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**REVIEW DRAFT - NORTH AMERICAN
COLONIAL WATERBIRD CONSERVATION PLAN**

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The North American Colonial Waterbird Conservation Plan Steering Committee

COMMENT ON PLAN TO WaterbirdComments@USGS.gov

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- Southeastern Coastal Plain and Appalachian Colonial Waterbird Regional Information Report
- Upper Mississippi /Great Lakes Colonial Waterbird Regional Information Report
- Hawaii and Pacific Island Colonial Waterbird Regional Information Report
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PREFACE

The North American Colonial Waterbird Conservation Plan provides an overarching framework for conserving and managing colonially-nesting aquatic birds throughout North America. It hopes to inspire conservation action for seabirds and colonial waterbirds from Canada through the Caribbean, from Bermuda to the Pacific Islands, in their nesting sites, on their annual migrations, and on their wintering grounds. It aims to facilitate continent-wide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection that taken together will maintain healthy populations.

The North American Colonial Waterbird Plan is the culmination of a multiyear process of collaborative deliberation on the most appropriate approaches and goals to conserve, throughout North America, populations of seabirds and other colonial waterbirds and the habitats on which they depend. The planning process was possible because of the engagement of hundreds of experts on biology, conservation, and management of colonial waterbirds (recognized in the Acknowledgments).

The North Colonial Waterbird American Plan is a framework, providing insight, goals, approaches, networks and infrastructure for waterbird conservation. Some implementation action is inherently continental in scale - such as coordinating continent-wide monitoring programs and dealing with widespread threats. Much implementation occurs at smaller scales. Following from this plan, Regional Colonial Waterbird Plans will facilitate conservation at regional, state, provincial, and local levels. In the end we hope to inspire and facilitate conserving seabirds and colonial waterbirds at their colony sites, feeding sites, at each park and refuge, in each state or province and in every region of North America.

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EXECUTIVE SUMMARY

The North American Colonial Waterbird Conservation Plan provides an overarching framework for conserving and managing colonially-nesting aquatic birds throughout North America. It aims to facilitate continent-wide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection and management that taken together will maintain healthy populations of colonial waterbirds. The expressed goal of the North American Colonial Waterbird Conservation Plan is: to ensure that the distribution, diversity, and abundance of populations, habitats (breeding, migratory, and wintering), and important sites of seabirds and colonial waterbirds are sustained or restored and maintained throughout their ranges in North America.

The Plan is unique among contemporary bird conservation initiatives in covering all of North America, from Canada to Panama, Bermuda through the Caribbean Basin, and the islands and seas of the Pacific Ocean associated with the United States and adjacent Pacific Nations.

The Plan covers species colonial waterbirds found in 37 countries in North America as defined above. These are birds that nest colonially and depend on water, including seabirds (such as auks, albatrosses, storm-petrels, frigate birds), coastal waterbirds (such as gulls, terns, pelicans and cormorants), wading birds (such as herons, ibises and storks), and certain marshbirds (such as certain grebes, bitterns). Across the Continent, colonial waterbirds face significant risks to their populations, habitats and critical sites. These species share similar risks associated with concentrating their breeding populations in few locations; but they also share the potential for effective and efficient conservation measures focused on these few sites. These species also share a dependence on aquatic resources, which opens possibilities for pursuing colonial waterbird conservation partnership with multi-use resource management programs such as wetland regulation, coastal zone management, and inland and offshore fisheries management.

The North American Colonial Waterbird Plan is inherently a partnership among individuals and institutions with a stake and interest in conservation of these species and the habitats they use. Conservation will be planned and implemented by this partnership, starting with the North American Plan. It will be carried out through international agreements, by national and state/provincial governments, by non-government organizations and by individuals. It will be implemented through partnership with multi-use management programs and, especially, as part of the all-bird conservation approach of the North American Bird Conservation Initiative. The North American Bird Conservation Initiative (NABCI) Specific planning and implementation steps include:

- North American Colonial Waterbird Conservation Plan,
- North American Colonial Waterbird Conservation Council,
- North American Colonial Waterbird Monitoring Partnership,
- Continental Colonial Waterbird Data Management Program,
- Continental education and outreach program,
- National colonial waterbird plans,
- National colonial waterbird coordinators,
- Canada, US, Mexico national North American Bird Conservation Initiatives,
- Regional colonial waterbird working groups,
- Bird Conservation Region colonial waterbird conservation plans,
- Joint Venture Management Boards and Technical Committees,
- Joint Venture colonial waterbird coordinators,
- State/provincial colonial waterbird conservation programs,
- State/provincial colonial waterbird coordinators.
- Local conservation organizations and colony-based programs

CONSERVING COLONIAL WATERBIRDS IN NORTH AMERICA

Introduction to the Plan

Birds of the water have special meaning to humans. Many are spectacular in appearance and numbers. They have figured in human history as food, ornamentation, folkloric figures, and as symbols of the natural world. Those aquatic birds that aggregate to nest and roost together, because of their conspicuousness, represent the exotic, the mysterious, and the wildness of their aquatic worlds. Waterbirds such as albatrosses, herons, storks, pelicans, puffins, auklets, and terns are known and cherished by parts of the public, as is suggested by how frequently they are selected as symbols and totems of conservation organizations, environmental programs, and locales. Gulls in parking lots, puffins on post cards, terns on beaches, herons silhouetted on a darkening pond, Gannets plunging from height for caplin in the sea, White Pelicans herding fish, Brown Pelicans soaring past condominiums, Cattle Egrets perched on cows, mixed species assemblages entertaining visitors to parks, Magnificent Frigatebirds soaring above beaches, seabird flocks leading sport fishermen to their catch, or storks standing tall in a misty swamp, all contribute to our interaction with the remnant natural environment in North America. To protect, conserve, and sustainably manage these birds, the North American Colonial Waterbird Conservation Plan aims to inform and mobilize those responsible for their conservation.

Beyond the symbolic, some aspects of seabird and colonial waterbird biology seem to be indicative of their environment. Numerous studies suggest how some of their attributes may be used as early indicators of ecosystem health, including such important systems as wetlands, estuaries, coastal lagoons and the oceans. Protection, management, and use of colonial waterbirds and seabirds can help conserve the broader landscape in which they occur.

Seabirds and colonial waterbirds face significant threats to the long-term stability of their populations. One species is totemic. The last sighting of the Great Auk, in 1852, heralded the extinction of this colonial waterbird species through the direct impact of hunting. The Marbled Murrelet, Roseate Tern, Wood Stork, Least Tern, and Bermuda Petrel rest uncomfortably on national lists of endangered and threatened species, perhaps in line to join the Great Auk without proper conservation attention.

Seabirds and colonial waterbirds face significant threats to the long-term stability of the habitats and sites on which they depend. Hydrologic change of freshwater wetlands, degradation of coastal environments, depletion of the forage base, and contaminants all effect colonial waterbirds and seabirds. For some species, habitat issues principally have been the cause of population declines. Logging of old growth forests along the Pacific Coast destroyed nesting habitat of the Marbled Murrelet. More subtly, patch-by-patch, wetland and other aquatic habitats are drained, canalized, manipulated, plowed, or altered in response to human development and agricultural pressure, decreasing their value to colonial waterbirds. For some species, habitat changes have caused population increases and distribution changes, making them into pests. Artificial food sources have led to increases in Double-Crested Cormorants and Ring-billed Gulls. Habitats and sites must be managed in order to maintain sustainable populations.

Seabirds and colonial waterbirds face significant threats from conflict with people. Conflicts exist or are imagined wherever human industry and colonial waterbirds attempt to coexist. Large numbers of seabirds are killed by long-line and gill net fisheries. Fishermen compete with seabirds for their food supply and sometimes go further to destroy their colonies. Herons, cormorants, terns, and pelicans understandably choose to take advantage of food concentrated in aquacultural ponds and raceways, to the distress of fish farmers. These species are killed in large numbers both legally and illegally. Colonial waterbirds choosing to nest or roost in urban and suburban environments conflict with aesthetic and public health standards. Oil spills maim and kill thousands of seabirds and colonial waterbirds. Oil brought back to colonies kills eggs and chicks. Contamination by pesticides and other chemicals caused population declines in Double-crested Cormorants and Brown Pelicans. Threats continue throughout the continent.

Conservation of seabirds and colonial waterbirds requires continent-wide planning. It also requires coordinated continent-wide coordination of action at international, regional and local scales, a collaborative monitoring program providing statistically sound analyses of trends, research targeted toward better conservation action, education and outreach to people, and action on issues and factors limiting population stability at all scales of activity.

Conservation of seabirds and colonial waterbirds is an international issue. Many species range through the countries of North and Central America and the Caribbean, and many are also found in Europe, South America, and the Pacific. Many North American nesting species migrate across national boundaries. The Northern Fulmar crosses the Atlantic Ocean in its migration; Buller's Shearwater crosses the Pacific. Maintaining North American populations of seabirds and colonial waterbirds at levels required for their long-term conservation depends on inventory, monitoring, management action, and planning carried out on a continental scale. Conservation at this scale is addressed in the present plan.

Conservation of seabirds and colonial waterbirds is a national matter. National governments have ultimate responsibility for managing their national resources, including especially birds. In Canada, the United States, and Mexico, the national government is responsible for migratory birds. In the United States it is responsible for listed species. In other countries wildlife falls under the national government. National governments are also responsible for habitat management on government lands, such as parks and sanctuaries, and for in varying degrees for regulation of such issues as pollution, wetlands, and land development. Conservation at this scale is addressed in this plan, and also will be addressed in national colonial waterbird plans, as desired within various nations.

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

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requiring cooperation. Conservation at this scale is to be addressed in Regional Colonial Waterbird Plans.

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

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

Geographic Extent of Plan

For the purposes of this Plan, North America is defined broadly - to include the North American continent proper, Central America through Panama, Atlantic and Caribbean Islands from Bermuda through the Caribbean Basin, the Hawaiian Islands. Under the regional planning process, the colonial waterbird conservation needs of additional entities will be addressed. For example, under the Hawaii and Pacific Islands regional plan, the associated political entities of American Samoa, Baker and Howland Islands, Commonwealth of the Northern Mariana Islands, Guam, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Atoll, Navassa Island, and Palmyra Atoll, and Wake Island will be incorporated. In the Caribbean Regional Plan, the colonial waterbird conservation needs of Puerto Rico, and the U.S. Virgin Islands will be addressed. Other entities will be added, as determined by colonial waterbird regional working groups. The following figure includes areas covered in regional plans, as well as those covered by the Continental Overview.

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Geographic Extent of Colonial Waterbird Conservation Plan



Species Included in the Plan

For the purposes of the NACWCP, **colonial waterbirds** are defined as birds that nest colonially and are dependent on water to complete portions of their life cycles. This definition encompasses **seabirds** (such as auks, albatrosses, storm-petrels, frigate birds), **coastal waterbirds** (such as gulls, terns, pelicans and cormorants), **wading birds** (such as herons, ibises and storks), and certain **marshbirds** (such as certain grebes, bitterns). The table below lists the families with species considered to be colonial waterbirds for purposes of this plan. A full list of the species included in the plan are listed in Appendix 1.

