterbird population in both the wintering and breeding regions of the birds in question.; permitted killing must not be allowed to adversely affect regional population sustainability.
- Hunting – Sport or food hunting and trapping of colonial waterbirds are illegal in most of North America, but do occur in some parts of Canada, Greenland, Alaska, and the Caribbean region. From basic biological principals it must be assumed that artificial mortality of adults will depress waterbird populations. Therefore, hunting must either be illegal or carefully regulated so as not to impact regional populations.
 - Hunting regulations for colonial waterbirds and seabirds must be promulgated in concert with the goal of maintaining sustainable range-wide and region-wide populations.
 - Unless shown otherwise, the presumption is that hunting and artificial killing will adversely affect population sustainability.
- Ingestion – Waterbirds, especially seabirds, ingest floating debris as a natural consequence of foraging. Ingesting plastics and other artificial flotsam can be detrimental.
 - Education campaigns need to be developed to inform ocean industries of the need to eliminate ocean dumping of materials that adversely affect seabirds.
 - A campaign should be especially targeted at the sport and commercial fishing industry to eliminate disposal of fishing line.
- Light effects – Light in close proximity to colonies can affect nesting birds. Squid fisheries using lights at night and lights on oil platforms at sea attract seabirds, such as storm petrels and murrelets. The bright lights of coastal developments disorient birds from coastal and inland colonies.
 - The effects of lights need to be better understood.
 - Adverse affects of lights both on the water and on the shore need to be minimized.
- Abundant species – Because of rapid population increase or range expansion, some species are thought to have negative effects on some human commercial interests. Such range and population trends may be natural fluctuations or may be caused by release from artificial depression (such as from pesticides), or may be artificial. There is no evidence that any colonial waterbird is now artificially superabundant across its range in North America.
 - New techniques for reducing real economic impact are needed.
 - Cases of apparent local superabundance require individual evaluation.
 - Depredation permitting, colony removal, and colony discouragement should adhere to the goals of range-wide and region-wide population sustainability.
 - Methods of culling or control must be carefully evaluated and considered relative to geographic scale.

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- Siting urban facilities – The location and design of potentially attractive facilities such as airports, landfills, municipal wastewater wetlands, etc. can be critical to future bird-human interactions, including health and safety issues.
 - Development of plans for such facilities must include avoiding adverse impacts on colonial waterbirds.
- Wetland alteration – Wetlands are being heavily modified by physical changes including water management, dredging, ditching, siltation, invasive plant species. Wetland creation is widespread but how it functions to serve wildlife is seldom proven to be equivalent to natural wetlands. Where the benefits of artificial wetlands are proven, they need to continue to be managed for waterbird use. Colonial waterbird use of wetlands is variable by nature, and regulators permitting wetland changes need to evaluate waterbird use on a case-by-case basis on time scales spanning both annual cycle and multi year hydrologic cycles.
 - Natural wetlands need to be protected and conserved to retain ecological functioning.
 - Most residual wetlands must now be actively managed for colonial waterbird use as part of all-bird, multiple use conservation.
 - Wetland conservation for colonial waterbirds should be conducted in concert with other wetland conservation programs, such as the Wetland Reserve Program in the US, habitat protection and conservation programs and projects under the North American Waterfowl and Wetland Conservation Act (NAWCA), and other wetland protection programs and wetland mitigation requirements.
 - Rules for wetland projects under the NAWCA program should be refined to support colonial waterbird conservation.
 - Provisions of the Farm Bill should be learned by waterbird managers and used to benefit waterbirds.
- Artificial aquatic habitats – Reservoirs, damned rivers, artificial wetlands, rice fields, and aquaculture facilities provide important, although artificial, habitat for colonial waterbirds. In some areas, such areas adjacent to Canadian cities on the Great lakes, the State of Louisiana, and the western United States, waterbird populations have become dependent on these artificial habitats.
 - The role of artificial habitats in the sustainability of colonial waterbirds needs to be understood in each regional context.
 - Artificial habitats need to continue to be managed in ways that are conducive to supporting colonial waterbirds.
 - Where needed, subsidies should be provided to continue practices that benefit colonial waterbirds.
- Water management – Throughout North America, one of the common issues for colonial waterbird conservation is the impact of water management on their habitats. Management of natural and artificial wetlands for purposes of water supply, flood control, vegetation management or even management of other waterbirds can adversely affect suitability for colonial waterbirds.
 - Colonial waterbird conservation and management should be an explicit goal of water management practices, whatever their principal goals.
 - Allocation of water supplies should include conservation allocation that is of benefit to colonial waterbirds.
- Oceanic changes – Changes in oceanic regimes occur on regular cycles that are somewhat predictable in frequency as well as on longer (multidecadal) scales. Aquatic prey availability is correlated with these environmental changes. Conservation of seabirds and wetland birds needs to be robust enough to accommodate long scale cycles.
 - Better understanding is needed of the role of cyclical oceanic changes in seabird sustainability.
- Climate change – Sea level is rising along mainland and island coastal areas. Climate change also affects rainfall patterns and resulting wetland hydrology throughout the interior of the continent. These changes affect habitat availability and ultimately phenology of nesting and migration.
 - Conservation planning needs to take into consideration the long-term inevitability of climate change in establishing reserves, and securing nesting and feeding sites that will function under future conditions.
 - The effects of climate change on normal oceanic cycles needs to be determined or better understood.
- Banding – Banding is an essential conservation tool.

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- Due to the multiple benefits, banding colonial waterbirds should be permitted and encouraged, even if not tied to a specific research question.
 - Demographic and movement research and monitoring needs to be encouraged.
 - Banding training modules need to be developed and training and certification of waterbird banders initiated.
 - Band quality should be improved and salt water resistant bands need to be made available
 - Banding data repositories must be redesigned to deal with long-lived birds that are re-banded during their life.
 - Banding should be integrated into population studies, the use of radio and satellite telemetry should be increased, and historic data should be conserved.
- Education – Environmental Education can most effectively be accomplished at colony sites. Colony based environmental education, colony adoption, interpretive displays, viewing points, and publicity can serve to gain support for colony sites preservation and also for conservation of species more broadly.
 - Colonial waterbird conservation needs to be inculcated into environmental consciousness, especially through environmental education.

Inventory and Monitoring Waterbirds in North America

Waterbird conservation planning and management decisions depend on measuring and evaluating population change as a basis for setting policy, identifying management and research priorities, and evaluating management actions. A critical element of managing and monitoring waterbirds is a comprehensive monitoring program. Although some waterbirds have been counted for decades, numerous survey methodologies are implemented over different scales, resulting in data sets that cannot be compared. A continent-wide monitoring program must be able to determine trends in waterbird populations, to determine how well the elements of a conservation strategy are working, to test key assumptions, and to implement an adaptive management approach.

