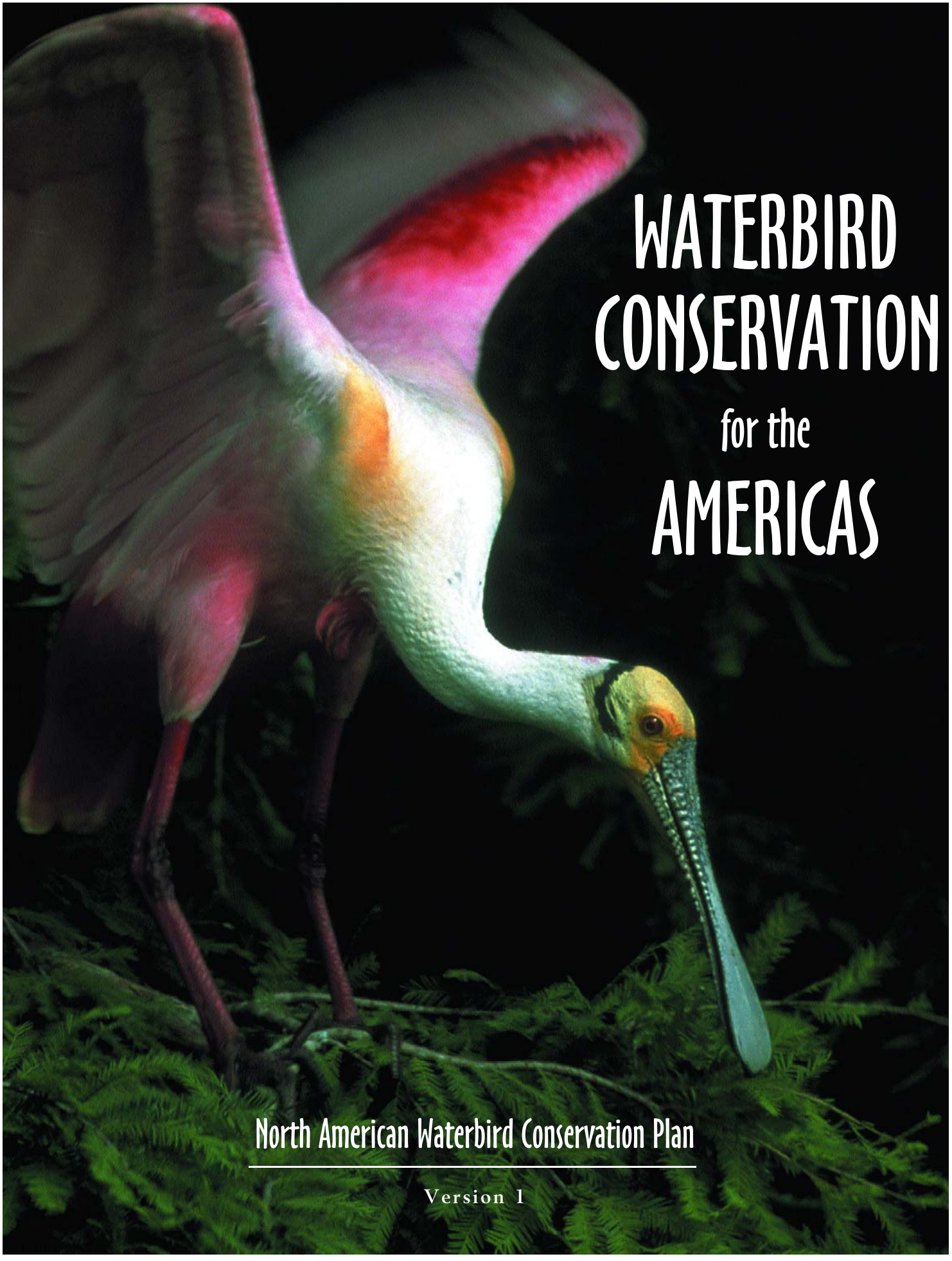

WATERBIRD CONSERVATION for the AMERICAS

North American Waterbird Conservation Plan

Version 1


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Clapper Rail

Waterbirds have been cherished by human societies for centuries. They have inspired poetry, music, and fables and are often touted as symbols of freedom, strength, and agility. This Plan provides an overarching framework and guide for conserving waterbirds. It sets forth goals and priorities for waterbirds in all habitats from the Canadian Arctic to the offshore islands of Venezuela, from Bermuda to the U.S. Pacific Islands, at nesting sites, during annual migrations and during nonbreeding periods. It advocates continent-wide monitoring; provides an impetus for regional conservation planning; proposes national, provincial, state, and other local conservation planning and action; and creates a larger context within which local habitat conservation can nest. Taken together, we hope that these activities will assure healthy populations and habitats for the waterbirds of the Americas.

This Plan is about weaving together cultures, opinions, resources, and science to achieve sustainable waterbird populations and appropriately manage waterbird habitats throughout the entirety of their ranges. The most encouraging revelation that occurred to us during the years it took to develop this Plan was the great number of individuals, representing all factions of society, that were willing and eager to unite to accomplish waterbird conservation. This shared passion for waterbirds will continue to be the force that moves waterbird conservation ahead in the Americas.


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Brown Boobies

This Plan is in its first version, emphasizing seabirds and other colonial-nesting waterbirds. It also concentrates on the northern portions of its geographic scope. Future versions will include more guidance on conservation of solitary-nesting waterbirds, such as the grebes and rails, and more details on the needs and priorities of various regions within the overall Plan area, especially the Caribbean, Central America, and Mexico. Moreover, publication of the Plan is just one step in an initiative to further waterbird conservation. Other anticipated products include national waterbird plans, regional waterbird plans, a continental conservation status assessment document, training workshops, educational materials, symposia, and a continent-wide monitoring partnership.

This Plan was developed by an independent partnership of individuals and organizations with interest and responsibility for conserving waterbirds and their habitats. Waterbird conservation in the Americas is facilitated, although not directed, by this partnership. The partnership is a means of formalizing alliances to plan and implement waterbird conservation cooperatively with other bird initiatives and other national and regional strategies for species and habitat conservation.

The planning process was possible because of the voluntary engagement of hundreds of experts on biology, conservation, and management of waterbirds (please see the Acknowledgments). It also was made possible by the firm backing 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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Edgewater, Maryland

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COVER PHOTO: Roseate Spoonbill, © Nancy Camel

WATERBIRD CONSERVATION for the AMERICAS

North American Waterbird Conservation Plan

Version 1

Authors

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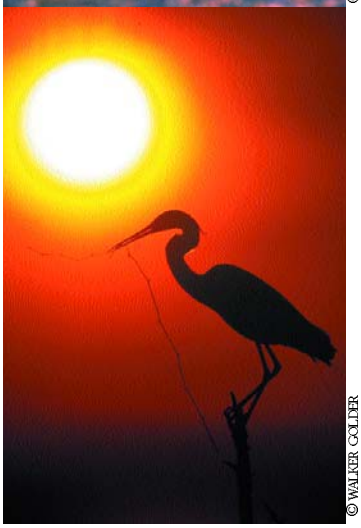
TABLE of CONTENTS



Top to bottom: Herring Gull, skimmers and gulls, Tricolored Heron

USFWS

To cherish what remains of the Earth and to foster its renewal is our only legitimate hope of survival.

Wendell Berry

EXECUTIVE SUMMARY

A Vision and Framework

The North American Waterbird Conservation Plan (the Plan) is the product of an independent partnership of individuals and institutions having interest and responsibility for conservation of waterbirds and their habitats in the Americas. This partnership—Waterbird Conservation for the Americas—was created to support a vision in which the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and nonbreeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean.

The Plan provides a continental-scale framework for the conservation and management of 210 species of waterbirds, including seabirds, coastal waterbirds, wading birds, and marshbirds utilizing aquatic habitats in 29 nations throughout North America, Central America, the islands and pelagic waters of the Caribbean Sea and western Atlantic, the U.S.-associated Pacific Islands and pelagic waters of the Pacific. Birds as familiar as herons, loons, pelicans, and gulls, as well as the lesser known albatrosses, petrels, auks, and rails are among the species considered in the Plan. These birds' dependence on aquatic habitats such as wooded swamps, stream corridors, salt marshes, barrier islands, continental shelf waters and open pelagic waters make them especially vulnerable to the myriad threats facing water and wetland resources globally. In addition, the congregatory behavior of many waterbirds increases population risks by concentrating populations in limited areas.

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Black-footed Albatross

Conservation Challenges

The conservation of waterbirds faces significant challenges. Eighty percent of the species considered in the Plan are colonial nesters—congregating at breeding sites in numbers ranging from many to hundreds of thousands of birds. Of this group, the Plan finds that one-third are considered to be at risk of serious population loss. Eleven species of pelagic seabirds are highly imperiled, and 36 species of pelagic and coastal seabirds as well as seven species of wading birds are of high conservation concern.Although non-colonial waterbirds remain to be assessed quantitatively, many of these populations are also clearly at risk. Waterbird populations are subject to numerous threats, many of which are habitat-based and affect all aquatic birds and other aquatic resources. The threats that the Plan identifies as requiring remedial action include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and other human industries, disturbance, and conflicts arising from abundant species.

Additional information on population sizes and trends is needed to improve the assessment of conservation risk, as well as allow a detailed assessment of the relative importance of specific areas to the various species and the effectiveness of waterbird management prescriptions. More precise

© NANCY CAMEL

Common Moorhen

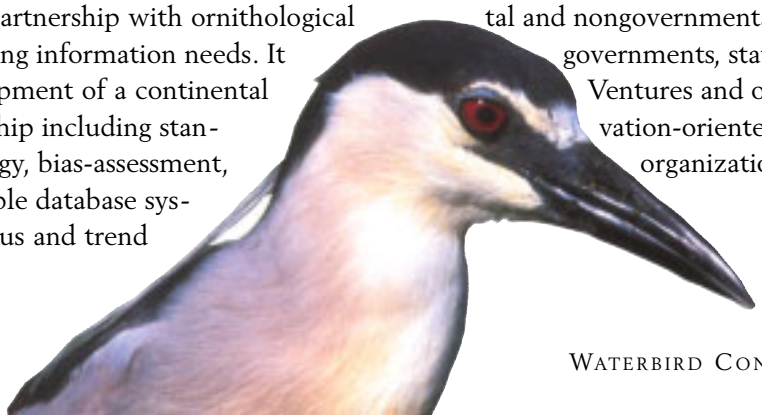
information on spatial habitat needs is also needed; presently, there is little information on habitat use outside of the breeding season for many species, particularly during migration. Critical to the effective management of waterbird populations and habitats will be increasing knowledge, through monitoring and research, broadly disseminating this information, and encouraging conservation action by policy makers, wildlife managers, and the public.

Conservation Solutions

The Plan identifies strategies and opportunities for achieving its vision. It documents a dynamic process for species status assessment to inform setting of conservation priorities at a regional scale, and has identified many of the key issues requiring conservation action.The Plan has involved the scientific community, especially through partnership with ornithological societies, in identifying information needs. It proposes the development of a continental monitoring partnership including standardized methodology, bias-assessment, and internet-accessible database systems to support status and trend evaluation.

The Plan promotes habitat and site-based conservation actions throughout the Americas, especially via the Important Bird Areas programs and similar efforts. Regional waterbird conservation working groups will step down the continental-level aspects of the Plan to the regional and local levels. At all scales, the Plan advocates integration of waterbird conservation with other bird conservation initiatives when appropriate, in order to efficiently provide the best management options for local wildlife and habitat managers.

An evolving Waterbird Conservation Council will facilitate implemention of the Plan, assess its effectiveness, and plan the future course of waterbird conservation. Finally, the Plan details resources and infrastructure needed to more fully accomplish waterbird conservation. Rather than establishing new structures, implementation of the Plan will be entrusted to governmental and nongovernmental entities, especially national governments, state governments, habitat Joint Ventures and other partnerships, and conservation-oriented nongovernmental organizations.



Black-crowned Night-Heron

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PART 1

WHAT FUTURE for WATERBIRDS?

A Call to Action

Waterbirds include the albatrosses and shearwaters admired by sailors and rarely seen on shore; they are the gregarious gulls and pelicans working the coastlines and the graceful herons and flamingos poised over still, shallow waters; the rare Whooping Crane and abundant Common Murre are both waterbird species; and the secretive rails in the marshes, the ostentatious puffins and boobies of the rocky cliffs, and the graceful loons of open lakes fall into this diverse group of aquatic species.

These birds constitute a natural resource of great intrinsic, human and ecological value that needs to be protected and fostered through appropriate management. Spectacular in appearance or in numbers, waterbirds are conspicuous representatives of their exotic, mysterious, and wild aquatic worlds. Throughout history, they have figured prominently in human culture, serving as sources of food and ornamentation, as well as folkloric or totemic figures. Even today, many serve as symbols of cultural identity, conservation organizations, environmental programs, or locales. Waterbirds are a favorite of birdwatchers, who number nearly a hundred million people and contribute significantly to communities and businesses in their pursuits. Some species are a boon to sportsmen, such as the seabird flocks leading anglers to their catch. Beyond their cultural significance, waterbirds are often useful as indicators of environmental quality and ecosystem health. The conservation of waterbirds can help protect the broader landscape in which they occur.

Despite their value, or perhaps because of it, waterbirds have not always fared well at the hands of humans. In one case, the harm was irreversible. The last sighting of the Great Auk in 1852 heralded the extinction of this colonial waterbird species through direct hunting impacts. Fortunately, the mass destruction of egrets by market hunting in the late 1800s and early 1900s was stemmed in time, and in fact, led to the modern conservation movement in North America. Yet as illustrated by the crash of the Brown Pelican population in the Gulf of Mexico due to contaminants, waterbirds are still at risk due to human activities. Species such as the Short-tailed Albatross, Newell's Shearwater, Black-vented Shearwater, Black-footed Albatross, Bermuda Petrel, and Hawaiian Coot, listed by the World Conservation Union (IUCN) as vulnerable, could share the Great Auk's fate unless they receive proper conservation attention.

Sandhill Cranes

Sunbittern ***Sandhill Crane*** ***Common Crane*** ***Whooping Crane*** ***Limpkin*** ***Sungrebe*** ***Yellow Rail***

Some waterbirds continue to be threatened by direct impacts of human activities. Longline and gill net fisheries kill large numbers of seabirds through entanglement and drowning. Oil spills from ships and chronic bilge discharge sicken and kill hundreds of thousands of waterbirds. Impacts from exposure to pesticides and other chemicals, which caused population declines in Double-crested Cormorants and Brown Pelicans in the 1960s and 1970s, continue to threaten waterbirds in places throughout the Americas. Food concentrated in aquaculture ponds and hatchery facilities attracts herons, cormorants, terns, and pelicans, and may result in legal or illegal killing by distressed fish farmers. Citizens sometimes look upon waterbirds with disfavor when nesting or roosting congregations in urban and suburban environments conflict with aesthetic standards. Public disaffection with waterbirds, warranted or not, may be among their greatest long-term threats.

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Common Tern

The habitats of waterbirds—the important sites on which they depend for nesting, feeding and wintering—are also at risk due to human related and natural threats. Hydrologic change of freshwater wetlands, degradation of coastal and marine habitats, and depletion of the food base all adversely affect waterbirds. Habitat loss and degradation can cause population declines. For example, the Marbled Murrelet has declined dramatically due to the destruction of its nesting habitat from logging of old growth forests along the Pacific Coast of North America. More insidious are patch-by-patch losses occurring in wetlands and other aquatic habitats, as they are drained, channelized, manipulated, over-fished, plowed, or altered in response to human pressures. Even cumulatively, these may go unnoticed due to the piecemeal fashion of loss. For some species, such as the Double-crested Cormorant and Ring-billed Gull, habitat changes have resulted in artificial food sources and subsequent population increases and expansion. These may threaten other bird species or result in human conflicts. Without active and appropriate management, most waterbird habitats will no longer provide for healthy and diverse populations of waterbirds.

A Vision for Waterbird Conservation in the Americas

Threats to waterbirds and their habitats have stimulated a significant response by individuals and organizations concerned with their conservation. The Waterbird Conservation for the Americas initiative (the Waterbird initiative) was launched in 1998 to link these efforts, and is an international, broad-based, voluntary partnership dedicated to waterbird conservation. In Canada, the U.S., and Mexico, it complements the initiatives existing for other bird groups, specifically the North American Waterfowl Management Plan, Partners in Flight, and the national Shorebird Plans, all of which come together in the North American Bird Conservation Initiative (NABCI). In addition, the Waterbird initiative addresses conservation of waterbirds in the Caribbean, Central America, and open waters of the Pacific and Atlantic.

The vision of Waterbird Conservation for the Americas is that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and nonbreeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean.

It is recognized that sustainability is inherently hard to quantify and judge. Sustainability implies that populations are healthy and vigorous, and that human-caused adversities do not affect demographic parameters in ways that reduce populations below what existing ecosystems or ecosystems managed at varying capacities

Ocellated Crake ***Ruddy Crake*** ***White-throated Crake*** ***Gray-breasted Crake*** ***Black Rail***

should support. Sustainability does not imply stasis in population size, trend or distribution. Sustainability must be achieved at all scales and within contemporary social and economic contexts. It is particularly difficult to quantify sustainability on a continental scale, as it must be extrapolated from smaller scales. Finally, sustainability will need to be most precisely defined for species under threat, including both rare and abundant species.

Four goals were developed to achieve the vision for waterbirds:

■ **Species and Population Goal**
To ensure sustainable distributions, diversity and abundance of waterbird species throughout each of their historical or naturally expanding ranges in the lands and waters of North America, Central America, and the Caribbean.

■ **Habitat Goal**
To protect, restore, and manage sufficient high quality habitat and key sites for waterbirds throughout the year to meet species and population goals.

■ **Education and Information Goal**
To ensure that information on the conservation of waterbirds is widely available to decision makers, land managers, the public, and all whose actions affect waterbird populations and their habitats.

■ **Coordination and Integration Goal**
To ensure that coordinated conservation efforts for waterbirds in the Americas continue, are guided by common principles, and result in integrated and mutually supportive waterbird conservation actions.

A Common Framework

Achieving the vision for waterbird conservation will involve activities over a huge geographical area, multiple scales of planning and implementation, and involvement of numerous partners from government and nongovernmental organizations, from the scientific community, and from local citizenry. Thus, it is highly desirable that the various stakeholders agree to common definitions, foundations, tenets, priorities, strategies and structures to the extent possible.

Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan (the Plan) provides a common framework for managers and conservationists to proceed with actions intended to benefit waterbirds. It aims to facilitate continent-wide planning and monitoring, national-state-provincial conservation planning and action, regional planning and coordination, and local habitat protection and management.

A Matter of Scale

Conservation of waterbirds is an international matter. Many species considered in the Plan range through a number of countries in the Plan area, and the distributions of some species extend to other continents. Wintering habitats used in one country may be supporting breeding populations in another. Populations that migrate across international borders must be evaluated at continental or even global scales. Moreover, some resource issues, such as fish stock management, are inherently international. Thus, maintaining waterbird populations in the Americas at levels necessary for their long-term conservation requires that planning, inventory, monitoring, and management action be carried out as international activities. Conservation at this largest scale is the principal focus of this Plan.

Common Loon

Buff-banded Rail ***Guam Rail*** ***Clapper Rail*** ***King Rail*** ***Virginia Rail*** ***Corn Crake***

Conservation of waterbirds is a national matter. Most national governments have responsibility for managing birds, especially endemic and migratory species. National governments are also responsible for habitat management on government lands and in varying degrees for regulation of factors affecting habitat quality, such as pollution, wetland protections, and land development. It is recommended that national governments and other stakeholders consider development of national strategies to guide waterbird conservation at this scale.

Conservation of waterbirds is a regional matter. Between seasons and years, local sites of populations may shift within larger geographic or ecological regions. Regional conservation action requires cooperation among neighboring political units such as states, provinces, and nations. Conservation planning at this scale will be addressed in regional waterbird plans and will be implemented through regional partnerships of private conservationists and waterbird biologists in state, provincial, and national governments.

Conservation of waterbirds within large nations is a state and provincial matter. In Canada, provincial governments have principal responsibility for habitat and for the management of some waterbirds. In the U.S., states have principal statutory and/or constitutional responsibility for all wildlife within state borders—managing hunting, parks, sanctuaries, and other activities affecting waterbirds—and concurrent jurisdiction with the federal government on migratory species.

Conservation of waterbirds is a local matter. Local commitment to waterbird conservation is essential. Local governments in many countries are responsible for zoning, development permitting, and local environmental quality. Nesting and roosting waterbirds are particularly affected by local conditions. Fortunately, the congregatory behavior of most waterbirds provides opportunities for effective, efficient conservation action at the local scale. Also, because different species utilize the same habitats, common conservation principles and similar management themes can be enacted that would positively affect a suite of species. Conservation at the local scale will be addressed through local planning and actions of local constituencies, especially community-based organizations.

Geographic Extent of the Plan

The geographic extent of this Plan is immense. As shown in Figure 1, it includes North America, Central America, the islands and waters of the Caribbean, the Pacific Ocean including the U.S.-associated Pacific Islands, and the western Atlantic Ocean including Bermuda.

The Plan area is organized into several planning regions (see Figure 1), which were created in order to facilitate planning at a scale that was practical, yet allowed a landscape-level perspective. The regional boundaries are based on a combination of political considerations and ecological factors. The Central American nations and their coastal zones are combined into one planning region, as are all of the Caribbean Islands. In Canada, the U.S., and Mexico, planning regions are based on composites of Bird Conservation Regions (BCRs) and Pelagic Bird Conservation Regions (PBCRs) (see Figure 2). The BCRs are terrestrial geographic areas having similar habitats and were developed to provide a consistent spatial framework for NABCI's bird conservation strategy[1]. The PBCRs were created specifically for this Plan as marine analogs of terrestrial BCRs, in order to address the conservation needs of seabirds. They are very similar to the Large Marine Ecosystems developed by IUCN, the U.S. National Oceanic and Atmospheric

The Plan area includes the interests of 29 nations:

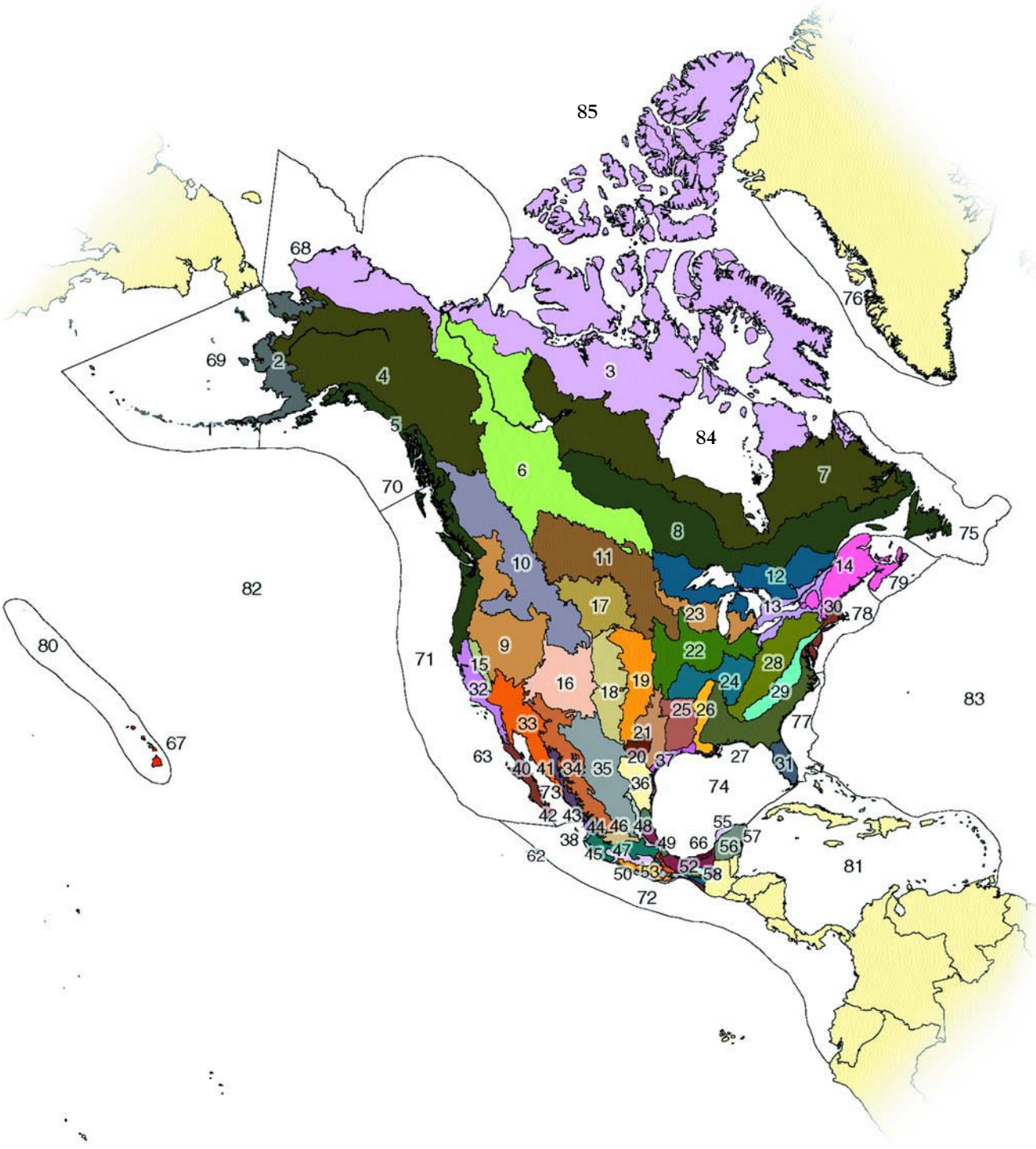
Canada, United States (including Pacific and Caribbean islands), Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Venezuela (the Caribbean islands), Bermuda, Bahamas, Jamaica, Cuba, Haiti, Dominican Republic, Anguilla, Antigua & Barbuda, St. Kitts & Nevis, Dominica, St. Lucia, St. Vincent & the Grenadines, Barbados, Granada, Trinidad & Tobago, Netherlands (the islands of Aruba, Bonaire, Curacao, Saba, St. Eustatius, St. Maarten), France (St. Pierre et Miquelon Archipelago, the islands of Martinique, Guadeloupe, St. Martin, St. Barthelemy), Great Britain (the islands Turks & Caicos, Cayman Islands, British Virgin Islands, Montserrat)

Rufous-necked Wood-Rail *Gray-necked Wood-Rail* *Uniform Crake* *Spotted Crake* *Sora* *Spotless Crake*

Figure 1. Geographic Extent of ***Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan,*** Showing Waterbird Conservation Planning Regions

Yellow-breasted Crake *White-browed Crake* *Zapata Rail* *Colombian Crake* *Paint-billed Crake*

Figure 2. Bird Conservation Regions



Spotted Rail *Purple Swamphen* *Purple Gallinule* *Azure Gallinule* *Common Moorhen*

Figure 2 Legend

BCRs

1 Aleutian/Bering Sea Islands
2 Western Alaska
3 Arctic Plains and Mountains
4 Northwestern Interior Forest
5 Northen Pacific Rainforest
6 Boreal Taiga Plains
7 Taiga Shield and Hudson Plains
8 Boreal Softwood Shield
9 Great Basin
10 Northern Rockies
11 Prairie Potholes
12 Boreal Hardwood Transition
13 Lower Great Lakes/St. Lawrence Plain
14 Atlantic Northern Forest
15 Sierra Nevada
16 Southern Rockies/Colorado Plateau
17 Badlands and Prairies
18 Shortgrass Prairie
19 Central Mixed-grass Prairie
20 Edwards Plateau
21 Oaks and Prairies
22 Eastern Tallgrass Prairie
23 Prairie Hardwood Transition
24 Central Hardwoods
25 West Gulf Coastal Plain/Ouachitas
26 Mississippi Alluvial Valley
27 Southeastern Coastal Plain
28 Appalachian Mountains
29 Piedmont
30 New England/Mid-Atlantic Coast
31 Peninsular Florida
32 Coastal California
33 Sonoran and Mohave Deserts
34 Sierra Madre Occidental
35 Chihuahuan Desert
36 Tamaulipan Brushlands
37 Gulf Coastal Prairie
38 Islas Marías
39 Sierras de Baja California
40 Desierto de Baja California
41 Islas del Golfo de Californa
42 Sierra y Planicies de El Cabo
43 Planicie Costera, Lomeríos y Cañones de Occidente
44 Marismas Nacionales
45 Planicie Costera y Lomeríos del Pacífico Sur
46 Sur del Altiplano Mexicano
47 Eje Neovolcánico Transversal
48 Sierra Madre Oriental
49 Planicie Costera y Lomeríos Secos del Golfo de México
50 Cuenca del Río Balsas
51 Valle de Tehuacán-Cuicatlán
52 Planicie Costery y Lomeríos Húmedos del Golfo de México
53 Sierra Madre del Sur
54 Sierra Norte de Puebla-Oaxaca
55 Planicie Noroccidetal de Yucatán
56 Planicie de la Península de Yucatán
57 Isla Cozumel
58 Altos de Chiapas
59 Depresiones Intermontanas
60 Sierra Madre de Chiapas
61 Planicie Costera del Soconusco
62 Archipiélago de Revillagigedo
63 Isla Guadalupe
64 Arrecife Alacranes
65 Los Tuxtlas
66 Panatanos de Centla-Laguna de Términos
67 Hawaii

PBCRs

68 Chukchi & Beaufort Seas
69 East Bering Sea
70 Gulf of Alaska
71 California Current
72 Pacific Central-American Coastal
73 Gulf of California
74 Gulf of Mexico
75 Newfoundland-Laborador Shelf
76 West Greenland Shelf
77 Southeast U.S. Continental Shelf
78 Northeast U.S. Continental Shelf
79 Scotian Shelf
80 Insular Pacific-Hawaiian
81 Caribbean Sea
82 Pacific
83 Atlantic
84 Hudson Bay
85 Arctic Ocean

Terrestrial BCRs not yet developed for the Caribbean and Central America

Administration (NOAA) and the Intergovernmental Oceanographic Commission of UNESCO (IOC) [2], with some practical modifications suggested by regional waterbird managers. The PBCRs shown in Figure 2 include both coastal (up to 200 miles offshore) and open-ocean areas of the Atlantic and Pacific.