Not all waterbirds are covered in the Colonial Waterbird Plan. Most biologically-based categorizations are fuzzy, and defining colonial seabirds and waterbirds is no exception. There are always reasonable biological arguments for including or excluding certain species from any biologically defined list. Some species of songbirds, raptors and waterfowl also fit the Plan's definition of colonial waterbirds. Some species are semi-colonial or inconsistently colonial. Some marshbirds do not have a colonial component to their life history. These are not covered in the North American Colonial Waterbird Conservation Plan because they are covered in other planning initiatives such as Partners in Flight or the North American Waterfowl Plan. National or Regional Colonial Waterbird Plans may choose to include some of these species, if it makes sense for conservation in their areas. For example, the Canadian colonial Waterbird Plan has chosen to include aquatic species associated with colonial

Bird families of species included in the North American Colonial Waterbird Conservation Plan

Family	Species
Podicipedidae	select grebes
Diomedidae	shearwaters and petrels
Procellariidae	albatrosses
Hydrobatidae	storm-petrels
Phaethontidae	tropicbirds
Sulidae	boobies and gannets
Pelicanidae	pelicans
Phalacrocoracidae	cormorants
Anhingidae	darters
Fregatidae	frigatebirds
Ardeidae	herons, select bitterns, and allies
Threskiornithidae	ibises, spoonbills
Ciconiidae	storks
Phoenicopteridae	flamingos
Laridae	skuas, gulls, terns, and skimmers
Alcidae	auks, murres, and puffins

birds such as grebes, loons, and bitterns. Exclusion does not imply unimportance and it is likely that conservation action under this plan would be of benefit to other species. Appendix 1 lists species that for biogeographic or biological reasons are not explicitly covered by the Plan, but can benefit from being considered in planning for colonial Waterbird conservation.

The Planning Process

In August 1998 a voluntary alliance of individuals representing themselves, government agencies, non-government organizations and the scientific community gathered at USGS

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Patuxent Wildlife Research Center in Laurel Maryland to contemplate development of a conservation plan for seabirds and colonial waterbirds throughout North America. The North American Colonial Waterbird Conservation Plan emerged from this alliance. The planning process was entrusted to the work of two committees--a Steering Committee and an Advisory Committee (See acknowledgments for membership). The Steering Committee organized and facilitated the Plan's development by holding a series of workshops, keeping the process engaged, and writing the plan. The Advisory Committee, composed of a wide range of individuals representing all factions of seabird and colonial waterbird interests, provided information for the Plan, participated in workshops, and reviewed and commented on various drafts. The members of the Steering Committee during 1998-2000 are the authors of this plan.

Beyond the Committees, broad input was obtained to incorporate a wide variety of interest groups and individuals, including local, state, provincial, and federal agencies, non-governmental organizations, business-related sectors, researchers, educators, and policy makers. This was accomplished through topical and regional workshops, outreach presentations, a web page, and solicited reviews from 1998 through 2000. The workshops held are listed in Table 2, and those who participated in the planning are listed in the Acknowledgments.

List of planning workshops held in preparation of the
North American Colonial Waterbird Conservation Plan.

Monitoring Workshops

Shepardstown West Virginia
Plymouth, Massachusetts

Research and Biology Workshops

Colonial Waterbird Society, Miami, Florida
Pacific Seabird Group, Blaine, Washington
American Ornithologists' Union/ Society of
Canadian Ornithologists, Newfoundland

National Planning Workshop

Ottawa, Canada

Regional Workshops

Southeast and Florida, St. Petersburg, Florida
Caribbean, Santo Domingo, Dominican Republic
Central America and Mexico, Monterey, Mexico
Hawaii and Pacific Islands, Honolulu, Hawaii
Northeast, Bangor, Maine
Great Lakes and Upper Mississippi, Chicago, Illinois
Intermountain West and Southwest Desert, Phoenix,
Arizona
Pacific, Napa, California
Lower Mississippi and Gulf Coast, Memphis, Tennessee
Prairies and Great Plains, Jamestown, North Dakota

Regional and Continental Review Workshops

Waterbird Society, Plymouth, Massachusetts
Pacific Seabird Group, Lihue, Hawaii
Florida Wading Bird Group, Lake Placid, Florida
Texas Waterbird Group, Corpus Christi, Texas

The Draft Plan and its Reports were released on October 24, 2000. After a six month review and comment period, the Steering Committee for 2001 will revise the plan and the Reports for final release. Also in 2000-2001, Regional Working Groups will create Regional Colonial Waterbird conservation Plans.

Scientific Basis for Conservation Action

Many opportunities and challenges face conservation action for seabirds and colonial waterbirds. The very characteristics that make this group of species unique, their coloniality and dependence on water, provide opportunities, in addition to creating challenges. In this section we note the biological bases and special opportunities for conservation characteristic of colonial seabirds and waterbirds. For a more detailed analysis of the topic, see Report on the Biological Basis of Conservation. In order to plan for and implement colonial waterbird conservation throughout North America the following biological characteristics need to be considered.

Distribution and Range

- Many species have large ranges that cross national and even continental borders and individuals may cover enormous distances requiring conservation to be inherently international and to take advantage of existing international structures.
- Distribution - breeding, wintering and migratory - are changing for both natural and human caused reasons.
- Conservation must occur along migration ranges and the major North American flyways, Atlantic Coast, Pacific Coast and Mississippi River.
- Conservation on the winter range is critical, and for many species this range extends beyond the area of this Plan.
- Identifying Globally important sites for seabirds and colonial waterbirds and conserving these sites as a continental network are essential.

Coloniality-Concentration

- Aggregation is THE defining biological characteristic of the birds covered in the Plan, which makes them vulnerable to local conditions.
- Aggregation opens possibilities for efficient, effective, and economical site-specific conservation action.
- In each region, colony sites can be prioritized as: 1. Traditional Sites - used consistently for decades; 2. Intermittent Sites - used in cycles of years to decades; 3. Occasional Sites - used occasionally or in the recent past; 4. Potential Sites - not used, but meeting the understood criteria for use, and managed as a matrix explicitly identified for preservation and management.
- Colony sites must be managed to assure they remain viable.

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- Concentration in feeding sites makes each of these sites important to the local population, and by extension to the regional population. These need to be conserved and managed even if birds use them for only a short period during the year.
- Roosting and loafing sites also must be protected and managed, even if ephemerally used.

Dependence on Aquatic Systems

- Use of aquatic habitats, such as ponds, rivers, lakes, wetlands, coastal and offshore marine systems, present opportunities for effective multi-species management and conservation action.
- In habitat patches that are relatively unaltered, maintenance of natural conditions and variability is the goal.
- For altered or exploited habitat patches active management will be required, within a multiple use management context such as in concert with water conservation management, wetland regulation, fisheries management, waterfowl habitat management and coastal zone management.

Demography

- Many colonial waterbird and seabirds are long lived, having low annual reproductive output and high adult survivorship.
- Naturally low annual productivity and high juvenile mortality means that reproductive success in any one year may not be critical to the population trend.
- Adult mortality is generally found to be the most critical factor affecting population change, thus population conservation action aimed at reducing or removing the impact of stressors that cause preferential adult mortality may be most effective.
- Because of delays in seeing the effects of reproductive failure and the existence of nonbreeding buffers, population trend data alone are insufficient to monitor the health of these populations, demographic monitoring is also essential.
- In some instances conservation may only be feasible on the nesting grounds thereby increasing juvenile survival, even when adult survival is the limiting factor.
- Conservation action needs to take demographics into consideration but needs to evaluate the relative roles of demographic and environmental impacts.

Population Trends

- The status of population information and trend information for most species is woefully inadequate and it is not possible, for most species, to achieve the Plan's goal of being able to detect continental population changes of greater than 50% over 50 years.
- Wintering population information is lacking for most species and most areas.
- A continent-wide, long-term program to monitor and evaluate population sizes and trends is needed.

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- For each population of conservation concern, data need to be available to ask: What is the trend? Is there a demographic cause to the trend? Is there an environmental cause to the trend? And then, what action should be taken?
- Knowledge of population sizes is needed to assess conservation risk due and to determine the relative importance of areas to the species.
- Population thresholds/goals need to be determined for small populations and those that are declining, but not for most species.

Scientific Knowledge Base

- Sound colonial waterbird conservation can only proceed on the basis of sound scientific knowledge.
- For many species and in many areas basic biological information is sufficiently strong to support conservation action, and such knowledge is often sufficiently robust to be extrapolated to other populations, other species or other areas.
- But not much is known about many species, or outside the nesting season for most species.

Part 2: A VISION FOR COLONIAL WATERBIRD CONSERVATION IN NORTH AMERICA

Overall Goal and Objective of the Plan

The overall vision of the North American Colonial Waterbird Conservation Plan is to ensure populations, habitats (breeding, migratory, and wintering), and important sites of seabirds and colonial waterbirds are sustained or restored and maintained throughout their ranges in North America.

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

The goal of the North American Colonial Waterbird Conservation Plan is to ensure the distribution, diversity, and abundance of populations and habitats (breeding, migratory, and wintering), and important sites of seabirds and colonial waterbirds are sustained or restored and maintained throughout their ranges in North America.

The objective of the North American Colonial Waterbird Conservation Plan is to create a cohesive, multi-national, partnership that uses strong science and is organized within Bird Conservation Regions to make informed decisions to conserve and manage seabirds and colonial waterbirds, their habitats, and sites, throughout North America.

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Conservation strategies must be based on rigorous science. An underlying foundation of scientific knowledge about seabird and colonial waterbird biology, and the threats facing them, form the links between broad conservation goals and the specific conservation programs needed to protect bird species and habitats. Effective conservation of the seabirds and colonial waterbirds that occur throughout North America also requires that the information to make informed conservation decisions is current, complete as possible, and readily available. To achieve this continued research and monitoring will be needed to clearly identify important population trends, ecological sensitivities, and key habitats. These concepts are encompassed within the following four goals, their strategies for implementing the goals and the expected results of their implementation.

Species and Population Goal

GOAL: To sustain the distribution, diversity and abundance of seabirds and colonial waterbirds throughout North America and restore populations of species of concern and those in decline.

Strategies

- Determine population status for all species of colonial waterbirds throughout North America
- Institute a continent-wide, dispersed, partnership-based monitoring system covering all of North America and including seabird by-catch monitoring
- Develop analytical tools and analytical schemes to determine and assess population trends against trend goals for each species
- Synthesize information obtained to identify critical factors affecting populations to implement appropriate conservation actions

Results

- Seabirds and colonial waterbirds are monitored with sufficient intensity and coordination to accurately determine population trends, taking into account "action thresholds" when evaluating population trend significance
- Factors influencing seabird and colonial waterbird populations are sufficiently understood
- Species of concern are identified, status assessments and management plans are developed, and their populations are restored to appropriate levels

Habitat Goal

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

Strategies

- Identify key marine, freshwater, and terrestrial habitats for seabirds and colonial waterbirds, including breeding, wintering, roosting, foraging sites.
- Implement management actions that secure important habitats

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- Develop and implement management plans for seabirds and colonial waterbirds for each bird conservation region.
- Increase understanding of seabird and colonial waterbird habitat requirements
- Determine and communicate widely educational information on habitat conservation strategies and tactics applicable to all local habitats that might be managed for waterbirds.
- Develop and maintain a communication network among site managers of seabirds and colonial waterbirds.

Results

- Important seabird and colonial waterbird habitats are secured through legislation and/or habitat conservation programs are properly managed
- Key factors affecting seabird and colonial waterbird habitat requirements are understood
- Best practices are identified to integrate seabird and colonial waterbird habitat needs with other uses of the landscape/seascape

Site Goal

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

Strategies

- Identify, inventory and investigate sites that potentially qualify as continental Important Colonial Waterbird Areas (IWAs)
- Refine and continually update the list of continentally Important Colonial Waterbird Areas
- Identify, inventory and investigate sites that potentially qualify as regionally Important Colonial Waterbird Areas
- Develop and maintain a catalogue of continentally and regionally Important Colonial Waterbird Areas, with locations, management, responsibility and management issues.