Habitats also have to be monitored. Throughout North America, the destruction of freshwater wetlands, destruction and degradation of coastal and marine ecosystems, contaminants, sea level rise, and human disturbance influence waterbird populations.

The monitoring goal for the North American Waterbird Plan is to develop a North American Monitoring Partnership in which participants and partners use comparable techniques and contribute to a centrally managed data repository. Accomplishing this goal requires participants to:

- Develop and agree to standardized survey methodologies during the breeding and non-breeding seasons,
- Develop and manage a centralized database that will archive and disseminate data from multiple sources,
- Identify gaps in current population survey efforts and coordinate the development of an integrated network of statistically valid, bias controlled, long-term, waterbird population monitoring programs with States and Provinces in North America,
- Track populations of waterbirds at the regional scale, in addition to the continental scale,
- Begin monitoring habitat at the regional and local scale as related to waterbirds,
- Begin monitoring outside of the breeding season to identify important wintering habitats, including pelagic habitats.
- Integrate waterbird information into “all bird” conservation planning and monitoring.

For a continent-wide monitoring program to succeed, it is essential that methods be developed and agreed upon that are consistent and comparable. The monitoring program requires:

- Development of a set of standardized waterbird monitoring methods for both population and habitat at multiple geographic and temporal scales,

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- Implementation of a sampling design that allows statistical inference to be drawn from the data collected,
- Establishment of a centralized data repository accessible to managers for data submittal and retrieval over the Internet,
- Development of a manual of recommended standardized population monitoring methodologies, Implementation of the recommended methodologies by those responsible for monitoring waterbirds,
- In Mexico, Central America, and the Caribbean Nations, basic inventory of colony sites and nesting habitats, relative abundance and species composition is required as a preliminary step in establishing programs in these areas,
- The paucity of information on waterbird habitat needs outside of the breeding season needs to be addressed through the development of nonbreeding surveys focusing on important foraging habitats,
- Initiation and standardization of at-sea monitoring programs of seabirds, especially in pelagic areas.
- Initiation and standardization of a marshbird monitoring program

The continent-wide monitoring program is being developed as part the National Bird Population Data Center at US Geological Survey Patuxent Wildlife Research Center. A colonial waterbird database has been developed to archive data on waterbirds throughout their ranges, regardless of survey locality, and will facilitate a coordinated response to conserve these birds throughout their ranges. Patuxent's database will be linked to the Pacific Seabird Database. The North American Waterbird Monitoring Partnership must be designed to adequately cover the continent. Significant information gaps exist. A-priori design is required to provide sufficient coverage and also to allow statistical inference to be made.

To effectively manage and conserve waterbirds, monitoring changes in habitat must be integrated with monitoring changes in species population trends. A waterbird monitoring program provides a base from which to synthesize data on species distribution, descriptive-level habitat characteristics, environmental factors, and contaminants. Over the next decade, it will be critical to establish a habitat-monitoring component of the waterbird-monitoring program. Once this has been accomplished, measures of habitat can be explored at regional and local levels, and integrated into population measures; this will allow correlation of population trends with local or regional shifts in habitat characteristics, support adaptive management, and lead to strong, science-based management decisions.

Information Needs For Seabird and Colonial Waterbird Conservation

Conservation of seabirds and colonial waterbirds in North America requires a sound scientific basis. Much is known about the conservation biology of colonial waterbirds and seabirds. But much remains to be understood, and this requires that the scientific information needs be met through inventory, monitoring and research. This section notes many of the basic information elements that are needed as the foundation for making informed management and conservation decisions. Information needs may be divided into four major categories: Basic inventory, monitoring, and assessment; species, populations, habitat information; management-oriented research; and ecosystem or large-scale issues.

Basic Inventory, Monitoring, and Assessment

- Especially in Mexico, the Caribbean, and Central America, little information is available concerning sites of nesting, roosting, and feeding waterbirds. Using ground surveys and remote sensing methods, identifying and protecting Important Bird Areas throughout North America is critical in any conservation plan. Little information is available anywhere on migration hot spots and key wintering areas for many species. Once these data start accumulating, a continental database should be developed that is centrally managed, and accessible via Internet.

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- Setting up and testing monitoring methods, and then evaluating their power to detect trends, is crucial for effective conservation. Information is necessary to determine how to sample populations at large scales where the desired goal is to detect a 50% change over a 25 year period. The foundation of information must include population size, distribution, and status. Monitoring of other aspects of waterbird biology needs to be included; developing approaches to monitoring habitat changes of nesting, roosting and foraging waterbirds, contaminant monitoring of tissues and prey, disease and parasite monitoring, and aspects of reproductive success are key to consider.
- GIS is an important tool to use for conservation science. Every effort must be made to develop spatially explicit criteria for integrating bird conservation at multiple geographic scales.

Species, Populations, and Habitat Information

- Determining the genetic and demographic structure of populations is critical for making conservation decisions. Whether particular subspecies or demes are threatened, or determining which populations are sources or sinks, is essential information when trying to formulate priority schemes in conservation.
- Evaluating what information is necessary to complete population models for key species or determining what decision support base is necessary for management action thresholds for certain populations are critical information needs. Information is needed to set numerical population goals for each species within North America. Comparative population trend analyses from different geographical regions will provide important insights into the relative significance of human-induced perturbations. Finally, the degree to which populations show high site fidelity to certain habitats for breeding, during migration, or in winter is an important knowledge gap in the conservation planning at present. Research into the key features that provide consistently high habitat quality is another important area.

Management-oriented Research

- Key issues in this area include: the importance of human hunting as a source of mortality to seabirds, the role of commercial fisheries in seabird mortality, the importance of aquaculture facilities as a food base for waterbirds, and related, the significance of the anti-depredation harvest of “nuisance” waterbirds at such sites to populations, methods to reduce the effects of certain waterbirds in urban and suburban landscapes, knowledge of better predator control and eradication methods at colony sites, research into evaluating the impact of different types of human disturbance, including researchers, on nesting success in colonies, determining the effects of contaminants including oil on waterbirds at the population level, manipulations of habitats, including wetland creation, marsh management, irrigation modification, impoundment management, to increase attractiveness to colonial birds, and using adaptive resource management approaches to restoration of colony sites for rare or declining species.