Though the Plan does have a defined geographic extent, it is recognized that the conservation needs of waterbirds do not stop at any discrete borders. Thus, when appropriate and acceptable, activities under the Plan should be linked to activities beyond the Plan area. For example, seabird conservation in Canada will be coordinated with conservation and management in Greenland, where appropriate. Where possible, conservation across all Pacific islands will be considered when planning for U.S. holdings in the Pacific. It is hoped that the Plan will eventually link to conservation initiatives in South America.

Taxonomic Extent of the Plan

The Plan addresses the conservation needs and opportunities for 210 species of birds in 23 families that spend at least part of the year in the Plan area (see Table 1).The complete list of included species is given in Appendix 1, along with 39 species occurring only accidentally or casually in the Plan area.

All of the species addressed in the Plan are dependent on aquatic habitats to complete portions of their life cycles, hence the term "waterbirds." They can be further characterized by other non-technical terms relating to where they typically forage: seabirds (birds primarily feeding in open ocean); coastal waterbirds (primarily

Eurasian Coot (Common) *Hawaiian Coot* *American Coot* *Caribbean Coot* *Great Skua*

utilizing the interface between land and both salt and fresh water); wading birds (principally feeding by wading in shallow waters), and marshbirds (often secretive, feeding in primarily fresh waters). These terms are not exclusive. Admittedly, there are many other kinds of birds that rely on aquatic habitats, including shorebirds, waterfowl, raptors, and many songbirds; however, these species are the focus of other initiatives such as the Shorebird Plans, the North American Waterfowl Management Plan, and Partners in Flight.

This first version of the Plan provides detailed information on the waterbirds that nest colonially, as they were the original focus of the Waterbird initiative. The waterbird families that contain colonial-nesting species are noted in Table 1 by asterisks; these are generally the seabirds, coastal waterbirds, and wading birds. Subsequent versions of the Plan will address solitary-nesting waterbirds, generally the marshbirds, in greater detail.

TABLE 1. Families and Species of Waterbirds Included in *Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan*

Families	Species
Gaviidae	loons
Podicipedidae*	grebes
Diomedeidae*	albatrosses
Procellariidae*	shearwaters, petrels, fulmars
Hydrobatidae*	storm-petrels
Phaethontidae*	tropicbirds
Sulidae*	boobies, gannet
Pelecanidae*	pelicans
Phalacrocoracidae*	cormorants
Anhingidae*	darters, anhinga
Fregatidae*	frigatebirds
Ardeidae*	herons, egrets, bitterns
Threskiornithidae*	ibises, spoonbill
Ciconiidae*	storks
Phoenicopteridae*	flamingo
Accipitridae*	Snail Kite
Rallidae	rails
Heliornithidae	sungrebe
Eurypygidae	sunbittern
Aramidae	limpkin
Gruidae	cranes
Laridae*	gulls, terns, skimmers, skua, jaeger
Alcidae*	auks, murres, puffins, murrelets, guillemots

* Family includes some or all colonial-nesting species, which are addressed in detail in Version 1 of the Plan. Future versions will further address remaining families.

Biological Considerations

Conservation action for waterbirds involves many opportunities and challenges because of the fundamental biology that unites these species. The Plan takes into account the following biological characteristics and advocates their consideration in all other planning and implementation activities for waterbirds.

Distribution and Range

- Many waterbirds have large ranges that cross national and continental borders, or span oceans, and individuals may cover enormous distances in their lifetimes over periods of years or even weeks.
- Breeding, wintering and migratory distributions change continually due to natural and human-related causes.
- Some species use recognizable migration flyways.
- Some populations spend only part of the year within any one area, including the Plan area.
- Distributions in some areas, such as the Arctic and tropics, are very poorly understood.

Dependence on Aquatic Systems

- These birds use aquatic habitats, such as ponds, rivers, lakes, wetlands, coastal and offshore pelagic systems for feeding and other activities.
- Marine seabirds constitute the majority of species in the Plan and rely on prey populations associated with continental shelf and open ocean waters.
- In habitat patches that are relatively unaltered, waterbirds depend on the maintenance of natural conditions.
- Most wetland systems in the Plan area have been altered. In these altered habitat patches, birds often depend on human management.

Demography

- Most waterbirds are long-lived, have low annual reproductive output, high juvenile mortality, but high adult survivorship.
- Reproductive success in any one year may not be as critical to population sustainability as adult mortality.

South Polar Skua ***Pomarine Jaeger*** ***Parasitic Jaeger*** ***Long-tailed Jaeger*** ***Black Skimmer***

- The population consequences of reproductive failure are postponed in long-lived species with delayed maturity, hence monitoring should incorporate measures of productivity and survival as well as population surveys.
- Low inter-year variability in populations of long-lived waterbirds, such as many seabirds, enhances the ability to detect population trends.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Royal Terns

Coloniality-Concentration

- Concentration at colonies is the defining biological characteristic of many species of waterbirds.
- Colony site character changes with time, often due to natural causes.
- Some species are faithful to nesting sites; others change sites frequently.
- Concentration at feeding, roosting and loafing sites makes specific sites disproportionately important to populations.
- Many waterbirds concentrate during migration and in over-wintering areas.

Underlying Tenets

Certain assumptions are central to waterbird conservation strategies, processes, and implementation.The following points describe the underlying tenets of the Plan, which should be adopted in all waterbird conservation activities.

Integrated Bird Conservation

Waterbirds occur in habitats used by other birds and by people. Thus, the wisest course for conservation action is within the context of multi-species and multi-use management, which will increase efficiency and effectiveness while reducing costs.

In protecting and managing aquatic habitats, the needs of all birds relying on these habitats should be coordinated, whenever possible. In these multi-species conservation programs, the needs of waterbirds should receive equal consideration to those of other species. Effectively meeting the needs of multiple species groups is the purpose of NABCI. Thus, in Canada, the U.S. and Mexico, this Plan should be considered alongside plans for other groups of aquatic species, thereby facilitating the inclusion of waterbirds in further planning and implementation of "all-bird" conservation. Also, because of limited resources, waterbird conservation in Mexico, Central America, and the Caribbean would be most effective if part of an effort for all aquatic bird species. For these regions, the Plan proposes partnerships of relevant initiatives and the creation of plans that include all aquatic birds.

Multi-use management of aquatic habitats, such as for water supply, flood control, wetland protection, fisheries, and recreation, should incorporate the habitat and population needs of waterbirds as one of its goals.

A Foundation on Science and Experience

Wherever possible, conservation strategies should be based on rigorous scientific and practical knowledge. The knowledge about waterbird biology and the threats facing waterbirds form links between broad conservation goals and the specific conservation programs needed to protect bird species and their habitats.

Knowledge to make informed conservation decisions must be current, as complete as possible, and readily available. Planning for the conservation of species that change nesting locations year to year or change feeding locations on a daily or weekly basis will require understanding populations at many scales. Critical knowledge needed includes population trends and dynamics, key habitats, and important areas.

Fortunately, for many waterbird species and in many areas, basic biological information is sufficiently strong

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Snowy Egret

to support conservation action. In addition, locally gained knowledge is often sufficiently robust to extrapolate to other situations. However, there are many significant gaps in knowledge, and the Plan recommends that research and monitoring on waterbirds be expanded, targeted and disseminated to meet the increased demands of scientifically based conservation.

The management of waterbirds, especially abundant fish-eating colonial waterbirds, involves economic and social factors as well as biological ones, and these must be considered in conservation planning. Management must seek to achieve population and habitat health and sustainability as defined in ways consistent with scientific knowledge, which may require explicit management of both biological and human factors.

Although available scientific information and practical experience must be used to inform management actions, conservation cannot always wait for complete information. The Plan urges critical conservation action be initiated with due speed based on best available knowledge but in an adaptive manner.

An Adaptive Approach

Effective waterbird conservation requires an innovative, dynamic, iterative process of planning, implementation, evaluation of that implementation, and revision of action plans when necessary. The Plan encourages the incorporation of approaches that permit evaluation of the results of management action in terms of the underlying scientific hypotheses.

Evaluating the effects of conservation action results in the development of an agenda for further research, provides needed data for adaptive management models, further informs subsequent management action, and influences the revision process.

To be adaptive, conservation requires flexibility and openness to redirection or change, such as might be justified by the results of research, monitoring, and experiential learning. Flexibility in the mechanisms used to deliver waterbird conservation is particularly important in multi-national strategies.

[1] *The North American Bird Conservation Initiative: Bringing It All Together,* U.S. NABCI Committee, September 2000

[2] *An Ecosystem Strategy for the Assessment and Management of International Coastal Ocean Waters.* IUCN, NOAA and IOC. 1998 (see www.edc.uri.edu/lme)

Ring-billed Gull *California Gull* *Great Black-backed Gull* *Glaucous-winged Gull* *Western Gull*

PART 2

STATE of the RESOURCE

The Plan has as a principal focus the identification and facilitation of conservation action at a continental scale. Recommended actions are based on an examination of the state of waterbird populations and waterbird habitats, including associated issues and threats. They also pertain to inventory and monitoring programs, research, and communication, education and public awareness activities critical to conserving all waterbirds in the Americas.

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Parakeet Auklets

Population Status

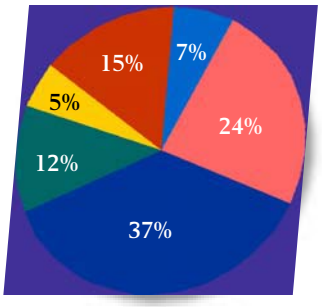
Estimates of current population sizes and trends for colonial waterbirds occurring in the Plan area are provided in Appendix 1. [Data for solitary nesting waterbirds (marshbirds) will be presented in subsequent versions of the Plan.] These numbers and trends were derived from the best professional judgment of species experts and information from the literature. The time period used to estimate trends for most species was 1970 to present, and the precision and accuracy of this information vary widely.

For such large, conspicuous, and in some cases economically important waterbirds, it is astounding how few and how poor are the available data on population status. Historical continental estimates are largely not available. Some significant attempts to estimate populations occurred during the 1970s and 1980s, but these efforts and some continuing monitoring programs were limited in geographic extent. Population estimates for approximately 20% of colonial species, including most species not breeding in the Plan area, are not provided in Appendix 1 due to a lack of information.

For many species, population data derive from colony-based monitoring programs of varying intensity that estimated breeding pairs during the 1990s. Therefore, population estimates, in most cases, best reflect breeding populations. In cases where non-breeding individuals were also present at colony-sites, these estimates may approximate total populations in the Plan area. Total population and wintering population information are lacking for most species and most of the Plan area.

As shown in Figure 3, the estimates of population trend for 166 species of colonial waterbirds indicate that seven percent of species are showing a biologically significant population decline and another 24 percent show apparent declines. Importantly, up to 17 percent show population increases. Generally these increases are due to populations rebounding from previous reductions due to contaminants or hunting, or are related to increased availability of artificial food sources.

Figure 3. Estimated Population Trends for Colonial Waterbirds



The time period used to estimate trends for most species was 1970 to present, and the precision and accuracy of this information vary widely.

Yellow-footed Gull *Glaucous Gull* *Iceland Gull* *Thayer's Gull* *Herring Gull* *Slaty-backed Gull*

Information was insufficient to estimate trends for 15 percent of species.

Achieving the goal of sustainable continental populations of waterbirds requires better information on population status. Knowledge of population sizes is needed to assess conservation risk and population trends, and to determine the relative importance of defined geographic areas to the various species. Population trend information is important to assess the effectiveness of waterbird management prescriptions. Thus, a continent-wide, coordinated long-term program to monitor and evaluate population sizes and trends is essential.

Laysan Albatrosses

Assessing population status is also a necessary preliminary step to setting population goals. However, the uncertainty of global and continental population information makes goal setting at the continental scale impossible at this stage. Population goals are of more value when associated with habitat goals, and this can best be accomplished at the regional scale.

Population Conservation Issues and Threats

Conservation of waterbirds in the Americas requires addressing a multitude of threats and other concerns, many of which are shared across the Plan area. Although the details of these issues are too long and complex to describe fully here, the following recommendations should be considered by those planning and implementing waterbird conservation to enable coherent and coordinated actions.

The demography of many waterbirds is such that adult mortality is the key determinant in population trends. Thus, whenever possible, threat management should be aimed at reducing adult mortality to levels associated with sustainable regional populations. However, in many cases the only management options available are at colony sites, and actions aimed at reducing juvenile mortality may be justified in absence of alternatives.

Conflicts with Fisheries

Great numbers of ocean-feeding seabirds are incidentally caught and killed by longlines, gillnets, and other gear used in fisheries around the world (an occurrence called incidental catch or bycatch). Beginning in the early 1990s, on-board observer programs have been used to collect data on the bycatch of specific species, and estimates of incidental take of seabirds have been calculated for some fisheries. To date, these efforts have focused on marine fisheries in the Pacific, such as in the Bering Sea, Gulf of Alaska, and Hawaiian waters; efforts in the Atlantic are underway. In general, the significance of fishery impacts on seabird populations at the colony-level has yet to be determined. Moreover, since 1999, changes in management of the Alaska and Hawaii fisheries are likely resulting in dramatically reduced bycatch levels.

Fisheries can also have indirect negative effects on waterbird populations. Fishing levels or food-web interactions can affect the availability of prey. Bycatch of forage fish as well as fisheries that target the same prey used by waterbirds may reduce the birds' food supplies. Trawling the sea bottom alters the habitat on which the prey of seabirds and coastal waterbirds depends. Some bird populations may experience "beneficial" impacts brought about by the presence of offal and fish waste as an additional food source; however, such benefits need to be evaluated in terms of possible negative impacts from increased likelihood of incidental take, or heightened competition or predation resulting from unnatural population increases of one species over another. Ultimately, fishery managers should be striving to implement practices that will decrease human impacts on waterbird populations, thus maintaining natural population cycles.

Lesser Black-backed Gull *Black-headed Gull* *Bonaparte's Gull* *Laughing Gull* *Franklin's Gull*

Seabirds and other colonial waterbirds are sometimes identified as having adverse effects on marine fisheries, but the existence of significant economic impacts has seldom been shown under scientific scrutiny. Similarly, impacts by waterbirds on inland fisheries are generally unsupported by good quantified data, despite perceptions to the contrary.

- The impact of fisheries on waterbirds should begin to be addressed in all fishery management policies and programs.
- Policies similar to the U.S. Fish and Wildlife Service waterbird bycatch policy—that waterbird bycatch in fisheries is to be eliminated—should be embraced by all fisheries management entities.
- Nations conducting longline fisheries or in whose waters longline fisheries operate, should develop and enact national plans of action for reducing bycatch of seabirds to levels that do not affect regional population size, distribution, or demography.
- Fishing nations should implement existing international agreements and enact new agreements that require conserving seabird populations as essential goals and outcomes of all fisheries programs.
- High seas fisheries should be brought under international regulation due to the potential of significant cumulative impacts to far-ranging seabirds.
- Bycatch reduction should be achieved through development and deployment of multifaceted mitigating measures, and outreach, education, and training programs within the affected fisheries and consumer groups.
- Effective data collection and monitoring programs should include regular reporting on mortality due to fisheries, and collection of data on the population status and trends of colonies and regional populations of affected species, thereby allowing for a better understanding of the quantitative impacts of fisheries.
- The take of targeted fish species or nontarget bycatch species eaten by waterbirds should not be permitted to reduce fish stocks to levels incapable of sustaining bird populations.
- Fishing operations that adversely affect sea bottom habitat that supports prey of seabirds and coastal waterbirds should be altered to reduce or eliminate the impact.
- Where legal, management involving deliberate killing of waterbirds to reduce impacts on fisheries should occur only on a case-by-case basis, and only if the economic impacts are clearly proven and the control measures do not adversely affect the sustainability of regional bird populations. Given the preponderance of technical evidence that waterbird predation does not usually have significant economic effect, the burden of proof should be on demonstrating economic harm on a case-by-case basis; similarly the burden of proof in permitting control measures should be on demonstrating no adverse effect on regional sustainability of affected bird populations.
- Where possible, seabird and other waterbird conservation action should work in partnership with fishery industries and sport anglers to effect conservation action.

Aquaculture

Aquaculture provides artificially concentrated food supplies, such as crayfish, shrimp, catfish, tropical aquarium fish, juvenile trout and salmonids, baitfish, mussels, and oysters. In many areas, governments are encouraging the development of aquaculture activities. Aquaculture can affect the distribution and population size of waterbirds, even on a continental scale in that populations may shift to take advantage of new food sources. Efforts to control these birds now being used or proposed are the killing of adults and juveniles at aquaculture sites or in colonies and roosts and destroying eggs or young in colonies. The demand for control can be tremendous. For example, in the Southeastern U.S., 108,000 waterbirds were legally destroyed between 1987 and 1995. More are probably destroyed illegally, increasing the cumulative impact of aquaculture-related this mortality. Over the long term, controls at aquaculture sites could prove unsustainable for some species. Alternative techniques for reducing real economic impact are available, including careful site-selection, barriers, bird-unfriendly pond construction, colony site translocation, and subsidies to compensate for losses.

- Whenever possible, waterbird conservationists should work in partnership with the aquaculture industry to find solutions to conflicts that assure regional sustainability of waterbird populations

Little Blu
Heron

Little Gull *Ivory Gull* *Ross's Gull* *Sabine's Gull* *Black-legged Kittiwake* *Red-legged Kittiwake*

Foraging wading birds

and limit economic impacts on aquaculture facilities.

- As in the case of fishery conflicts, attempts to reduce local populations at aquaculture facilities should occur in specific, localized situations only if economic impacts are proven before action is undertaken and control measures are shown to not adversely affect the sustainability of regional bird populations. Again, the burden of proof should be on demonstrating significant economic harm on a case-by-case basis and on demonstrating that regional waterbird population sustainability will not be impaired. The local and regional effects of permitted controls must be monitored.
- Where legal, permitted take of waterbirds should occur only after considering the cumulative impact of all other management actions on waterbird population sustainability; cumulative management actions should not be allowed to adversely affect regional population sustainability.
- Regulations guarding against illegally destroying waterbirds at aquaculture sites should be enforced.

Abundant Species Conflicts

Waterbirds, especially colonial species, have the capacity for rapid population and range changes, especially in response to changes in food availability or release from other ecological constraints. There usually is inconclusive evidence as to why population changes have occurred, as several factors are usually in play. It has not been shown that any colonial waterbird is now unsustainably abundant across its entire range in the Plan area, although in local situations population abundance may now exceed historical norms. When some waterbird populations, particularly fish-eating species, become locally higher than in the immediate past, there is the potential for conflict with human activities. In such cases human factors, especially economic and social, can come to dominate management dialogue. Abundant species also have the potential to affect local vegetation, rare plants, or other birds. Thus, ecological factors, too, may be of concern, if proven.

Abundant waterbirds need to be managed within their social context. Real or imagined social impact may

Gull-billed Tern *Caspian Tern* *Royal Tern* *Elegant Tern* *Great Crested Tern*

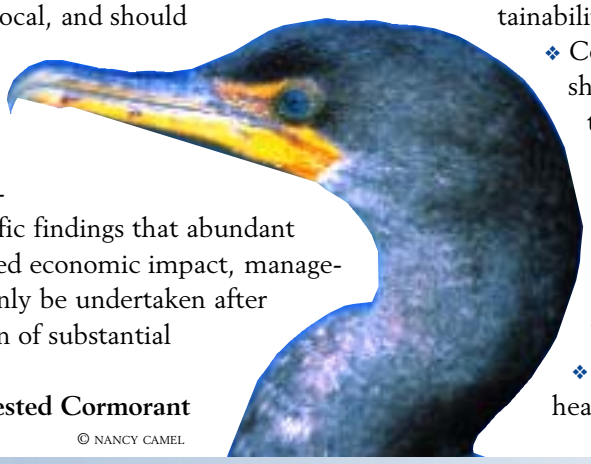
require management of social perceptions, as much as the birds themselves, through disclosure of scientific findings and public education. Regulations regarding lethal control of birds vary with country. For example, killing of migratory birds is not legally allowed in some jurisdictions, whereas in others these actions may be allowed with specific permission.

- Scientific findings must form the basis of any management action on abundant waterbirds.
- Scientifically credible studies of the real economic or ecological impact of abundant waterbirds, as well as sociological studies of the perception of impact, are needed broadly across the different types of waterbird/human conflicts. Cases of apparent local abundance leading to human conflicts require individual evaluation by scientifically valid means.
- Conflicting technical interpretations within the scientific community need to be mediated.
- Alternative management actions that do not involve severe intervention should be developed.
- The demography of each abundant species should be thoroughly studied, modeled and understood in order to inform appropriate management actions, but also to refine modeling techniques and provide findings of value to other less abundant species that are more difficult to study.
- Perception of the public to abundance issues should be monitored and evaluated; social, not only biological factors, should be managed by agencies responsible for waterbirds.
- Education programs and other communication measures should be used to inform the public about management decisions, including decisions of no-action when economic or ecological impacts are low.
- Where legal, permitted take to reduce local waterbird populations should occur only on a case-by-case basis, should be local, and should adhere to the Plan's goals of assuring regional population health and sustainability. Given the preponderance of scientific findings that abundant waterbirds have limited economic impact, management action should only be undertaken after explicit demonstration of substantial economic or ecological harm.
- Methods of culling or control should be carefully evaluated and relative to the impact on the regional population. Programs involving total colony removal or colony discouragement should be used only in very extraordinary circumstances and only when viable alternative colony or roost sites are successfully created and sustained over the long term.
- Where legal, permitted take of abundant waterbirds should factor the cumulative impact of all other deliberate management actions on the sustainability of the population, not only in the area of possible impact but within the population's entire wintering and breeding ranges. Waterbird mortality resulting from permitted take should not be allowed to adversely affect regional population sustainability.
- Any management action must be monitored sufficiently to detect any adverse population trend.
- Sustainable agriculture, which incorporates bird conservation as a goal, rather than a challenge, and which requires compensation and assistance programs, should be explored. For example, the development of new aquaculture facility designs and upgrades to existing facilities should be encouraged through public assistance programs.

"Nuisance" Congregation Sites

Waterbirds can establish roosts and colonies in close proximity to human habitation leading to economic and natural resource conflicts. Lacking evidence of health effects, aesthetic considerations tend to predominate in such conflicts. Management action, education and community engagement can sometimes turn nuisance sites into valued community resources. In rare situations when control is needed as a last option, actions should be mitigated and must not adversely affect sustainability of regional populations.

- Congregation sites used by waterbirds should not be eliminated because of aesthetic or cultural conflicts alone, but should be managed for educational, scientific, and conservation purposes. Urban sites especially should be developed as educational opportunities and used to enhance conservation of waterbirds.
- For demonstrable reasons of human health or natural resource protection, con-



Double-crested Cormorant

gregation site management including elimination or alteration may be considered.

- Programs involving bird removal or colony discouragement should be used only in extraordinary circumstances and only where no adverse effect on the local or regional populations will occur and viable alternative sites are successfully created, used and sustained.
- Colony and roost sites should be protected not only during nesting season but also year-round, including when not being used by waterbirds; destruction should be discouraged except as part of a regional management plan for the species.

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Brown Pelicans

Hunting

Sport or food hunting and trapping of some species of waterbirds are legal activities in parts of the Plan area. In other countries, hunting of most waterbird species is illegal. Human-induced mortality of adult and subadult waterbirds has the greatest potential to depress populations; it may be possible in local cases to hunt eggs or young birds and not adversely affect population stability.

- Hunting policy should be based on the assumption that increased adult mortality has the potential to affect population status and trend, unless shown otherwise for specific populations.
- Hunting of adult or subadult waterbirds should be carefully regulated and monitored so as not to adversely affect regional populations.
- If egg and juvenile hunting is permitted for subsistence hunting, it should be allowed only if it is shown that such mortality does not impact regional population sustainability.
- Where legal hunting, including subsistence hunting, is permitted, continued monitoring and evaluation of impact is needed.

Disturbance

Disturbance can be due to human 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, the ability to habituate to non-intrusive disturbance is common in waterbirds, and many waterbird colonies persist and thrive in highly populated areas. Research sometimes involves purposeful disturbance to waterbirds that includes nest disruption, capture, banding, marking, handling, attaching transmitters, extracting blood and so forth. These methods are necessary, but must be carried out with care and individually assessed as to their conservation impact.

- All accessible breeding and roost sites should be identified to the public, posted, protected, patrolled and anti-disturbance policies developed and implemented as needed.
- Additional research is needed on the appropriate buffer distances around colonies or breeding sites for various waterbird species and various types of sites.
- Depending on the colony or breeding site and circumstances, human intrusion (such as for research,

monitoring, environmental education) is not necessarily disruptive and may be beneficial in enhancing the birds' habituation to disturbance.
- Intrusive, disruptive disturbance should be tightly managed and monitored by agencies responsible for waterbirds at all sites where it occurs, especially to minimize disruption of nesting, lowered reproductive success, or abandonment of the breeding site.

Light Impacts

Lights in close proximity to colonies can affect nesting waterbirds. 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 can disorient waterbirds.

- The effects of lights on waterbirds need to be better understood.
- Regulatory programs, to reduce the adverse effects of lights both on the water and on the shore need to be developed, implemented, and enforced.

Predators and Competitors

At many breeding sites—beaches, coastal islands, seabird islands, inland pothole regions, and even remote Alaskan islands—mammalian and avian predators kill nesting waterbirds, their eggs, and/or chicks. In many cases the presence or numbers of predators and the ease of accessibility to the sites are not natural. Sometimes it is only a few individuals that cause damage. Competition for nesting sites may occur between abundant or between increasing species and other nesting species.

- Where predation or competition type, level and effect is natural, demonstrably unaffected by human actions, and does not adversely affect sustainability of the affected population, predator control is not warranted; in cases when predation is demonstrably affected by humans, or the effect may critically impact a population, control may be acceptable.
- Lethal predator or competitor control should be considered only when convincing evidence exists that a particular predator is having demonstrable negative impact on nesting success of vulnerable waterbird species.
- Control of competition for nest sites should take into consideration the regional and local sustainability and health of all waterbird species involved.
- Non-lethal control of native predators and competitors should be tried before lethal methods are employed.
- Methods that target offending individuals should be used in preference to more general removal programs.
- Relocation of predators should be used only when all impacts of such relocation are considered.

Great Egret

Invasive Species

Invasive species can be particularly detrimental to waterbird populations and habitat, especially on islands. Introduced predators can depress or even eliminate populations. Herbivores and exotic plants can degrade habitat quality or even eliminate use of sites by waterbirds. Insects, such as fire ants, can kill nesting waterbirds. Others serve as disease vectors.

- As a general policy, invasive exotic plants and animals should be eliminated from waterbird habitat.

Contamination and Eutrophication

Pesticides, fertilizers, metals, and industrial chemicals have added large nutrient and toxic burdens to freshwater and coastal estuaries and open oceans, and have affected waterbird individuals and populations.

- The effects of contaminants should be better under-

Limpkin

stood, especially implications at the population level, contamination sources, pathways to the birds, sublethal effects and synergistic effects.

- Monitoring of contaminant loads and effects in waterbirds and maintenance of long-term data and tissue repositories are needed throughout the Americas.
- Changes in habitat due to water quality alterations should be avoided or reversed in important waterbird habitat.