Results

- Important seabird and colonial waterbird sites are identified and catalogued.
- IWAs are secured through stakeholder engagement, legislation and/or site management programs.
- Threats affecting IWAs are documented, understood and managed.

Education Goal

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

Strategies

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

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- Work with users of seabirds and colonial waterbird habitats to promote practices and policies that reduce impacts on the birds.
- Provide information and outreach to influence decision makers and the public on conservation and resource management policies.

Results

- Decision makers and regional planners incorporate seabird and colonial waterbird needs into their plans and actions.
- Citizens, conservationists, and resource managers are made more aware of conservation problems relating to seabirds and colonial waterbirds.
- Best practices and policies for the conservation of seabirds and colonial waterbirds are accepted and widely used.

Coordination and Implementation Goal

GOAL: To ensure that coordinated conservation efforts for seabirds and colonial waterbirds are guided by common principles and are in place throughout the range of those species that occur in North America and result in implementing colonial waterbird conservation actions.

Strategies

- Establish cooperative actions with organizations concerned with the conservation, research, and management of seabirds, colonial waterbirds, and their habitats.
- Exchange information and expertise with international, national, Bird Conservation Region, state/provincial and local partners.
- Develop seabird and colonial waterbird plans, where appropriate, at the national, Bird Conservation Region, and state/provincial levels throughout North America.
- Influence environmental policies and programs to positively affect seabird and colonial waterbird conservation.
- Participate in international programs in ways that enhance the conservation of seabirds and colonial waterbirds
- Increase human and financial resources available for seabird and colonial waterbird conservation.

Results

- Seabird and colonial waterbird conservation plans are in place and implemented at the international, national, Bird Conservation Region, and state/provincial levels.
- Principles that support seabird and colonial waterbird conservation are incorporated into international, national and state/ provincial legislation, agreements and partnerships.
- Colonial waterbirds are fully considered in all bird conservation programs internationally, nationally, regionally, state/provincially and locally.
- Non-government groups play an active role in promoting and implementing seabird and colonial waterbird conservation activities throughout North America.
- Priority conservation action is not hindered through lack of human or financial resources.

Premises Underlying Strategies for Conservation

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

Effective conservation requires an interaction of people and processes. Planning is the development of goals for populations, habitats, sites and programs, identification of approaches and opportunities, and the rationalization of the pathways chosen. The planning process for seabird and colonial Waterbird conservation is two-staged. The present document is meant to provide a start to conservation by creating a common philosophical and practical basis for elevating concern and action for seabirds and colonial waterbirds. The Plan is continental in scope, encompassing all species and their habitats. By virtue of its breadth, it is necessarily general. The second stage steps the planning and implementation processes to the regional and local scales, where conservation actually occurs.

Science

Effective long-term conservation strategies for seabirds and colonial waterbirds must be underpinned by strong scientific understanding. Conservation goals cannot be met, evaluated, or revised without knowledge of the basic biology, conservation biology, habitat relationships, and conservation threats for the various species. Science provides the information needed to identify critical conservation needs, to suggest best conservation actions, to monitor populations, habitats, and management activity, and to adapt conservation action to new information. If there is one category of information that is lacking, it is an understanding of the role of various limiting factors for various species in various places. While available science must underlay conservation action, action must also occur without adequate knowledge.

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

Partnership

Partnership is a key strategy for successfully implementing conservation action for seabirds and colonial waterbirds. No single institution or person can even begin to accomplish all that is required. Partnership begins with the planning process, which is organized by voluntary

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committees of individuals. Partnership is essential among government agencies such as national wildlife agencies, state and provincial agencies, and local government. Partnership is essential among nongovernmental organizations. Partnership is essential among management biologists and among research scientists. Partnership is essential among environmental educators.

- The Plan will be written and implemented through a facilitated continent-wide network of partners.

Scale

Colonial waterbirds can be conserved only by coordinated action taken at the continental, national, regional, and local scales. Continental scale action is essential to provide a common planning framework and to assure continuation of continental scale operations such as engagement with North American Bird Conservation Initiatives (NABCI) and continent-wide monitoring. At the National scale, wildlife agencies, NGO's or other partnerships should create national plans and implementation procedures. At the state/provincial scale, responsible governmental entities should develop specific plans and procedures appropriate to conservation needs in their area, enact appropriate policies and procedure, and employ individuals to carry out colonial waterbird conservation. At the local scale, park and refuge managers should develop customized implementation for their particular situation.

- The planning and implementation process will address multiple scales of conservation needs and actions.

Planning

The purpose of the continental plan is to provide a consistent large scale framework. The continental planning effort will step down to the regional and state/provincial scale. However, planning is not the goal, conservation action is.

- A strategic premise of the Plan is that the purpose of planning is to facilitate on-the-ground conservation action.

Integrated Bird Conservation

Seabirds and colonial waterbirds are only a portion of the suite of bird species that use aquatic habitats throughout North America. Waterfowl, shorebirds, solitary marshbirds, raptors, and songbirds are other groups of birds use the same habitats. It is not possible to construct or conduct conservation action for each of these species independently. Knowledge, resources, infrastructure are too limited. But multiple species using a landscape often share conservation needs. The wisest course is for habitats and landscapes to be managed with respect to all species simultaneously, increasing efficiency, reducing costs, and increasing effectiveness. It is this

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recognition that led to the development of the NABCI. Through NABCI, stakeholders in bird conservation can attempt to manage landscapes for all species over all habitats. The Plan is to provide the information, goals, and direction to guide the seabird colonial waterbird portion of all-bird conservation.

Integrating all bird conservation in all habitats is far from easy, or even clearly defined. Implementation will require attention to the needs of each ecological group of birds, such as waterbirds, as well as actively searching for commonalities among species that provide overlapping opportunities for effective management. It is crucial that the zones of overlap and possible conflict among species' requirements be determined. Where conflicts among the needs of species arise, creative approaches might be called for or decisions made that will adversely affect one group of species. But at least in an integrated planning process using strong science, these decisions will be made with understanding and disclosure of any adverse consequences.

The most fundamental common element among bird conservation needs is that effective conservation action is local. It is at the scale of the local colony site, roosting site, feeding site, or landscape matrix of such sites, that effective conservation occurs. Furthermore, it is at the local scale that conservation delivery can be most effectively integrated across bird species groups. In each local situation, the stakeholders must be identified. Local conservation, scientific, political, social and economic expertise must be assembled and the insights and guidelines from each of these disciplines considered. Public and private organizations and individual citizens must mobilize the conservation and management of sites required for maintaining sustainable populations of seabirds and colonial waterbirds.

Local conservation action can best be planned, collected, coordinated, and facilitated on a regional basis. This is true for both biological and political reasons. Politically, local and state government and private organizations are focused on conservation at the regional or subregional level. Biologically, if regions are defined on ecological bases then conservation action has logical commonalities across the region. In recognition of this fact, the primary bird conservation delivery mechanism of NABCI is the Bird Conservation Region (BCR). Based on the highly successful geographically based approach of the North American Waterfowl Management Plan, BCRs will span the continent having both a geographical base and a set of partners acting within a joint venture framework.

- A strategic premise of the Plan is that it is to be implemented as an integral component of the NABCI program for the conservation of all North American birds and will be delivered in part through Bird Conservation Region joint ventures.

Implementation

Implementation at the continental scale involves continued planning, evaluation, and engagement with other bird conservation initiatives under the auspices of NABCI, with national programs, with states and provinces. Implementation will be facilitated at the continental level by the North American Colonial Waterbird Conservation Council, at the national level by national

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coordinators and national committees as appropriate, at the regional (BCR) level by Regional Colonial Waterbird Conservation Working Groups and by BCR Joint Ventures, at the state and provincial level by state coordinators and working groups, and at the local level by the many individuals and organizations involved in bird and habitat conservation.

- A strategic premise of the Plan is that it will be implemented by partnerships and formal institutions at all levels, from the international to the local.

Evaluation

Evaluation is the planning step most often overlooked because it is so difficult. At one level, the success or failure of the present plan should be based on whether seabird and colonial waterbird populations are being maintained at sustainable levels and whether their habitat is being maintained and managed in ways that assure that population goals are met. Imprecision and inadequacy in measuring either population or habitat sustainability would, for most species, make population and habitat goals difficult to evaluate in the short term. It was for this reason that more measurable subgoals were developed under each of the overall goals.

- A strategic premise of the Plan is that progress in meeting its goals should be evaluated periodically by Regional Working Groups and the North American Colonial Waterbird Conservation Council.

Revision

The Colonial Waterbird Conservation Plan is a living document that reflects an ongoing process of planning, implementation and evaluation. It is designed to be amenable to iterative revision and reconsideration. This will be accomplished in two ways. The Plan will be placed on the Internet as Version 1. As proves desirable, various parts will be revised and inserted as replacement elements of the plan. Also every five years, a top to bottom review will examine the entire plan for elements that need changing.

- A strategic premise of the Plan is that it will be revised continuously as needed and be subject to full review and revision every five years.

Part 3: COLONIAL WATERBIRD CONSERVATION – THE CONTINENTAL SCALE

The North American Colonial Waterbird Conservation Plan has as its first focus the identification and facilitation of conservation action at the continental scale. Some issues, such as fisheries and migratory habitat, transcend state, regional, or National boundaries. Some activities, such as coordination with international bird conservation initiatives and monitoring, must be continent-wide in scope. Populations and conservation threats of species are most logically

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evaluated at the continental scale. Thus, the first level of infrastructure to facilitate meeting the plan's goals must be international. This section provides evaluations and considers conservation needs at the North American scale.

Continental Species Status

Species Included in the Plan

Biological Criteria. Colonial waterbirds are defined for the purposes of the Plan as avian species that nest colonially and utilize aquatic (freshwater, coastal or marine) habitats. The adaptation to nest colonially occurs in many species and is manifested in a spectrum of behaviors that range from highly dense aggregations of birds nesting mere centimeters apart to loose associations of nesting pairs with no obvious social interaction.

Geographical Criteria. Colonial waterbirds included in the Plan utilize breeding and/or non-breeding habitats in North America. North America is defined broadly to include all of Canada, the US, Mexico and the nations of Central America and the Caribbean. In addition, the majority of colonial waterbird species using land-based habitats within North America also make extensive use of coastal and pelagic habitats in the Atlantic and Pacific Oceans. The geographical area included in the Plan extends from 90° N to the equator, and from 40° to 180° W.

The Plan explicitly includes a total of 155 colonial bird species known to utilize aquatic habitats in North America and associated oceanic regions (Appendix 1). Colonial species that are already subject to conservation planning in North America under the North American Waterfowl Management Plan (e.g. Common Eider) or Partners in Flight (e.g. Red-winged Blackbird) are not included. In addition, species that are accidental or casual to North America are not included. Species identified as being accidental or casual to the Plan geographic region in the AOU Checklist are provided in Appendix 2.

Subspecies. Subspecific taxa of colonial birds are not currently considered in the continental plan, however it is anticipated that subspecies will be included in conservation planning at regional and/or BCR scales.

Allied Species. A significant number of non-colonial waterbirds share inland and pelagic habitats with colonial species included in the continental plan. Examples are rails and loons. Most of these species do not receive adequate conservation planning from other initiatives and would benefit from the implementation of habitat protection strategies identified in the North American Colonial Waterbird Conservation Plan. Although not formally included in the Plan, these species are listed in Appendix 3. Adoption of conservation measures to benefit these allied species is encouraged at the National and regional level.