Ecosystem and Large-scale Issues

- Little information is available on the role of colonial waterbirds in the food webs of their respective ecosystems. Just how valuable are they in terms of both energy and nutrient flow, or in affecting prey species dynamics? We also know little for long distance migrants about how their habitat and energy needs change over the seasons as they move among high, mid and low latitudes. Knowledge of how well coupled fish populations are to waterbirds remains largely unknown as well.
- Major changes in ocean regimes are known to occur at different time scales. Will global climate change then be adverse to pelagic seabirds already adapted to such changes? How will expected sea level rise influence habitat use and species vulnerabilities in different areas of North America? Will changes in interior wetlands and rainfall patterns adversely affect many colonial waterbirds? How will their habitats be expected to change?

Education and Outreach for Seabird and Colonial Waterbird Conservation

Seabirds and colonial waterbirds live in a world increasingly dominated by humans and our actions. For many and perhaps most species, it is no longer safe to assume that their survival is

24 October 2001 – Second Review Draft of the North American Waterbird Conservation Plan assured without public awareness of their existence, and public support of measures that protect them and their habitats. The public also represents a reservoir of potential volunteers and advocates that, properly trained, can assist with monitoring of colonies and roosts both to assess populations and prevent disturbance, work with local parks, refuges and agencies to improve management of colonies and wetland habitats in their care, and work for the adoption of appropriate legislation at every level to better protect waterbirds and their habitats.

Waterbirds are, in fact, only a special case. An informed, supportive public is critical to all efforts to protect wildlife and wildlife habitat. People don't save what they don't love (or understand and respect), and they don't love what they don't know about. Furthermore, in a time of considerable opposition to taxation, people resist tax-based programs if they fail to see a need.

On the other hand, people are generally very supportive of efforts to protect wildlife when they understand the basis of the programs. Education and outreach programs of every type are the vehicle by which the public becomes acquainted with waterbirds, better understands their vulnerability to disturbance and other factors, and develops support for the essential management and monitoring programs that secure their future. Because waterbirds are often large and showy, they serve as useful ambassadors or teaching tools, allowing the lessons of more targeted education efforts to achieve broader application.

Priority goals are:

- Identify priority target audiences, including resource professionals, conservationists, teachers and students, and the public.
- Determine the critical messages.
- Identify sources of information.
- Develop strategies for reaching priority audiences.
- Develop or identify model education and outreach materials as a guide to the establishment of local E&O programs.
- Develop a mechanism to deliver information on request.
- Develop an information exchange mechanism through an information office.

Overall, our emphasis is on local programs where individuals have the opportunity to have their lives changes by personal experiences in, around or near the resource. Their support is crucial to the future of seabirds and colonial waterbirds and their habitats, and indeed all wildlife and all natural areas everywhere.

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Part 4: WATERBIRD CONSERVATION – THE NATIONAL, REGIONAL, AND LOCAL SCALE

Because of the multi-national nature of this Plan, the scale at which planning strategies are developed and implemented will differ. For the purposes of this Plan, the geographic scales are defined as follows:

- (1) the local scale might include local governments and entities, or provinces, states, or islands,
- (2) the regional scale might define a bird conservation region or some grouping of regions, a group of provinces, a Canadian Wildlife Service Region or group of CWS regions, a group of islands, such as the Caribbean region or Pacific Islands region, or a group of States,
- (3) the national scale defines nations, and
- (4) continental scale defines North America, as described in Part One.

National Waterbird Conservation

National Planning

Planning for waterbird conservation on the national level is essential. However, the exact path taken to work towards national conservation will vary. For example, biological staff of the national wildlife or natural resource agency may undertake the planning process. Canada is preparing a national plan for seabird and colonial waterbird conservation entitled “Wings Over Water.” Wings Over Water forms the Canadian component of the NAWCP and is consistent with its approach. Planning may take other approaches as appropriate in other nations of the Plan area. National plans, if developed, should take into consideration and where possible be mutually consistent with the North American Waterbird Conservation Plan.

National Species Prioritization

The North American Waterbird Plan provides the conservation status of all species on a North American scale. Nations may be required to identify species of conservation priority, and doing so they are urged to use the Plan’s evaluation of North American conservation status. However, if other criteria need to be used, it remains critical that waterbirds be thoroughly and fairly considered within prioritization schemes taking into account their specific biology, needs, and issues. It is crucial that criteria not be used that are not conducive to waterbird conservation because they were developed for other species groups and do not reflect the appropriate degree of threat or conservation concern for waterbirds.

Nationally Important Bird Areas for Waterbirds

Nations may choose to identify nationally important waterbird areas. Canada and Mexico have evaluated sites in their national IBA programs on the basis of their waterbird populations. If appropriate for conservation, nations are urged to identify sites of national importance to complement the list of sites of global or continental importance. The internationally recognized criteria for sites of national importance are:

- Nationally Important Waterbird Area – The site is known to hold or thought to hold on a regular basis 1% or more of the national population or 10,000 or more waterbirds.