Oil and Hazardous Materials

Oil is a major environmental threat to oceanic, coastal, and inland species, especially along major shipping transportation corridors. Oil may be released during platform construction, drilling in wetlands and offshore, shipping and spillage, and chronic, low-level seepage from surface runoff or subsurface sources. Waterbirds are commonly injured by oil spills, chronic oil discharge in bilge water, and hazardous material releases. Birds affected annually can number in the hundreds of thousands in some areas. Injuries can lead directly to mortality or have indirect effects through habitat degradation, reduced reproductive success, or contaminated food supplies. As upper trophic level feeders, waterbirds rely on healthy aquatic environments to provide the food base necessary for reproduction, migration and general maintenance.

- Oil effects on waterbirds should be minimized through increased enforcement on shipping activities, safe operational procedures, spill clean up, and when effective, rehabilitation of oiled birds.
- Every effort to eliminate threats to waterbirds should be made in policies for offshore petroleum leasing and operations. Where threats to waterbirds cannot be eliminated, such threats should be mitigated.
- The effects of oiling on populations should be better understood.
- Death and morbidity of waterbirds from oiling should be monitored wherever they occur.
- The efficacy and approaches to rehabilitation of oiled waterbirds should be improved and implemented where effective.

Debris Ingestion and Entanglement

Waterbirds, especially seabirds, ingest materials and debris as a natural consequence of foraging. Ingesting plastics and other artificial flotsam can be detrimental. Waterbirds are caught in discarded fishing line, nets and other waste.

- Dumping of debris, used line, and nets should be prohibited and the prohibition enforced by all authorities.
- Existing debris posing a threat to waterbirds should be removed as possible.
- Widespread, internationally supported education campaigns should be developed and implemented to inform ocean industries, such as the cruise industry, of the need to eliminate ocean dumping of materials that result in seabird mortality.
- A specific international educational campaign should be targeted at the sport and commercial fishing industries in order to eliminate in-water disposal of

persistent fishing line, nets and traps.
- Non-persistent lines, nets and traps should be developed.
- Research on the use of lead sinkers and their effect on waterbird mortality rates should be undertaken and appropriate action considered.

Disease, Natural Toxins, and Parasites

Diseases, such as Newcastle's disease, avian cholera, algae poisoning, and likely West Nile Virus, affect waterbirds. Sometimes die-offs of unknown causes may occur, such as in the Salton Sea. Waterbirds may harbor human pathogens, such as tick-borne diseases.

- Habitat management should be undertaken in ways to avoid the occurrence of avian diseases.
- The human health effects of waterbird concentrations should be studied in particular situations.
- Human health issues should be resolved by assuring human avoidance of waterbird sites, rather than destruction of waterbird habitat.

Species Conservation Status

The conservation status of 166 species of seabirds and other colonial waterbirds utilizing habitats in the Plan area was assessed (see Table 2 and Appendix 1). Expert assessment of the conservation status of 44 solitary-nesting waterbirds will be presented in subsequent versions of the Plan.

In brief, the process for assigning colonial waterbirds to categories of conservation concern followed a protocol adapted from those used by Partners in Flight and the U.S. Shorebird Conservation Plan that considers vulnerability to population loss due to population trend, abundance, threats and distribution (See Appendix 2). The protocol for colonial species also accommodates the special conservation issues of species that aggregate during the breeding season and/or utilize extensive marine habitats. Over 150 ornithologists and wildlife managers contributed to the development of the Plan's conservation status assessment protocol and species

Royal Tern colony

TABLE 2. Conservation Status and Distribution of Colonial Waterbirds

CATEGORY OF CONSERVATION CONCERN[a]	DISTRIBUTION[b]				
	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 Band-rumped Storm-Petrel	Phoenix Petrel[c] Tahiti Petrel[c] Polynesian Storm-Petrel[c]
High Concern	Bermuda Petrel Black-vented Shearwater Brandt's Cormorant Craveri's Murrelet Kittlitz's Murrelet Least Storm-Petrel Xantus's Murrelet	Bare-throated Tiger-Heron[d] Black Skimmer Black Storm-Petrel Blue-footed Booby Blue-gray Noddy Christmas Shearwater Greater Shearwater[c] Jabiru Least Tern Little Blue Heron Magnificent Frigatebird Pink-footed Shearwater[c] Snail Kite Snowy Egret Tricolored Heron Wood Stork	Aleutian Tern Ancient Murrelet Laysan Albatross Marbled Murrelet Pelagic Cormorant Red-faced Cormorant Red-legged Kittiwake Ross's Gull Short-tailed Albatross[c]	Arctic Tern Bridled Tern Brown Booby Gull-billed Tern Masked Booby Red-billed Tropicbird Red-footed Booby Roseate Tern White-tailed Tropicbird	Herald Petrel[c] Little Gull Little Tern
Moderate Concern	American White Pelican California Gull Cassin's Auklet Forster's Tern Heermann's Gull Western Grebe Yellow-footed Gull	Anhinga Bonaparte's Gull[d] Brown Pelican Elegant Tern Franklin's Gull Gray-backed Tern Neotropic Cormorant Reddish Egret Roseate Spoonbill White Ibis Yellow-crowned Night-Heron[d]	Bonin Petrel Common Murre Crested Auklet Dovekie Great Skua[c] Horned Puffin Ivory Gull Least Auklet Northern Fulmar Pigeon Guillemot Razorbill Thayer's Gull Thick-billed Murre Tristram's Storm-Petrel Whiskered Auklet	Black-crowned Night-Heron Black Tern Black Noddy Bulwer's Petrel Cory's Shearwater[cd] Eared Grebe Great Cormorant Great Frigatebird Manx Shearwater Red-tailed Tropicbird Royal Tern Sooty Shearwater[c] Sooty Tern South Polar Skua[c] White Tern	Black-headed Gull Great Crested Tern Juan Fernandez Petrel[c] Lesser Black-backed Gull[c]
Low Concern	Clark's Grebe Green Heron Western Gull	White-faced Ibis	Glaucous-winged Gull Iceland Gull Parakeet Auklet Rhinoceros Auklet Tufted Puffin	Caspian Tern Common Tern Flesh-footed Shearwater[c] Glossy Ibis Greater Flamingo[d] Herring Gull Leach's Storm-Petrel Long-tailed Jaeger Parasitic Jaeger Pomarine Jaeger Sabine's Gull Wedge-rumped Storm-Petrel[c] Wedge-tailed Shearwater	White-necked Petrel[c]
Not Currently At Risk	Double-crested Cormorant Ring-billed Gull	Great Blue Heron Laughing Gull Northern Gannet	Atlantic Puffin Black Guillemot Black-legged Kittiwake Fork-tailed Storm-Petrel Glaucous Gull Great Black-backed Gull	Brown Noddy Cattle Egret Great Egret Mew Gull Sandwich Tern Wilson's Storm-Petrel[c]	Buller's Shearwater[c] Cook's Petrel[c] Short-tailed Shearwater[c]
Information Lacking		Agami Heron Boat-billed Heron Fasciated Tiger-Heron Green Ibis Rufescent Tiger-Heron Striated Heron			Capped Heron Cocoi Heron Kermadec Petrel[c] Lesser Frigatebird[c] Mottled Petrel[c] Nazca Booby[c] Scarlet Ibis Slaty-backed Gull Western Reef-Heron White-winged Petrel[c]

Xantus's Murrelet *Craveri's Murrelet* *Ancient Murrelet* *Cassin's Auklet* *Parakeet Auklet*

Table 2 Footnotes

[a] **Categories of Conservation Concern are defined as:**

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

High Concern: Species that are not Highly Imperiled. Populations known or thought to be declining and have some other known or potential threat as well.

Moderate Concern: Species that are not Highly Imperiled or High Concern. Populations 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.

Low Concern: Species that are not Highly Imperiled, High Concern or Moderate Concern. Populations 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.

Not Currently at Risk: all other species for which information was available.

Information Lacking: inadequate information available to assess risk.

[b] **Distribution categories are broadly defined as:**

North America: Includes all species that breed and winter only in North America as defined in the Plan.

Western Hemisphere: Includes all species that breed and winter in North America and South America and associated oceanic regions.

Northern Hemisphere: Includes all species, except those included in the above categories, that breed and winter in the Northern Hemisphere and associated oceanic regions.

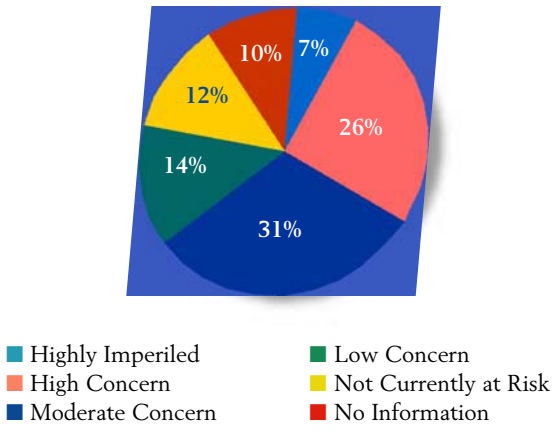
Cosmopolitan: Includes all species that breed and winter in most hemispheres including North America and associated oceanic regions.

Peripheral: Includes all species that occur largely outside of North America but with breeding and/or non-breeding ranges that overlap peripherally with North America and associated oceanic regions.

[c] **Species does not breed in the Plan area.**

[d] **Species fits into a range of categories because of a missing factor score (see Appendix 1). Species is shown in the concern category of greatest vulnerability.**

FIGURE 4: Conservation Status of Colonial Waterbird Species



information base. The full details of the methods and results may be found in a companion publication[1].

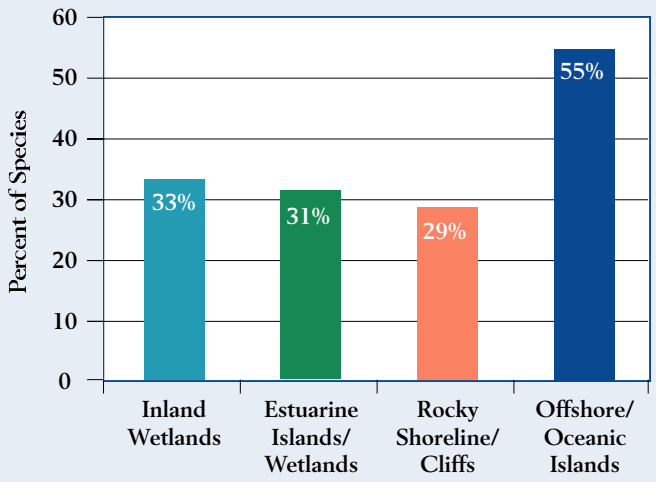
As a result of the conservation status assessment, species are classified in one of five categories indicating the level of conservation concern.The relative responsibility and importance of conservation planning efforts in the Plan area to global biodiversity vary by species. Thus, to make concern categories more meaningful, species are also categorized by distribution. Twenty-two species of waterbirds considered in the Plan are limited to the Plan area.The others included in the Plan range into South America or other continents of the Northern Hemisphere; some have worldwide distributions or occur largely outside of the Plan area. Taken together, the conservation concern and distribution categories allow prioritization of conservation strategies.

Figure 4 shows that of the 166 species of colonial waterbirds assessed in the Plan area, 7 percent are highly imperiled and another 26 percent are of high concern. Of greatest concern are many species of island-nesting seabirds with limited breeding distributions and whose populations have declined in part due to introduced predators. These species are particularly vulnerable, as they lay a single egg per breeding season, and may require five to eight months to incubate, hatch and raise their nestling to independence.

Crested Auklet *Whiskered Auklet* *Least Auklet* *Rhinocerous Auklet* *Atlantic Puffin* *Horned Puffin*

Genera of greatest concern include *Phoebastria* (albatrosses), *Oceanodroma* (storm-petrels), *Puffinus* (shearwaters), and *Pterodroma* (petrels). Also of concern are *Sula* (boobies), *Brachyramphus* and *Synthliboramphus* (murrelets), *Phaethon* (tropicbirds), *Phalacrocorax* (cormorants), *Egretta* (egrets), and *Sterna* (terns). Genera with most species of low or no current concern include *Larus* (gulls), *Plegadis* (ibises), *Fratercula* (puffins), *Ardea* (herons) and *Stercorarius* (jaegers).

FIGURE 5: Nesting Location of Colonial Waterbirds



Habitat Needs

The habitat needs of waterbirds include places to nest, feed, roost, or loaf (rest). By definition, these species depend on aquatic habitats for some portion of their lives.

Nesting habitat is critical. Colonial species gather together to nest, while the nests of solitary breeders are dispersed across suitable habitat.The placement of nests and nesting location varies with species, as does flexibility in the placement of nests. Normally, the location of nests provides relative isolation from predators, such as on islands, cliffs, swamps or summits (see Figure 5). More than half of colonial waterbirds require islands for colony-sites. Nearly three-quarters of seabirds and other colonial species are nest-site specialists with relatively inflexible habitat requirements. Nest-sites used by colonial waterbird species include trees/shrubs, open ground (e.g., grass, sand, tundra), marshes, burrows, crevices, and ledges (see Figure 6). Nesting activity may affect the qualities of a site over time. For example, the presence of a nesting colony may cause changes in a site's vegetation. Likewise, changes in vegetation may affect site suitability for nesting. Sand-nesting terns, for example, prefer nesting sites regularly reconfigured or swept free of vegetation by storms.

Waterbirds feed in nearly any and all aquatic habitats. The foraging habitat needs of each particular species,

FIGURE 6: Nest Placement of Colonial Waterbirds

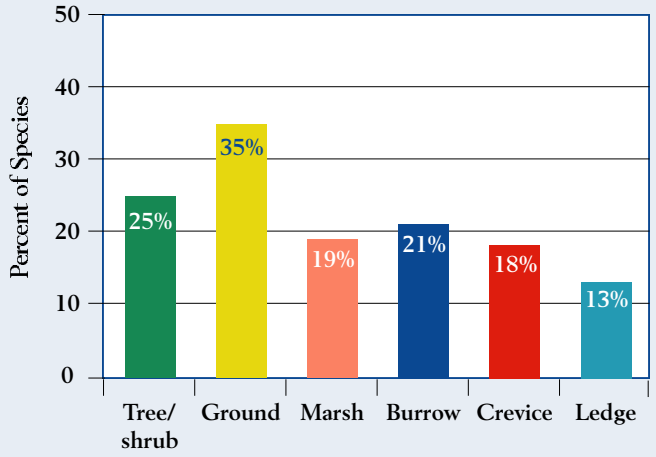
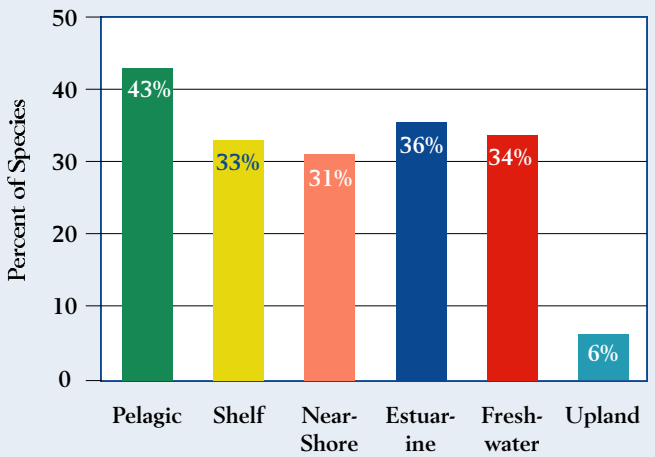


FIGURE 7: Foraging Habitats of Colonial Waterbirds



Tufted Puffin *Snail Kite* *Least Grebe* *Pied-billed Grebe* *Red-necked Grebe* *Horned Grebe* *Eared Grebe*

however, can be quite specific. Foraging habitats for colonial species are shown in Figure 7. Nearly half forage in offshore marine habitats including shelf waters or open ocean. Over 100 species utilize freshwater and estuarine wetlands. Sixty percent use more than one aquatic habitat. Waterbirds nest within commuting distance of feeding sites. Some species, including some marshbirds, may feed only in territories around their nest. Colonial waterbirds flying to feeding sites may travel short distances (Black Guillemots tend to feed within one to four kilometers) or undertake long commutes (herons may feed 20-30 kilometers away, while some petrels and albatrosses fly hundreds of kilometers to feed). Because commuting distances to foraging grounds from nesting areas differ between species, the amount and quality of habitat required throughout the nesting season vary.

Great Blue Heron

Assessing habitat use and requirements is a necessary preliminary step to establishing habitat goals that can translate into actual habitat acreage on the ground. However, goal setting at the continental scale is not possible at this stage. Habitat goals must first be established at regional and local scales, and then extrapolated to the continental scale. Habitat goals will be established on a regional basis as part of regional waterbird planning efforts.

Habitat Conservation Issues and Threats

It is because of the diversity of habitat needs among waterbirds that conservation action should emphasize protection and management of all available aquatic habitats. Those sites and areas found to be of particular importance to waterbirds, already subject and conducive to active management, or containing vulnerable species should be the highest priorities.

Nesting Habitat Concerns

Where the availability of nesting habitat is a limiting factor to populations, protection and usually management of this habitat are essential to sustaining healthy populations. Nesting habitat can be destroyed by a range of activities, including but not limited to drainage, forestry practices, agriculture, aquaculture, pollution, disturbance, and development for residential or industrial purposes. In the case of colonial nesters, a surprising number of breeding sites are on artificial habitat, such as spoil islands, dikes, bridges and causeways, fill, even rooftops, and these sites often require management or maintenance to remain useful to waterbirds. Colonies may change character over time due to vegetation death or succession, often caused by the birds themselves.

- As a management tool, active and potential colony sites and nesting habitats should be inventoried in each country and region. A matrix of used and potentially used breeding sites should be maintained across each regional landscape and used for site and regional planning to assure sufficient breeding habitat availability.
- Public and private agency managers responsible for waterbird conservation should maintain or enhance the quality of important or selected breeding sites using manipulations, as needed and appropriate, such as vegetation or substrate alterations or predator control, including the control of other waterbirds on a case-by-case basis. The results of management actions at breeding sites should be monitored, and actions revised as appropriate.
- The need for alternative breeding sites should be determined on a regional basis, and where appropriate, habitat or sites should be established or re-established. The importance of human-made nesting sites to waterbirds within a region should not be underestimated. In most areas such sites need to be protected and managed.

Commercial interests can adversely affect waterbirds' breeding sites. Guano mining at islands in Mexico and in Latin America, for example, can adversely affect seabirds.

- The effects on colonial waterbirds of guano mining and other industries need to be understood in each

White Ibises in flight over Battery Island Sanctuary

case and the activity should be wisely managed for sustainability of waterbird populations.

Availability of foraging habitats is also vital to the reproductive efforts of waterbirds.

- Conservation planning for nesting habitat must also include associated foraging habitat.
- Feeding sites and the distances traveled to reach them must be understood for each species, and a network of feeding situations secured and managed.

Non-Nesting Habitat Concerns

Seabirds and other colonial waterbirds often congregate throughout the year. In non-nesting seasons, they gather at roosts and loafing areas. These sites require both protection and management to maintain their value to waterbirds.

- Roost and loafing sites should be inventoried and monitored on a regional basis, and those that are used over a number of years may merit consideration for acquisition.
- Disturbance to roost and loafing sites should be minimized using all available management tools.

Wintering, migrating, and other non-nesting habitats are critical to the long-term conservation of waterbirds. Presently, there is little information on habitat needs outside of the breeding season for many species, particularly during migration.

- Waterbird conservation strategies should establish monitoring programs during the non-breeding season, targeting habitat use away from the nesting sites. Information from these programs will assist in identifying, preserving, and managing habitats that provide suitable sites for migrating, foraging, roosting, as well as breeding waterbirds.
- Because habitat used by migrating water birds is poorly understood, surveys and inventories of migration habitat use should be undertaken.

Reduction in Habitat Quality

Aquatic habitats, wetlands especially, are subject to significant physical and chemical modifications from water management, dredging, ditching, siltation, runoff, and introduction of invasive plant species—modifications that destroy or degrade habitat for waterbirds. Remaining natural wetlands need to be preserved, protected, and actively managed to retain their ecological functions. The needs of waterbirds should be integrated into strategies for all wetland management and mitigation programs.

- Since waterbird use of wetlands is variable by nature, regulators permitting wetland changes should evaluate waterbird use on a case-by-case basis on time scales spanning both annual and multi-year hydrologic cycles.
- In the U.S., Canada, and Mexico, wetland conservation projects funded under the North American Wetland Conservation Act should include consideration of waterbirds, and rules for wetland projects should be further refined to support waterbird conservation.
- Farm programs, such as the U.S. Wetland Reserve Program, should be used to benefit waterbirds.

Throughout the Americas, one of the most common issues relating to wetland alteration is water management. Management of natural and artificial wetlands for purposes of water supply, flood control, vegetation management, fish production or even management of

other aquatic birds can affect suitability for waterbirds.

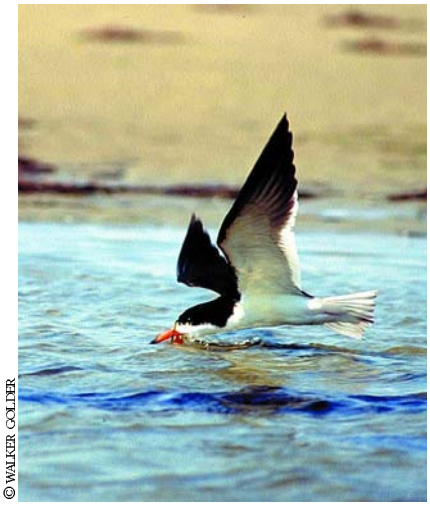
- Waterbird conservation should be an explicit goal of water managers, whatever their other principal goals. For example, allocation of water supplies should include conservation allocation that is of benefit to waterbirds.

Human-created aquatic habitats, such as islands, reservoirs, dammed rivers, artificial wetlands, rice fields, and aquaculture facilities provide important habitat for waterbirds. At some sites, such as man-made islands and peninsulas adjacent to Canadian cities on the Great Lakes, aquaculture facilities in Louisiana, and reservoirs in the western and southeastern U.S., waterbird populations have become dependent on artificial habitats. On the other hand, artificial wetlands—now created widely for mitigation—have seldom proven to be as productive as natural wetlands.

- The role of artificial habitats in the sustainability of waterbirds should be understood in different landscapes.
- The success of wetland mitigation programs should be assessed and reported to assure meeting of management goals for waterbirds.
- Where they support waterbirds, artificial habitats should be managed appropriately. Where needed, subsidies should be provided to continue management practices that benefit waterbirds.

Coastal zone policies and practices associated with land-use and development, coastal protection, water quality, dredging, resource extraction including sport and commercial fisheries, and disturbance can significantly affect the ability of coasts and intertidal waters to sustain waterbirds.

- Coastal zone management policies should include sustainability of waterbird populations as a goal, including conservation of feeding, nesting, and roosting sites for resident, migratory and wintering waterbirds. This requires that the effects of policies be understood and that a commitment to sustainable waterbird populations underlie all actions taken by government, industry and citizens.



Black Skimmer

Open, sandy beach habitats are particularly subject to disturbance. Nesting, foraging, and loafing waterbirds may be adversely impacted by bathers, runners and walkers, off-road vehicles, and anglers on beaches.

- Beach sites used by waterbirds need to be identified and managed by responsible authorities. Management might include site protection, appropriate sand and vegetation manipulations, closures and enforcement, predator control, and monitoring.

Dredging along the coasts, such as for ship and boat channels, can be used to create and enhance nesting and roosting sites for waterbirds. Beach restoration projects can similarly benefit nesting birds, or can adversely impact their habitat, including from contaminated sediment.

- Maintenance, establishment, and enhancement of waterbird habitat using dredged materials need to be explicitly treated as a priority by all agencies conducting dredging projects in order to enhance benefits to waterbirds while avoiding conflicts with other users.
- Planning for beach replenishment and dredge disposal operations should be coordinated at a regional level and be consistent with wetland protection and enhancement efforts nationally and regionally.
- Created sites require continued management, and this should be the primary responsibility of the organization creating the habitat.

The location and design of potentially attractive facilities such as airports, landfills, municipal wastewater wetlands, can be critical to future bird-human interactions, including health and safety issues.

- Plans for such facilities should be designed to minimize or eliminate human conflicts and impacts to regional waterbird populations.

Climate Change

Sea level is rising along mainland and island coastal areas. Climate change also affects rainfall patterns and resulting wetland hydrology in interior areas. These changes affect habitat availability and ultimately the seasonal timing of nesting and migration.

Red-footed Booby *Brown Booby* *Anhinga* *Brandt's Cormorant* *Neotropic Cormorant*

- 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 ocean cycles and sea ice formation need to be determined or better understood.

Key Sites for Waterbirds

Waterbird populations may come to depend on specific areas and sites for their stability. Coloniality or congregatory behavior—gathering in colonies, roosts and feeding areas—result in discrete sites supporting sizable portions of local or wider populations at some time during the year. Waterbirds are also localized by specialized habitat requirements for nesting and/or for feeding, resulting in these habitats and sites being critically important for population health and sustainability.

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Pied-billed Grebe

A variety of site classification systems already exist throughout the Plan area, some of which already confer protection to birds, for example, Migratory Birds Sanctuaries and National Wildlife Areas in Canada, National Wildlife Refuges or Marine Protected Areas in the U.S. or lands in the National System of Protected Areas (Sistema Nacional de Áreas Protegidas) in Mexico. Other systems identify sites in order to engender management attention or serve as candidates for protected areas. These sites and areas need to be recognized for all species and at all scales, and such sites need to be managed in a way to protect their value for waterbirds.

The Important Bird Areas (IBAs) initiative is a good example of a program that recognizes and supports sites of importance for all birds. Waterbird conservation planners should focus on ensuring that IBA programs are well developed in the Plan area and assist in the protection and management of sites that are identified as important to waterbirds. The IBA program is detailed below.

Important Bird Areas Program

Program Structure

Sites are identified as IBAs through the application of criteria based on numbers and types of birds. The IBA identification process provides a data-driven means for cataloging the most important sites for birds, prioritizing projects, and allocating limited resources. The IBA program engages a variety of partners, such as citizens, landowners, and public and private organizations, throughout the process. In addition to identification, the process might include monitoring, habitat restoration, site stewardship, advocacy, and fundraising. The identification of an IBA is therefore a starting point for site-based conservation efforts.

The IBA program was initiated by BirdLife International in Europe in the 1980s, and is supported by partners around the world. BirdLife International has partners for much of the Plan area. In Canada, BirdLife's partners include Bird Studies Canada and the Canadian Nature Federation. BirdLife International's partner in the U.S. is the National Audubon Society. American Bird Conservancy has also developed a list of IBAs, some of which are important for waterbirds. In Mexico, CIPAMEX is the BirdLife International partner. [In Mexico and other Spanish-speaking countries, IBAs are known as Áreas de Importancia para la Conservación de las Aves (AICAs).] In the Caribbean and Central America, BirdLife International partners are active in a

Double-crested Cormorant *Great Cormorant* *Red-faced Cormorant* *Pelagic Cormorant* *Reddish Egret*

number of nations and projects to identify IBAs are underway.

Criteria

Based on the criteria developed by BirdLife International, an IBA must maintain and support one or more of the following: species of concern (e.g., threatened and endangered species); restricted-range species (vulnerable because they are not widely distributed); species that are vulnerable because their populations are concentrated in one general habitat type or biome; or individual species or groups of similar species that are vulnerable because they occur at high densities due to their congregative behavior. While all criteria apply to waterbirds, some are particularly important for species that inherently congregate in specific habitats and sites.

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Horned Puffins

To further establish priorities for conservation efforts, sites identified as IBAs are classified with regard to their overall significance in a hierarchical fashion—global, continental, national, and state/provincial. Global significance is determined by internationally consistent criteria set forth by BirdLife International. Sub-global criteria are structured by the partner organization to be most appropriate for the particular planning region.

IBAs and the Plan

The IBA programs existing within the Plan area will be used to inform the Plan and as a vehicle for implementing site-based conservation. These programs are at different stages of development. The IBA program in Canada has essentially concluded much of its identification activities at the global and national level, and is focusing on site management and protection. In the U.S., the National Audubon Society has agreed to support the Plan by identifying waterbird IBAs. Mexico has indicated that their primary National Bird Conservation Strategy in Mexico focuses on the AICA program. BirdLife International and its national partners are identifying and facilitating conservation at IBAs in Central America and the Caribbean.

Other Key Sites

The IBA Program, as described in the previous section, utilizes a strict set of criteria to identify sites. Waterbird conservation at the regional or local level requires identification and management of sites that, while not qualifying as IBAs, are critical to local populations. These sites might be recognized based on factors such as social or educational value, intrinsic aesthetic value, economic value (ecotourism), or simply professional judgment. If desirable, conservation planners and managers are encouraged to target such sites for conservation activities. In some instances, a state or provincial program might also identify these sites as IBAs through the application of their own criteria.