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

that are cosmopolitan. The distributions of twenty-two species are limited to North America and associated oceanic regions. Therefore, the relative responsibility and importance of conservation planning efforts in North America to global biodiversity varies by species. Accordingly, the 155 species included in the Plan have been placed in global distribution categories to facilitate prioritization of conservation strategies. Global distribution categories are broadly defined as:

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

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

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

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

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

Regional Occurrence. Within North America (and associated oceanic regions), the geographical area of the Plan is comprised of 32 Colonial Waterbird Conservation Regions that have been delineated to facilitate planning and implementation. These include 19 land-based and 13 oceanic regions. These regions have been created from existing biological mapping programs. The North American Bird Conservation Initiative has developed terrestrial Bird Conservation Regions (BCRs). The IUCN and other agencies have developed the Large Marine Ecosystem Program which has identified Large Marine Ecosystems (LMEs) primarily in shelf waters around the world's continents. Colonial Waterbird Regions are comprised of BCRs and LMEs, and two central Pelagic regions. The occurrence of breeding and non-breeding colonial waterbirds in these regions and globally is provided in Appendix 4 and 5.

Breeding and Non-breeding Distributions. For the majority of species considered in the Plan, breeding and non-breeding distributions are spatially contiguous and thus include all habitats utilized. However, 20 species (identified in Appendix 4 and 5) are distributed in breeding and non-breeding (wintering) habitats that are spatially disjunct (e.g. Franklin's Gull) and therefore migratory habitats are not included for these species. Distribution of these species during migration is largely unknown and has been identified as a research priority in the Plan.

Prioritization Process

Rationale for Prioritizing Conservation Needs. The NACWCP has undertaken the task of ranking conservation needs of the 155 colonial waterbird species included in the Plan. This has been done to conform and integrate with other bird and habitat conservation programs. In addition, ranking conservation needs assists managers in the allocation of management resources. The principal challenge faced in ranking species is the inconsistent quality of information on species' status. Nevertheless, due to the colonial habit of species included in the

Plan, colonial waterbirds are relatively well-studied and information adequate for broad ranking is available for most species.

Other Priorities. Although this process attempts to characterize conservation status of birds (on a species-by-species basis), many other ranking schemes should be developed that reflect other interests and needs in colonial waterbird conservation. These include identifying 1) best candidates for investment of research efforts (e.g. indicator or model species), 2) “umbrella” species whereby conservation efforts focused on these species may result in cascading benefits to many other species, 3) species of management concern—including colonial birds that are at the center of resource management conflicts, and 4) “flagship” species—species suited for profiling in education and outreach programs.

Prioritization Protocol. An ad hoc committee developed a process for assigning conservation ranks to colonial birds. This protocol was adapted from the Partners in Flight and US Shorebird Conservation Plan guidelines and accommodates the special conservation issues of species that aggregate during breeding season and/or utilize extensive marine habitats. Conservation rank is determined by evaluating six factors that contribute to conservation status (population trend, relative abundance, threats to breeding and non-breeding, relative distribution of breeding and non-breeding populations). These factors are scored and ranks are determined through a step-wise categorization process. The complete protocol is available in Appendix 10.

Data Sources. The primary source of information for estimating factor scores is species experts that were recruited to provide/review data and resultant scores. Species experts were identified for 143 of the 155 species included in the Plan through literature searches and by committee members. Ninety researchers and wildlife managers participated in this process. Many species profiles received at least two reviews, and most experts provided multiple reviews. Expert review was supplemented by published information where needed.

Continental Conservation Rankings

Categorical Ranks. For species with sufficient information, the estimation of factor scores and step-wise categorization resulted in conservation ranks as follows (details are provided in the protocol):

Highly Imperiled: This includes all species listed as threatened or endangered (national/international; COSEWIC, USFWS, IUCN) as well as all species with significant population declines and either low populations or some other high risk factor.

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

Species of Moderate Concern: Populations of these species are either a) declining with moderate threats or distributions; b) stable with known or potential threats and moderate to restricted distributions; c) relatively small; d) relatively restricted; and e) declining but with no other known threats

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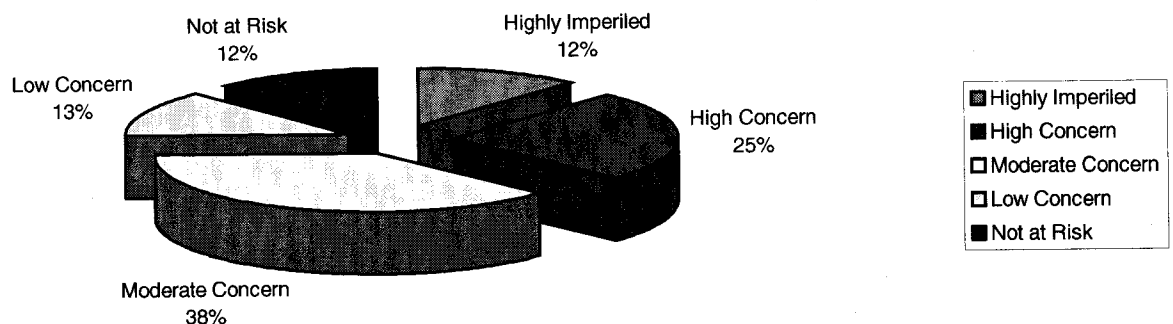
Species of Low Concern: Populations of these species are either a) stable with moderate threats and distributions; b) increasing but with known or potential threats and moderate to restricted distributions; or c) of moderate size.

Species not at risk: all other species

The categorical ranks of North American colonial waterbirds is given in Appendix 6. Ten species of Central American wading birds cannot be ranked currently due to an almost complete absence of information. A further twenty-one species are yet to be ranked pending expert input.

Twelve percent of species ranked are considered Highly Imperiled; 25% are Species of High Concern; 38% are Species of Moderate Concern; 13% are Species of Low Concern; 12% are Species Not at Risk.

Conservation Status of 135 Colonial Waterbird Species in North America



Regional Priorities. Categorical ranks developed at the continental scale are used as preliminary rankings at the regional and BCR scale. Ranks are expected to be reviewed and may be modified in the development of regional implementation plans. Species that are considered peripheral to certain regions or BCRs may be removed from the ranked species list. Alternatively, regions or BCRs that support core populations of colonial waterbirds may elevate rankings to reflect local area importance and/or for other reasons.

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Continental Population Status

Current Populations

Current North American population estimates were obtained from species experts and the literature (Appendix 7). The precision and accuracy of this information varies widely. For the majority of species, these data derive from colony-based monitoring programs of varying intensity that estimated breeding pairs during the 1990s. Therefore, population estimates best reflect breeding populations. In cases where non-breeding individuals also are present at colony-sites, these estimates may approximate total North American populations. Population estimates for approximately 20% of species, including most species not breeding in North America, are not provided due to missing or low quality information.

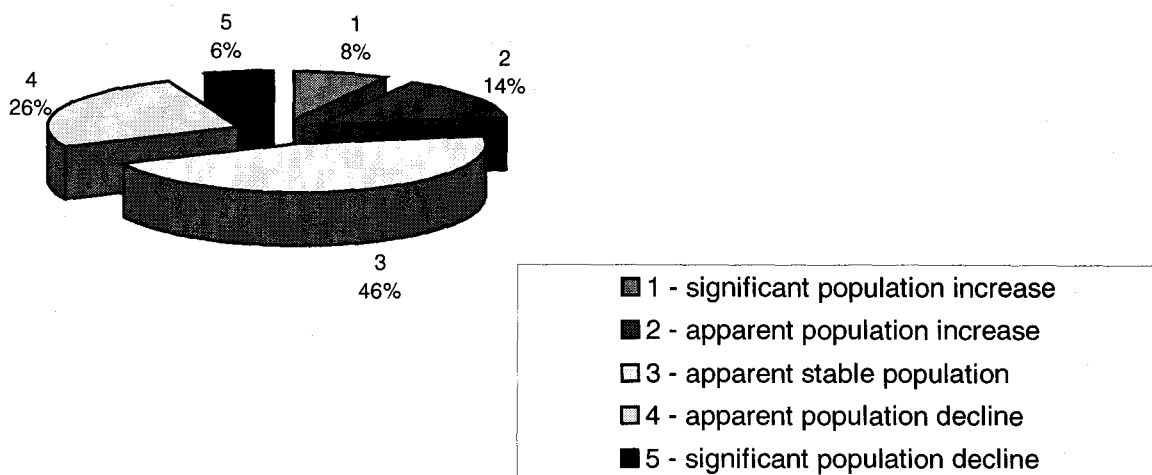
Historical Populations

Although possible to estimate current continental populations for most North American colonial waterbirds, historical continental estimates are largely not available. Nevertheless, significant attempts to estimate populations occurred during the 1970s and 1980s and data are available at the regional/BCR scale.

Population Trends

Current North American population trend estimates were obtained from species experts and the literature. Experts were requested to estimate population trend from 1970 to the present and provide a qualitative score that ranged from significant population increase to significant population decrease (see Prioritization Protocol in Appendix 10). Population trend information for 135 colonial birds is presented below.

Population Trends for 135 Colonial Waterbird Species in North America



Due to the absence of historical population data, it is not possible to quantify population trend information at the continental scale. No other databases exist that allow large-scale quantification of trend. The Breeding Bird Survey data include adequate information for only twelve of the 155 colonial waterbird species included in the Plan. In addition, BBS data represent only a fraction of the land-based CWRs and none of the marine CWRs included in the Plan.

At the regional scale, it may be possible to quantify population trend information with historical population data for most regions. Quantitative trend information is preferable to continental scores in providing benchmarks and for establishing goals for local and regional managers.

Continental Population Goals

The establishment of continental and regional population goals remains to be determined. Alternatives include 1) trend-based goals at the continental scale to improve conservation status of North American populations, 2) abundance-based goals at the regional scale based on local current and historical population estimates, and/or 3) trend-based goals at the regional scale.

Habitat Use

Breeding Habitats

Protecting and managing habitats where colonial waterbirds nest are essential to sustaining healthy populations throughout North America. Nesting habit changes, both naturally and due to human influence. In situations where habitat is limiting, management is required. Habitat can be completely altered by human activity, such as drainage, forestry, and agriculture. Colonies on artificial sites must especially be actively maintained.

Protecting Foraging Habitats

Foraging habitats in proximity to colony-sites are vital to the reproductive efforts of colonial waterbirds. Commuting distances to foraging grounds from the colony ranges from a few kilometers in some wading birds to 100s of kilometers for pelagic species. Information on foraging habitats for many species included in the Plan is provided in Appendix 8. It is likely that habitat goals will be established at the regional level to reflect local natural resource management objectives.

Wintering Habitats

Wintering habitats are critical to the long-term conservation of colonial waterbirds. Presently, there is little information on habitat needs outside of the breeding season. Colonial waterbird conservation programs must establish non-breeding season monitoring programs which target habitat use away from the breeding colonies. Information from these programs will assist managers in identifying and managing habitats that provide suitable sites for foraging, roosting and breeding colonial waterbirds.

Migratory Habitats

Even less is known about important migratory habitats for colonial waterbirds. Colonial waterbird conservation strategies must include activities to identify, manage, and preserve key habitats used by colonial waterbirds during migration.

Habitat Planning – Planning and implementation of habitat conservation is best accomplished on the regional and local scale. Regional Plans will identify important nesting, foraging, wintering and migratory habitats and establish habitat goals within Bird Conservation Regions.

Continental Site Conservation - Important Waterbird Areas

Important Colonial Waterbird Areas (IWAs) are sites recognized as critical to the conservation of continental populations of colonial waterbirds. The principal reason for identifying such sites is to attain their recognition, protection, and management. Global and continental IWAs are recognized through application of quantitative criteria based on numbers of birds using the site. The Important Waterbird Areas concept follows the Important Bird Area (IBAs) concept promulgated by BirdLife International and its partners around the world. Global and continental IWAs should cross-list under IBA programs at the same scale.