Regional Waterbird Conservation

Figure 4



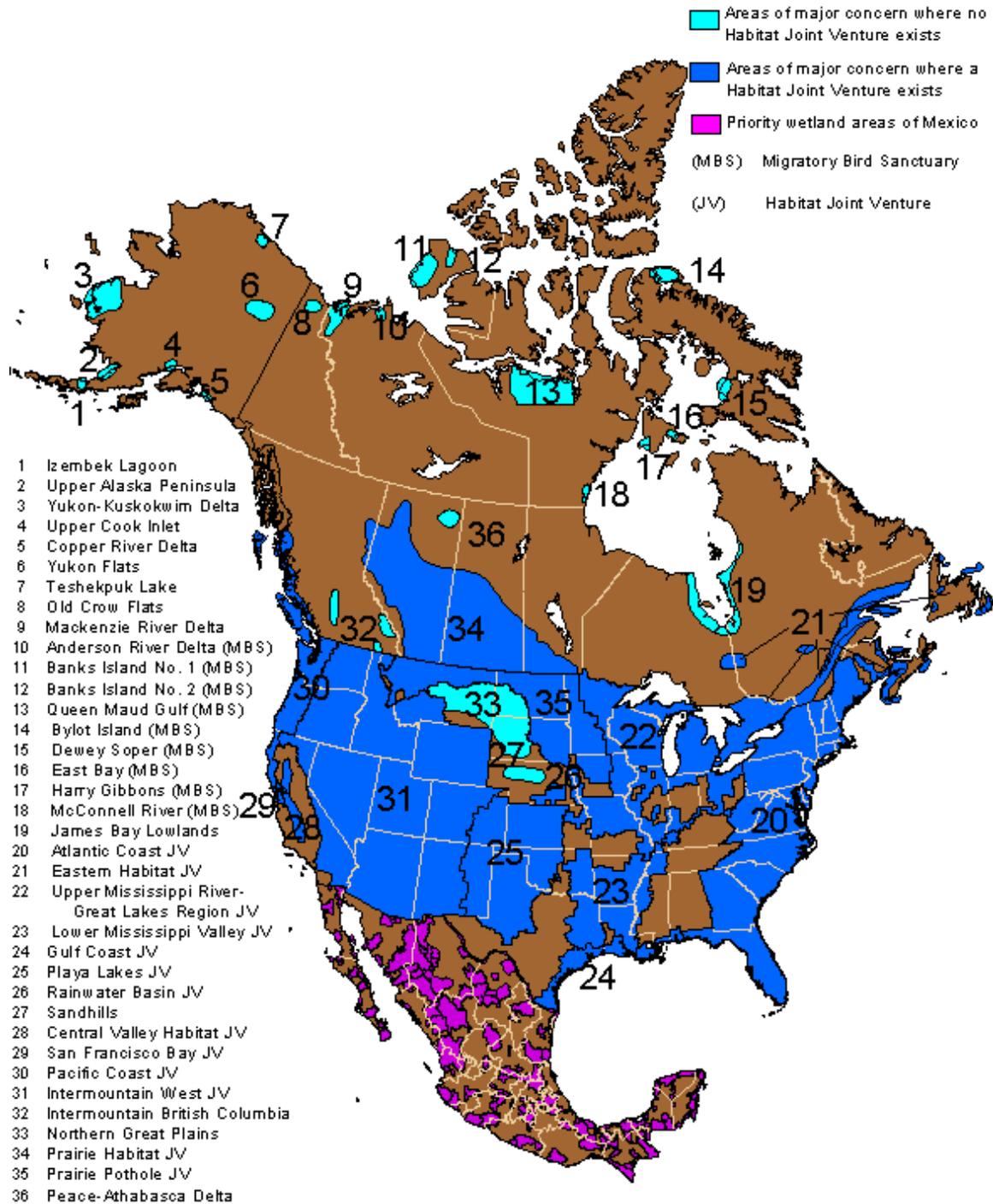
NABCI Bird Conservation Regions

Conservation action can best be planned in detail and facilitated on a regional basis. In recognition of this, a primary bird conservation planning mechanism of the North American Bird Conservation Initiative in Canada, Mexico, and the United States is the Bird Conservation Region (BCR). BCRs span the continent as shown in the following figure. Regional planning for colonial waterbird conservation will focus in part at the BCR scale, providing goals, guidance, and facilitation in ways that will coordinate and overlap with other bird conservation initiatives. However, it is important to recognize that BCRs are really important as a planning structure and that implementation will occur at many geographic scales.

Habitat Joint Ventures

Habitat Joint Ventures formed under the North American Waterfowl Management Plan are important regional implementation units. Joint Ventures consist of voluntary partners in the conservation of bird habitat, especially wetlands of importance to waterfowl. Such wetlands are also important to waterbirds. Joint Ventures set habitat goals and mobilize partners to achieve these goals. Integration with Joint Ventures is important for waterbird conservation. Every effort should be made to identify areas of overlap between waterbird conservation needs and waterfowl Joint Venture plans. The habitat Joint Ventures of the North American Plan are shown below.

Figure 5. North America Waterfowl Management Plan Joint Ventures



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Colonial Waterbird Practical Units for Planning (PUPs)

The continental strategy of the North American Waterbird Conservation Plan, by itself, will not result in the successful conservation of waterbirds. Habitat conservation and management will be accomplished at a smaller geographic scale. Recognizing the need to organize waterbird needs at a scale suitable for implementation, regional working groups were formed under the continental plan to plan, implement, and periodically revise regional conservation plans at the sub-continent scale. Setting the geographic boundaries of regional planning required consideration of: 1) stakeholders engagement at BCR scale where BCRs exist (Canada, US, Mexico) 2) geographic inclusiveness, and 3) practical political reality. As the common language for regional planning, Practical Units for Planning (PUPs) were adopted for the terrestrial habitats and Pelagic Conservation Regions (PCRs) were adopted for marine habitats. These are shown by Figure 6. The Pelagic Conservation Areas were adopted from the Large Marine Ecosystem concept (CITATION) and altered for use in planning seabird conservation. Pelagic Conservation Areas extend 200 nautical miles seaward from the coastline, with the exception of the Pacific Pelagic Region which encompasses that portion of the Pacific not encapsulated by, but surrounded by the other PCRs in the Pacific Ocean.

Regional Working Groups

Fourteen Regional Working Groups produced regional waterbird conservation plans for each PUP. The purpose of these plans and regional infrastructure is to inform, guide and facilitate waterbird conservation at smaller scales, especially at the BCR, Joint Ventures, provincial/state and local scales. Specifically, regional PUP plans identify priority regional species, establish preliminary habitat and species goals to be updated through adaptive management models, identify Important Waterbird Areas within the regions using the established Important Bird Areas Program, and identify implementation mechanisms within each PUP. Conservation information within each regional plan is organized at the Bird Conservation Region scale, while implementation venues are identified at multiple scales within each region, wherever they exist.

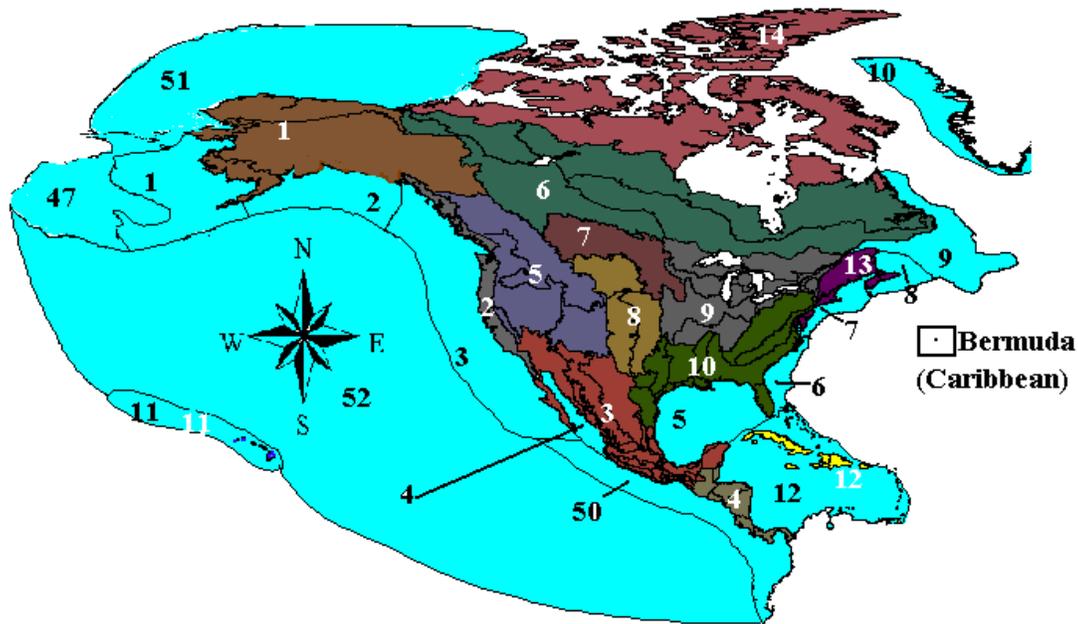
Regional Species Conservation Status

Regional working groups considered and implemented a process to categorize the conservation status of species occurring in their region. Continental species status data was supplied to each working group and Area Importance scores were incorporated to determine regional species status. Regional working groups may have also considered special populations or subspecies when determining priority species within the region.