Criteria for IBAs of Global Significance

- The site regularly holds significant numbers of a species that is a globally threatened species or a species of global conservation concern.
- The site supports significant populations of an endemic or restricted-range species.
- The site is known or thought to hold a significant assemblage of the species whose distributions are largely or wholly confined to one biome.
- The site supports >1% of a biogeographic population of a waterbird species, or > 1% of the global population of a seabird or the site supports, on a regular basis, >20,000 waterbirds or >10,000 pairs of seabirds of one or more species.

Links to IBA Programs:

Canada: www.bsc-eoc.org, www.cnf.ca

U.S.: www.audubon.org/bird/iba

Mexico: www.iztacala.unam.mx/cipamex

In the Americas: www.birdlife.net

Tricolored Heron *Little Blue Heron* *Little Egret* *Western Reef-Heron* *Snowy Egret* *Chinese Egret*

Inventory and Monitoring

Monitoring waterbird populations and habitats across the continent is required to determine conservation status, detect population trends, assess health of habitats, and indicate whether environmental changes and management prescriptions are affecting waterbirds. Populations of some waterbirds have been counted for decades and for some groups of birds in specific locations, considerable long-term information is available. However, most waterbirds, if monitored at all, have been surveyed by various parties using different methodologies over multiple scales, resulting in data sets that are very difficult to compare.

In many cases, data are lacking altogether. Especially in Mexico, the Caribbean, Central America, and northern Canada, limited information is available concerning use of sites for nesting, roosting, and feeding. Information on waterbird populations using migration hot spots and key wintering areas is lacking for all of North America, Central America and the Caribbean. Information on seabird by-catch associated with commercial fisheries is needed. Monitoring cryptic waterbird species requires special development. This lack of information hinders our abilities to manage and evaluate populations throughout their ranges. Our ability to refine waterbird conservation planning and evaluate management actions at multiple geographic scales is dependent on a coordinated continental system of inventory and monitoring programs and a centrally managed repository for waterbird data.

Central to creating this system and repository is the establishment of an alliance in which participants agree to use comparable techniques and contribute their data.The National Bird Population Data Center at U.S. Geological Survey, Patuxent Wildlife Research Center (USGS Patuxent), through their Waterbird Monitoring Partnership, is working to accommodate groups collecting waterbird data throughout the continent by centralizing the storage of and access to waterbird monitoring data. Centralized storage and access will allow the Waterbird initiative to identify gaps in survey information, assess how well conservation strategies are working, test key assumptions, and implement adaptive management prescriptions. The goals of the Waterbird Monitoring Partnership include centralizing data storage and management, developing standardized census methods, developing statistically valid and logistically feasible waterbird sampling schemes tied to hypothesis-driven monitoring programs, developing standardized models for analyses of waterbird data, and identifying and filling in gaps in continental waterbird monitoring programs.

© WALKER GOLDER

Least Tern

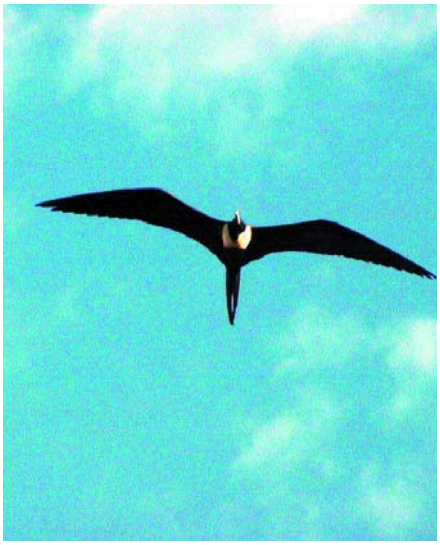
Centralized Data Storage and Access

The National Bird Population Data Center has already developed a data repository to archive data on waterbirds throughout their ranges, regardless of survey locality or survey method. This centralized database is publicly accessible and allows managers to submit and retrieve data over the World Wide Web (www.mp2-pwrc.usgs.gov/cwb/). Ultimately, it will be linked to other databases covering specific bird groups or regions of the Plan area, such as the Pacific Seabird Database and data collected by the International Waterbird Census of Wetlands International.

Standard Methodologies

Large scale monitoring programs must use techniques that permit population and habitat data collected in different locations and across multiple geographic or temporal scales to be

compared and combined. A specific need is the ability to sample at large scales using various methods and still meet trend detection goals. Setting up and testing monitoring methods and then evaluating their precision and power to detect trends are crucial for effective conservation.



Magnificent Frigatebird

USGS Patuxent, through the Waterbird Monitoring Partnership, will work with all waterbird partners to develop a manual of recommended standardized population monitoring methodologies having sufficiently low bias to be useful in trend analysis. To assist with integrating bird conservation across the continent at other geographic scales, every effort must be made to develop spatially explicit criteria for use in a common GIS-based system. The Waterbird Monitoring Partnership will help to create an *a priori* sampling design to provide sufficient coverage during the breeding and non-breeding seasons, allow merging of data among surveys, and allow statistical inferences to be made.

Monitoring Goal

The monitoring goal of the Plan is to be able to detect greater than 50% change over 10 years or 3 generations. This goal mirrors one proposed by the World Conservation Union in their criteria for identification of species at risk.

Filling the Gaps

With a data repository and standard methodologies in place, partners will be able to identify gaps in current population survey efforts and coordinate an integrated network of statistically valid, bias controlled, long-term, waterbird population monitoring programs throughout the Plan area.

Monitoring programs should track populations of waterbirds at the regional scale as well as the continental scale. In particular, basic inventories of waterbird colony sites and nesting habitats in Mexico, Central America, and the Caribbean nations should be conducted. Determining relative abundance and species composition is the first step in identifying IBAs and establishing other programs in these areas.

The Waterbird Monitoring Partnership will address the paucity of information on waterbird habitat needs outside of the breeding season by developing nonbreeding surveys that focus on important wintering habitats, including pelagic foraging areas for seabirds. One critical task of the Waterbird Monitoring Partnership is to establish a mid-winter census (to include shorebirds and waterfowl as well as waterbirds) linked to the International Waterbird Census being conducted by Wetlands International for the RAMSAR Bureau in Europe, Africa, Asia, and South America. For many countries, lack of resources dictate that censuses include as many species as can be accommodated by a census technique. The Waterbird Monitoring Partnership will work with other bird initiatives to implement a mid-winter waterbird census incorporating all waterbirds. If such a census is successfully implemented in North America, Central America, and the Caribbean, global population estimates will be available for all waterbirds.

There is a need for demographic information (e.g. reproductive success, adult mortality) on particular populations and for particular species. Comprehensive monitoring programs should include a demographic component. The Waterbird Monitoring Partnership will help partners develop sampling frameworks, and within these frameworks, identify particular sites for collecting demographic data.

Habitats, as well as populations, have to be monitored, thus waterbird monitoring efforts should include a habitat component. Habitat data and analyses must be robust enough to allow correlation with population trends at many scales. Where the potential exists, integration with existing habitat monitoring programs or those developed for other bird groups will be pursued. Monitoring programs focusing on other aspects of waterbird biology or on environmental factors, for example contaminants and disease, should be included in monitoring schemes as appropriate.

Scientific Information Needs

Conservation of waterbirds in the Americas requires a sound scientific basis. Much is known about the conservation biology of waterbirds, but much remains to be understood. Below is an evaluation of the priority research needs for waterbird conservation. Many of these needs are discussed elsewhere in the Plan; they are repeated here to encourage recognition by the research community.

Species, Populations, and Habitat Information
Understanding genetic and demographic population structure is essential to formulating proper conservation schemes. For example, priorities depend on knowing whether particular subspecies or genetically identifiable populations are threatened, or distinguishing which populations are sources or sinks. Additional study, through banding and modeling, is needed to further waterbird population biology.
Comparative population trend analyses from different geographical regions will provide important insights into the relative effect of human-induced perturbations. Once a threshold for action is determined, assessments of trend significance can guide the management of these effects.

The degree to which populations show high fidelity to certain sites for breeding, during migration, or in winter is an important knowledge gap in conservation planning at present. Research into the key features that provide consistently high habitat quality is also needed.

Management-oriented Research
Additional information is needed on the population effects of several key threats and concerns. Research should be conducted on all of the following topics to ameliorate related negative impacts:

- Importance of hunting as a source of mortality to waterbirds
- Role of commercial fisheries in seabird mortality
- Importance of aquaculture facilities as a food base for waterbirds where natural habitat displacement has occurred
- Population-level significance of killing waterbirds near aquaculture facilities
- Methods to reduce the real and apparent impacts of certain waterbirds in urban and suburban landscapes
- Better predator control and eradication methods at colony sites
- Impact of different types of human disturbance, including researchers, on nesting success in colonies
- Determining population level effects of contaminants including oil on waterbirds at the population level
- How manipulations of habitats, including wetland creation and restoration, marsh management, irrigation modification, impoundment management, increase attractiveness to waterbirds
- Adaptive resource management approaches to restore nesting habitat for rare or declining species.

Ecosystem and Large-scale Issues
The role that waterbirds play in their respective ecosystems—in energy and nutrient flow, or in affecting prey species dynamics, for example—is little known in most situations. In particular, information is lacking on how habitat and energy needs change for long distance migrants, as they move among high, mid and low latitudes, and the degree to which fish populations are coupled to waterbird populations remains largely unknown.

Research is needed on the effects of global weather changes. Major changes in ocean regimes occur in short cycles that are somewhat predictable in frequency as well as on longer (multidecadal) scales. Aquatic prey availability is correlated with these changes, and evidence is beginning to emerge that population changes of some seabirds may be associated with these regime shifts. Better understanding is needed of the role of

Banding is an essential tool in the study of waterbird populations and demography. Band returns give insight on population demography and distribution, thus research and monitoring using banded waterbirds should be encouraged. Banding training modules need to be developed, and training and certification of those banding waterbirds must be initiated. Band quality should be improved and saltwater-resistant bands need to become available. Banding data repositories must be redesigned to deal with long-lived waterbirds that are re-banded numerous times during their life. Many historic databases exist which must be conserved. The use of radio and satellite telemetry should also be increased.

Bare-throated Tiger-Heron *Fasciated Tiger-Heron* *Rufescent Tiger-Heron* *Yellow Bittern* *Least Bittern*

cyclical oceanic changes in seabird sustainability.

Changing weather patterns can be expected to influence habitat use by coastal species (e.g., shifts due to rising sea levels), but the vulnerabilities of other habitats in the Plan area have not been studied in detail. For example, it is not known precisely how changes in rainfall and temperature patterns might affect waterbirds in interior wetlands. Based on the data that do exist, conservation of all waterbirds must take into account the need for populations to accommodate long-term cycles and large-scale changes.


© JEFF HATFIELD

American Bittern

Communication, Education, and Public Awareness

The dissemination of information is an essential component of waterbird conservation. Waterbirds live in a world increasingly dominated by humans. For many and perhaps most species, their survival can be assured only with public awareness of their existence and public support for measures that protect them and their habitats.

Fortunately, many waterbirds, due to their visibility and beauty, can easily garner positive public attention and support. It also allows them to serve as effective teaching tools. Congregatory behavior can further enhance these advantages. For example, colony and roost sites may be excellent venues for education and advocacy programs, such as colony adoption programs and interpretive displays at viewing points. The publicity enjoyed by many waterbirds allows them to serve as ambassadors for all aquatic birds.

A public in support of waterbirds and properly informed on conservation issues represents a huge reservoir of potential supporters, volunteers and advocates. They can assist with monitoring of colonies and roosting areas to assess populations and prevent disturbance; work with local parks, refuges, and agencies to improve management of colonies and wetland habitats; and seek adoption of appropriate legislation at every level to better protect waterbirds and their habitats. With the dissemination of scientifically valid information, perhaps adverse public perception of a few abundant fish-eating species could be reversed. Waterbird conservation should become part of the citizenry's environmental consciousness, and community-based organizations, committed to waterbird conservation are essential. In addition to the general public, natural resource decision makers and educators are particularly important audiences for waterbird conservation information.

An abundance of environmental outreach programs already exists. Therefore, a waterbird conservation communication program should involve the development and fostering of partnerships in order to incorporate waterbird conservation into existing programs as well as develop new, targeted projects. A Waterbird Communication and Outreach Coordinator—most likely an individual associated with an NGO—should be designated to facilitate information sharing and oversee the formation and implementation of waterbird education and public awareness activities.

Education and awareness activities may take a variety of forms and provide a diversity of experiences. The steps in development of any outreach program are:

- Identify priority target audiences, recognizing that priority audiences will differ in various regions, especially in different countries.
- Determine critical messages.
- Identify sources of information.
- Develop strategies for reaching priority audiences, especially using existing programs.
- Develop or identify model education and outreach materials to incorporate into local programs.
- Develop information and dialogue exchange mechanisms, especially on the Internet.
- Evaluate results and adapt approaches as necessary.

In general, emphasis should be on local programs where individuals have the opportunity to have their lives changed by personal experiences with waterbirds.

[1] Parsons et al., in prep. *North American Conservation Assessment for Waterbirds,* A Waterbird Conservation for the Americas Report.

40 Ideas for Waterbird Conservation Outreach Projects

1. Internet based chat rooms for information sharing and interaction between waterbird educators
2. Partnerships and communication networks, such as sister-site programs, among important waterbird areas
3. Internet accessible repository of technical information and educational resource material
4. Training workshops for waterbird education specialists and waterbird managers
5. Graduate studies and research in waterbird conservation
6. Boat tours around seabird nesting islands led by trained interpretive naturalists
7. In-class school outreach sessions with hands-on activities
8. Classroom and public field trips to waterbird nesting habitats
9. Placement of spotting scopes in observation blinds at appropriate nesting colonies or installed at mainland vantage points near waterbird areas
10. Guided public tours at selected waterbird colonies on boardwalks or beaches
11. Adopt-a-Colony and Adopt-a-Wetland projects
12. Adopt-a-Waterbird programs (individual birds)
13. Internet real time video cameras focused on nest sites
14. Internet-based curricula associated with video cameras
15. Waterbird web pages or colony web pages
16. Waterbird festivals or special "waterbird days" to celebrate the return of migrants or the nesting season
17. Teacher workshops to teach hands-on activities
18. Dramatic presentations about waterbirds using costumes or puppets
19. Town meetings to role play values about waterbirds
20. Roadside signs about waterbirds at pullouts or other vantage points near colonies
21. Kiosks about waterbirds near viewing areas
22. Audio components to kiosks playing waterbird sounds at viewing sites
23. Waterbird Centers- theme-oriented nature centers that celebrate waterbird biology and conservation
24. Books, brochures and video productions featuring local waterbirds
25. Postcards
26. Calendars
27. Other waterbird merchandise (shopping bags, t-shirts, jewelry etc.) with informational hangtags
28. Posters and other signs to educate anglers about recycling fishing line, overhead casting and cleaning up baited hooks and lures
29. Birding trails booklets featuring waterbird sites
30. Volunteer programs (e.g., Earthwatch) that connect serious birders with researchers
31. Internships for biology college students with researchers
32. Workshops on waterbird management for agencies, IBA managers, and others with responsibility for waterbirds.
33. Workshops for fishing party boat operators to provide instruction on removal of hooks from accidentally snagged birds, and to reemphasize the importance of proper disposal of fishing line and nets.
34. Beach cleanups to collect plastics, especially cigarette lighters, crumbly Styrofoam and six-pack holders
35. Training for beached bird surveys and oiled bird rescues
36. Identification and labeling of storm drains that lead to wetlands
37. Decoration of building walls and fences with murals celebrating local waterbirds
38. Larger than life, free-standing statues or other artwork of local waterbirds for parks and public places
39. Help in identifying, protecting and teaching about a local IBA or key site for waterbirds
40. Campaigns against the release of balloons that can settle in aquatic habitats and choke wildlife

White-faced Ibis *Buff-necked Ibis* *Green Ibis* *Roseate Spoonbill* *American White Pelican* *Brown Pelican*

PART 3

MOVING FORWARD through PARTNERSHIPS

Developing and relying on an integrated network of partners is a key strategy for successfully planning and implementing conservation action for waterbirds. No single institution or person can accomplish all that is required and partnerships at all levels will be a driving force. The Plan was created from the input of numerous parties, and continued planning and implementation will follow the approach of collaboration and partnership.

International Waterbird Conservation

The Waterbird Conservation Council

Continued planning and facilitation of waterbird conservation at the continental scale will fall to the Waterbird Conservation Council (the Council), successor to the Plan's Steering Committee. The Council will be the keeper of the Plan and have responsibility for coordinating, supporting, and communicating implementation of this and other waterbird plans, updating the plans, and facilitating actions for waterbird conservation throughout the Plan area.

Specifically, the Council will have the following responsibilities:

- Be the sponsor of the Plan document, overseeing its dissemination and revision.This includes publication of Version 2 by 2004, and reviews at least every five years thereafter to facilitate the adaptive approach advocated by the Plan
- Conduct planning and implementation at the continental scale and facilitate conservation at all levels, from continental to local
- Identify implementing agencies, entities and individuals, and through interactions, interventions, and collaborations, leverage opportunities for waterbird conservation
- Facilitate the acquisition of resources to support

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Common Murres

waterbird conservation throughout the Plan area
- As invited, select or nominate representatives to various committees and councils
- Promote and support work of regional working groups
- Interact with other bird conservation initiatives, habitat Joint Ventures (JVs), provinces/states, national governments, local interests, and others
- Facilitate and support the Waterbird Monitoring Partnership
- Facilitate and support the meeting of scientific information needs
- Facilitate and support the waterbird conservation communication program combining communication, education and public awareness activities
- Maintain the Plan's home page
- Assure coordination of the Plan with other international bird conservation programs and initiatives
- Periodically evaluate if goals of the Plan are being met, and modify plans and activities accordingly
- Recruit new members to the Council.

American White Pelicans

Council membership will be recruited to represent all of the interests and stakeholders involved in waterbird conservation. Together, councilors will provide perspectives that cover:
- The geographical extent of the Plan area
- Taxonomic groups of birds included in the Plan
- The range of habitats in the Plan area
- Species and resource management
- Communication and outreach
- Monitoring

And include representatives of:
- Political entities
- Non-governmental organizations
- Research and scientific organizations
- Other stakeholders

The Council is an independent, self-perpetuating non-governmental organization and will not be part of any governmental agency or single non-governmental organization. The Council will select its own members, based on recommendations, nominations and approvals obtained from participating stakeholder groups and organizations. Appointments will be for staggered, renewable three-year terms. The Council will develop its terms of reference, appoint committees and working groups as needed and select its Chair. An Executive Committee will be appointed to allow rapid action and continuous engagement in conservation issues.

Waterbird Monitoring Partnership

The Waterbird Monitoring Partnership was discussed in Part 2.The Council will facilitate the development of this partnership with USGS Patuxent. Via the Waterbird Monitoring Partnership, monitoring will be carried out across the plan area by a multi-national array of partners, including provincial, state, national and local governments, non-governmental organizations, and volunteers. Where possible, monitoring efforts for waterbirds will be linked to efforts for other bird groups.

Waterbird Conservation Communication Program

The need for organized communication and outreach activities was also discussed in Part 2. A Waterbird Communication and Outreach Coordinator will consult with the Council to articulate and promote a communication strategy integrating existing programs. As with monitoring efforts, waterbird conservation communication, education and public awareness will be a cooperative effort by numerous partners.

North American Bird Conservation Initiative and Other International Partnerships

Within Canada, Mexico, and the U.S., implementation of the Plan will be accomplished to the extent possible and appropriate within the structure and philosophy of NABCI.The Plan has adopted NABCI BCRs and related PBCRs as its basic planning units. Plan representatives will participate in NABCI activities as invited, and serve as members of committees and subcommittees, as needed.

Continental implementation requires cooperation and coordination beyond, as well as within, the artificial boundaries of the Plan. There are many international partnerships that benefit waterbird conservation and with which the Plan should link, especially associated with conservation in the Asian and Central Pacific, Bering Sea, and circumpolar Arctic areas. Alliances with national and international conservation entities in South America should also be fostered.

National Waterbird Conservation

Planning and implementing waterbird conservation on the national level is crucial to the success of waterbird conservation. However, the exact strategy taken to work towards national conservation will vary among countries, depending on the governmental structure and conservation entities within the country and the availability of resources. Flexibility in how countries both plan and implement waterbird conservation is a desirable part of the multinational Waterbird Initiative. National planning, for example, may be the responsibility of biological staff of the national wildlife or natural resource agency, a non-governmental organization (NGO), or a combination of national stakeholders brought together for the purpose.

National plans and strategies can be important and valuable options in national scale conservation. Frameworks for national waterbird conservation are presently developed for Canada, Mexico, and the U.S. as discussed below. Other nations will be taking other approaches to planning and implementing waterbird conservation that they find appropriate. It is hoped that national strategies will, to the extent possible, take into consideration and be mutually consistent with the continental Plan.

There are many potential elements of a national waterbird conservation strategy:

- A national waterbird conservation plan or strategy, including an assessment of species conservation status using the continental-scale status assessment as a starting point
- A national waterbird coordinator, a professional biologist preferably in a national agency
- A national inventory of waterbird colonies and breeding sites, important roost sites, and feeding areas linked to other national inventories
- A national monitoring scheme for waterbirds and their habitats linked to other national schemes via partnerships
- Summary of available information on waterbirds and their habitats
- Identification and management of key sites for waterbirds, including IBAs in partnership with BirdLife International
- Identification and management of important habitats
- Ongoing inventory of information gaps
- A system for technical assistance to national agency staff and other stakeholders in waterbird conservation
- Nationally coordinated communication strategy, linking education and public awareness programs featuring waterbird conservation
- Communication network among waterbird stakeholders in the country.

Canada

Within Canada, waterbird conservation will be organized and facilitated through a National Waterbird Working Group in conjunction with NABCI Canada Council. Canada is preparing a national plan for the conservation of all waterbirds entitled *Wings Over Water*[1], through a partnership of national, provincial and territorial wildlife agencies, environmental NGOs, and other specialists. Developed concurrently with the continental Plan, the two plans are

Arctic Tern

Tahiti Petrel *Fiji Petrel* *Black-winged Petrel* *White-necked Petrel* *Mottled Petrel* *Bonin Petrel*

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Dredged Sand Island

consistent in goals and approach. Additional planning will occur at regional levels with coordinated implementation at appropriate levels. As work evolves there should be increasing opportunities for broader continental planning and implementation.

An important element of waterbird conservation in Canada is the NABCI goal to integrate bird conservation across species groups and national boundaries. Cross-border integration for areas that encompass parts of the U.S. and Canada will occur first in joint planning regions where there are species and issues of common concern. Most implementation will occur at regional and local levels with various partners and will include evaluation to ensure appropriate results and national consistency.

United States

In the U.S., bird conservation is a partnership among local, state, and federal agencies and NGOs. A distinct U.S. waterbird conservation plan will not be developed, since finer-scale regional and state strategies will be used to deliver on-the-ground conservation.

State governments are a principal force in waterbird conservation; coordination among state governments occurs through the International Association of Fish and Wildlife Agencies (IAFWA). Representatives of the Waterbird initiative will participate in the committee system organized by IAFWA, particularly the Shorebird and Waterbird Working Group, the Migratory Shore and Upland Game Bird Working Group, and Bird Conservation Committee. The Shorebird and Waterbird Working Group has as its particular charge the support of the Waterbird initiative.

Desirable state roles and actions include:

- Creating a state waterbird conservation strategy, using the continental Plan as a starting point, which includes population and habitat goals
- Maintaining an inventory of waterbird nesting sites and important nonbreeding habitats
- Assisting in identifying and managing important areas for waterbirds
- Monitoring waterbirds and their habitats in cooperation with other parties through the Waterbird Monitoring Partnership at USGS Patuxent
- Continuing colony site protection and management programs
- Providing technical assistance to other stakeholders in waterbird conservation
- Supporting education and awareness programs focusing on waterbird conservation
- Participating in the continent-wide communication network, and defining research and monitoring and other information needs

As stated above, each state is urged to create a waterbird conservation strategy and to appoint a member of their technical staff to have primary responsibility for the waterbird strategy within the state. This staff person would be responsible within the state for overseeing waterbird inventory and monitoring, protecting colony/breeding and feeding areas, identifying priority research needs, identifying Important Bird Areas, and implementing other conservation measures for waterbirds within the state.

States should encourage and support local conservation efforts on behalf of waterbirds. The state coordinators are encouraged to participate in JVs within their boundaries and facilitate the sharing of data with national data management networks. Each state is encouraged to organize and/or conduct a monitoring program for waterbird populations and, as reasonable, habitat and demographic parameters within the state. The monitoring program should follow the protocols of this plan and participate in the continental data management program.

Each state is encouraged to carry out an environmental education program that reaches into the school system, teaching the conservation of waterbirds in ways appropriate for the region. Each state is encouraged to set up a mechanism to facilitate communication and support from individuals and organizations monitoring, managing, and protecting waterbird sites.

Management of migratory birds is also the responsibility of numerous federal agencies, especially the U.S. Fish and Wildlife Service. Migratory birds are also a focus of many NGOs, whose activities include advocacy, education, research, fund-raising, and habitat acquisition. The facilitation of the partnership of states, federal entities, and NGOs is also a goal of the NABCI U.S. Committee.

Mexico

In Mexico, waterbird conservation will be focused on planning and conservation action at AICAs. Waterbird planning and implementation in Mexico will occur under the auspices of the NABCI Mexico Council, with the important involvement of international and national NGOs. It is hoped that in planning and implementation, Mexico will take into consideration and be mutually consistent with the continental Plan, where possible.

Countries of the Caribbean and Central America

In the Caribbean and Central America, planning efforts should identify the resources necessary in each nation to make waterbird conservation a priority. The continental waterbird conservation community should share responsibility in assisting to secure these resources. It is recommended that countries develop national waterbird strategies and plans, incorporating all species of birds using aquatic habitats. It is hoped that in each country at least a part-time position be designated to lead the national waterbird conservation program.

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Laughing Gull

Regional Waterbird Conservation

Conservation action in many cases is most effectively planned and carried out on a regional basis with special consideration to both political realities and ecological zones. The strategies and goals set forth on the continental scale by the Plan must be supplemented by more precise goals set at subcontinental scales. To carry out regional planning, sixteen waterbird conservation planning regions have been established that together cover the Plan area. The Plan also recognizes the critical role played by Habitat Joint Ventures (JVs), established regional entities formed under the North American Waterfowl Management Plan in Canada, the U.S. and parts of Mexico. JVs are positioned to perform on-the-ground habitat protection and restoration, and they are expanding beyond the traditional focus on waterfowl. The relationships among regional planning and implementation units are shown in Table 3. This information will be modified as regional working groups refine or adjust their boundaries and compile regional data.

Habitat Joint Ventures

JVs consist of voluntary organizational and agency partners working together to conserve bird habitat, especially wetlands of importance to waterfowl. JVs set habitat goals and mobilize partners to achieve these goals. Since wetlands are important to other aquatic birds, integration of the habitat needs of waterbirds into JV planning and implementation is important for waterbird conservation. Every effort should be made to identify areas of overlap between habitat needs for various bird groups.