Under the BirdLife criteria, important bird areas are evaluated for specific conservation categories of birds. The two categories that relate to the Plan are threatened bird species and congregatory bird species. Under BirdLife criteria, sites are identified as being globally important, continentally important, or nationally important. The Criteria to be used for evaluation within the continental planning process for colonial waterbirds are as follows:

Globally Important Waterbird Area – The site is known to hold or thought to hold on a regular basis 1% or more of the global population or 20,000 or more colonial waterbirds.

Continentially Important Waterbird Area – The site is known to hold or thought to hold on a regular basis 1% or more of the continental population or 15,000 or more colonial waterbirds.

Appendix 9 lists sites that have so far been identified as candidates for evaluation as global, continentally, or regionally Important Waterbird Areas. During the review period for this Draft Plan, Regional Working Groups will be called upon to use their regional knowledge to evaluate these sites according to global and continental criteria.

Issues of Continental Significance to Colonial Waterbird Conservation

Conservation of Colonial Waterbirds in North America requires attention to many issues and concerns that are shared across the continent. These are also discussed at greater length in the Regional Reports accompanying this Plan. Below is a list and short explanation of these issues, to guide conservation planning and action.

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- Contaminants and eutrophication – Pesticides, fertilizers, and industrial chemicals have added large nutrient and toxic burdens to freshwaters and coastal estuaries and even the open oceans. Individual effects in many cases are known, population implications are seldom adequately explored. Monitoring and assessment of contaminant effects are essential.
- Oil related activities – Oil is a major environmental threat to oceanic and coastal species. Threats include platform construction, drilling in wetlands and offshore, shipping and spillage, and the chronic, low level seepage from surface runoff or subsurface sources. Marine bird populations are an integral component of the marine ecosystem and are commonly injured in oil spills or hazardous material releases. Such injuries can occur as direct mortalities or indirectly through habitat degradation, lost reproductive success, and/or contaminated food supplies. As upper trophic level feeders, marine birds rely on a healthy marine environment to provide the prey base necessary for reproduction, migration and general maintenance.
- Disturbance – Unless there is evidence to the contrary, human disturbance at congregatory sites-colonies, roosts, feeding areas – should be assumed to affect the well being of the birds. Disturbance can be due to intrusion on the ground, water or air – especially by new generation watercraft such as kayaks and jet skis that allow close approach, low flying aircraft, pets and feral animals, off-road vehicles, and other outdoor activities. Intrusive, disruptive disturbance must be tightly managed at all sites where it occurs. Sites need to be inventoried, identified to the public, posted, patrolled and enforced. However, habituation to non-intrusive disturbance is a common phenomenon, and many colonies persist and thrive in highly populated areas. There are situations where promoting continued disturbance is desirable to assure habituation. Entrance and research in colonies is not necessarily detrimental, so long as the disturbance caused is not unduly disruptive. Disturbance must be managed, but each situation must be evaluated individually.
- Loss of colony sites – Colony sites can be destroyed by drainage, forestry practices, agriculture, and development for domestic or industrial purposes. A surprising number of colonies are on artificial sites, such as spoil islands, dikes, bridges and causeways, fill, even rooftops. These require continual maintenance.
- Habitat management of colony sites – Public and private agency managers have an opportunity to enhance the quality of selected colony sites using a variety of manipulations of vegetation and substrates. Results of management actions need to be monitored.
- Fisheries and ocean resource exploitation – Marine fisheries exact a significant, and perhaps unsustainable, toll on pelagic seabirds through incidental catch of seabirds in fishery longlines and the reduction of food supplies for the birds. Recent studies have implicated longline fishing in population declines of some albatross species. Longline fishing is considered the most recent and potentially most serious global threat faced by albatrosses and other procellariiform taxa. Unsustainable bycatch of birds by fisheries must be eliminated through employment of new methods, mitigating equipment, education within the affected fisheries, on-ship monitoring, implementation of the International Plan of Action, international agreements, and increased understanding of population dynamics that determines sustainable mortality. Sustaining seabird populations must be accepted as part of all fisheries programs. High seas fisheries must be brought under international regulation. Colonial waterbird conservation action should work in partnership with the fishery industry.
- Colony site restoration/establishment – Colonies have been successfully re-established through human intervention and tools are known to accomplish this. Their use requires careful assessment of conditions at the site.
- Beach management and “nourishment” – Open sandy beaches throughout the Plan area are heavily used by bathers, off road vehicles, fishermen, and are subject to development, all of which may compete for space with nesting and loafing waterbirds. Massive projects restoring beaches or managing coastal beach

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movement are undertaken. Colonial waterbird sites need to be managed. Site protection, appropriate sand and vegetation management, closures and enforcement, predator control, and monitoring are required.

- Dredged material management – Maintenance dredging of boat channels provides opportunity for island creation and management for nesting and roosting colonial waterbirds. Properly management for drainage and vegetation is required. Resolving competition for this resource with “beach nourishment” programs is needed in some areas. Where natural beaches are under development pressures, dredge islands may be the prime nesting and roosting sites for colonial waterbirds in the region.
- Guano mining – Guano mining at islands in Mexico and in Latin America can adversely affect seabirds, and needs to be wisely managed.
- Predator management – At many colony sites - beaches, coastal islands, seabird sites, inland pothole regions, and even remote Alaskan islands - mammalian and avian predators kill nesting birds, their eggs, or chicks. In most cases the presence, numbers, or accessibility of sites are artificial. Sometimes it is only a few individuals that cause damage. For species that are rare or use a few sites, predator management is required. Techniques exist, such as exclusion from nests, vegetation management, population reduction or removal of individual predators.
- Diseases and parasites – Diseases such as Newcastle’s disease, avian cholera, and perhaps West Nile Virus affect waterbirds. Die-offs occur, such as in the Salton Sea, sometimes of unknown causes. Waterbirds may harbor human pathogens such as tick borne diseases.
- Aquaculture – Aquaculture provides artificially concentrated food supplies, such as crawfish, shrimp, catfish, tropical aquarium fish, juvenile trout and salmon, mussels, and oysters. National and state governments in the Plan area are encouraging the development of aquacultural activities. These can affect the continental distribution and population size of colonial waterbirds, which shift to take advantage of new food sources. Demand is great to control these birds. In some states, tens of thousands are killed legally and more illegally. Such levels of take are likely unsustainable. Much of the presumed economic impact is not born out under scrutiny. Techniques for reducing real economic impact are available, including barriers, bird-unfriendly pond construction, needed, and even colony site translocation. Depredation permitting should not be done on a case-by-case basis but adhere to range-wide and region-wide population goals as determined by population modeling. Colonial waterbird conservation action should work in partnership with the aquaculture industry finding solutions of common benefit.
- Hunting – Sport or food hunting and trapping of colonial waterbirds is illegal in most of North America, but does occur in some parts of Canada, Greenland, Alaska, and the Caribbean region. From basic biological principals it must be assumed that artificial mortality of adults will depress waterbird populations and killing needs to be prohibited, or where allowed greatly restricted and regulated not to impact regional populations. Hunting regulations must be in concert with sustainable range-wide and region-wide goals determined through population modeling.
- Ingestion – Waterbirds, especially seabirds, ingest floating debris as a natural consequence of foraging. Ingesting plastics and other artificial flotsam can be detrimental.
- Light effects – Light in close proximity to colonies can affect nesting birds. Squid fisheries using lights at night attract seabirds, such as storm petrels and murrelets.
- Overabundant species – Because of rapid population increase or range expansion, some species are thought to have negative effects on some human commercial interests. Such range and population trends may be natural fluctuations or may be caused by release from artificial depression (such as from pesticides), or may be artificial. There is not evidence that any colonial waterbird is now artificially overabundant across its range in North America. Cases of apparent local overabundance require individual evaluation. Much of the

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presumed economic impact is not born out under scrutiny. New techniques for reducing real economic impact are needed. Depredation permitting should not be done on a case-by-case basis but adhere to range-wide and region-wide goals determined through population modeling.

- Siting urban facilities – The location and design of potentially attractive facilities such as airports, landfills, municipal wastewater wetlands, etc. can be critical to future bird-human interactions, including health and safety issues. Development of plans for such facilities must include avoiding adverse impacts on colonial waterbirds.
- Wetland alteration – Wetlands are being heavily modified by physical changes including water management, dredging, ditching, siltation, invasive plant species. Wetland creation is widespread but how it functions to serve wildlife is seldom proven to be equivalent to natural wetlands. Where benefits are proven artificial wetlands are desirable, they need to continue to be managed for waterbird use. Natural wetlands need to be protected and conserved to retain ecological functioning. Colonial waterbird use of wetlands is variable by nature, and regulators considering permitting wetland change need to evaluate waterbird use on a case-by-case basis on time scales spanning both the annual cycle and multi year hydrologic cycles. Most residual wetlands must now be actively managed for colonial waterbird use as part of all-bird, multiple use conservation.
- Oceanic changes – Changes in oceanic regimes occur on regular cycles that are of somewhat predictable frequency as well as on longer (multidecadal) scales. Aquatic prey availability is correlated with these environmental changes. Conservation of seabirds and wetland birds need to be robust enough to accommodate long scale cycles.
- Climate change – Sea level are rising along mainland and island coastal areas. Climate change also affects rainfall patterns and resulting wetland hydrology throughout the interior of the continent. These changes affect habitat availability and ultimately phenology of nesting and migration. Conservation planning needs to take into consideration the long-term inevitability of climate change in establishing reserves, and securing nesting and feeding sites that will function under future conditions.
- Banding – Banding is an essential conservation tool. Banding colonial waterbirds should be permitted and encouraged. Demographic and movement research and monitoring needs to be encouraged. Training modules need to be developed and training and certification of colonial waterbird banders initiated. Band quality should be improved, banding should be integrated into population studies, the use of radio and satellite telemetry should be increased, and historic data should be conserved.
- Education – Colonial waterbird conservation needs to be inculcated into environmental consciousness, especially through environmental education. This can most effectively be accomplished at colony sites. Colony based environmental education, colony adoption, interpretive displays, viewing points, and publicity can serve to gain support for colony sites preservation and also for conservation of species more broadly.

Tool Box for Managers

Conservation of colonial waterbirds in North America requires the application of knowledge gained over decades of research and practical experience. Recommendations for the management of colonial waterbirds will be found in a series of reports that accompany this Plan. Managers and conservationists are urged to consult these reports. The Annotated Bibliography report describes publications of value to conservation action.

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Inventory and Monitoring of Colonial Waterbirds in North America

In the new millennium, bird conservation planning and management decisions have become increasingly dependent on measuring and evaluating population change as a basis for setting policy, identifying management and research priorities, and evaluating management actions. The North American Bird Conservation Initiative (NABCI) uses species categorization as a method of identifying conservation priorities for all bird species. Furthermore, adaptive management, has become a widely used strategy for making resource decisions. Managing adaptively requires feedback between management and assessment, when each activity influences the other. Thus, managers must assess a managed system periodically and somehow adapt decisions to the state of the system, while accounting for uncertainty about the effects of those decisions. As a result, a critical element of managing and monitoring colonial waterbirds is a comprehensive monitoring program. Such a monitoring program must be able to determine trends in colonial waterbird populations, to determine how well the elements of a conservation strategy are working, to test key assumptions, and to implement an adaptive management approach.