Regional Important Bird Areas

As part of the regional planning process, regional working groups conducted an evaluation to determine if any of the candidate sites in their regions merited global or continental status as IBAs using common criteria derived from the international IBA program described earlier in this Plan. Regional working groups also scanned their regions to determine sites that merit recognition as sites of regional or state importance. Mexico is using IBAs as the central theme in identifying priority bird needs within the country. The criteria for categorizing sites of regional or state importance were defined in cooperation with the National Audubon Society's and BirdLife International's Important Bird Area program and will be explained in more detail within the regional conservation plans.

**North American Waterbird Practical Units for Planning (PUPs)
 and Pelagic Conservation Areas (delineated by Large Marine Ecosystems)**



**Pelagic Conservation Regions
 (based on Large Marine Ecosystems)**

- (51) Chukchi and Beaufort Seas
- (1) Eastern Bering Sea
- (2) Gulf of Alaska
- (3) California Current
- (4) Gulf of California
- (5) Gulf of Mexico
- (6) Southeast US Continental Shelf
- (7) Northeast US Continental Shelf
- (8) Scotian Shelf
- (9) Newfoundland Shelf
- (10) West Greenland Shelf
- (11) Insular Pacific-Hawaiian
- (12) Caribbean Sea
- (47) West Bering Sea
- (50) Pacific Central American Coastal
- (52) Pacific Pelagic

Practical Units for Planning (PUPs)

- 1 Alaska/Bering/Yukon
- 2 Pacific Coast
- 3 Mexico
- 4 Central America
- 5 Intermountain West/Southwest Desert
- 6 Boreal
- 7 Prairie Pothole
- 8 Mixed/Shortgrass Prairie
- 9 Upper Mississippi Valley/Great Lakes
- 10 Southeast Coastal Plain/Appalachian Mtns
- 11 Pacific Islands
- 12 Insular Caribbean
- 13 Northeast Maritime
- 14 Arctic

Pacific Islands PUP

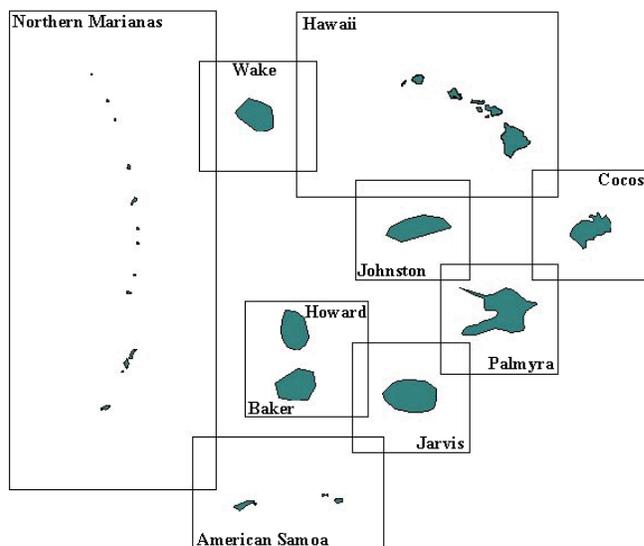


Figure 7. Pacific Islands PUP

Regional Seabird and Colonial Waterbird Conservation Strategies (SUMMARIES TO BE PROVIDED BY REGIONAL WORKING GROUPS)

- *Alaska/Bering/Yukon/
Beaufort and Chuckchi Seas,
Eastern Bering Sea,
Gulf of Alaska*
- *Pacific Coast
California Current
Pacific Pelagic*
- *Mexico
California Current
Gulf of California
Pacific Central American Coastal
Gulf of Mexico*
- *Central America
Pacific Central American Coastal
Caribbean Sea*
- *Intermountain West/Southwest Desert*
- *Boreal*
- *Prairie Pothole*
- *Mixed/Shortgrass Grass Prairie*
- *Upper Mississippi Valley/Great Lakes*
- *Southeast Coastal Plain/Appalachian Mountains
Gulf of Mexico
Southeast US Continental Shelf*
- *Pacific Islands
Insular Pacific-Hawaiian*
- *Insular Caribbean*

- *Northeast Maritime*
- *Arctic*

Local Waterbird Conservation

Conservation planning at the local level is essential. This is probably the most critical level of implementation because many different more locally-based agencies or groups share responsibilities for the management of birds and their habitats with national governments. Again, within countries, the way state, provincial, or island governments approach planning will vary and flexibility among partners is critical. For example, in the United States, individual states will determine whether they write state plans; some states may elect to write a state plan and some may not. There is no one correct way to plan waterbird conservation in North America.

Having stated that flexibility in planning strategies is necessary, it would be beneficial to have provincial and state participation in regional planning at the BCR or Joint Venture scale. This would facilitate on the ground monitoring programs that connect to the continental monitoring partnership allowing for more complete integration of knowledge and resources. Creating mechanisms, such as steering committees, to bring together all partners in bird conservation to conserve birds and their habitats on a landscape level will require co-operation with state and provincial biologists and NGOs.

Particular progress at this scale could be made on habitat conservation and management through purchase, easements, and management, identifying and monitoring nesting, wintering, and roosting sites, controlling disturbance, and considering seabird and colonial waterbird conservation needs in all applicable permitting procedures. Local entities, such as states and provinces, are encouraged to identify IBAs and secure colony sites and habitats within their political boundaries.