The Plan suggests that each JV include strategies for waterbird conservation and undertake explicit planning, habitat and population goal setting, habitat acquisition and protection, and management for waterbirds. Some JVs have already begun this process. Specifically, they are urged to protect and manage

Hawaiian Petrel *Kermadec Petrel* *Juan Fernandez Petrel* *Murphy's Petrel* *Bermuda Petrel*

TABLE 3. The Relationship of Waterbird Planning Regions to Other Planning and Implementation Units

Waterbird Conservation Planning Region	Overlapping Provinces or States or Countries[a]	Composite NABCI Bird Conservation Regions[b]	Composite Pelagic Bird Conservation Regions[b]	Overlapping Habitat Joint Ventures and Other BCR-Based Partnerships
Alaska/Bering/Yukon	Alaska, British Columbia, Yukon Territory, Northwest Territories	1,2,3 (Alaska and Yukon only) 4	68,69, 70	None
Pacific Coast	Yukon,Alaska, British Columbia, Washington, Oregon,California, Baja California	5,32	71	Pacific Coast, Central Valley Habitat, San Francisco Bay
Mexico–Southwest U.S.	California, Nevada,Arizona, New Mexico, Texas, Aguascalientes, Baja California, Baja California Sur, Campeche, Chiapas, Chihuahua, Coahuila, Colima,Distrito Federal, Durango, Guerrero, Guanajuato, Hidalgo, Jalisco, México, Michoacán, Morelos, Nayarit, Nuevo León, Oaxaca, Puebla,Querétaro, Quintana Roo, Sinaloa, San Luis Potosí, Sonora, Tabasco, Tamaulipas, Tlaxcala, Veracruz, Yucatán,Zacatecas	33,34, 35,38, 39, 40, 41,42, 43,44, 45, 46, 47,48, 49,50, 51, 52, 53,54, 55,56, 57, 58, 59,60, 61,62, 63, 64,65, 66	71,72, 73,74	Sonoran Desert
Intermountain West	Idaho, Utah,Nevada, Colorado, Arizona, New Mexico, Wyoming, British Columbia,Alberta	9,10, 15, 16	None	Intermountain British Columbia,Intermountain West, Sonoran Desert
Boreal	Northwest Territories, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, Newfoundland, Nunavut, St. Pierre et Miquelon (France)	6,7, 8	75	None
Arctic Canada	Northwest Territories, Nunavut, Quebec, Newfoundland	3 (except Alaska and Yukon)	76,84, 85	None
Northern Prairie and Parkland	Alberta, Saskatchewan,Manitoba, Montana,North Dakota, South Dakota, Minnesota,Iowa	11	None	Prairie Habitat, Prairie Pothole
Central Prairies	Montana, Wyoming, Colorado, New Mexico, Texas, North Dakota, South Dakota, Nebraska,Kansas, Oklahoma	17,18, 19	None	Playa Lakes, NE Rainwater Basin,Northern Great Plains
Upper Mississippi Valley/Great Lakes	Manitoba, Ontario, Quebec, Minnesota, Illinois, Kansas, Wisconsin,Indiana,Oklahoma, Michigan, Iowa,Arkansas, Ohio, Nebraska,Missouri,Alabama, Tennessee, New York, Kentucky, Vermont, Pennsylvania	12,13, 22,23, 24	None	Upper Mississippi Valley and Great Lakes Region, Central Hardwoods, Eastern Habitat, Atlantic Coast
Southeast U.S.	Texas, Oklahoma, Mississippi, Kentucky, Arkansas, Missouri, Tennessee, Louisiana, North Carolina, Virginia, Maryland,Ohio, Pennsylvania, New York, South Carolina,Alabama, Florida, West Virginia,Georgia	20,21, 25,26, 27, 28,29, 31,36, 37	74,77	Atlantic Coast,Lower Mississippi Valley, Gulf Coast
Mid Atlantic/ New England/ Maritimes	Delaware, Rhode Island, Vermont, New Jersey, Maryland,New York, Connecticut, Maine, Massachusetts, New Hampshire, New Brunswick, Nova Scotia,Prince Edward Island, Quebec	14,30	78,79	Eastern Habitat, Atlantic Coast
Pacific Islands	Hawaii,American Samoa,Northern Mariana Islands, Marshall Islands, Federated States of Micronesia,Baker and Howland Islands, Commonwealth of Guam, Jarvis Island, Johnston Atoll, Cocos, Kingman Reef, Midway Atoll, Palmyra Atoll, Wake Island	67	80	None

Black-capped Petrel ***Bulwer's Petrel*** ***Jouanin's Petrel*** ***Parkinson's Petrel*** ***Cory's Shearwater***

Waterbird Conservation Planning Region	Provinces or States or Countries	NABCI Bird Conservation Regions[a]	Pelagic Bird Conservation Regions[b]	Habitat Joint Ventures and Other BCR-Based Partnerships
Caribbean	Bermuda,Bahamas, Jamaica,Cuba, Haiti,Dominican Republic, Anguilla, Antigua & Barbuda,St.Kitts & Nevis, Dominica,St.Lucia,St. Vincent & the Grenadines, Barbados, Granada, Trinidad & Tobago, the Dutch islands of Aruba, Bonaire, Curacao, Saba, St.Eustatius, and St Maarten,the French islands of Martinique, Guadeloupe, St.Martin, and St.Barthelemy, the British islands of Turks & Caicos, Caymans, British Virgin Islands, and Montserrat,the U.S. islands of Puerto Rico, U.S. Virgin Islands, and Navassa,and the Venezuelan islands in the Caribbean	n/a	81	None
Central America	Guatemala, Belize, Honduras, El Salvador,Nicaragua,Costa Rica, Panama	n/a	72	None
Pacific	n/a	n/a	82	None
Atlantic	n/a	n/a	83	None

[a] Subject to change as regional plans are developed.
[b] See Figure 2.

nesting and roosting sites located within and near important waterbird feeding habitats. The Plan urges JVs to create mechanisms, such as waterbird advisory committees, to bring together all local partners in aquatic bird conservation for waterbird conservation goal setting within the context of goals for other aquatic species. JVs and other regional partners are urged to engage waterbird specialists with responsibilities for developing and carrying out conservation strategies and for working with regional waterbird working groups to formulate population and habitat goals and implementation projects. Regional waterbird working groups will assist JVs in implementing projects by providing expertise and perspective on the needs of waterbirds in the region.

Waterbird Conservation Planning Regions

The waterbird planning regions are shown in Figure 1. Regional plans will step down the goals of the continental Plan to smaller scales, and it is expected that regional waterbird conservation plans will identify priority species, habitat and species goals, IBAs, and prioritize implementation projects for its composite units. Regional conservation plans will be developed first for those regions that have the knowledge and expertise base sufficient for planning. Many, but not all of the waterbird planning regions already have voluntary regional working groups dedicated to producing a comprehensive plan. Other regions have groups planning for some subset of species or a particular geographic

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Sandhill Cranes

Streaked Shearwater *Wedge-tailed Shearwater* *Buller's Shearwater* *Flesh-footed Shearwater*

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American White Pelican

area within the region—efforts that will hopefully be merged into a comprehensive plan in the future. Finally, some regions, such as the Boreal, Arctic Canada, Central Atlantic, and Central Pacific, will need further consideration by partners to clarify how planning will proceed.

As discussed previously, the regions include land-based planning units and/or pelagic areas established to enable conservation planning for seabirds. BCRs and PBCRs are visualized as the principal way to plan waterbird conservation within the context of all bird habitat conservation. It should be noted that the Plan does not view planning units such as BCRs and PBCRs as being implementation units, with independent structure or staff. Implementation should draw on many units, including, but not limited to, political entities at every scale, and partnership-based implementation bodies.

The distribution of waterbird species in the planning units is shown in Appendix 3. In order to categorize the conservation status of species occurring in their region, regional working groups will implement a process appropriate to their needs. The continental colonial breeding species status data are available to each working group (Appendix 1).These data, along with a consideration of the importance of a geographic area to the continental population, can be used to determine regional species conservation status. Where possible, approaches should be used that are compatible with multiple bird conservation initiatives. Regional working groups should also consider special populations or subspecies when determining priority species within the region as appropriate. Regional planning efforts should include solitary nesting waterbirds (e.g., marshbirds) from the onset along with colonial-nesting waterbirds.

Regional working groups should also identify key sites for waterbirds in their region. Specifically, it is expected that groups will compile information that would allow an assessment of key sites against IBA criteria at global, continental, and/or national levels of significance, drawing on the criteria identified by IBA Programs in relevant countries. Additionally, in the U.S., National Audubon Society will partner with relevant regional waterbird working groups to identify state-level IBAs. Key sites that do not meet IBA criteria may also be identified within a region, and regional working groups will take these sites into account in planning and conservation action.

Alaska/Bering/Yukon

This region includes large interior portions of Canada's western provinces, all of Alaska to the tip of the 1,100 mile Aleutian Chain, as well as the surrounding pelagic areas. It is characterized by a wide diversity of physical features, including open ocean, seaside cliffs, coastal plains and tundra, mountain ranges, and diverse forest. The region's extensive coastlines and nutrient rich waters host some of the largest seabird colonies in the world, including those of the Black-legged Kittiwake, Common Murre, and Pelagic Cormorant. In summer, the world's populations of breeding Red-legged Kittiwake, Least Auklet, and Whiskered Auklet are found here, and Southern Hemisphere albatrosses and petrels forage offshore. Inland are found tremendously large, undisturbed areas inhabited by a small suite of waterbirds such as loons and cranes. All of the bird species found in this region benefit from the extended opportunities to feed and reproduce during the region's long—sometimes continual—periods of summer daylight. Despite low-density human populations, the region's waterbirds face a number of human-related threats, including introduced predators, fisheries mortality, oil spills and other contamination, global climate change affecting ice and ocean regimes, and development for lumber, mining, and oil exploration.

Pink-footed Shearwater ***Greater Shearwater*** ***Sooty Shearwater*** ***Short-tailed Shearwater***

Pacific Coast

The Pacific Coast region stretches from the Kenai Peninsula in Alaska through British Columbia and California coasts to include the northern portion of Baja California. Its diverse habitats include the coastlines and highly productive offshore marine areas, the largely coniferous coastal rainforests of its northern half, low coastal mountains of mixed chaparral vegetation towards the south, and the wetlands and lowlands of the expansive Central Valley of California. Each of these habitats hosts an array of waterbird species subject to varying threats. The northern coastlines include large proportions of the global breeding populations of a number waterbirds including Ancient Murrelet, Cassin's Auklet, Rhinoceros Auklet, Glaucous-winged Gull, and Leach's Storm-Petrel, while rocky islands off the southern coast support many or most of the world's breeding Ashy Storm-Petrel, Brandt's Cormorant, Western Gull and Xantus's Murrelet.The region's pelagic waters provide habitat for large numbers of shearwaters, storm-petrels, alcids, and albatrosses. The major threats to these coastal and pelagic species include introduced mammalian predators, bycatch in fisheries operations, contaminants, oiling, climate change, and lack of formal protection for several key breeding colonies and their associated marine foraging areas. The threats to Marbled Murrelets from timber harvest in the coastal rainforests are well known but this activity also impacts the waterbirds utilizing the associated river deltas and pockets of wetlands. Much of the depressional wetland and riparian habitats of the Central Valley, lying between the coastal and Sierra Nevada mountain ranges, have been lost to agriculture and other development, but large populations of waterbirds breed and winter here. The southern marshes and beaches of the region provide critical habitat for endangered populations of Clapper Rail and Least Tern. These habitats are threatened by development, as are all habitats in this rapidly developing region. Because of the tremendous diversity of populations, habitats, and threats, planning in the Pacific Coast region will be multi-faceted, including on-going scientific study, monitoring, management, education and outreach.

Green Heron

Mexico–Southwest U.S.

The Mexico region includes all of Mexico's lands, ocean waters and islands, as well as dry, often mountainous portions of southern California, Nevada,Arizona, New Mexico and Texas. From its northern edge, the region makes a transition from a temperate to tropical climate, and mountain ranges running almost the length of the region define the interior regions that separate the Pacific and Atlantic coastal plains. The region's complex topography results in a diverse array of aquatic habitats and waterbird species, and often localized bird distributions. The Mexican islands in the Pacific, Gulf of Mexico, and Caribbean (the Campeche Bank) support important seabird and coastal waterbird breeding colonies. Pacific offshore waters host non-breeding pelagic species, notably those ranging from their nesting islands in central and south Pacific, and the Gulf of Mexico provides foraging habitat for both locally nesting seabirds and wintering migrants. On the mainland, shallow bays, mangroves, coastal lagoons, and marshes frequented by wading birds are scattered along the

Pacific coast. On the Atlantic slope, the remaining mangrove-fringed lagoon complexes provide nesting areas and migratory bird wintering areas, and the low-lying area from southern Veracruz to the boundary with Belize offers extensive freshwater marshes and lagoons, hosting large colonies of wading waterbirds. The lagoons stretch to the north coast of the Yucatan, while the Yucatan's southern coasts are sparsely occupied by coastal species in winter. Important waterbird habitats in the region's interior include interior river drainages, the Salton Sea, lakes on the Mexican Plateau, and Central Volcanic Belt marshes, all providing refuge in an otherwise arid landscape.

The Mexico region's waterbirds and their habitats face numerous threats directly and indirectly resulting from human activity. In Mexico, conservationists are particularly challenged by a lack of information and resources, yet can draw on an emerging environmental awareness. Moreover, the network of Mexican AICAs provides a strong foundation from which to launch waterbird conservation in concert with conservation action for other aquatic species. As discussed previously, it is envisioned that the NABCI Mexico Council will oversee waterbird conservation planning and implementation in Mexico, working with planners in the U.S. portions of the region.

Intermountain West

The Intermountain West Region, as its name implies, is bounded by the Sierra Nevada and Cascade mountains on the west, and the Rocky Mountains on the east. It includes the extensive Great Basin, Columbia Basin, Colorado Plateau, and the Wyoming Basin. Characterized by diverse basin and range topography, the region provides a variety of habitats for waterbirds including high mountain lakes, rivers and streams, both fresh and brackish basin wetlands, and large alkaline lakes. Due to the arid climate—a result of the rainshadow cast by the mountains to the west—the wetlands of the Intermountain West serve as life-giving, yet transient, oases for aquatic birds. The region's dispersed lakes, marshes and riparian zones host about 40 waterbird species, including many or most of world's Eared Grebes, American White Pelicans, White-faced Ibises, and California Gulls. The competing demands for human uses of water, such as agriculture, development, and recreation pose the greatest threat to waterbird populations. The presence of contaminants (e.g., mercury, DDT and its breakdown products) is also a significant regional threat. Because of the West's feast-or-famine water regime, the Intermountain West regional plan will stress the necessity of conserving a network of high-quality wetland habitats with secure water sources in order to provide options for waterbirds during drought and flood cycles.

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Virginia Rail

Boreal

This immense region arches across the length of Canada. It includes the tundra of the low arctic and the forests of the subarctic, as well as the boreal forest. Dominant features include, from west to east, the Mackenzie River and its tributaries, the softwood forests of the boreal transition zone, the Hudson Plains (the largest extensive area of wetlands in the world), and eastern seacoasts. Glacially carved, low lying wetlands cover a large percentage of the region and widespread permafrost results in lowlands being waterlogged or wet for prolonged periods of time. Several major river deltas occur in the central portion of the region, including the Saskatchewan River delta, Peace-Athabasca River delta, and Slave River delta, all of which are critically important to migrating and breeding waterbirds. Coastal marshes and extensive tidal flats are present at Hudson Bay and on the Atlantic shorelines. This region provides extensive breeding habitats for large populations of waterbirds. Other breeding marshbirds include four species of grebes, American Bittern, Sora, Yellow Rail, as well as the American White Pelican and a variety of gulls and terns. An abun-

dance of seabirds, including a number of alcid species, utilize the shorelines and open oceans on the Atlantic coast. Most waterbird habitats in the region are in a comparatively pristine state relative to those in more southern regions. However, the cumulative impacts of developing forestry, fisheries, mining, hydroelectric, oil and gas development, transportation infrastructure, and other industrial activities in the north are resulting in degradation of habitats. As well, the impacts of climate change may be a more immediate and larger concern at higher latitudes than elsewhere. Finally, regardless of breeding area affiliations, all migrants to the region are exposed to a wide array of environmental hazards during migration and on wintering areas. Planning in the Boreal region will focus first on gaining a better understanding of populations, particularly the least abundant and most poorly understood. Some of the research and monitoring challenges facing planning efforts in the Boreal region are common everywhere, while others are unique to the northern situation.

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Black Guillemots

Arctic Canada

This region includes low-lying, coastal tundra and drier uplands of the Arctic mountains across the entire northern edge of Canada. Because of thick and continuous permafrost, surface water dominates the landscape (20-50 percent of the coastal plain). Freezing and thawing form a patterned mosaic of polygonal ridges and ponds, and many rivers bisect the plain and flow into the Arctic Ocean.The open seawaters of the Beaufort Sea, Chukchi Sea,Arctic Ocean, and Hudson Bay are frozen much of the year, and the ice pack is never far from shore. Breeding species include a variety of larids (jaegers, gulls, terns), alcids (guillemots, auklets, murres, puffins, and murrelets), loons and Sandhill Cranes. Few bird species of any type winter in the region.

Northern Prairie and Parkland

The Northern Prairie and Parkland region, extending from the southern edge of prairie Canada's boreal forest, across the international border, and south to the banks of the Missouri, is an area composed primarily of mixed-grass prairie. Aspen poplar woods form a belt of "parklands" along the region's northern boundary. The region offers waterbirds a tremendous variety and often high density of small wetlands or "potholes", ranging from wet meadows and shallow water ponds, to saline lakes, marshes and fens. Oxbow wetlands created by the changing flow of small prairie rivers and streams, and human created reservoirs dot the landscape. Widely regarded as the most important waterfowl production area in North America, the region hosts twenty-four colonial and fifteen non-colonial species of breeding waterbirds including the endangered interior Least Tern.A number of species reach their highest densities or have breeding ranges contained largely within the region, notably the American White Pelican, Eared Grebe, California Gull, Black Tern, Forster's Tern and Franklin's Gull. The challenge for the Northern Prairie and Parkland regional plan is operating in a landscape significantly affected by agriculture, oil/gas and other human development activities which factor immensely in the region's conservation issues. Wetland loss and deterioration tops the list, which is further influenced by the region's natural cycles of drought and inundation.The widespread and uncertain ramifications of global warming will affect the regional plan's strategies

to combat wetland loss and properly manage associated upland habitats for the benefit of waterbirds and other bird species.

Central Prairies

The Central Prairies region, stretching across the U.S. heartland, is characterized by a semi-arid climate and consists of rolling plains vegetated with shortgrass and mixed-grass prairie. Native grassland vegetation exists in many areas, especially in the north and west, and ranching is a dominant land use. Rowcrop agriculture is a more prevalent land use in the eastern parts of the region. Wetland resources are relatively sparse and consist mostly of river-associated wetlands, playas and depressional wetlands. The region supports significant breeding populations of interior Least Terns, Black Terns, Eared Grebes, Black-crowned Night-Herons, American Bitterns, and Virginia Rails. Additionally, critical migratory stopover habitat for Mid-continent Sandhill Cranes and Whooping Cranes is found along the Platte River in Nebraska and in other wetland complexes in the region. There is lack of adequate information on habitat use, and population sizes and trends for many waterbirds in this region. Primary threats to waterbirds in the Central Prairies region include unpredictable rainfall patterns, and habitat loss or degradation due to agricultural activity and urban development.The Central Prairies regional plan will focus on documenting critical waterbird sites/landscapes and identifying information gaps which may hinder the effective monitoring and management of waterbird populations.

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Least Terns

Upper Mississippi Valley/Great Lakes

The Upper Mississippi Valley/Great Lakes (UMVGL) region is a diverse area lying in the middle of North America. About 40 species of waterbirds occur in the region, and among the priority species there are Least, Common, Black, and Forster's Terns; Black-crowned and Yellow-crowned Night-Herons;American and Least Bitterns; Yellow, Black, and King Rails; and Common Loons. Superabundant species that are causing human conflicts include Double-crested Cormorants and Ring-billed Gulls. The UMVGL region provides a variety of waterbird nesting, roosting, and foraging habitats, including islands, natural and managed wetlands, lakes and lake shorelines, reservoirs, rivers and floodplains, sand and gravel bars, beaches, and Great Lakes coastal estuaries. The Great Lakes and "big rivers" (Mississippi, Illinois, Ohio, and Missouri Rivers) provide a foundation for much of the important waterbird habitat in the region. Parts of the region are heavily forested or have rugged terrain with few wetlands, and these support little waterbird use. Wetland losses from urban development, river dredging and diking, and agricultural drainage have reduced the amount of waterbird habitat in the region, and water quality has been impacted by agricultural and industrial runoff. Dredged material island creation, wetland creation and restoration activities, and water control structures have provided new waterbird habitat in some areas. Fluctuating water levels in the Great Lakes have reduced habitat for some species and enhanced habitat for others. A primary goal of the UMVGL regional plan is to ensure the availability of waterbird nesting and foraging sites by protecting, restoring, and managing a variety of habitat types throughout the region. Other limiting factors to UMVGL waterbirds include human disturbance, predation, nest-site competition, altered food base, contaminants, and conflicts with humans.

Southeast U.S.

This Southeast region borders the southeastern U.S., stretching from eastern Texas and Oklahoma, capturing the Florida peninsula, and extending northward into eastern North Carolina and Virginia. It extends into the Gulf of Mexico and pelagic areas off both the Atlantic and Gulf coasts. Particularly important waterbird habitats in the region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. The Southeast U.S. region is particularly critical to 15 species of waterbird. Federally listed taxa include breeding populations of Wood Stork, the Mississippi subspecies of Sandhill Crane, Whooping Crane, interior Least Tern, and Gulf coast populations of Brown Peli-

can.The population trends for the long-legged wading species in the region vary and are of great interest, as these birds are important ecological indicators for restoring the Everglades and for identifying environmental problems elsewhere (e.g., Okefenokee Swamp). Among concerns requiring region-wide attention are mortality of waterbirds associated with various fisheries ("waterbird bycatch," depredation control at aquaculture ponds and other facilities), loss and deterioration of habitat, disturbance of nesting areas (particularly those of beach-nesting terns and skimmers), and effects from contaminants. A key objective of the Southeast regional plan is the standardization of data collection efforts and analysis procedures across the region. This will allow better tracking of regional movements and the association of these movements with environmental or land use changes to better recommend effective conservation measures.

American Coot

Mid-Atlantic/New England/Maritimes

Stretching from the southern end of the Chesapeake Bay to the Gulf of St. Lawrence, this region offers a great variety of coastal habitats. The islands and shores of the Chesapeake and Delaware Bays host large mixed colonies of coastal and wading waterbirds, as do the estuaries and embayments formed behind mid-Atlantic barrier islands. Most of the world's population of Roseate Tern nests on the islands of southern New England, as do large numbers of other terns and gulls. Sandy shores give way to the rocky or muddy intertidal shorelines of northern New England and Canada's maritime provinces. Here, Black Guillemots breed on the coast, while Leach's Storm-Petrel, gulls, terns, and the southern-most populations of breeding alcids nest on offshore islands. The inland ponds, lakes, and river valleys often offer more isolation for waterbirds than coastal habitats, though they freeze earlier and easier. Development pressure is a critical issue for this region, which hosts tremendously dense human populations, especially in its southern end. Overexploitation of coastal resources and contamination are also key threats. The planning effort for the Mid-Atlantic/New England/Maritimes region has the advantage of being able to draw on the knowledge and expertise of a number of locally based waterbird working groups.

Pacific Islands

The Pacific Islands waterbird planning region extends across a vast area of the north and central Pacific Ocean encompassing numerous islands and island groups under U.S. jurisdiction. The region stretches 5,000 miles from east to west and 3,000 miles from north to south and includes some of the most isolated islands in the world. The physical geography ranges from mountainous, alpine environments to low-lying tropical atolls just a few feet above sea level.This region is of international importance for both endemic species (an evolutionary result of island isolation) and migratory waterbirds capable of crossing great distances of open ocean. This region supports millions of breeding seabirds representing 30 species, including the entire global population of Hawaiian Dark-rumped Petrel and Newell's Shearwater and greater than 98% of the world populations of Laysan and Black-footed Albatross. Unfortunately, the small size and isolation of these islands increases the vulnerability of individual species and their habitats. Rails, coots, and gallinules (several of which are endemic) are at risk of becoming endangered or are already extinct. Habitat loss and degradation associated with human development and invasive species have devastated native flora and fauna, especially on the more developed islands. Introduced species (predators, herbivores, insects, plants, etc.), introduced diseases, contaminants, and mortality resulting from interactions with commercial fisheries pose serious threats to waterbirds, both on land and at sea.The U.S.

White-faced Storm-Petrel ***Polynesian Storm-Petrel*** ***European Storm-Petrel*** ***Least Storm-Petrel***

Pacific Islands regional plan will synthesize the conservation issues of the region and prioritize management efforts to address them.

Caribbean

This region includes Bermuda, the islands and waters of the Caribbean Basin, and the islands and waters off the northern coast of South America.The majority of these islands are of volcanic origin, thus dispersal of species from surrounding continents and subsequent evolution in isolation have shaped the region's avifauna and produced a number of endemic species. Breeding residents and local migrants, wintering or migrating neotropical migrants, and non-breeding austral migrants can all be found in the region. The waterbirds occurring on each particular island are dependent on its size (ranging from Cuba's 110,860 km^2 to tiny rocky islets) and topography and the resulting suite of marine and freshwater habitats. Coastline extension and shelf width affect the presence and nature of beaches, estuaries, mud flats and mangroves. Mangroves provide foraging habitat for waterbirds seeking fish and invertebrates, and Brown Pelicans, as well as many species of herons and egrets, roost and nest in the mangrove canopy. Sandy and rocky coasts, as well as offshore rocks and reefs, are also routinely used as nest locations and roosts by shorebirds, gulls, terns and wading birds. Saltwater ponds and lagoons, formed as a result of the growth of corals across the mouth of an indented shoreline, can provide an important prey base for waders. Artificial spoil islands formed from dredging are used by several species of birds. Artificial freshwater habitats can also be very important, as Caribbean islands often have few natural inland bodies of fresh water. Reservoirs constructed for the purposes of potable water, irrigation, power, and flood control; ponds for irrigation, livestock, or aesthetic reasons; and irrigation canals can all serve as waterbird habitat.Where rivers, streams, or creeks occur, they range from rapid flows in the steep mountains to slower and more winding courses across the lowlands. Habitat destruction and disturbance associated with a growing human population are the principal threats in the Caribbean, notably deforestation, destruction of mangroves and other wetlands, hunting, and the introduction of exotic predators. Water pollution, siltation of water bodies, and excessive withdrawals of fresh water are also problems. These threats have caused declines in a number of waterbird and other aquatic bird species, including the globally threatened Bermuda Petrel, Black-capped Petrel, West Indian

© NANCY CAMEL

Anhinga

Wedge-rumped Storm-Petrel ***Band-rumped Storm-Petrel*** ***Leach's Storm-Petrel*** ***Tristram's Storm-Petrel***

Whistling-Duck and Zapata Rail.

The Caribbean region's island nations for the most part have limited capacity for conservation action. Moreover, these nations share an ecological identity not reflected by political boundaries. Thus, a multinational conservation planning and implementation effort is required to effect conservation action in this region. This effort should address the needs of all aquatic birds, including seabirds, coastal birds, wading birds, marshbirds, shorebirds, and waterfowl, in order to make the most effective use of resources. As an important first step, the Society for the Conservation and Study of Caribbean Birds has formed a Waterbirds Task Force for the Caribbean region. It is proposed that this working group conduct workshops to bring together stakeholders in aquatic bird conservation to enable them to define and coordinate regional conservation action.The group will determine and document regional and national population goals, habitat management goals, avian (waterbird) monitoring goals and techniques, and important aquatic bird areas (IBAs); identify needs and develop training and educational materials; and develop and implement priority conservation projects. It is hoped that Caribbean planning will foster waterbird interests in the Caribbean, generate additional species-based working groups, secure increased funding for aquatic bird conservation projects, and surmount political obstacles to access and collaboration.

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Wood Stork

Central America

The Central America region is defined by the seven nations of Central America and adjacent ocean areas. The region has 6,603 km of coast (approximately 12% of the Latin American and Caribbean coastline), with approximately 567,000 hectares of mangroves (8% of world's total), plus 1,600 km of coral reef. The low-lying coastal zones include many estuaries and extensive lagoons, important as waterbird habitat.The Gulf of Fonseca, a natural, shallow Pacific harbor shared by El Salvador, Honduras, and Nicaragua, is similar to the Gulf of California, with estuaries, marshes, rocky coastline, and islets. On the Atlantic side, the Honduras Bay islands and reefs host local colonies of seabirds while offshore waters in the Caribbean serve as foraging grounds for locally nesting seabirds and migrants. The region also contains the huge Isabel Lake (Guatemala) and Nicaragua and Managua Lakes (Nicaragua), and a regional system of volcanic lakes, such as Ilopango (El Salvador);Amátitlan and Atitlán (Guatemala); and the Arenal reservoir (Costa Rica). Extensive flood plains are found along the Mosquitia (Nicaragua and Honduras); the Belize River (Belize), and La Pasion, Polochic and Cahabon rivers (Guatemala).

Central America's coasts and wetlands contribute greatly to local, national and regional economies, but their importance is not always recognized and protection and management are often lacking. Conservation action in the region should include the promotion of greater awareness of these important ecosystems, primarily via local projects to demonstrate the feasibility of sustainable resource use. A process similar to that being developed for the Caribbean is suggested for the region.The first step would be to assemble those individuals willing to work towards developing a regional waterbird conservation plan into a working group. This working group, starting with identification of core participants, would conduct workshops to facilitate planning; devel-

Sooty Shearwater

op population and habitat goals; determine monitoring needs and approaches; support identification, protection and management of waterbird IBAs; create training and education materials; and identify and implement model conservation projects. Integration across national borders and of the needs of all aquatic birds (i.e., waterbirds, shorebirds, and waterfowl) is suggested as the most efficient approach to conservation, though the development of conservation strategies and monitoring could be done on a subregional basis, along the Pacific slope, Atlantic slope and interior lakes. It is recognized that funding is critical for this region to move forward with waterbird planning and conservation.