Throughout North America, the destruction of freshwater wetlands, destruction and degradation of coastal and marine ecosystems, contaminants, sea level rise, and human disturbance influence colonial waterbird populations. For some species, these actions have resulted in declines in numbers; less often, they have resulted in colonial waterbird species becoming nuisance wildlife. Unfortunately, when managers are faced with decisions that might influence populations, there is often a lack of certainty over population status. Often, after numerous years of collecting count information on colonial waterbirds, there is limited ability to determine, with any level of statistical significance, population status. Too often, monitoring programs have been initiated without any thought given to future data use. Numerous survey methodologies are implemented over different scales, resulting in data sets that cannot be compared.

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

- develop and agree to standardized survey methodologies during the breeding and non-breeding seasons,
- develop and manage a centralized database that will archive and disseminate data from multiple sources,
- identify gaps in current population survey efforts and coordinate the development of an integrated network of statistically valid, bias controlled, long-term, colonial waterbird population monitoring programs with States and Provinces in North America,
- begin monitoring habitat at the regional and local scale as related to colonial waterbirds,
- begin monitoring outside of the breeding season to identify important wintering habitats,
- integrate colonial waterbird information into "all bird" conservation planning and implementation.

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For a continent-wide monitoring program to succeed, it is essential that methods be developed and agreed upon that are consistent and comparable. The North American Colonial Waterbird Plan calls for development of a set of standardized colonial waterbird monitoring methods to be developed for both population and habitat at multiple geographic and temporal scales, and must include centralized data repositories accessible to managers for data submittal and retrieval over the Internet. As part of this conservation plan, a manual of recommended standardized population monitoring methodologies has been produced (Colonial Waterbird Monitoring Manual Report). Implementation of the recommended methodologies by managers will help standardize data collection efforts and hopefully, result in comparable data sets that can be analyzed at multiple geographic scales.

A centralized location for storing information on colonial waterbirds is key to their conservation. Centralized databases support analyses of long-term trends of waterbirds and document population status and shifts in distribution and habitat use; this information helps (1) document the present and future problems facing colonial waterbirds and, (2) better defines the management actions necessary to support their long-term conservation. The Pacific Seabird Group pioneered a database for archiving records on Pacific seabird surveys and is housed at US Geological Survey's Alaska Science Center. This database will, in the near future, be accessible over the Internet.

Based on the experience of the Pacific Group, the US Federal Government should take responsibility for maintaining a similar database, continent-wide. This is currently being developed as part the National Bird Population Data Center at US Geological Survey Patuxent Wildlife Research Center. This database is one of a number of databases managed at Patuxent, and integrates information on the status, trends, and biogeography of waterbirds across regions, provinces, and states. This colonial waterbird database has been developed to archive data on colonial waterbirds throughout their ranges, regardless of survey locality, and will facilitate a coordinated response to conserve these birds throughout their ranges; furthermore, because the colonial waterbird database at Patuxent is part of the National Bird Population Data Center, it will aid in integrating all-bird conservation. Patuxent's database will be linked to the Pacific Seabird Database.

The North American Colonial Waterbird Monitoring Partnership must be designed to adequately cover the continent. At present there are significant information gaps, as shown by the results of a recent survey conducted by USGS Patuxent Wildlife Research Center (see figure below and Inventory and Monitoring Report). A priori design is required to provide sufficient coverage and also to allow statistical inference to be made.

Basic inventory of colonial waterbird populations, habitats, and sites is required in some parts of the Plan area. Workshops held in 1999, as part of this Plan's planning process, in Mexico at the Neotropical Ornithological Congress and the Dominican Republic at the Society of Caribbean Ornithologists Meeting, indicate that within Mexico, Central America, and the Caribbean Nations, basic inventory of colony sites, relative abundances and species composition is a priority. Information on monitoring programs in Canada, is also a critical so that continental priorities can be identified. Finally, there a paucity of information on colonial waterbird habitat needs outside of the breeding season. Much effort must go into establishing non-breeding season surveys.

To effectively manage and conserve waterbirds, changes in habitat must be integrated with species' population trends. A waterbird monitoring program provides a base from which to synthesize data on species distribution, descriptive-level habitat characteristics, environmental factors, and contaminants. Over the next decade, it will be critical to establish a habitat monitoring component of the colonial waterbird monitoring program. Once this has been accomplished, measures of habitat can be explored at

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regional and local levels, and integrated into population measures; this will allow correlation of population trends with local or regional shifts in habitat characteristics, support adaptive management, and lead to strong, science-based management decisions.

Known Past and Present Seabird and Colonial Waterbird Monitoring Programs in North America.



Information Needs For Colonial Waterbird Conservation

Conservation of colonial waterbirds in North America requires a sound scientific basis. Much is known about the conservation biology of colonial waterbirds and seabirds. But much remains to be understood, and this requires that the scientific information needs be met through inventory,

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monitoring and research. This section notes many of the basic information elements that are needed as the foundation for making informed management and conservation decisions. A more detailed consideration may be found in the Information Needs Report.

Information needs may be divided into four major categories: Basic inventory, monitoring, and assessment; species, populations, habitat information; management-oriented research; and Ecosystem or large-scale issues.

Basic Inventory, Monitoring, and Assessment

- Especially in Mexico, the Caribbean, and Central America, little information is available concerning sites of nesting, roosting, and feeding waterbirds. Using ground surveys and remote sensing methods, finding Important Waterbird Areas (IWA's) throughout North America is critical in any conservation plan. Little information is available anywhere on migration hot spots and key wintering areas for many species. Once these data start accumulating, a continental database should be developed, one that is centrally managed, and accessible via Internet.
- Setting up and testing monitoring methods, and then evaluating their power to detect trends, is crucial for effective conservation. Information is necessary to determine how to sample populations at large scales where the desired goal is to detect a 50% change over a 50 year period. Monitoring of other aspects of waterbird biology needs to be included; developing approaches to monitoring habitat changes of nesting, roosting and feeding waterbirds, contaminant monitoring of tissues and prey, disease and parasite monitoring, and aspects of reproductive success are key to consider.

Species, Populations, and Habitat Information

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

Management-oriented Research

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

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to colonial birds, and using adaptive resource management approaches to restoration of colony sites for rare or declining species.

Ecosystem and Large-scale Issues

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

Education and Outreach for Colonial Waterbird Conservation

Seabirds and colonial waterbirds live in a world increasingly dominated by humans and our actions. For many and perhaps most species, it is no longer safe to assume that their survival is assured without public awareness of their existence, and public support of measures that protect them and their habitats. The public also represents a reservoir of potential volunteers and advocates that, properly trained, can assist with monitoring of colonies and roosts both to assess populations and prevent disturbance, work with local parks, refuges and agencies to improve management of colonies and wetland habitats in their care, and work for the adoption of appropriate legislation at every level to better protect colonial waterbirds and their habitats.

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

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

Our priority goals are:

- Identify priority target audiences
- Determine the critical messages

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- Identify sources of information
- Develop strategies for reaching priority audiences
- Develop or identify model education and outreach materials as a guide to the establishment of local E&O programs

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

Part 4: COLONIAL WATERBIRD CONSERVATION – THE NATONAL, REGIONAL, AND STATE/PROVINCIAL SCALE

National Colonial Waterbird Conservation

National Planning

Planning for colonial waterbird conservation on the national level is essential. This may be accomplished in a number of ways biological staff of the national wildlife or natural resource agency may undertake the planning process. Canada is preparing a national plan for colonial waterbird conservation, "Wings Over Water" (WOW), which will provide a blueprint for effective management and conservation for seabirds and colonial waterbirds in Canada through the acceptance of common goals and priority actions. It will build on conservation and habitat protection activities that have been underway in Canada for many years using the knowledge of their ecology already gained by researchers from governments, universities and public institutions. Canada is working with partners to develop the North American Colonial Waterbird Conservation Plan, while developing WOW, in parallel, and integrating the two plans, wherever possible.

In the United States there is not perceived to be the need for a formal plan outside of the North American Plan. Planning may take other approaches in other nations of the Plan area. National plans, if developed, should to take into consideration and where possible be mutually consistent with the North American Plan.

National Species Prioritization

The North American Colonial Waterbird Plan provides a list of species prioritized at the continental level. Nations generally need to identify species of conservation priority, and doing so they are urged to use the Plan's continental list in order to assess their relative conservation needs nationally. However, if other criteria need to be used, it remains critical that colonial waterbirds be thoroughly and fairly considered within prioritization schemes taking into account their specific biology, needs, and issues. It is crucial in this regard that criteria not be used that are not conducive to colonial waterbird conservation because they were developed for other

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species groups and do not reflect the appropriate degree of threat or conservation concern for colonial waterbirds.

Nationally Important Waterbird Areas

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

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

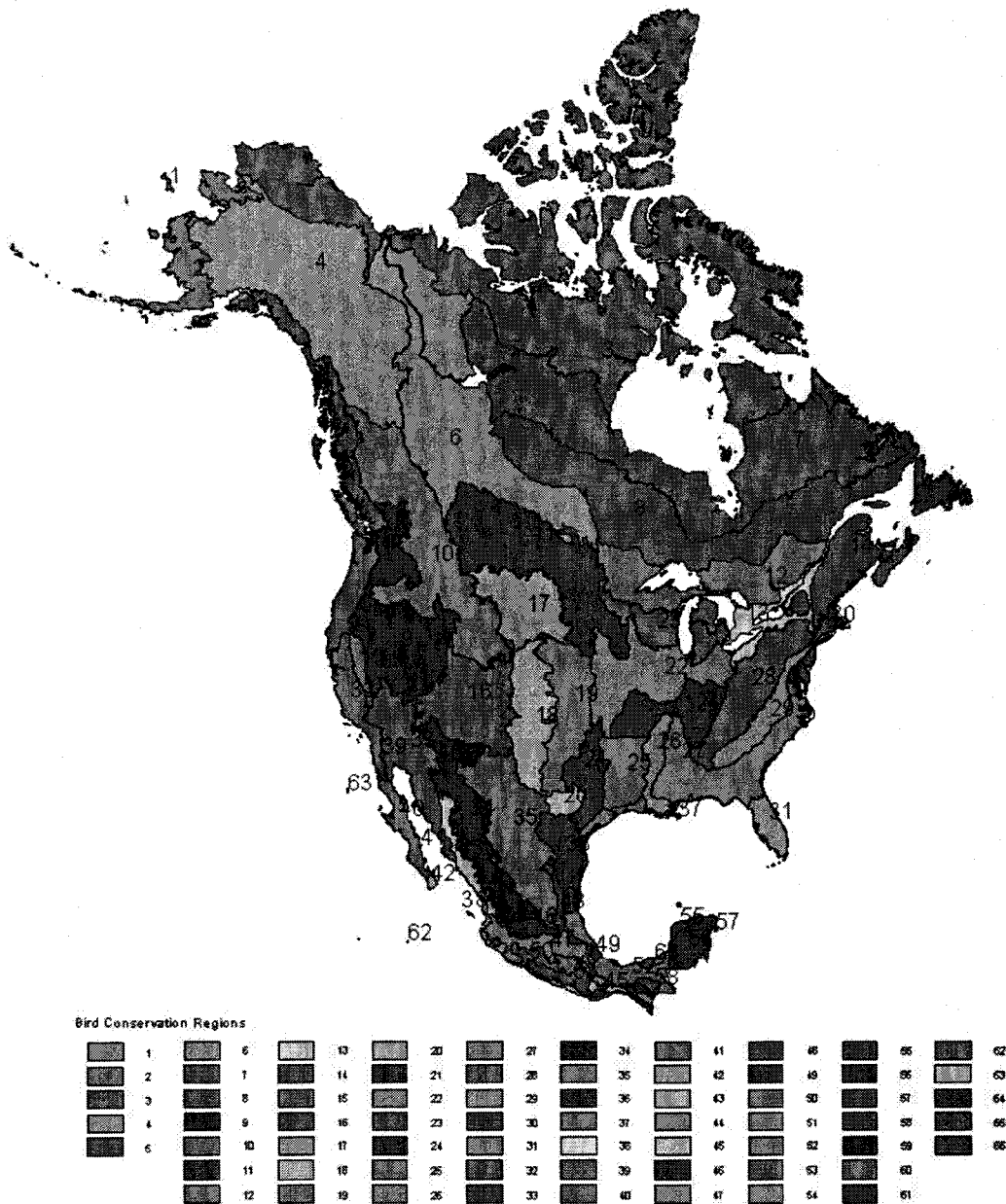
Regional Colonial Waterbird Conservation

NABCI Bird Conservation Regions

Conservation action can best be planned in detail and facilitated on a regional basis. This is true for both political and biological reasons. Politically, local and state government and private organizations are focused on conservation at the regional or subregional level. Biologically, if regions are defined on ecological bases then conservation action has logical commonalities across the region. In recognition of this fact, the primary bird conservation delivery mechanism of NABCI is the Bird Conservation Region (BCR), which are derived from terrestrial ecoregions. BCRs will span the continent having a geographical base. Those currently recognized are shown in the following figure. Regional planning for colonial waterbird conservation will focus at the BCR scale, providing goals, guidance, and facilitation.