Example of a the elements that might be in a local conservation program:

- set goals to achieve waterbird conservation, preferably within all-bird conservation
- assess waterbird status and conservation needs from BCR perspective, collaborating with Regional Waterbird Conservation Working Groups
- develop a local plan based on regional scale assessments of waterbird status, habitat priorities and other needs and opportunities
- develop programs to manage waterbirds and their habitats
- hire or appoint a waterbird biologist within a natural resources agency or NGO to facilitate, guide and manage colonial waterbird conservation, including participation in BCR scale planning
- develop and run comprehensive monitoring of waterbird colony sites, breeding populations, wintering numbers (where appropriate), and habitats, coordinated by the waterbird biologist and linked to the continent-wide monitoring partnership
- develop programs, methods and protocols to protect, conserve and manage habitat used by waterbirds
- identify Important Bird Areas for waterbirds, and evaluate status, creating a provincial/state status if desirable

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- secure through purchase, easements or other means to assure protection of important colony sites, breeding sites, habitats and IBAs for waterbirds, and manage these sites for waterbirds
- develop broad-base partnerships among government, business, and local conservationists for waterbird conservation, including establishing a steering committee/ working group or incorporating waterbird expertise in other conservation committees
- develop an information and education strategy including how-to publications for managers and public and provide mechanisms to incorporate waterbirds in education and in state and local outreach programs
- assure consideration of waterbird conservation needs in land acquisition, land management, regulation, planning and zoning
- identify scientific and management information needs and secure resources through partnerships to fill these needs

Implementation Model

The North American Waterbird Conservation Plan will be implemented at five scales: North American, tri-lateral, national, regional, and local. Conservation implementation is critical at each of these levels. Implementation mechanisms will differ substantially but must fully complement each other to provide the full array of waterbird conservation needs.

North American Implementation

The North American Waterbird Conservation Plan supports implementation at the continental scale. Plan implementation will be overseen by the North American Waterbird Conservation Council (The Council), successor to the Waterbird Conservation Plan Steering Committee. The Council will have responsibility for coordinating, facilitating, and communicating implementation of the plan, plan updates, and coordinating actions for waterbird conservation throughout North America.

The Council is an independent, self-perpetuating non-governmental organization and is not a part of any governmental agency or single non-governmental organization. Members will be selected by the Council and by stakeholders for three-year terms, preferably staggered. The Council will select its Chair. The initial membership of the North American Waterbird Conservation Council will consist of seventeen members including a Chair.

<p>PROPOSED COMPOSITION OF NORTH AMERICAN WATERBIRD CONSERVATION COUNCIL</p>

<p>Nine members appointed by Canada, Mexico, and the United States.</p>

<p>Three members from Caribbean, Central America, and the Pacific.</p>
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<p>Up to six members from private partner organizations, including Partners in Flight, NAWMP, Shorebird Plan.</p>

<p>Up to six members at large.</p>

<p>Two members representing the Technical Working Group and Regional Working Groups</p>

The Council will appoint a North American Waterbird Technical Working Group. It will consist of managers and scientists who will advise the Council, as appropriate, led by a chair appointed by the Council for a fixed term. The Waterbird Society and the Pacific Seabird Group will each nominate members of the Working Group. The Canadian Wildlife Service, US Fish and Wildlife Service, US Geological Survey, and International Association of Fish and Wildlife Agencies will each nominate members. Provinces, states, and NGOs will be encouraged to nominate additional members.

A North American Waterbird Regional Advisory Committee will be composed of a representative appointed by each regional waterbird working group. This Committee will advise the Council on matters of Continental-Regional coordination and facilitation and also will serve as a forum for exchange of information and experiences at the regional level.

The North American Colonial Waterbird Monitoring Partnership will undertake continent-wide monitoring and data management. Monitoring will be carried out across the plan area by an array of partners, especially provincial and state governments but also national and local governments and non-governmental organizations. Facilitating this partnership and the management of a continent-wide database is the responsibility of the US Geological Survey, Patuxent Wildlife Research Center, in cooperation with national and state wildlife agencies.

The North American Waterbird Conservation Council will have a number of responsibilities. It will:

- Be the keeper of the North American Waterbird Conservation Plan, sponsoring and overseeing its implementation and revision
- Facilitate conservation at all scales, from continental to local, but especially regional
- Facilitate the acquisition of resources to support waterbird conservation continent-wide
- Elect a representative to the NABCI-US committee and to other NABCI national committees or national waterbird committees as invited.
- Appoint new members of the Council and of the North American Waterbird Technical Working Group
- Interact directly with other bird conservation initiatives, joint ventures, provinces/states, national governments, local interests, and others
- Facilitate and support the North American Waterbird Monitoring Partnership
- Facilitate and support the meeting of scientific information needs
- Facilitate and support education and outreach programs, and maintenance of the Plan's home page

Continental implementation also requires connection, cooperation and coordinated implementation outside the artificial boundaries of the North American Waterbird Conservation Initiative. In the Pacific, seabird conservation should coordinate with the Asia-Pacific Migratory Bird Strategy, which, presently, does not include seabirds or colonial waterbirds. The Pacific Islands Regional Working Group should attempt to develop liaisons throughout the Pacific Islands. The appropriate agency or groups in Canada and the United States will work with other circumpolar member nations of the Conservation of Arctic Flora and Fauna (CAFF) through its Circumpolar Seabird Working Group, to ensure conservation activities over the entire boreal range of seabirds and colonial waterbirds. Canada and the United States should continue in their capacity within the Beringian Seabird Working Group, overseeing seabird conservation. Waterbird and seabird conservation planning need to be encouraged in South America. The North American Waterbird Conservation Initiative will support and interact with the Eastern Pacific Flyway Initiative. The Initiative will also take a lead in connecting NABCI with bird conservation activities beyond the tri-national area. Through these planning processes all partners will address the conservation priorities encountered by seabirds and colonial waterbirds, both inside Canada and in other countries in which they spend part of their year.

Continental conservation depends upon management action at the provincial and state level. The Colonial Waterbird Conservation Council will coordinate and cooperate with the Shorebird and Waterbird Working Group of the International Association of Fish and Wildlife Agencies and with waterbird specialists located in each province or state.

Trilateral/NABCI Implementation

Within Canada, Mexico, and the United States, implementation of the North American Waterbird Conservation Plan will be accomplished where possible within the structure and philosophy of the North American Bird Conservation Initiative (NABCI). NABCI is a trilateral arrangement among Canada, Mexico, and the US, derived from the North American Free Trade Agreement. The United States has bilateral migratory bird treaties with Mexico and Canada, which also underlie the trilateral partnership. The North American Waterbird Conservation Initiative will participate in such national and tri-national activities and NABCI national and tri-national councils, NABCI BCRs, the NABCI Monitoring Subcommittee, and NABCI NGO Subcommittee.

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Non Governmental Organization Implementation

NGOs, most of which operate internationally, are critical partners in waterbird conservation. NGOs with interests and missions compatible with the conservation of waterbirds should consider the needs and opportunities for waterbird conservation within their bird conservation activities. The North American Bird Conservation Initiative especially urges the continued engagement in waterbird conservation of: National Audubon Society, Wildlife Management Institute, International Association of Fish and Wildlife Agencies, BirdLife International, The Nature Conservancy, American Bird Conservancy, Pacific Seabird Group and Waterbird Society.