Pacific and Atlantic

These regions refer to the high seas of the Pacific and Atlantic, which are regularly utilized by the pelagic seabirds considered in the Plan, including shearwaters, petrels, storm-petrels, puffins, fulmars, gannets, skuas, kittiwakes, jaegers, and auks. Though consisting entirely of open water, these regions offer habitat of varying quality, depending on distance from land, latitude and the shifting character of the water (i.e., temperature, salinity, nutrients, and biological communities). Because of fluctuations in weather and food supply, and because food often has a patchy distribution, most pelagic seabirds must travel constantly and over enormous areas. Information on the movements and distribution is lacking for many pelagic seabird species, in part because of their extensive movements. It is known that after nesting in very crowded colonies, many species continue to congregate outside the breeding season in areas of high productivity, such as upwellings. Huge flocks of Sooty and Greater Shearwaters have been seen in these areas. The major threats to waterbirds on the high seas are oil and other contaminant spills, discarded plastics and other pollution, fisheries conflicts and the unknown impacts of altered ocean cycles. Activities on the continental shelves, such as ocean dumping and sand mining, can also directly or indirectly impact pelagic birds. Seabird conservation planning for the Pacific and Atlantic Regions will call for continued research and additional monitoring, and will explore how policy changes, enforcement, and alleviation of threats can be accomplished via international communication and cooperation.

Local Waterbird Conservation

Conservation planning at the local level is essential. Many waterbirds are part of the local communities that humans inhabit and survive within the human-dominated landscape. Local action and community-based conservation may well be the most important level of implementation. Many different locally-based agencies or groups share responsibilities for the management of birds and their habitats with national governments. The Plan recognizes and encourages a diversity of local conservation efforts on behalf of waterbirds.

The approaches that local governments and organizations use for planning and conservation action for waterbirds will differ markedly depending on local conditions, resources, opportunities, needs and interests. These should enhance, rather than weaken, overall conservation success. Not only will a diversity of approaches allow conservation to fit to the local situation but will provide experiments in conservation, the results of which can inform actions elsewhere.

Despite the necessity and desirability of flexibility, it does remain important that local planning and implementation of waterbird conservation be connected to continental, national, state and regional goals, programs and opportunities. This will ensure the availability of information, ideas, planning assistance and resources as well as use of common protocols, such as those developed for monitoring. Mechanisms used should bring partners together to conserve birds and habitats on a landscape level. Cooperation among state and provincial biologists, non-government organizations, especially community-based organizations, is essential.

Particular progress towards goals identified in this Plan could be made at the local level by identifying key local sites. Imbedding waterbird conservation in special site management is particularly well situated to engage local stakeholders in site monitoring and protection, while at the same time serving as a vehicle to address research, education and outreach, and coordination and integration priorities.

Possible elements of a local conservation program:

- Set goals to achieve waterbird conservation,
- Collaborate with regional waterbird conservation working groups to assess waterbird status and local conservation needs,
- Become familiar with regional scale assessments of waterbird status, habitat priorities and other needs and opportunities, but do not be limited by them,
- Develop programs to manage waterbirds and their habitats at local sites, including parks and preserves, for multiple purposes, including public involvement,
- Identify waterbird biologists able to facilitate, guide and manage local waterbird conservation,
- Monitor waterbird colony sites, breeding populations, wintering numbers (where appropriate), and habitats and link to the continent-wide monitoring partnership,
- Develop programs, methods and protocols to protect, conserve and manage habitat used by waterbirds,
- Identify candidate sites for IBAs for waterbirds; help evaluate status, and ensure adequate protection of sites selected for conservation,
- Identify colonies or important wetlands that may not meet IBA criteria but serve to educate and increase public awareness of waterbirds,
- Secure 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,
- Develop an information and education strategy including "how-to" publications for managers and the public, and provide mechanisms to incorporate waterbirds in local education and outreach programs,
- Assure consideration of waterbird conservation needs in land acquisition, land management, regulation, planning and zoning, and
- Identify scientific and management information needs, and secure resources through partnerships to fill these needs.

Lea Island, North Carolina

The Bottom Line

The Plan does not propose the creation of a stand-alone delivery infrastructure for waterbirds. To the contrary, waterbird conservation should be accomplished, to the extent possible, within existing structures, agencies and organizations. With a few exceptions, such as the Waterbird Monitoring Partnership and a waterbird conservation communication strategy, the Plan does not advocate new programs dedicated to waterbirds. Alternatively, the Plan advocates the inclusion of waterbird conservation action within existing programs, and where appropriate, refocusing or expanding programs to enhance their abilities to achieve waterbird conservation.

Although largely imbedded within existing structures and organizations, waterbird conservation requires staff and program support. Staff needs include positions and support funds dedicated at least in part to waterbirds. Program support includes the delivery mechanisms for waterbird conservation. At this time, existing staff size

TABLE 4. Resources Needed for Waterbird Conservation in the Americas

Programs	Waterbird Positions	Lead and Participating Organizations	No. of Positions/ Annual Funding (x $1000)
Waterbird Conservation for the Americas initiative		Waterbird Conservation Council (volunteer representatives for the range of partners and interests)	0/10
Waterbird Monitoring Partnership	Waterbird Monitoring Coordinator	USGS Patuxent Wildlife Research Center, national, state, local partners	1/2,200
Waterbird conservation communication program	Waterbird Communication and Outreach Coordinator	NGO	1/150
Waterbird IBA identification and conservation	IBA coordinators	National Audubon Society, and other BirdLife International partners	1+/2,000
Seabird population monitoring and fisheries issues programs	Seabird conservation coordinators	Pacific Seabird Group, other NGOs, conventions, national and state agencies	1+/4,000
Priority research projects		National agencies and NGOs	?/1,000
Habitat restoration and conservation programs		National agencies and NGOs	?/20,000
National waterbird conservation:			
Canada	National waterbird coordinator	Canadian Wildlife Service	1/200
U.S.	National waterbird coordinator	U.S. Fish and Wildlife Service	1/200
	National waterbird coordinator	Other national natural resource agencies in U.S.	26/2,600
Mexico	National waterbird coordinator	NABCI Mexico Council	1/200
Nations of Central America and Caribbean	National waterbird coordinators and specialists	Wildlife agencies and NGOs	30/300
NGO waterbird programs	Organization waterbird specialists	NGOs	?/?
Regional waterbird conservation:			
North American regions		Regional waterbird conservation working groups	0/250
Caribbean and Central America regions:			?/200
planning/coordination		Caribbean and Central American working groups, Society for the Conservation and Study of Caribbean Birds, BirdLife International, other NGOs	
surveys, monitoring, conservation action and site programs		National agencies, Ducks Unlimited, other NGOs, site-based partnerships, other partnerships	?/1,000
Local waterbird conservation and site-based programs		Community-based organizations	?/1,000

and resources are inadequate to carry out the work that must be done to assure waterbird conservation in the Plan area. Resources needed to accomplish further planning and implementation are shown in Table 4.

Partners in Implementation

At this point in time it is possible to recognize many of the partners that will be called upon in implementing waterbird conservation as outlined in this Plan. It is hoped and anticipated that additional organizations, as well as new innovative approaches to waterbird conservation, will be incorporated into this Plan in subsequent versions.

The Waterbird Conservation for the Americas Initiative

Implementation of the Plan, especially in the form of on-the-ground conservation action, is the purpose of the Waterbird initiative. As previously described, the Council will serve as the keeper of the Plan and the initiator and facilitator of conservation action at all levels by setting continental goals, seeking funding, and developing infrastructure, partnerships, and communication linkages. Improving information through monitoring is the core function of the Waterbird Monitoring Partnership, made up of an array of partners throughout North America, Central America, and the Caribbean. Dissemination of information, as well as education and public awareness will be directed by the waterbird conservation communications program. In Canada, U.S., and Mexico, regional waterbird working groups, and other entities formed under the Waterbird Initiative will integrate, where possible, with the other bird initiatives and NABCI.

Other International Coalitions

Key to waterbird implementation is the formation of networks between the Waterbird initiative and other international coalitions. These include, but are not limited to, the Central American Biological Conference, Mesoamerican Biological Corridor Project,American Pacific Flyway Initiative, Asia Pacific Migratory Waterbird Conservation Strategy, Central Pacific Flyway Initiative, the North American Flyway Councils, Circumpolar Seabird Working Group, Conservation of Arctic Flora and Fauna (CAFF), and Beringian Seabird Working Group. These networks should also connect to parties established under relevant conventions and treaties, for example, the Convention on Migratory Species (Bonn Convention), Convention on Wetlands of International Importance (the Ramsar Treaty), and North

USFWS

Red-billed Tropicbird

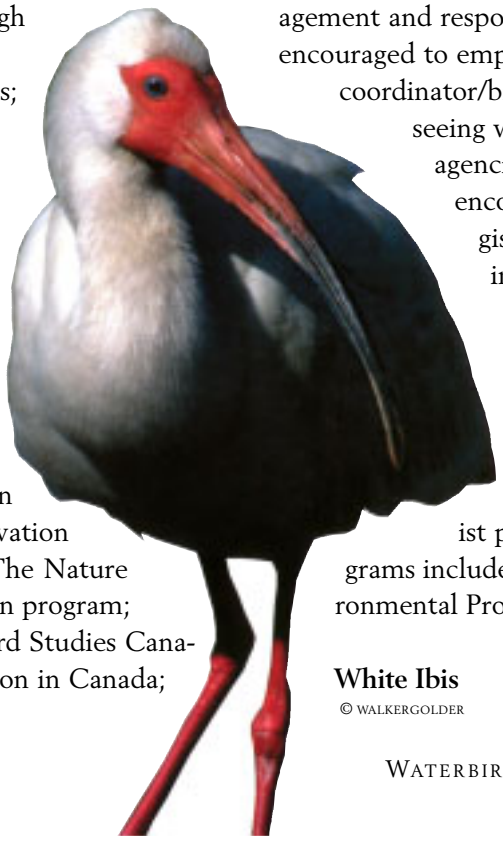
American Marine Protected Areas Network, a project of the North American Commission for Environmental Cooperation (CEC).

Professional Societies
Professional societies are important partners in implementation of the Plan, as they can take the lead in addressing the scientific and technical needs described in the Plan. In some areas, societies can also provide leadership in developing conservation strategies. Notable partners include the Pacific Seabird Group, Waterbird Society, Society for the Conservation and Study of Caribbean Birds, MesoAmerican Society for Conservation Biology, and CIPAMEX.

Environmental Nongovernmental Organizations
NGOs, many of which operate internationally, are also critical partners in waterbird implementation. NGOs with interests and missions compatible with the conservation of waterbirds should consider the needs and opportunities to deliver waterbird conservation within their conservation activities. The Waterbird Initiative especially urges the continued engagement in waterbird conservation by its current special partners: National Audubon Society via the U.S. and State IBA programs; Ducks Unlimited through monitoring and cooperative habitat work in Canada, the U.S. and Latin America; Pronatura and CIPAMEX as advocates for waterbird partnerships in Mexico; Manomet Center for Conservation Sciences for its long-term, parallel interests in shorebird and wading bird conservation; Point Reyes Bird Observatory through its work on Marine Protected Areas and other seabird conservation issues; Wildlife Management Institute through flyway management and its interests in marshbird conservation; International Association of Fish and Wildlife Agencies via its facilitation of state implementation; National Fish and Wildlife Foundation and its networks in Central America and Caribbean; BirdLife International,Americas Division via the Central American and Caribbean IBA programs and waterbird conservation partnerships in member countries;The Nature Conservancy via its bird conservation program; Canadian Nature Federation and Bird Studies Canada for their IBA program coordination in Canada; American Bird Conservancy though its PanAmerican program; and Wetlands International in developing an international waterbird census and flyway initiatives.

Government Agencies
Governmental bodies at all scales are key partners in implementing waterbird conservation strategies. The Trilateral Committee, representing national wildlife agencies in Canada, U.S. and Mexico, facilitates cooperation for conservation of wildlife and habitat common to the three countries. In Canada, the Canadian Wildlife Service will work with NABCI Canada Council and federal, provincial and territorial natural resource management agencies, non-government conservation organizations, and other specialists as determined through the development of *Wings Over Water: Canada's National Waterbird Conservation Plan*. The structure of bird conservation in Mexico centers on the NABCI Mexico Council. In the U.S., migratory bird management is one of the principal responsibilities of the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service is encouraged to appoint and support a permanent waterbird coordinator within the Division of Migratory Bird Management.This person should concentrate on assisting regional planning efforts and implementation, facilitate functioning of the Council, and be a spokesperson for waterbird conservation in the U.S. This individual should have a budget sufficient to support travel, facilitation and small grants.

Other U.S. federal agencies concerned with land management and responsible for bird conservation are also encouraged to employ and support national waterbird coordinator/biologists whose responsibility is overseeing waterbird management within their agencies. TheU.S.D.A. Forest Service is encouraged to employ waterbird biologists at all organizational levels, including the national and international level, in order to address waterbird conservation needs within the Taking Wing Program and other bird conservation initiatives. Additional U.S. agencies called upon to create waterbird coordinator/ specialist positions within their national programs include: National Park Service, USGS, Environmental Protection Agency, U.S Department of



White Ibis

Agriculture Wildlife Services, Bureau of Land Management, Bureau of Indian Affairs, National Oceanic and Atmospheric Administration's National Marine Fisheries Service, Bureau of Reclamation, Natural Resources Conservation Service, Mineral Management Service, and Department of Defense's Services and Army Corps of Engineers.

Regional and Taxonomic Working Groups
Regional waterbird working groups and the strategies they develop are central to future planning efforts and implementation of waterbird conservation actions. Regionally, implementation will occur through many different entities including, but not limited to, federal agencies, states, provinces, industry groups, species interest groups, local entities, and individuals. State and provincial governments include and partner with people whose engagement is critical to long-term conservation of waterbirds. IAFWA's Shorebird and Waterbird Working Group, Migratory Shore and Upland Game Bird Working Group, and Bird Conservation Committee are venues where state agencies interface with waterbird conservation interests. The partners in JVs are specifically focused on wetland and associated upland habitat acquisition, protection, restoration, and management.The Gulf of Maine Seabird Working Group and the North Pacific Albatross Working Group are examples of integral special interest stakeholders.

Community-based Organizations
Given the need to affect waterbird conservation at all geographic scales, it must be emphasized that one of the principal means of implementing waterbird conservation is through local action. Cities, towns, villages, islands, local governmental organizations, and NGOs should be involved. To the extent that "all conservation is local," waterbirds must be protected, conserved, monitored, and managed by people with the wisdom gained by their intimate knowledge of the local situation.The superstructure of continental waterbird planning should 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. Each colony or breeding site and important feeding site should have its advocate and guardian, backed by legislation from local and state governments.

Additional Partners
It cannot be overemphasized that waterbird conservation will benefit from the participation of additional partners. Anyone interested in waterbirds can contribute to their conservation. Moreover, contribution at all scales—be it management at a local sanctuary or international policymaking—is welcome and important. Additional partners will be recognized in subsequent versions of the Plan.

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[1] Canadian Wildlife Service. In prep. *Wings Over Water: Canada's National Waterbird Conservation Plan*. Environment Canada, Ottawa,Canada

PART 4

ACHIEVING the VISION: SUMMARY of STRATEGIES and OUTCOMES

Vision

The vision of the Waterbird Conservation for the Americas initiative is that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and nonbreeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean.

Species and Population Goal

GOAL: ***To ensure sustainable distributions, diversity and abundance of waterbird species throughout each of their historical or naturally expanding ranges in the lands and waters of North America, Central America, and the Caribbean.***

Strategies

- Determine population status for all species of waterbirds throughout North America, Central America, and the Caribbean.
- Institute a large scale, dispersed, partnership-based population monitoring system.
- 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 thresholds for each species.
- Define sustainable population goals for all species, at regional scales as possible and as needed, and eventually at the continental scale.
- Determine the extent and root causes of public perception of waterbirds, particularly locally abundant species, and develop programs that help bring public perception in line with scientific and economic findings.
- Energize JVs and agencies to take responsibility for setting and achieving population goals through appropriate management.
- Develop a global perspective on populations to aid in interpretation of population trends.
- Synthesize information to identify key factors affecting populations in order to take appropriate conservation action.

Blue-footed Booby

Desired Results

- Waterbirds, their habitats, and threats are monitored with sufficient intensity and coordination to accurately determine population size, trend, causes for trends and distribution changes.
- Factors influencing waterbird populations are sufficiently understood to take conservation action.
- The influence of wetland complexes at different spatial scales on breeding and dispersal dynamics is better understood.
- Public perception is coherent with scientific and economic findings on waterbird impacts.
- Management plans are in accord with technical findings.
- Habitat sources and sinks are recognized.
- Species of concern are identified, status assessments

conducted, sustainable goals developed, management plans enacted, and populations restored to appropriate sustainable levels.

Habitat Goal

GOAL: ***To protect, restore, and manage sufficient high quality habitat and key sites for waterbirds throughout the year to meet species and population goals.***

Strategies

- Identify key marine, freshwater, and terrestrial habitats for waterbirds, including breeding, wintering, migratory, roosting, and foraging habitats.
- Implement conservation and management actions that secure important habitats.
- Increase understanding of waterbird habitat requirements, threats to habitat quality, and habitat interaction at different scales.
- Develop and implement habitat management plans for waterbirds for each planning unit.
- Identify, inventory and document key sites that potentially qualify as global, continental, national, or state IBAs and other key sites for waterbirds.
- Refine and continually update the list and description of IBAs for waterbirds.
- Develop and maintain a communication network among habitat managers, including IBAs for waterbirds.

Desired Results

- Important waterbird habitats are secured and habitat programs are properly managed.
- Important marine areas are identified and fisheries managed at levels that promote sustainable seabird populations.
- 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.
- New programs are developed and implemented to protect and manage important waterbird habitats at multiple scales.
- IBAs and other key sites for waterbirds are identified and catalogued.
- IBAs and other key sites are secured through stakeholder engagement, legislation and/or site management programs.
- Threats affecting IBAs and other key sites are documented, understood and managed and a network of area managers exists.

Little Blue Herons

Education and Information Goal

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

Strategies

- Ensure that information on waterbird conservation is available in a form that is useful for planning, implementation, and management purposes.
- 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.
- Develop and widely distribute educational information on habitat conservation strategies.
- Work with users of waterbird habitats to promote practices and policies that reduce impacts on the birds.

Desired 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 in the Americas continue, are guided by common principles, and result in integrated and mutually supportive 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 through common goal setting, and multispecies approaches such as advocated by NABCI.

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Yellow-crowned Night-Heron

- Establish cooperative linkages with other bird conservation initiatives concerned with aquatic habitats.
- When initiatives for other aquatic bird groups are not underway, catalyze simultaneous planning and conservation of all water-dependent bird species.
- Seek to achieve integrated bird conservation action that incorporates the needs of waterbirds.
- Exchange information and expertise with international, national, regional state/provincial and local partners, and establish networks between conservationists, scientists, and habitat managers.
- Develop waterbird plans, where appropriate, at national, regional, JV, and state/provincial levels.
- 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.

Desired Results

- Waterbird conservation plans are in place and coordinated at the continental, national, regional, state/provincial, and local levels as appropriate.
- Common principles that support waterbird conservation are incorporated into international, national and state/ provincial legislation, agreements and partnerships.
- Waterbirds are fully integrated into 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.
- Priority conservation action is not hindered through lack of human or financial resources.

APPENDICES

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Horned Grebe

APPENDIX 1 Names, Estimated Population Sizes, and Conservation Status of Waterbirds

COLONIAL OR SEMI-COLONIAL BREEDERS

							Conservation Status Assessment Factor Scores and Categories of Concern[c]							
S/M#[a]	AOU#	Scientific Name	English Name[b]	French Name[b]	Spanish Name[b]	Estimated Population in Plan Area	PT	PS	TB	TN	BD	ND	Category	Rule
3179	35	*Stercorarius skua*	Great Skua	Grand Labbe	Pagalo grande	Insufficient information	3	4	na	2	na	3	Moderate	3c
3183	35.2	*Stercorarius maccormicki*	South Polar Skua	Labbe antarctique	Pagalo sureno	Insufficient information	3	4	na	2	na	1	Moderate	3c
3184	36	*Stercorarius pomarinus*	Pomarine Jaeger	Labbe pomarin	Estercarario pomarino	20,000 - 40,000 breeders	3	3	3	2	1	1	Low	4a
3185	37	*Stercorarius parasiticus*	Parasitic Jaeger	Labbe parasite	Salteador parasito	Insufficient information	3	3	3	2	1	1	Low	4a
3186	38	*Stercorarius longicaudus*	Long-tailed Jaeger	Labbe à longue queue	Salteador colilargo	>150,000 individuals (?)	3	2	3	2	1	1	Low	4a
3187	80	*Rynchops niger*	Black Skimmer	Bec-en-oiseaux noir	Rayador	65,000 - 70,000 breeders	4	2	4	3	3	3	High	2a
3196	57	*Larus heermanni*	Heermann's Gull	Goéland de Heermann	Gaviota de Heermann	350,000 breeders	3	2	4	5	5	4	Moderate	3b
3199	55	*Larus canus*	Mew Gull	Goéland cendré	Gaviota piquiamarilla	160,000 - 240,000 breeders	4	2	1	1	2	2	Not currently at risk	5
3201	54	*Larus delawarensis*	Ring-billed Gull	Goéland a bec cerclé	Apipizca pinta	~1,700,000 breeders	1	1	1	1	2	2	Not currently at risk	5
3202	53	*Larus californicus*	California Gull	Goéland de Californie	Gaviota Californiana	>414,000 breeders	3	2	5	2	2	3	Moderate	3b
3203	47	*Larus marinus*	Great Black-backed Gull	Goéland marin	Gavion	121,430 breeders	2	2	2	2	3	2	Not currently at risk	5
3205	44	*Larus glaucescens*	Glaucous-winged Gull	Goéland à ailes grises	Gaviota de alas glaucas	380,000 breeders	3	2	2	2	3	3	Low	4a
3206	49	*Larus occidentalis*	Western Gull	Goéland d'Audubon	Gaviota occidental	>77,000 breeders	2	2	2	2	4	4	Low	4b
3207	49.1	*Larus livens*	Yellow-footed Gull	Goéland de Cortez	Gaviota de Patas Amarillas	40,000 breeders	3	3	3	3	5	5	Moderate	3b
3208	42	*Larus hyperboreus*	Glaucous Gull	Goéland bourgmestre	Gaviota blanca	169,200 breeders	3	2	1	1	1	1	Not currently at risk	5
3209	43	*Larus glaucoides*	Iceland Gull	Goéland arctique		>100,000 individuals	3	2	3	3	3	2	Low	4a
3209.1	43.1	*Larus thayeri*	Thayer's Gull	Goéland de Thayer	Gaviota de Thayer	<10,000 individuals in Canada	3	3	3	5	3	2	Moderate	3c
3210	51	*Larus argentatus*	Herring Gull	Goéland argenté	Gaviota plateda	>246,000 breeders	3	2	3	2	1	1	Low	4a
3212	48	*Larus schistisagus*	Slaty-backed Gull	Goéland a manteau ardoise		Insufficient information	----------Insufficient information available to assess risk----------							
3214	50	*Larus fuscus*	Lesser Black-backed Gull	Goéland brun		Insufficient information	3	4 or 5	na	3	na	3	Moderate	3c
3223	55.1	*Larus ridibundus*	Black-headed Gull	Mouette rieuse	Gaviota dorsinegra menor	40 breeders, 400 non-breeders	3	5	3	3	4	3	Moderate	3d
3225	60	*Larus philadelphia*	Bonaparte's Gull	Mouette de Bonaparte	Gaviota encapuchada	Insufficient information	?	3	3	3	1	2	Moderate	*
3231	58	*Larus atricilla*	Laughing Gull	Mouette a tete noir	Gaviota de Bonaparte	528,000 - 538,000 breeders	2	2	2	2	3	2	Not currently at risk	5
3232	59	*Larus pipixcan*	Franklin's Gull	Mouette de Franklin	Gaviota de Franklin	315,608 - 990,864 breeders	3	1 or 2	4	3	2	2	Moderate	3b
3233	60.1	*Larus minutus*	Little Gull	Mouette pygmée	Gaviota minima	100-200 breeders	4	5	3	1	5	4	High	2a
3234	39	*Pagophila eburnea*	Ivory Gull	Goéland senateur	Gaviota marfil	>2,400 breeders	3	4	3	3	4	1	Moderate	3b
3235	61	*Rhodostethia rosea*	Ross's Gull	Mouette rosée		<200 breeders	?	5	2	3	4	1	High	**
3236	62	*Xema sabini*	Sabine's Gull	Mouette de Sabine	Gaviota de Sabine	200,000 - 400,000 breeders	2	2	2	4	2	1	Low	4b
3238	40	*Rissa tridactyla*	Black-legged Kittiwake	Mouette tridactyle	Gaviota patinegra	3,126,000 breeders	3	1	2	2	2	1	Not currently at risk	5
3239	41	*Rissa brevirostris*	Red-legged Kittiwake	Mouette des brumes		160,000 - 180,000 individuals at breeding colonies	4	2	4	2	5	3	High	2a
3240	63	*Sterna nilotica*	Gull-billed Tern	Sterne hansel	Pico de gaviota	6,000 - 8,000 breeders	4	3	4	2	3	2	High	2a
3241	64	*Sterna caspia*	Caspian Tern	Sterne Caspienne	Charran caspia	66,000 - 70,000 breeders	2	3	4	2	2	2	Low	4b
3243	65	*Sterna maxima*	Royal Tern	Sterne royale	Golondrina-marina real	100,000 - 150,000 breeders	3	2	4	3	3	3	Moderate	3b
3244	66	*Sterna elegans*	Elegant Tern	Sterne elegante	Golondrina-marina elegante	34,000 - 60,000 breeders	3	3	4	4	4	3	Moderate	3b
3246	65.2	*Sterna bergii*	Great Crested Tern			Few	3	5	?	2	5	4	Moderate	3c
3248	67	*Sterna sandvicensis*	Sandwich Tern	Sterne caugek	Sterna sandvicensis	75,000-100,000 breeders (probably close to 10,000)	2	2	3	2	3	3	Not currently at risk	5
3249	72	*Sterna dougallii*	Roseate Tern	Sterne de Dougall	Charran Rosada	16,000 breeders	4	3	5	5	3	3	High	2a
3253	70	*Sterna hirundo*	Common Tern	Sterne pierregarin	Sterna h. hirundo	300,000 breeders	2	2	5	4	2	1	Low	4b
3254	71	*Sterna paradisaea*	Arctic Tern	Sterne arctique	Sterna paradisaea	Insufficient Information	4	3	4	2	1	1	High	2a
3257	69	*Sterna forsteri*	Forster's Tern	Sterne de Forste	Gaviota de Forster	47,000 - 51,500 breeders	4	3	3	2	2	2	Moderate	3b
3259	74.1	*Sterna albifrons*	Little Tern			Few	2	5	4	2	5	5	High	2b
3261	74	*Sterna antillarum*	Least Tern	Petite Sterne	Charran minimo	60,000 - 100,000 breeders	4	2	5	4	3	2	High	2a
3268	73	*Sterna aleutica*	Aleutian Tern	Sterne Aleoute	Charran de las Aleutianas	14,594 breeders	4	3	4	2	4	3	High	2a
3269	76.1	*Sterna lunata*	Gray-backed Tern	Sterne a dos gris	Golondrina-marina dorsigris	72,000 - 104,000 breeders	3	2	4	2	4	3	Moderate	3c
3270	76	*Sterna anaethetus*	Bridled Tern	Sterne a collier	Charran embridado	8,700 - 14,700 breeders	4	3	4	3	3	3	High	2a
3271	75	*Sterna fuscata*	Sooty Tern	Sterne fuligineuse	Golondrina-marina oscura	>3,360,000 - 4,380,000 breeders	3	1	4	2	3	2	Moderate	3c
3275	77	*Chlidonias niger*	Black Tern	Guifette noire	Gaviotin negro	100,000 - 500,000 breeders	3	2	4	3	2	2	Moderate	3b
3277	79	*Anous stolidus*	Brown Noddy	Noddi niais	Golondrina-boba café	286,000 - 298,000 breeders	2	2	2	2	3	2	Not currently at risk	5
3278	79.1	*Anous minutus*	Black Noddy	Noddi noir	Golondrina-boba negra	>86,400 breeders, >250,000 total	3	2	4	2	3	2	Moderte	3c
3280	79.2	*Procelsterna cerulea*	Blue-gray Noddy	Noddi gris		Insufficient information	3	4	4	2	4	3	High	2b
3281	79.3	*Gygis alba*	White Tern	Gygis blanche	Charran blanco	30,000 breeders; total N.A. population - 80,700	3	3	2	2	4	3	Moderate	3c