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North American Bird Conservation Regions



Bird Conservation Regions and Corresponding Numbers

1 – Aleutian/Bering Sea Islands	32 – Coastal California
2 – Western Alaska	33 – Sonoran and Mojave Deserts
3 – Arctic Plains and Mountains	34 – Sierra Madre Occidental

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4 – Northwestern Interior Forest	35 – Chihuahuan Desert
5 – Northwestern Pacific Rainforest	36 – Tamaulipan Brushlands
6 – Boreal Taiga Plains	40 – Desierto de baja California
7 – Taiga Shield and Hudson Plains	42 – Sierras y Planicie del cabo
8 – Boreal Softwood Shield	43 – Planicie Costera y Lomerios
9 – Great Basin	44 – Marismas nacionales
10 – Northern Rockies	45 – Planicie Costera y Lomerios del Pacifico Sur
11 – Prairie Potholes	46 – Sur del Atiplano Mexilano
12 – Boreal Hardwood Transition	47 – Eje Neovolcanico Transversal
13 – Lower Gt Lakes/St. Lawrence Plain	48 – Sierra Madre Oriental
14 – Atlantic Northern Forest	49 – Planicie Costera y Lomerios Secos del Golfo de Mexico
15 – Sierra Nevada	50 – Cuenca del Rio Balsas
16 – Southern Rockies/Colorado Plateau	51 – Valle Tenuacan Cuicatlan
17 – Badlands and Prairies	52 – Planicie Costera y Lomerios Humedos del Golfo de Mexico
18 – Short Grass Prairie	53 – Sierra Madre del Sur
19 – Central Mixed Grass Prairie	54 – Sierra Norte de Puebla-Oaxaca
20 – Edwards Plateau	55 – Planicie Noroccidental de Yucatan
21 – Oaks and Prairies	56 – Planicie de la Peninsula de Yucatan
22 – Eastern Tall Grass Prairie	57 – Isla Cozumel
23 – Prairie Hardwood Transition	58 – Altos de Chiapas
24 – Central Hardwoods	59 – Depresiones Intermontanas
25 – West Gulf Coastal Plain/Ouachitas	60 – Sierra Madres de Chiapas
26 – Mississippi Alluvial Valley	61 – Planicie Costera del Soconusco
27 – Southeastern Coastal Plain	62 – Archipelagos de Revillagigedo
28 – Appalachian Mountains	63 – Isla Guadalupe
29 – Piedmont	64 – Arrecife Alacranes
30 – New England/Mid-Atlantic Coast	66 – Pantanos de Centla-Laguna de Terminos
31 – Peninsular Florida	

Regional Planning

The North American Colonial Waterbird Conservation Plan, while continental in outlook, is meant to also set the stage for more detailed regional planning. The strategy is for regional working groups to form in order to plan and implement colonial waterbird conservation at the subcontinent scale. Setting the geographic boundaries of regional planning requires consideration of issues of: 1) stakeholders engagement at BCR scale, 2) geographic inclusiveness, and 3) practical political reality.

At this stage there are too few stakeholders committed to colonial waterbird conservation across the continent to assemble teams in each BCR. Therefore, larger planning units needed to be developed. To overcome the scale issue, Waterbird Conservation Regions (WCRs), have been identified that are amalgamations of BCRs; within these groups of BCRs, issues and approaches to colonial waterbird conservation are shared.

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BCRs have not been identified outside Canada, United States, and Mexico. For the purposes of colonial waterbird planning, BCR equivalents, WCRs, have been identified for the Caribbean, Central America, and the Pacific Islands.

NABCI BCRs, being terrestrially anchored, do not sufficiently address the offshore needs of colonial waterbirds. So additionally, we have identified Nearshore WCRs based on the concept of Large Marine Ecosystems, which are regions of ocean encompassing coastal areas from river basins and estuaries to the seaward boundary of continental shelves and seaward margins of coastal current systems. Finally, Large Marine Ecosystems do not incorporate all oceanic habitats important to pelagic waterbird species. For this reason, Pelagic WCRs have been developed and extend from Large Marine Ecosystems boundaries to the boundary of the Plan area in the Atlantic and Pacific Oceans and are called Central Pacific and Atlantic Ocean Conservation Regions.

The Waterbird Conservation Regions are shown in the figure below. The WCRs are:

Terrestrial

- Aleutian/Bering Sea
- Caribbean & Central America
- Central Mexico
- Eastern Arctic
- Great Plains/Prairie Potholes
- Intermountain West/Southwestern Desert
- Lower Mississippi Valley
- Mexico Gulf Coast
- Mexico Pacific Coast
- NE Maritime
- New England/Mid-Atlantic Coast
- Northern Pacific Coast
- Prairies, Woodlands, Gulf Coast
- SE Coastal Plain/Appalachian Mountains
- Southern Pacific Coast
- Upper Mississippi Basin/Great Lakes
- Western Arctic
- Western Boreal Forest
- Hawaii and Pacific Islands

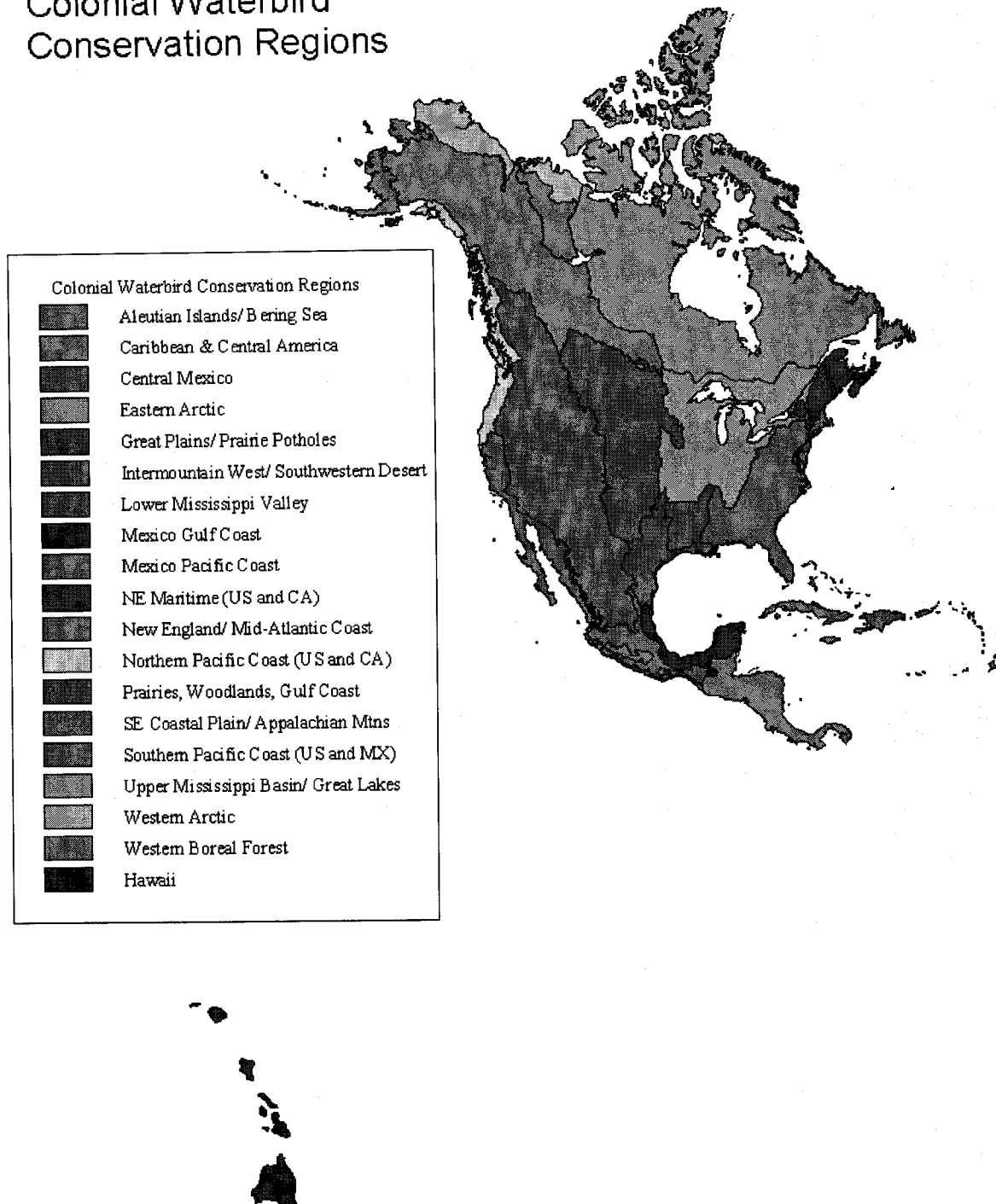
Marine

- *Bering Sea (Eastern and West LMEs)
- Gulf of Alaska
- *California Current/Gulf of California
- Gulf of Mexico
- Southeast US Continental Shelf
- Northeast US Continental Shelf
- Scotian Shelf
- *Newfoundland Shelf/West Greenland Shelf
- Insular Pacific (Hawaii)
- Caribbean Sea
- Pacific Central American Coastal
- Central Pacific Ocean (not on figure)
- Central Atlantic Ocean (not on figure)

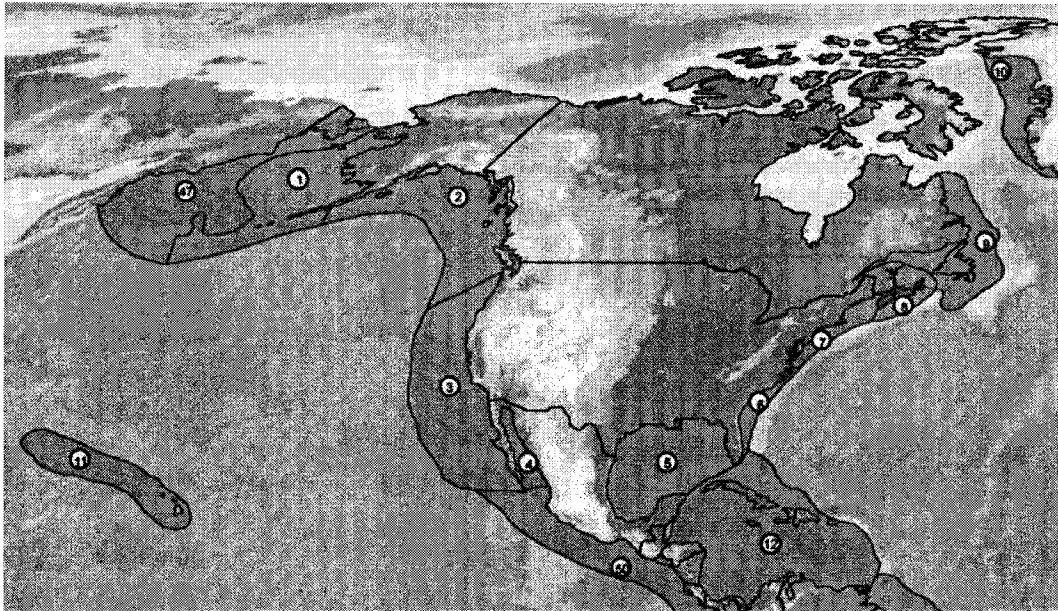
* Combined in Appendix 5

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Colonial Waterbird Conservation Regions