National Implementation

Implementation in every nation within the Plan area is important for successful large scale waterbird conservation. Within Canada, waterbird conservation implementation will be organized and facilitated through regional waterbird working groups. Canada's national waterbird conservation plan "Wings Over Water" identifies approaches to planning which form the basis for coordinated national implementation. Implementation will mostly occur at regional and local levels but there will be a need to evaluate implementation for national consistency and consistency with the North American Plan. Planning and implementation is expected to occur at several regional levels with the ultimate goal to be coordinated implementation at the BCR level. Cross border-integration will most practically occur first in joint planning regions, where there are species or issues of common concern. As work evolves there should be increasing opportunities for broader continental planning and implementation.

In Mexico, waterbird conservation will be focused on planning and conservation action at Important Bird Areas for waterbirds. The Mexican national NABCI Council, it is hoped will focus some of its attention on waterbirds but bird conservation planning will take an all-bird approach. (WAITING FOR DOCUMENT FROM MEXICO).

In the Caribbean and Central America, it is hoped that each nation will make waterbird and seabird conservation a priority within its wildlife or natural resources agency. A position, at least part time, should be designated to lead the national colonial waterbird conservation program. Each nation is encouraged to conduct a complete inventory of colony, breeding, and feeding sites, establish a monitoring program, manage and preserve habitat, and add waterbird conservation to its natural resource management agenda.

In the United States the primary responsibility for migratory bird management in the United States rests with the US Fish and Wildlife Service. US FWS is encouraged to appoint and support a waterbird coordinator within the Division of Migratory Bird Management. Specifically this position should play a principal support for the North American Waterbird Conservation Council. It should concentrate on assisting in regional planning and implementation and be the spokesperson for waterbird conservation in the United States. This individual should have a budget sufficient to support travel, facilitation and small grants. Other US Federal agencies concerned with land management and responsible for bird conservation are encouraged to employ and support national waterbird coordinator/biologists whose responsibility is overseeing waterbird management within their agencies. The US Forest Service is encouraged to employ waterbird biologists at all levels of the organization, and at the national and international level include waterbird conservation needs within the Taking Wing initiative. The following agencies in the United States are particularly called upon to create waterbird coordinator/specialist positions within their national programs: National Park Service, US Geological Survey,

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Environmental Protection Agency, Bureau of Land Management, Bureau of Indian Affairs,
NOAA, National Marine Fisheries Service, Corps of Engineers, Natural Resources Conservation
Service, and Department of Defense and the Services.

The principal national wildlife or natural resource agency in each country within this plan area is encouraged to appoint a waterbird coordinator. This individual's responsibility should principally be waterbirds, including providing support for the North American Waterbird Conservation Council, developing (where appropriate) national waterbird conservation plans, interacting with programs in neighboring countries, conducting or facilitating a national monitoring program, serving as an advocate for waterbirds in national and local conservation issues, and facilitating local conservation action on behalf of waterbirds.

Regional Implementation

Regional Working groups will facilitate implementation of waterbird conservation in their PUP region. The methods used to implement waterbird conservation will differ among regions. Bird Conservation Regions may or may not be used as an implementation unit.

On the regional basis, implementation will occur through many different implementing bodies including, but not limited to wildlife agencies (federal and provincial), industry, NGOs, and regional implementation bodies such as Habitat Joint Ventures. A joint venture is a self-directed partnership of agencies, organizations, corporations, tribes, or individuals that has formally accepted responsibility of implementing national and international bird conservation plans within a specific geographical area. JV's are directed by a management board comprised of a broad spectrum of representatives having interests in conservation and are guided by implementation and evaluation plans. JV's are staffed by a full time Joint Venture Coordinator and other technical staff and supported by a technical committee and other committees as needed.

Local Implementation

Given the need to affect waterbird conservation at all these scales, it must be emphasized that the principal means of implementing waterbird conservation in North America is through local action. Again, for the purposes of this plan, local might be defined to include local governments and entities, or provinces, states, or islands.

To the extent that "all conservation is local," seabirds and waterbirds must be protected, conserved, monitored, and managed by people with the wisdom gained by intimate knowledge of the local situation. All the rest of the implementation infrastructure (such as the Continental Monitoring Program or Waterbird Conservation Regional Working Groups, or BCRs) must be designed to support local waterbird conservationists and natural resource managers as they implement conservation actions at local colonies, breeding, roosting, and feeding sites, at local parks, refuges, and sanctuaries, and at local patches of aquatic habitat or adjacent pelagic conservation regions used by these birds.

On-the-ground conservation action has to take place at the local scale. The Regional Waterbird Working Group, Joint venture, NGO, state, provincial, or other local entity/agency biologists will take on the responsibility for particular elements within the local conservation arena. Each colony or breeding site and important feeding site should have its advocate and guardian, backed by legislation from local and state governments, and linked to other site guardians.

Funding for Monitoring, Research and Conservation Action

Conducting the needed monitoring and research and undertaking conservation action requires resources at all scales. Funding needs to be found to support these endeavors. Funds, perhaps located in several organizations, need to be secured and made available through competitive grants processes in order to provide information needed for conservation. Funds also need to be found for conservation action, such as purchasing or otherwise securing important habitats, monitoring and managing colony or breeding sites and feeding habitats, educational opportunities, information networks and so forth. The North American Wetlands Conservation Act Council should consider opportunities to support wetland habitat conservation of benefit to waterbirds. Organizations, including industry, should establish competitive grant programs for monitoring, research, infrastructure development, and conservation action on behalf of waterbirds.

ACKNOWLEDGEMENTS

The Authors of this Plan are the members of the North American Waterbird Conservation Plan **Steering Committee**: James A. Kushlan (Chair), Melanie J Steinkamp (Director), Katharine Parsons (Species Status Assessment Chair), Jack Capp, Martin Acosta Cruz, Malcolm Coulter, Ian Davidson, Loney Dickson, Naomi Edelson, Richard Elliot, R. Michael Erwin, Scott Hatch, Steven Kress, Steve Lewis, Robert Milko, Steve Miller, , Richard Paul, Roberto Phillips, Jorge E. Saliva, Bill Sydeman, John Trapp, Kent Wohl.