3284	34	*Alle alle*	Dovekie	Mergule nain		1,000 breeders	3	4	2	3	5	2	Moderate	3c
3285	30	*Uria aalge*	Common Murre	Guillemot marmette	Arao comun	4,250,000 individuals	3	1	4	4	3	2	Moderate	3c
3286	31	*Uria lomvia*	Thick-billed Murre	Guillemot de Brünnich		8,000,000 breeders	3	1	4	4	2	2	Moderate	3c
3287	32	*Alca torda*	Razorbill	Petit Pingouin		76,000 breeders	3	2	4	5	4	3	Moderate	3c
3289	27	*Cepphus grylle*	Black Guillemot	Guillemot à miroir		100,000 - 200,000 breeders	2	2	3	3	2	1	Not currently at risk	5
3290	29	*Cepphus columba*	Pigeon Guillemot	Guillemot du Pacifique	Arao paloma	<69,000 breeders	4	3	3	2	3	3	Moderate	3b
3292	23	*Brachyramphus marmoratus*	Marbled Murrelet	Guillemot marbré		300,000 - 800,000 individuals	5	2	4	2	3	4	High	2a
3293	24	*Brachyramphus brevirostris*	Kittlitz's Murrelet	Alque pale		7,000 - 18,000 individuals (summer)	4	3	4	4	3	4	High	2a
3294	25	*Synthliboramphus hypoleucus*	Xantus's Murrelet	Guillemot de Xantus	Pato nocturno de Xantus	6,000 - 7,000 breeders	4	3	5	4	5	5	High	2a
3295	26	*Synthliboramphus craveri*	Craveri's Murrelet	Alque a aisselles grises		10,000 breeders	4	3	5	3	5	5	High	2a
3296	21	*Synthliboramphus antiquus*	Ancient Murrelet	Alque à cou blanc	Arao paloma	1,300,000 breeders	4	1	5	4	4	3	High	2a
3298	16	*Ptychoramphus aleuticus*	Cassin's Auklet	Starique de Cassin	Alcuela norteamericana	3,200,000 - 3,570,000 breeders	3	1	4	2	4	3	Moderate	3c
3299	17	*Aethia psittacula*	Parakeet Auklet	Starique perroquet		1,000,000 individuals	?	1	2	2	3	3	Low	**
3300	18	*Aethia cristatella*	Crested Auklet	Starique cristatelle	Alcita crestada	3,000,000 breeders	?	1	4	4	4	3	Moderate	**
3301	19	*Aethia pygmaea*	Whiskered Auklet	Starique pygmee		>25,000 individuals in water around nesting colonies	?	3	4	4	4	4	Moderate	**
3302	20	*Aethia pusilla*	Least Auklet	Alque minuscule		9,000,000 total individuals	?	1	4	2	4	3	Moderate	**
3303	15	*Cerorhinca monocerata*	Rhinocerous Auklet	Alque rinoceros	Alcuela rinoceronte	922,000 breeders	2	1	4	2	3	3	Low	4b
3304	13	*Fratercula arctica*	Atlantic Puffin	Macareux moine		750,000 - 760,000 breeders	1	2	4	4	3	2	Not currently at risk	5
3305	14	*Fratercula corniculata*	Horned Puffin	Macareux cornu		1,000,000 breeders	?	1	4	2	3	2	Moderate	**
3306	12	*Fratercula cirrhata*	Tufted Puffin	Macareux Huppé		2,750,000 - 3,000,000 breeders	2	1	4	2	2	2	Low	4b
3331	330	*Rostrhamus sociabilis*	Snail Kite	Milan des marais	Babosero	600 - 1,000 individuals	3	4	4	4	5	5	High	2b
3624	4	*Podiceps nigricollis*	Eared Grebe	Grèbe à cou noir	Zambullidor orejudo	3,500,000 - 4,100,000 individuals (fall population)	3	1	2	4	2	3	Moderate	3c
3629	1	*Aechmophorus occidentalis*	Western Grebe	Le Grèbe de l'Ouest	Achichilique	>110,000 breeders	3	2	4	4	3	3	Moderate	3b
3630	1.1	*Aechmophorus dorkii*	Clark's Grebe	Le Grèbe de Clark	Achichilique	10,000 - 20,000 individuals	3	3	3	3	3	3	Low	4a
3631	113	*Phaethon aethereus*	Red-billed Tropicbird	Grand Paille-en-queue	Rabijunco piquirrojo	3,800 - 7,000 breeders	4	4	5	2	3	3	High	2a
3632	113.1	*Phaethon rubricauda*	Red-tailed Tropicbird	Paille-en-queue blanc	Rabijunco cola roja	32,000 breeders	3	3	4	2	4	2	Moderate	3c
3633	112	*Phaethon lepturus*	White-tailed Tropicbird	Phaeton a bec jaune	Rabijunco cola blanca	10,000 - 23,000 breeders	4	3	5	3	3	2	High	2a
3635	117	*Morus bassanus*	Northern Gannet	Fou de Bassan	Bobo norteno	155,456 breeders	1	2	3	3	4	2	Not currently at risk	5
3638	114.1	*Sula nebouxii*	Blue-footed Booby	Fou a pattes bleues	Bobo patiazul	~90,000 individuals in Gulf of CA	4	2	5	5	5	4	High	2a
3640	114	*Sula dactylatra*	Masked Booby	Fou masque	Bobo enmascarado	80,000 - 120,000 breeders	4	2	4	2	3	2	High	2a
3640.1	---	*Sula granti*	Nazca Booby			Insufficient information	----------		Insufficient information available to assess risk				----------	
3641	116	*Sula sula*	Red-footed Booby	Fou a pieds rouges	Bubia pies rojos	300,000 breeders	4	2	5	5	3	2	High	2a
3642	115	*Sula leucogaster*	Brown Booby	Fou brun	Bobo vientre-blanco	280,000 - 300,000 breeders	4	2	5	3	3	2	High	2a
3643	118	*Anhinga anhinga*	Anhinga	Anhinga d'Amerique	Anhinga americana	20,000 - 34,000 breeders in US	3	3	3	3	3	4	Moderate	3b
3653	122	*Phalacrocorax penicillatus*	Brandt's Cormorant	Cormoran de Brandt	Cormoran de Brandt	151,200 breeders	4	2	5	4	4	4	High	2a
3657	121	*Phalacrocorax brasilianus*	Neotropic Cormorant	Cormoran olivatre	Cormoran neotropical	16,000 breeders in US	2	3	3	3	3	4	Moderate	3c
3658	120	*Phalacrocorax auritus*	Double-crested Cormorant	Cormoran à aigrettes	Cormoran Orejudo	>740,000 breeders	1	2	2	2	2	2	Not currently at risk	5
3662	119	*Phalacrocorax carbo*	Great Cormorant	Grand Cormoran	Cormoran Grande	11,600 breeders	3	3	2	2	4	4	Moderate	3c
3678	124	*Phalacrocorax urile*	Red-faced Cormorant	Cormoran a face rouge		<50,000 breeders	4	3	4	4	3	3	High	2a
3679	123	*Phalacrocorax pelagicus*	Pelagic Cormorant	Cormoran Pélagique	Cormoran Pelagico	<69,000 breeders	4	3	4	4	3	3	High	2a
3685	198	*Egretta rufescens*	Reddish Egret	Aigrette roussatre	Garza rojiza	6,000 - 10,000 breeders	3	3	5	5	4	?	Moderate	3c
3688	199	*Egretta tricolor*	Tricolored Heron	Aigrette tricolore	Garceta tricolor	<194,000 breeders in US	4	3	4	3	4	4	High	2a
3690	200	*Egretta caerulea*	Little Blue Heron	Petit heron bleu	Garza azul	Insufficient information	4	2	4	4	?	?	High	2a
3692	197.1	*Egretta gularis*	Western Reef-Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	
3694	197	*Egretta thula*	Snowy Egret	Aigrette neigeuse	Garceta pie-dorado	>143,000 breeders	4	2	4	3	3	4	High	2a
3697	---	*Pilherodius pileatus*	Capped Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	
3699	194	*Ardea herodias*	Great Blue Heron	Grand Héron	Garzon cenizo	83,000 breeders	1	2	2	2	2	3	Not currently at risk	5
3700	---	*Ardea cocoi*	Cocoi Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	
3709	196	*Ardea alba*	Great Egret	Grande aigrette	Garza blanca	>180,000 breeders	1	2	2	2	?	?	Not currently at risk	5
3711	200.1	*Bulbulcus ibis*	Cattle Egret	Héron garde-boeuf	Depulgabuey	1,160,000 breeders (Texas only)	2	1	2	2	3	3	Not currently at risk	5
3718	1014.1	*Butorides striatus*	Striated Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	
3719	201	*Butorides virescens*	Green Heron	Héron vert	Garcita verde	Insufficient information	2	3	2	3	2	4	Low	4c
3721	---	*Agamia agami*	Agami Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	
3722	203	*Nyctanassa violacea*	Yellow-crowned Night-Heron	Bihoreau violace	Pedrete enmascarado	Insufficient information	3	?	2	3	3	5	Moderate	*
3723	202	*Nycticorax nycticorax*	Black-crowned Night-Heron	Bilhoreau a couronne noire	Yaboa Real	>50,000 breeders (does not include Central America	4	3	3	3	2	3	Moderate	3b
3729	---	*Cochlearius cochlearius*	Boat-billed Heron			Insufficient information	----------		Insufficient information available to assess risk				----------	

							Conservation Status Assessment Factor Scores and Categories of Concern[c]							
S/M#[a]	AOU#	Scientific Name	English Name[b]	French Name[b]	Spanish Name[b]	Estimated Population in Plan Area	PT	PS	TB	TN	BD	ND	Category	Rule
COLONIAL OR SEMI-COLONIAL BREEDERS (continued)														
3730	---	*Tigrisoma mexicanum*	Bare-throated Tiger-Heron			10,000 individuals	4	3	3	3	?	?	High	*
3731	---	*Tigrisoma fasciatum*	Fasciated Tiger-Heron			Insufficient information	----------Insufficient information available to assess risk----------							
3732	---	*Tigrisoma lineatum*	Rufescent Tiger-Heron			Insufficient information	----------Insufficient information available to assess risk----------							
3750	182	*Phoenicopterus ruber*	Greater Flamingo	Flamant rose	Flamenco americano	90,000 - 150,000 individuals	2	2	2	2	?	?	Low	*
3755	184	*Eudocimus albus*	White Ibis	Bec croche	Corocoro blanco	>100,000 breeders in US	3	2	3	3	4	5	Moderate	3c
3756	185	*Eudocimus ruber*	Scarlet Ibis	Ibis rouge		Insufficient information	----------Insufficient information available to assess risk----------							
3758	186	*Plegadis falcinellus*	Glossy Ibis	Ibis falcinelle	Ibis cara oscura	13,000 - 15,000 breeders	1	3	3	2	5	5	Low	4c
3759	187	*Plegadis chihi*	White-faced Ibis	Ibis à Face Blanche	Atotola	>100,000 breeders	2	2	4	3	3	4	Low	4b
3766	---	*Mesembrinibis cayennensis*	Green Ibis			Insufficient information	----------Insufficient information available to assess risk----------							
3787	183	*Ajaia ajaja*	Roseate Spoonbill	Spatule rosee	Espatula rosada	20,500 breeders	3	3	5	5	5	5	Moderate	3c
3794	125	*Pelecanus erythrorhynchos*	American White Pelican	Pélican d'Amérique	Pelicano Norteamericano	>120,000 breeders	3	2	4	3	2	2	Moderate	3c
3795	126	*Pelecanus occidentalis*	Brown Pelican	Pélican brun	Pelicano Café	191,600 - 193,700 breeders	3	2	4	4	3	3	Moderate	3c
3804	188	*Mycteria americana*	Wood Stork	Tantale d'Amerique	Ciguena americana	32,000 - 46,000 breeders	4	3	4	3	5	5	High	2a
3819	189	*Jabiru mycteria*	Jabiru	Jabiru d'Amerique	Garzon soldado	450 breeders	4	5	5	5	?	?	High	2a
3823	128	*Fregata magnificens*	Magnificent Frigatebird	Fregate superbe	Fragata magnifica	106,000 - 174,000 breeders	4	2	4	2	3	3	High	2a
3825	128.1	*Fregata minor*	Great Frigatebird	Fregate du Pacifique	Fragata pelagica	24,000 breeders	3	3	2	2	4	2	Moderate	3c
3826	128.2	*Fregata ariel*	Lesser Frigatebird	Fregate ariel		Insufficient information	----------Insufficient information available to assess risk----------							
3852	86	*Fulmarus glacialis*	Northern Fulmar	Fulmar boréal	Fulmar Boreal	2,100,000 breeders	3	1	4	4	2	1	Moderate	3c
3860	---	*Pterodroma rostrata*	Tahiti Petrel			Insufficient information	5	5	5	2	5	5	Highly Imperiled	1a
3864	---	*Pterodroma cervicalis*	White-necked Petrel			>100,000 individuals	3	2	na	3	na	2	Low	4a
3865	99	*Pterodroma inexpectata*	Mottled Petrel	Diablotin macule		Insufficient information	----------Insufficient information available to assess risk----------							
3866	99.1	*Pterodroma hypoleuca*	Bonin Petrel	Petrel de Bonin		460,792 - 716,632 breeders	3	2	4	2	4	3	Moderate	3c
3867	---	*Pterodroma leucoptera*	White-winged Petrel			Insufficient information	----------Insufficient information available to assess risk----------							
3868	98.3	*Pterodroma cookii*	Cook's Petrel	Diablotin de Cook	Petrel de Cook	>100,000 individuals	3	2	na	2	na	1	Not currently at arisk	5
3873	98.8	*Pterodroma alba*	Phoenix Petrel			Insufficient information	5	5	na	2	na	3	Highly Imperiled	1a
3874	98.6	*Pterodroma arminjoniana*	Herald Petrel			Insufficient information	3	4	5	2	5	3	High	2b
3875	98.5	*Pterodroma sandwichensis*	Hawaiian Petrel			2,000 breeders	5	4	5	2	5	2	Highly Imperiled	1a
3877	98.4	*Pterodroma neglecta*	Kermadec Petrel			Insufficient information	----------Insufficient information available to assess risk----------							
3878	98.7	*Pterodroma externa*	Juan Fernandez Petrel			>1,000,000 individuals	4	1	na	3	na	1	Moderate	3a
3889	98.1	*Pterodroma cahow*	Bermuda Petrel			100 breeders	2	5	5	5	5	5	High	2b
3890	98	*Pterodroma hasitata*	Black-capped Petrel	Diablotin errant		4,000 - 10,000 breeders	5	3	5	3	5	3	Highly Imperiled	1a
3898	101	*Bulweria bulwerii*	Bulwer's Petrel	Petrel de Bulwer	Petrel de Bulwer	260,000 breeders	3	2	5	4	4	2	Moderate	3b
3904	88	*Calonectris diomedea*	Cory's Shearwater	Puffin cendre	Pardela de Cory	Insufficient information	3	?	na	3	na	2	Moderate	*
3906	96.1	*Puffinus pacificus*	Wedge-tailed Shearwater	Puffin fouquet	Pardela de Pacifico	<665,170 breeders	3	2	3	2	3	2	Low	4a
3907	96.2	*Puffinus bulleri*	Buller's Shearwater	Puffin de Buller	Pardela de Buller	2,500,000 individuals	?	1	na	2	na	1	Not currently at risk	**
3908	95.1	*Puffinus carneipes*	Flesh-footed Shearwater	Puffin à pattes pâles	Pardela patipalida	1,500,000 individuals	3	1	na	3	na	2	Low	4a
3909	91	*Puffinus creatopus*	Pink-footed Shearwater	Puffin à pattes roses	Pardela patirrosada	35,000 - 50,000 individuals	4	3	na	4	na	2	High	2a
3910	89	*Puffinus gravis*	Greater Shearwater	Puffin majeur	Pardela mayor	Insufficient information	3	4	na	4	na	2	High	2b
3911	95	*Puffinus griseus*	Sooty Shearwater	Puffin fuligineux	Pardela gris	2,800,000 individuals	4	1	na	3	na	1	Moderate	3b
3912	96	*Puffinus tenuirostris*	Short-tailed Shearwater	Puffin à bec mince	Pardela colicorta	30,000,000 individuals	3	1	na	2	na	1	Not currently at risk	5
3913	96.3	*Puffinus nativitatis*	Christmas Shearwater	Puffin de la Nativite	Pardela de Navidad	5,000 - 6,600 breeders	3	4	4	4	3	3	High	2b
3914	90	*Puffinus puffinus*	Manx Shearwater	Le puffin manx	Pardela Manx	360 breeders	3	5	3	2	5	2	Moderate	3c
3916	93.2	*Puffinus auricularis newelli*	Newell's Shearwater		Pardela de Newell	29,200 breeders	5	3	5	2	5	4	Highly Imperiled	1a
3916	93.1	*Puffinus auricularis townsendi*	Townsend's Shearwater	Puffin de Townsend	Pardela de Townsend	Low	5	4	5	2	5	4	Highly Imperiled	1a
3917	93	*Puffinus opisthomelas*	Black-vented Shearwater	Puffin cul-noir	Pardela mexicana	154,640 - 159,140 breeders	4	2	5	3	5	4	High	2a
3920	92	*Puffinus lherminieri*	Audubon's Shearwater	Puffin d'Audubon	Pardela de Audubon	6,000 - 10,000 breeders	5	3	5	4	4	3	Highly Imperiled	1a
3933	82	*Phoebastria albatrus*	Short-tailed Albatross	Albatros à queue courte	Albatros rabon	~1,300 individuals	2	4	na	5	na	2	High	2b
3934	81	*Phoebastria nigripes*	Black-footed Albatross	Albatros à pattes noires	Albatros pies negros	148,000 breeders	5	2	5	5	4	2	Highly Imperiled	1a
3935	82.1	*Phoebastria immutabilis*	Laysan Albatross	Albatros de Laysan	Albatros de Laysan	1,100,000 breeders	4	1	4	4	4	2	High	2a
3943	109	*Oceanites oceanicus*	Wilson's Storm-Petrel	Petrel oceanite	Paino de Wilson	50,000 - 100,000 non-breeders	3	2	na	2	na	1	Not currently at risk	5
3949	---	*Nesofregatta fuliginosa*	Polynesian Storm-Petrel			Insufficient information	5	5	5	2	5	3	Highly Imperiled	1a
3951	103	*Oceanodroma microsoma*	Least Storm-Petrel	Petrel minime	Paino minimo	>1,000,000 individuals	4	1	5	2	5	4	High	2a
3952	106.3	*Oceanodroma tethys*	Wedge-rumped Storm-Petrel	Petrel de Darwin	Paino de Galapagos	>500,000 individuals	3	2	na	3	na	3	Low	4a
3953	106.2	*Oceanodroma castro*	Band-rumped Storm-Petrel	Petrel de Castro	Paino de Harcourt	200 breeders	5	5	5	2	5	2	Highly Imperiled	1a
3954	106	*Oceanodroma leucorhoa*	Leach's Storm-Petrel	Océanite cul-blanc	Paino de Leach	15,275,000 breeders	2	1	4	3	2	2	Low	4b
3957	107.1	*Oceanodroma tristrami*	Tristram's Storm-Petrel	Petrel de Tristram	Paino de Tristram	<10,000 breeders	3	3	4	2	4	3	Moderate	3c
3960	107	*Oceanodroma melania*	Black Storm-Petrel	Oceanite noir	Paino negro	>2,000,000 breeders	4	1	5	3	4	3	High	2a
3961	108	*Oceanodroma homochroa*	Ashy Storm-Petrel	Oceanite cendre	Pine cenivo	<10,000 breeders	5	3	4	2	5	4	Highly Imperiled	1a
3963	105	*Oceanodroma furcata*	Fork-tailed Storm-Petrel	Petrel a queue fourchue	Paino rabihorcado	5,000,000 - 6,000,000 breeders	1	1	4	2	3	2	Not currently at risk	5

SOLITARY BREEDERS (MARSHBIRDS)

S/M#[a]	AOU#	Scientific Name	English Name[b]	French Name[b]	Spanish Name[b]	Conservation Status Assessment Factor Scores and Categories of Concern[c]
2745	---	*Eurypyga helias*	Sunbittern		Garza del Sol	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2777	206	*Grus canadensis*	Sandhill Crane	Grue Canadienne	Grulla Canadiense	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2783	204	*Grus americana*	Whooping Crane	Grue blance d'Amerique	Grulla Americana	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2786	207	*Aramus guarauna*	Limpkin		Carao	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2789	---	*Heliornis fulica*	Sungrebe			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2809	215	*Coturnicops noveboracensis*	Yellow Rail	Râle jaune	Polleula amarilla	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2825	---	*Laterallus ruber*	Ruddy Crake		Polleula rojiza	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2826	---	*Laterallus albigularis*	White-throated Crake			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2827	---	*Laterallus exilis*	Gray-breasted Crake		Polleula pechigris	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2828	216	*Laterallus jamicensis*	Black Rail	Râle noir	Polleula negra	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2841	---	*Gallirallus philippensis*	Buff-banded Rail			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2843	---	*Gallirallus owstoni*	Guam Rail			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2850	211	*Rallis longirostris*	Clapper Rail	Râle gris	Rascón picudo	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2851	208	*Rallus elegans*	King Rail	Râle élégant	Rascón real	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2853	212	*Rallus limicola*	Virginia Rail	Râle de Virginie	Rascón de Virginia	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2869	---	*Aramides axillaris*	Rufous-necked Wood-Rail		Rascón de cuellirrufo	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2870	---	*Aramides cajanea*	Gray-necked Wood-Rail		Rascón de cuelligris	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2875	---	*Amaurolimnas concolor*	Uniform Crake		Polleula café	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2891	214	*Porzana carolina*	Sora	Marouette de Caroline	Polleula sora	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2897	---	*Porzana tabuensis*	Spotless Crake			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2900	---	*Porzana flaviventer*	Yellow-breasted Crake		Polleula pechiamarilla	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2903	---	*Cyanolimnas cerverai*	Zapata Rail			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2904	---	*Neocrex colombianus*	Colombian Crake			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2905	217.1	*Neocrex erythrops*	Paint-billed Crake			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2906	212.2	*Pardirallus maculatus*	Spotted Rail			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2913	---	*Porphyrio porphyrio*	Purple Swamphen		Gallineta morada	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2917	218	*Porphyrula martinica*	Purple Gallinule			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2922	219	*Gallinula chloropus*	Common Moorhen		Gallineta común	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2930	220.1	*Fulica alai*	Hawaiian Coot			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2931	221	*Fulica americana*	American Coot		Gallineta Americana	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
2932	221.1	*Fulica caribaea*	Caribbean Coot			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3615	5	*Tachybaptus dominicus*	Least Grebe	Grebe minime	Zambullidor chico	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3616	6	*Podilymbus podiceps*	Pied-billed Grebe	Grebe a bec bigarre	Zambullidor piquigrueso	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3621	2	*Podiceps grisegena*	Red-necked Grebe	Grebe jougris		----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3623	3	*Podiceps auritus*	Horned Grebe	Grebe cornu	Zambullidor cornudo	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3740	191	*Ixobrychus exilis*	Least Bittern	Blongios minute	Ardeola	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3745	190	*Botaurus lentiginosus*	American Bittern	Butor d'Amerique	Torcomon	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3746	---	*Botaurus pinnatus*	Pinnated Bittern			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3845	11	*Gavia stellata*	Red-throated Loon	Plongeon catmarin	Colimbo Gorjirrojo	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3846	10	*Gavia arctica*	Arctic Loon			----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3847	10	*Gavia pacifica*	Pacific Loon		Colimbo Artico	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3848	7	*Gavia immer*	Common Loon	Plongeon huard	Colimbo mayor	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------
3849	8	*Gavia adamsii*	Yellow-billed Loon	Huart a bec blanc	Colimbo Piquiamarillo	----------To be assessed in Version 2 of the North American Waterbird Conservation Plan----------

ACCIDENTAL OR CASUAL SPECIES[d]

S/M#[a]	AOU#	Scientific Name	English Name[b]	French Name[b]	Spanish Name[b]	Occurrence
2781	206.1	*Grus grus*	Common Crane			Accidental in AK, Alberta and Nebraska, AOU (1998)
2811	---	*Micropygia schomburgkii*	Ocelelated Crane			One record from Costa Rica, AOU (1998)
2864	---	*Crex crex*	Corn Crake			Casual on Baffin Island, along Atlantic Coast of N. America, Bermuda, AOU (1998)
2889	---	*Porzana porzana*	Spotted Crake			Accidental in Lesser Antilles, AOU (1998)
2918	4081	*Porphyrula flavirostris*	Azure Gallinule			Accidental in Trinidad and NY, AOU (1998)

ACCIDENTAL OR CASUAL SPECIES (continued)

S/M#[a]	AOU#	Scientific Name	English Name[b]	French Name[b]	Spanish Name[b]	Occurrence
2929	220	*Fulica atra*	Eurasian Coot (Common)			Included with other coots in US hunting regulations. Casual or accidental in AK, Labrador, Quebec and Northern Mariana Islands, AOU (1998)
2901	---	*Porzana cinerea*	White-browed Crake			Accidental on Guam (Pratt et al. 1987)
3192	54.2	*Larus belcheri*	Band-tailed Gull	Goéland siméon		Casual in Panama, also FL
3194	54.1	*Larus crassirostris*	Black-tailed Gull	Goéland à queue noire		Accidental or casual in AK, coastal British Columbia, southern CA, Belize, MD. Sight reports for Aleutians, southern Manitoba, RI and VA
3195	---	*Larus modestus*	Gray Gull	Goéland gris		Accidental off Costa Rica and Colombia; sight reports for Panama
3195.1	---	*Larus cachinnans*	Yellow-legged Gull	Goéland leucophée		Casual in MD and DC; accidental in Quebec and Newfoundland
3262	---	*Sterna superciliaris*	Yellow-billed Tern	Sterne argentée		Accidental in Panama
3273	---	*Chlidonias hybridus*	Whiskered Tern	Guifette moustac		Accidental in NJ, DE and Barbados
3274	78	*Chlidonias leucopterus*	White-winged Tern	Guifette leucoptére		Accidental or casual in AK, Manitoba, WI, Ontario, Quebec, New Brunswick, VT, MA, NY, NJ, DE, VA, Bahamas, Virgin Islands, Barbados, Guam, northern Marianas and Palau; sight reports from IN and GA
3276		*Phaetusa simplex*	Large-billed Tern	Sterne à gros bec		Casual in Panama; accidental in Bermuda, Cuba and Aruba
3283	---	*Larosterna inca*	Inca Tern	Sterne inca		Casual off Pacific coast of Panama
3283.1	---	*Brachyramphus perdix*	Long-billed Murrelet	Guillemot à long bec		Casual in interior N. America (AK, CA, MN, CO, AR, IN, OH, Quebec, St. Lawrence River, MA, NC, SC, FL; accidental in coastal CA
3639	---	*Sula variegata*	Peruvian Booby	Fou varié		Casual off Pacific coast of Panama
3691	196.1	*Egretta garzetta*	Little Egret	Aigrette garzette		Accidental in Quebec, Newfoundland, Nova Scotia, NH, MA, VA, Bermuda, Puerto Rico, St. Lucia, Martinique, Trinidad,Suriname
3695	196.2	*Egretta eulophotes*	Chinese Egret	Aigrette de Chine		Accidental in AK
3698	195	*Ardea cinerea*	Gray Heron	Héron cendré		Casual in Lesser Antilles, Trinidad
3738	---	*Ixobrychus sinensis*	Yellow Bittern	Blongios de Chine		Accidental in AK
3763	---	*Theristicus caudatus*	Buff-necked Ibis	Ibis mandore		Accidental in Panama
3861	---	*Pterodroma macgillivrayi*	Fiji Petrel			Not listed in 1998 AOU
3863	100.2	*Pterodroma nigripennis*	Black-winged Petrel	Pétrel à ailes noires		Casual in Hawaiian waters
3872	---	*Pterodroma longirostris*	Stejneger's Petrel	Pétrel de Stejneger		Ranges in waters between Hawaii and N. America; accidental in Hawaiian islands and off CA and south of Clipperton Island
3880	100.1	*Pterodroma ultima*	Murphy's Petrel	Pétrel de Murphy		Ranges at sea north to Hawaiian islands, off CA and Mexico and casually off WA and OR. Also off British Columbia and possibly Alaska
3899	101.1	*Bulweria fallax*	Jouanin's Petrel	Pétrel de Jouanin		Accidental in Hawaiian Islands
3901	---	*Procellaria parkinsoni*	Parkinson's Petrel	Pétrel de Parkinson		Ranges in waters off Central America
3905	88.1	*Calonectris leucomelas*	Streaked Shearwater	Puffin leucoméle		Casual in California and Hawaiian Islands
3921	92.1	*Puffinus assimilis*	Little Shearwater	Petit Puffin		Casual or accidental in Hawaiian Islands, Nova Scotia, SC. Sight reports for Puerto Rico and NC
3929	81.1	*Diomedea exulans*	Wandering Albatross	Albatros hurleur		Accidental off CA and Panama
3936	82.2	*Thalassarche melanophris*	Black-browed Albatross	Albatros à sourcils noirs		Sight reports (none satisfactory) for Atlantic waters off N. America from Newfoundland to FL
3937	82.3	*Thalassarche cauta*	Shy Albatross	Albatros à cape blanche		Accidental off coast of WA
3939	83	*Thalassarche chlororynchos*	Yellow-nosed Albatross	Albatros à nez jaune		Casual or accidental in Quebec, New Brunswick, ME, NY, MD, FL, LA and TX. Sight reports off Newfoundland, ME, south to FL
3942	---	*Phoebetria palpebrata*	Light-mantled Albatross	Albatros fuligineux		Accidental off central CA
3946	111	*Pelagodroma marina*	White-faced Storm-Petrel	Océanite frégate		Casual in western Atlantic off N. America from MA to NC
3950	104	*Hydrobates pelagicus*	European Storm-Petrel	Océanite tempête		Accidental in Nova Scotia
3958	---	*Oceanodroma markhami*	Markham's Storm-Petrel	Océanite de Markham		Casual north to Clipperton Island, on western coast of Coast Rica and western Panama

[a]Arranged by S/M # = Sibley & Monroe's numbering system (Monroe., Burt L. Jr. and Charles G. Sibley. 1993. A World Checklist of Birds. Yale University Press, New Haven, CT). Note: Non-integer values were created for this Plan.