The Steering Committee wishes to thank members of the **Advisory Committee** for their engagement and advice: David Allen, Bob Altman, Ghisselle Alvarado, Brad Andres, Jon Andrew, Maurice Anselme, Donald Anthony, Adreanna Araya, Jennifer Arnold, Kristine Askerooth, Bruce Batt, Fred Baumgarten, Carol Beardmore, Brian Bell, Theodore Below, Glenn Belyea, Rob Bennetts, Silvano Benvenuti, Robert Blohm, Hans Blokpoel, Thurman Booth, Lisa Borgia, Steve Bouffard, Jennifer Boyce, Patricia Bradley, Joel Brice, Stephen Brown, Larry Bryan, Joseph Buchanan, Laura Burford, Joanna Burger, Winifred Burkett, Rob Butler, Vernon Byrd, Carolyn Caldwell, Bianca Capuano, Montserrat Carbonell, Harry Carter, Mike Carter, Dan Casey, John Castrale, Andrea Cerovski, Mauricio Cervantes, Heather Chaffey, Gilles, Chapdelaine, John Chardine, Jean Cohn, Therese Conant, Richard Cook, Fred Cooke, Jorge Copen, Jim Corven, Ken Cox, John Croxall, Octavio Cruz, Francie Cuthbert, Reggie David, Jill Dechant, Tony Diamond, Rachel Diebboll, Paul Doherty, Laura Dominguez, Terry Doyle, Jeff Drahota, Mark Drever, Diane Drigot, Kim Dryden, Susan Earnst, Chris Eberly, Linda Elliott, Steve Emslie, Mick Erickson, C Greg Esslinger, Mike Estey, Stewart Fefer, Suzanne Fellows, George Fenwick, Richard Fischer, Sharon Fish, Jane Fitzgerald, Elizabeth Flint, Robert Ford, Doug Forsell, Rod Fowler, Glen Fox, Gail Fraser, Peter Frederick, Joseph Furbert, Lynn Gape, Lisa Gelvin-Innaver, Richard Gibbons, Frank Gill, Eric Gilman, Phil Glass, John Gobielle, Walker Golder, Paula Gouse, Todd Grant, Chris Grondahl, Scott Hall, Rob Hall, Keith Hamer, Janelle Hancock, Fran Harty, Jeremy Hatch, Jeff Hatfield, Katie Haws, Chuck Hayes, Floyd Hayes, Lindsey Hayes, Loren Hays, Greg Hellyer, Janos Hennicke, Gudrun Hilgerloh, Randy Hill, Thor Hjarsen, Cathleen Hodges, Roger Hollevoet, Bill Howe, Marshall Howe, Stan Howe, Darcy Hu, Laura Hubers, Jay Huner, Chuck Hunter, Gary Huschle, David Hyrenbach, Larry Igl, David Irons, Gary Ivey, Sarah Jamieson, Dave Jenkins, Heather Johnson, Stephanie Jones, Scott Kahan, Jeni Keisman, Caroline Kennedy, Judith Kennedy, Tommy King, Vern Kleen, Gregg

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Knutsen, Bill Kolodnicki, Oliver Komar, Mark LaBarr, Pierre Lamothe, Regina Lanning, Teodoro Lara, Linda Leddy, Richard Levad, Celia Lewis, Carol Lively, Michael Langlois, Roy Lowe, Andrew MacLachlan, Elizabeth Madden, Malcolm Coulter, Art Martell, Sumner Matteson, David Mazurkiewicz, Joe McCauley, Cal McCluskey, Leonard McDaniel, Ronald McDonald, Laura McFarlane Tranquilla, Joan McKearnan, Keith McNight, Will Meeks, David Mehlman, Eric Mellink, Robert Mesta, R.L. Miller, Andrew Milliken, Kyra Mills, Marc Minno, Amy Morgan, Ken Morgan, Seth Mott, Allan Mueller, Pablo Munguia, Tom Murphy, Luis Naranjo, Maura Naughton, Neal Neimuth, Eric Nelson, Scott Newman, Ian Newton, Jim Nichols, Ian Nisbet, Fernando Nunez, Paul O’Conner, Leslie Ogden Evans, James Ortego, Eduardo Palacios, Barbara Pardo, Hee Cheon Park, David Pashley, Don Paul, Cynthia Pekarik, Diane Pence, Cyndi Perry, Bruce Peterjohn, Daniel Petit, Mila Plavsic, Gary Popotnik, Tim Post, Fritz Prellwitz, Tim Prior, Rocky Pritchert, Cynthia Ragland, Jean-Francois Rail, Barnett Rattner, Mason Reid, Fritz Reid, Ron Reynolds, Terry Rich, Kim Rivera, Will Roach, Sharon Roberts, Greg Robertson, Steve Rockwood, Jim Rodgers, Rose Rojas, Ken Rosenberg, Karen Rowe, Cory Rubin, Marie Ryan, Pierre Ryan, Ronnie Sanchez, Jorge Sandoval, Lori Sargent, John Sauer, Jean-Pierre Savard, William Scharf, Paul Schmidt, Ann Schnapf, Elizabeth Schreiber, Bill Schultze, Camille Sewall, Dawn Sherry, Mark Shieldcastle, Barry Smith, David Smith, Graham Smith, Laura Sommers, Bettina Sparrowe, Jeffrey Spendelow, Anne Storey, Dennis Summers-Smith, Ann Sutton, Bill Sydeman, Jean Takekawa, Mike Tansy, Steven Thomas, Jocelyn Thrace, Hector Torres, Adrienne Tossas, John Trapp, Jeff Trollinger, Barry Truitt, Jane Tutton, Len Ugarenko, Lourdes Valdes, Bill Vermillion, Anthony Viggiano, Kate Wallace, George Wallace, James Watson, Keith Watson, David Wege, Linda Welch, Troy Wellicome, Jeff Wells, Chip Weseloh, Francis Wiese, Alexandra Wilke, E.J. Williams, Kevin Willis, Barry Wilson, Brad Winn, Donna Withers, Mark Woodrey, Marilet Zablan, Tara Zimmerman, Jim Zohrer

The Steering Committee and Advisory Committee wish to thank especially agencies and organizations that have provided support for the development of the North American Waterbird Conservation Plan. These include: U.S. Fish and Wildlife Service, U.S. Geological Survey, Manomet Center for Conservation Science, International Association of Game and Fish Agencies, National Marine Fisheries Service, Arkansas Game and Fish, British Airways.

The Steering Committee wishes to acknowledge the authors of the Reports in support of the Plan: Katharine Parsons, James A. Kushlan, Bruce Peterjohn, Melanie J Steinkamp, Scott Hatch, R. Michael Erwin, , Barnett Rattner, Scott Werner, D. Tommy King, James F. Glahn, Jay V. Huner, John Tautin, Kim Rivera, Vernon Byrd, Rich Paul, Harry Carter.

The Steering Committee gives a special acknowledgement to our colleagues Jeni Keisman, Regina Lanning, Sky Lesnick, Marilyn Whitehead, Alex Wilke, and Corey Wisneski. Without their competence, diligence, and dedication, we could not have completed this Plan.