AOU # = American Ornithologists' Union numbering system. (AOU. 1998. Checklist of North American Birds. 7th edition. American Ornithologists' Union, Washington, DC).

--- = AOU numbering system has been discontinued, number not assigned.

[b]Common names were compiled from AOU (1998), AOU's Birds of North America accounts, Native Names of Mexican Birds (Birkenstein, Lillian R. and Roy E. Thomlinson. 1981. USDOI-FWS. Resource Publication 139. Washington, DC) and regional workshops. It is recognized that many additional common names exist.

[c]Conservation Status Assessment Protocol used for colonial breeders is presented in Appendix 2. Included are definitions for factor scores [Population Trend (PT), Population Size (PS), Threats to Breeding (TB), Threats to Non-breeding (TN), Breeding Distribution (BD), Non-breeding Distribution (ND)] and conservation concern categories.

na not applicable. Species does not breed within the Plan area.
? unknown
* Reflects range due to unknown factor score
** Recommended by specialist group

[d]Accidental and casual occurrences are defined by AOU 1998 and/or expert opinion.

Accidental - one or two records in the checklist area and is literally accidental to the area and unlikely to occur regularly.

Casual - two or a few records in the checklist area but not enough to constitute regular occurrence. (Subsequent records are improbable).

APPENDIX 2

CONSERVATION STATUS ASSESSMENT PROTOCOL for COLONIAL WATERBIRDS

Assessment Process

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

Factor Scores

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

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

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

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

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

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

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

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

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

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

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

- **5** highly restricted (up to 1,300,000 km^2)
- **4** local (1,300,000 km^2 – 4,200,000 km^2)

3 intermediate (4,200,000 km^2 – 13,600,000 km^2)
2 widespread (13,600,000 km^2 – 44,000,000 km^2)
1 very widespread (44,000,000 km^2 – 140,000,000 km^2)

Categories of Conservation Concern

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

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

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

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

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

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

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

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

Rule 4a. PT = 3 *and* either PS, TB, TN, BD, or ND = 3; or
Rule 4b. PT = 2 *and* either PS, TB, TN, BD, or ND = 4 or 5; or
Rule 4c. PS = 3 *and* either TB, TN, BD, or ND = 4 or 5

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

Rule 5: Does not meet any previous rule

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

APPENDIX 3

Distribution and activity of colonial waterbird species presented by Bird Conservation Regions (BCRs) and adjacent Pelagic Bird Conservation Regions (PBCRs, shown in parentheses).Activities are: b = breeding;w = wintering;m = migratory/dispersal; p = occurs pelagically during wintering and/or non-breeding. Note: U.S. Pacific Islands are included with BCR 67,and mx = interior Mexican BCRs combined (43-56, 58-61,65, 66). BCRs have not been established in the Caribbean and Central America.

	Bird Conservation Region (BCR) Number	Great Skua *Stercorarius skua*	South Polar Skua *Stercorarius maccormicki*	Pomarine Jaeger *Stercorarius pomarinus*	Parasitic Jaeger *Stercorarius parasiticus*	Long-tailed Jaeger *Stercorarius longicaudus*	Black Skimmer *Rynchops niger*	Heermann's Gull *Larus heermanni*	Mew Gull *Larus canus*	Ring-billed Gull *Larus delawarensis*	California Gull *Larus californicus*	Great Black-backed Gull *Larus marinus*	Glaucous-winged Gull *Larus glaucescens*
Aleutian/Bering Sea Islands (East Bering Sea)	1		p	p	bp				b				bw
Western Alaska (East Bering Sea)	2		p	bp	bp	bp			b				bw
Arctic Plains and Mountains (Chukchi & Beaufort Seas, also Arctic Ocean and Hudson Bay)	3			bp	bp	bp			b			b	b
Northwestern Interior Forest	4					b			b				bw
Northern Pacific Rainforest (Gulf of Alaska, California Current)	5		p	p	bp	p		wm	bw	bwm	wm		bw
Boreal Taiga Plains	6				b				bm	b	bm		
Taiga Shield and Hudson Plains (Newfoundland-Labrador Shelf, also Hudson Bay)	7			p	bp	p			b	b	b	b	
Boreal Softwood Shield (Newfoundland-Labrador Shelf)	8	p	p	p		p			b	b	b	bw	
Great Basin	9								wm	bwm	bwm		b
Northern Rockies	10								m	bwm	bwm		
Prairie Potholes	11									bm	bm		
Boreal Hardwood Transition	12									b		bw	
Lower Great Lakes/St. Lawrence Plain	13									bw		bw	
Atlantic Northern Forest (Scotian Shelf, NE US Continental Shelf)	14	p	p	p	p	p				bm		bw	
Sierra Nevada	15									w	bwm		
Southern Rockies/Colorado Plateau	16									wm	bwm		
Badlands and Prairies	17									bm	bm		
Shortgrass Prairie	18									w	bwm		
Central Mixed-grass Prairie	19									w			
Edwards Plateau	20									w			
Oaks and Prairies	21									w			
Eastern Tallgrass Prairie	22									wm		w	
Prairie Hardwood Transition	23									bw		w	
Central Hardwoods	24									wm			
West Gulf Coastal Plain/Ouachitas	25									w			
Mississippi Alluvial Valley	26						b			w			
Southeastern Coastal Plain (SE US Continental Shelf, Gulf of Mexico)	27	p	p	p	p	p	bw			w		bw	
Appalachian Mountains	28									m		w	
Piedmont	29									w		w	
New England/Mid-Atlantic Coast (NE US Continental Shelf)	30	p	p	p	p	p	b			w		bw	
Peninsular Florida (SE US Continental Shelf, Gulf of Mexico)	31		p	p	p	p	bw			w		w	
Coastal California (California Current)	32		p	p	p	p	bw	w	w	w	w		w
Sonoran and Mohave Deserts	33						bw	bw		w	wm		w
Sierra Madre Occidental	34									w			
Chihuahuan Desert	35									w			
Tamaulipan Brushlands (Gulf of Mexico)	36									w			
Gulf Coastal Prairie (Gulf of Mexico)	37						bw			w			
Islas Marias (Gulf of California)	38												
Sierras de Baja California	39									w	m?		
Desierto de Baja California (California Current, Gulf of California)	40		p	p	p	p		bw	w	w	w		w
Islas del Golfo de California (Gulf of California)	41							bw		w	w		w
Sierra y Planicies de El Cabo (California Current, Gulf of California)	42		p	p	p	p		bw		w	w		w
Isla Cozumel (Caribbean Sea)	57												
Archipielago de Revillagigedo (Pacific Central-American Coastal)	62			p	p	p							
Isla Guadalupe (California Current)	63			p	p	p							
Arrecife Alacranes (Caribbean Sea)	64												
Hawaii (Insular Pacific-Hawaiian)	67		p										
(Atlantic)	atl	p	p	p	p	p							
(Pacific)	pac		p	p	p	p							
Caribbean Islands (Caribbean Sea)	car			p	p								
Central America (Caribbean Sea, Pacific Central-American Coastal)	cen		p	p	p	p	w						
Mexico (Gulf of Mexico, Pacific Central-American Coastal)	mx		p	p	p	p	bw	bw		w	w		

Bird Conservation Region (BCR) Number	Western Gull *Larus occidentalis*	Yellow-footed Gull *Larus livens*	Glaucous Gull *Larus hyperboreus*	Iceland Gull *Larus glaucoides*	Thayer's Gull *Larus thayeri*	Herring Gull *Larus argentatus*	Slaty-backed Gull *Larus schistisagus*	Lesser Black-backed Gull *Larus fuscus*	Black-headed Gull *Larus ridibundus*	Bonaparte's Gull *Larus philadelphia*	Laughing Gull *Larus atricilla*	Franklin's Gull *Larus pipixcan*	Little Gull *Larus minutus*	Ivory Gull *Pagophila eburnea*	Ross's Gull *Rhodostethia rosea*	Sabine's Gull *Xema sabini*	Black-legged Kittiwake *Rissa tridactyla*	Red-legged Kittiwake *Rissa brevirostris*	Gull-billed Tern *Sterna nilotica*	Caspian Tern *Sterna caspia*	Royal Tern *Sterna maxima*	Elegant Tern *Sterna elegans*	Great Crested Tern *Sterna bergii*	Sandwich Tern *Sterna sandvicensis*	Roseate Tern *Sterna dougallii*	Common Tern *Sterna hirundo*	Arctic Tern *Sterna paradisaea*
1			w			bw				b							bp	bp								m	bp
2			bw			bw	b			bm				p		bp	bp	p		b						m	bp
3			b	b	bm	b								bp	bp	bp	b										bp
4					m	b				b							p										b
5	bw		wm		wm	bwm				wm		m	w			p	bp	p		bm		m				m	bp
6					m	bm				b		b								bm						b	b
7			bw	w	m	b				bm			b	p	p	p	b			bm							b
8			w	w	m	bw		w	bw	bm				p		p	bp			bm						b	b
9						wm				m		bm								bm						bm	
10					m	bwm				bm		bm								bm						m	
11						bm				bm		bm								bm						b	
12			w			bw				wm		m	b							bm						b	
13			w	w		bw				wm		m	bw							bm						b	
14			w	w		bw		w	b?w	wm	b		w			p	bp			m					b	b	bp
15					m	m				m										bm							
16						wm				m		bm														m	
17					m	m				m		m								bm							
18						wm				m		m														m	
19						wm				m		m														m	
20						wm				m		m															
21						w				w		m															
22			w			bwm				m		m								bm						m	
23			w			bwm				wm		m	b							bm						m	
24						wm				wm		m								m						m	
25						w				wm		m								m						m	
26						w				w		m							b	m						m	
27				w		bw		w		wm	bw		w				p		bw	bw	bw			bw	m	bm	
28						m				m										m						m	
29						w				m										m						m	
30			w	w		bw		w	b?w	w	b		w				p		b	bm	b			b	bm	b	bp
31						w		w		wm	bw		w				p		bw	bw	bw			bw	bm	m	
32	bw					w				w		m	w			p	p		b	bw	bw	bm				m	p
33		w				wm				wm	b								bw	bw	bw	b				m	
34						m				wm	w									m							
35						m				m	w									m							
36						wm				w	w	m							bw	w						m	
37						w		w		w	bw	m	w						bw	bw	bw			bw		bm	
38																											
39						w																					
40	bw	w			w	w				w	w					p	p			bw	bw	b				m	p
41		bw			w	w					w									w	bw	b					
42	w	w				w				w	w					p				w	w	b				m	
57												m															
62																p											p
63																p	p										p
64												m															
67																							bp				
atl																	p										p
pac																p	p						p				p
car						w				wm	bw	m					p		b	wm	bw			bw	bm	bm	
cen						w				wm	w	m				p			w	wm	bw	wm		bw		m	p
mx		w				wm				wm	bw	m				p			bw	wm	bw	bm		bw		m	p

Bird Conservation Region (BCR) Number	Forster's Tern *Sterna forsteri*	Little Tern *Sterna albifrons*	Least Tern *Sterna antillarum*	Aleutian Tern *Sterna aleutica*	Gray-backed Tern *Sterna lunata*	Bridled Tern *Sterna anaethetus*	Sooty Tern *Sterna fuscata*	Black Tern *Chlidonias niger*	Brown Noddy *Anous stolidus*	Black Noddy *Anous minutus*	Blue-gray Noddy *Procelsterna cerulea*	White Tern *Gygis alba*	Dovekie *Alle alle*	Common Murre *Uria aalge*	Thick-billed Murre *Uria lomvia*	Razorbill *Alca torda*	Black Guillemot *Cepphus grylle*	Pigeon Guillemot *Cepphus columba*	Marbled Murrelet *Brachyramphus marmoratus*	Kittlitz's Murrelet *Brachyramphus brevirostris*	Xantus's Murrelet *Synthliboramphus hypoleucus*	Craveri's Murrelet *Synthliboramphus craveri*	Ancient Murrelet *Synthliboramphus antiquus*	Cassin's Auklet *Ptychoramphus aleuticus*	Parakeet Auklet *Aethia psittacula*	Crested Auklet *Aethia cristatella*	Whiskered Auklet *Aethia pygmaea*
1				bp										bp	bp			bp	bp	bp			bp	bp	bp	bp	bp
2				bp										bp	bp		p	bp	bp	bp			bp	bp	bp	bp	bp
3				bp									bp	b	bp	bp	bp	bp		bp					p		
4				bp															bp					bp			
5	wm			bp				bm						bp	bp			bp	bp	bp	p		bp	bp	bp		
6	b							b																			
7								b					p	bp	bp	b	bp										
8								b					p	bp	bp	bp	bp										
9	bm							bm																			
10	bm							bm																			
11	bm		bm					b																			
12	m							b																			
13	b							b																			
14			b					b					p	bp	p	bp	bp										
15	m							m																			
16	bm							bm																			
17	bm		bm					b																			
18	bm		bm					bm																			
19	bm		bm					bm																			
20	m		bm					m																			
21	w		bm					m																			
22	m		bm					bm																			
23	bm							b																			
24	m		bm					bm																			
25	wm		bm					m																			
26	bwm		bm					m																			
27	bwm		bm			p	p	m	p				p			p											
28								m																			
29	m							m																			
30	bw		b			p		m					p	p	p	p	p										
31	w		b			b?p	bp	m	bp	p																	
32	bw		b					bm						bp				bp	bp		bp	p	p	bp			
33	w		b					m																			
34	wm							m																			
35	wm							m																			
36	bw							m																			
37	bw		b			p	bp	m	p																		
38							p		bp																		
39	w																										
40	w		b																		bp	bp		bp			
41			b																								
42	w		b				p		p													p					
57						bp		m	bp	p																	
62									bp																		
63																					bp						
64						p			bp	p																	
67		bp			bp		bp		bp	bp	bp	bp															
atl																p											
pac				p?	p		p		p?	p?	p																
car	w		bm			bp	bp	m	bp	bp																	
cen	w		bw			bp	p	m	bp	bp		bp															
mx	bw		bw			bp	p	wm		p												p					

Bird Conservation Region (BCR) Number	Least Auklet *Aethua pusilla*	Rhinoceros Auklet *Cerorhinca monocerata*	Atlantic Puffin *Fratercula arctica*	Horned Puffin *Fratercula corniculata*	Tufted Puffin *Fratercula cirrhata*	Snail Kite *Rostrhamus sociabilis*	Eared Grebe *Podiceps nigricollis*	Western Grebe *Aechmophorus occidentalis*	Clark's Grebe *Aechmophorus clarkii*	Red-billed Tropicbird *Phaethon aethereus*	Red-tailed Tropicbird *Phaethon rubricauda*	White-tailed Tropicbird *Phaethon lepturus*	Northern Gannet *Morus bassanus*	Blue-footed Booby *Sula nebouxii*	Masked Booby *Sula dactylatra*	Nazca Booby *Sula granti*	Red-footed Booby *Sula sula*	Brown Booby *Sula leucogaster*	Anhinga *Anhinga anhinga*	Brandt's Cormorant *Phalacrocorax penicillatus*	Neotropic Cormorant *Phalacrocorax brasilianus*	Double-Crested Cormorant *Phalacrocorax auritus*	Great Cormorant *Phalacrocorax carbo*	Red-faced Cormorant *Phalacrocorax urile*	Relagic Cormorant *Phalacrocorax pelagicus*	Reddish Egret *Egretta rufescens*	Tricolored Heron *Egretta tricolor*
1	bp	b		bp	bp																	bw		bw	bw		
2	bp	b		bp	bp																	bw		bw	bw		
3			b	bp	bp																				b		
4					bp																	bw			bw		
5		bp		bp	bp		wm	bwm	bw											bwm		bw		bw	bw		
6							b	b	b													b					
7			bp																			b					
8			bp										bp									b	bw				
9							bwm	bw	bw													bwm					
10							b	b	b													bm					
11							b	b	bm													b					b
12																						b					
13																						b					
14			bp										bp									b	bw				
15							b	b	b													m					
16							bwm	b	b													bm					
17							b	b	b													b					
18							bw	b	b													bm					
19							bw	b	b													bw					
20							w															w					
21							w												b		b	bwm					
22																						bm					
23							b	b	b													b					
24																						wm					
25							wm												b		b	bw					b
26																			bw			bw					bw
27						bw							p						bw			bw	w			w	bw
28																						wm					
29																						wm					
30			p										p									bw	w				b
31						bw							p		bp			p	bw			bw				bw	bw
32		bp			bp		bw	bw	bw	p										bw		bw			bw		w
33							w	bw	bw	p										w	bw	bw				bw	bw
34							bw	bw	bw												bw						
35							w	bw	bw												bw	wm					
36							w												bw		bw	w					bw
37							w	w	w				p					p	bw		bw	w				bw	bw
38																											
39							w	bw	bw																		w
40		p					w	w	w	bp				bp	p			p		bw	bw	bw			w	bw	bw
41							w	w		bp				bp	bp			bp		bw		bw				bw	
42							w	w	w	bp				bp	p			p		w						bw	w
57															p												
62															bp		bp	bp									
63																				bw							
64																											
67											bp	bp			bp		bp	bp									
atl			p																								
pac											p	p			p												
car						bw				bp		bp	p		bp		bp	bp	bw		bw	bw				bw	bw
cen						bw	w			p				p	p		p	bp	bw		bw					bw	bw
mx						bw	bw	bw	bw	p				p	p	bp	p	p	bw	w	bw	bw				bw	bw

Bird Conservation Region (BCR) Number	Little Blue Heron *Egretta caerulea*	Western Reef-Heron *Egretta gularis*	Snowy Egret *Egretta thula*	Capped Heron *Pilherodius pileatus*	Great Blue Heron *Ardea herodias*	Cocoi Heron *Ardea cocoi*	Great Egret *Ardea alba*	Cattle Egret *Bubulcus ibis*	Striated Heron *Butorides striatus*	Green Heron *Butorides virescens*	Agami Heron *Agamia agami*	Yellow-crowned Night-Heron *Nyctanassa violacea*	Black-crowned Night-Heron *Nycticorax nycticorax*	Boat-billed Heron *Cochlearius cochlearius*	Bare-throated Tiger-Heron *Tigrisoma mexicanum*	Fasciated Tiger-Heron *Tigrisoma fasciatum*	Rufescent Tiger-Heron *Tigrisoma lineatum*	Greater Flamingo *Phoenicopterus ruber*	White Ibis *Eudocimus albus*	Scarlet Ibis *Eudocimus ruber*	Glossy Ibis *Plegadis falcinellus*	White-faced Ibis *Plegadis chihi*	Green Ibis *Mesembrinibis cayennensis*	Roseate Spoonbill *Ajaia ajaja*	American White Pelican *Pelecanus erythrorhynchos*	Brown Pelican *Pelecanus occidentalis*	Wood Stork *Mycteria americana*
1																											
2`																											
3																											
4																											
5			bw		bw		bw	bm		bw			bw									m			wm	bwm	
6					bm			m					b												bm		
7					m																						
8					bm			m																			
9			bm		bwm		bwm	bm					bwm									bm			bwm		
10			bm		bwm			m					b									bm			bm		
11	bm		bm		bw		bm	bm		b		bm	b									bm			bm		
12					b		bm	bm		b		bm	bw												bm		
13					bw		bm	bm		b			b														
14	bm		b		bw		m	m		b			b														
15					m			m		m			bw									b			bwm		
16			bm		bw		bm	bm					bw									bm			bm		
17					bw			m					b									b			bm		
18			m		bw		wm	bm					bw									bm			bm		
19	bm		bm		bw		wm	bm		bm		bm	bw									bm			m		
20	b		m		bw		w	m		bw			bw									m			w		
21	b		bm		bw		bw	m		bw		b	bw									m			w		
22	m		m		bw		bm	bm		b		bm	bw									m					
23			bm		bw		bm	bm		b		bm	bw														
24	bm		b		bw		bm	bm		b		b	bw									m					
25	b		b		bw		bw	bwm		b		b	bw						bwm			m			w		m
26	bw		bw		bw		bw	bwm		b		bw	bw						bwm		bw			b	wm		m
27	bw		bw		bw		bw	bw		bw		bw	bw						bwm		bw			w	w	bw	bwm
28	m				bw		bm	bm		b		bm															
29	m		m		bw		bm	bm		b		m	bw						wm								m
30	bw		bw		bw		bw	bm		b		bm	bw						wm		b					wm	
31	bw		bw		bw		bw	bw		bw		bw	bw						bw		bw			bw	w	bw	bw
32	wm		bw		bw		bw	bm		bw			bw									bw			w	bw	
33	bw		bw		bw		bw	bw		bw		bw	bw						bw			wm		bw	w	bw	m
34			bwm		bw		bw	bm		bw			bw									wm			w		
35			bwm		bw		w	m		bw			bw									wm			w		
36	bw		bw		bw		w	bw		bw		bw	bw						wm			w		bw	bw		
37	bw		bw		bw		bw	bw		bw		bw	bw						bw		bw	bw		bw	bw	bw	m
38																											
39			w				w	bw		bw												m					
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mx	bw		bw		bw		bw	bw		bw	bw	bw	bw	bw	bw			bw	bw		bw	bw		bw	bw	bwm	bwm

Bird Conservation Region (BCR) Number	Jabiru *Jabiru mycteria*	Magnificent Frigatebird *Fregata magnificens*	Great Frigatebird *Fregata minor*	Lesser Frigatebird *Fregata ariel*	Northern Fulmar *Fulmarus glacialis*	Tahiti Petrel *Pterodroma rostrata*	White-necked Petrel *Pterodroma cervicalis*	Mottled Petrel *Pterodroma inexpectata*	Bonin Petrel *Pterodroma hypoleuca*	White-winged Petrel *Pterodroma leucoptera*	Cook's Petrel *Pterodroma cookii*	Phoenix Petrel *Pterodroma alba*	Herald Petrel *Pterodroma arminjoniana*	Hawaiian Petrel *Pterodroma sandwichensis*	Kermadec Petrel *Pterodroma neglecta*	Juan Fernandez Petrel *Pterodroma externa*	Bermuda Petrel *Pterodroma cahow*	Black-capped Petrel *Pterodroma hasitata*	Bulwer's Petrel *Bulweria bulwerii*	Cory's Shearwater *Calonectris diomedea*	Wedge-tailed Shearwater *Puffinus pacificus*	Buller's Shearwater *Puffinus bulleri*	Flesh-footed Shearwater *Puffinus carneipes*	Pink-footed Shearwater *Puffinus creatopus*	Greater Shearwater *Puffinus gravis*	Sooty Shearwater *Puffinus griseus*	Short-tailed Shearwater *Puffinus tenuirostris*
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2					bp			p														p	p			p	p
3					bp																						p
4																											
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pac			p		p	p	p	p	p	p	p	p	p	p	p	p			p		p	p	p	p		p	p	p
car		bp															bp	bp		p								
cen	bw	bp	p																					p		p		
mx	bw	bp	p				p									p						p		p		p		

Bird Conservation Region (BCR) Number	Christmas Shearwater *Puffinus nativitatis*	Manx Shearwater *Puffinus puffinus*	Newell's Shearwater *Puffinus auricularis newelli*	Townsend's Shearwater *Puffinus auricularis townsendi*	Black-vented Shearwater *Puffinus opisthomelas*	Audubon's Shearwater *Puffinus lherminieri*	Short-tailed Albatross *Phoebastria albatrus*	Black-footed Albatross *Phoebastria nigripes*	Laysan Albatross *Phoebastria immutabilis*	Wilson's Storm-Petrel *Oceanites oceanicus*	Polynesian Storm-Petrel *Nesofregetta fuliginosa*	Least Storm-Petrel *Oceanodroma microsoma*	Wedge-rumped Storm-Petrel *Oceanodroma tethys*	Band-rumped Storm-Petrel *Oceanodroma castro*	Leach's Storm-Petrel *Oceanodroma leucorhoa*	Tristram's Storm-Petrel *Oceanodroma tristrami*	Black Storm-Petrel *Oceanodroma melania*	Ashy Storm-Petrel *Oceanodroma homochroa*	Fork-tailed Storm-Petrel *Oceanodroma furcata*
1							p	p	p						bp				bp
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atl		p								p					p				
pac	p		p				p	p	p	p	p			p	p	p			p
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cen						p				p			p	p	p				
mx				p	p	p			p			p	p	p	p		p		

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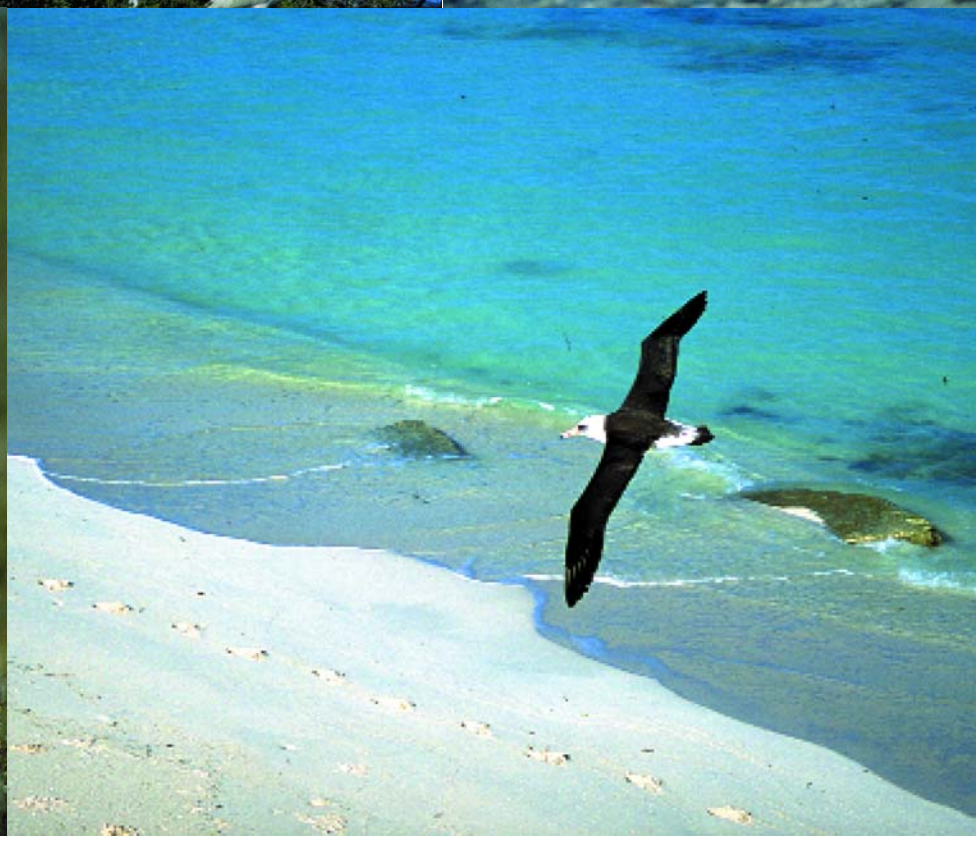
BACK COVER:Clockwise from top left:White Ibis, © Walker Golder;Sora,© Peter LaTourrette; Common Tern, © Walker Golder;Laysan Albatross, © Melanie Steinkamp;Brown Pelican, © Walker Golder



WATERBIRD CONSERVATION for the AMERICAS

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north american waterbird conservation plan