Pelagic Conservation Areas—Delineated By Large Marine Ecosystems



Pelagic Conservation Regions: (Large Marine Ecosystems)

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

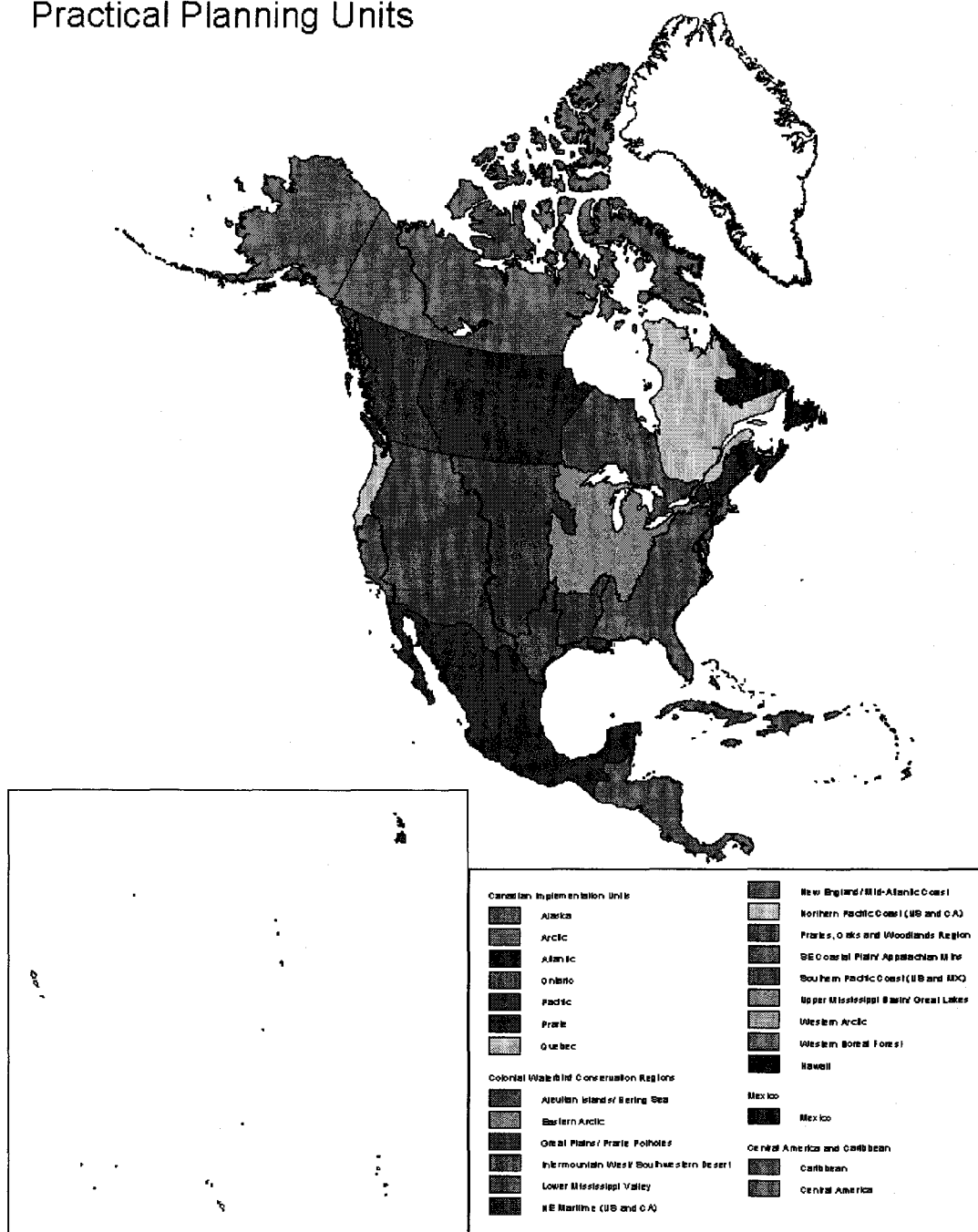
Because both planning and implementation depends on existing political and resource structures, organization of regional planning will differ in different areas. In the USA, it is anticipated that regional planning will occur at the scale of Colonial Waterbird Conservation Regions. In Canada, regional planning and implementation units will be provincial borders and federal boundaries. In Mexico implementation will occur at the national level, as will likely be the case in smaller countries. Along most coasts, planning units will encompass both land and marine Colonial Waterbird Regions.

For purposes of regional planning, the North American Plan recognizes practical planning units in which a Regional Working Group will take on the task of writing a Regional Colonial Waterbird and /or Seabird Conservation Plan (see figure below). The following plans are expected to be developed: Central Pacific Ocean, Alaska (including Bering Sea and Gulf of Alaska), Arctic Canada, Pacific Canada, Prairie Canada, Ontario, Quebec, Atlantic Canada, Intermountain West/ Southwestern Desert, Northern Pacific Coast, Southern Pacific Coast

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(including California Current and Gulf of California), Great Plains/Prairie Potholes, Central Atlantic Ocean, Upper Mississippi Basin/ Great Lakes, Southeastern Coastal Plain/Appalachian Mountains, Lower Mississippi Valley, Prairies/Woodland/Gulf Coast (including Gulf of Mexico), Mexico (including Mexico Gulf Coast, Mexico Pacific Coast, and Central Mexico), Caribbean Basin/Central America, and Hawaii and Pacific Islands. Available draft plan reports for some regions are available as part of this document; all are listed.

North American Colonial Waterbird Practical Planning Units



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The purpose of these plans and regional infrastructure is to inform, guide and facilitate colonial waterbird conservation at smaller scales, especially at the BCR, state/provincial and local scales. It is anticipated that the colonial waterbird regional working groups' planning process will evaluate, develop planning, set goals, and facilitate planning specifically in each BCR associated with their region. Regional Working Groups will develop their plans by November 1, 2001. As a generality, this planning process will proceed in each Colonial Waterbird Conservation Planning Unit as follows:

1. Establish a Regional Working Group
2. Select a chair or chairs; select representatives to the North American Plan's Regional Advisory Committee; select, as invited, representatives to underlying Bird Conservation Region Joint Ventures.
3. Adopt Regional Plan outline in consultation with other regions.
4. Write plan using workshop approach attempting to involve all stake-holders in colonial waterbird conservation in the region.
5. Conduct analysis of regional species prioritization at the BCR scale and evaluation of global, continental and regional IWAs.
6. Conduct a review of the plan including local stakeholders from throughout the region, BCRs, states/provinces, North American Colonial Waterbird Conservation Council, regional and state/provincial organizations and agencies.
7. Under the continued leadership of the Regional Working Group, begin facilitating implementation of Regional Plans within the BCRs, states/provinces, and localities.

This approach may be modified by Working Groups in some planning units such as those found in Canada and Mexico. Planning effective colonial waterbird conservation requires consideration of a wide variety of habitat and management issues. Because the needs of these species may overlap with those of other birds, conservation planning will coordinate with the other bird conservation plans. Each Regional Working Group should include individuals having conservation expertise and a strong knowledge of the local situation within the broader, regional context. This should include active participation of those concerned with conservation, those whose activities conserve, manage or affect seabirds and colonial waterbirds including national and state/ provincial fisheries and wildlife agencies, industrial interests such as aquaculture, agriculture, and fisheries, nongovernmental organizations, and engaged individuals. Partnerships with stakeholders will ensure that valuable local knowledge, resources and socio-economic priorities are considered to help maximize the effectiveness and benefits of regional planning.

Regional Species Prioritization

Regional Working Groups will consider and implement for prioritization at a regional scale, process to categorize the conservation status of species occurring in their region. Working Groups will select the process most conducive to colonial waterbird conservation in their region and use it to provide prioritization scores for birds in each BCR in their region. These scores will reflect the conservation needs for species at the BCR scale relative to other colonial waterbirds and will be reported in format that will allow these prioritization scores to be inserted in combined lists derived for other bird species in the BCR by other methods.

Regionally Important Waterbird Conservation Areas

As part of the Regional Planning Process, Regional Working Groups, who know the areas the best, will conduct an evaluation to determine if any of the candidate sites in their region merit global or continental status as IWAs. Using common criteria, derived from the international IBA program, described earlier in this Plan. In addition to determining global and continental IWAs, each Regional Working Groups will also scan their regions to determine sites that merit recognition as sites of regional importance. The criteria for categorizing sites of regional importance are decisions to be made by each of the Regional Working Groups for their region.

Regional Colonial Waterbird Conservation Situation

Central Pacific Ocean

The Pacific Pelagic encompasses the offshore foraging habitat for seabirds from the seaward edge of the coastal currents to the extent of the Plan area.

The significant issues in this Region are related to exploitation of ocean resources by fisheries, including both fisheries affects on seabirds and seabirds effects on fisheries. Killing of seabirds as part of the bycatch of fisheries is the most significant issue. This includes mortality due to long-line fisheries, which hook and drown diving and surface feeding seabirds, gill nets, which trap and kill diving seabirds, and light effects, which attracts birds at night. Most information on seabird mortality is local, and there needs to be a Regionwide program to assess, monitor and evaluate mortality including both the national and international fishing fleet. Treaties and other instruments must be enacted to assure all fishing activities are monitored. Mitigation techniques need to be developed, employed and enforced.

East and West Bering Sea/Aleutian Islands

This region includes a wide diversity of marine and terrestrial habitats. The inner shelf area, comprising Bristol Bay, the broad delta of the Yukon and Kuskokwim rivers, and Norton Sound, is strongly influenced by fresh water input and a northward flowing coastal current that originates in the Gulf of Alaska. The largest aggregations of colonial seabirds are found on large islands of the middle and outer domains of the eastern Bering Sea shelf and on islands in the Aleutian chain, where shelf habitat is minimal but deep oceanic water of the North Pacific enters the Bering Sea through numerous passes. Characteristic seabirds include fish-eating murre and kittiwakes and planktivorous auklets, both of which occur in prodigious numbers on a relatively few nesting places distributed throughout the region. Most of the world population of red-legged kittiwakes occurs on the Pribilof Islands and whiskered auklets are largely confined to the Aleutians.

The annual removal of fish biomass in enormous quantities by commercial trawlers operating on the highly productive eastern Bering Sea shelf presents major challenges for sustainable

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management of the ecosystem. To date, fishery management in the region has scarcely considered the needs of other high level consumers such as seabirds, pinnipeds, and whales. Incidental take by long-line fishing gear is a significant source of mortality for visiting short-tailed albatrosses and potentially threatens the recovery of that highly imperiled species. Historically, colonial waterbirds suffered severe consequences of a government policy to encourage fox farming on many of the Aleutian Islands. The effects of that bygone era persist today, and the possibility of future introductions of predators, especially rats, poses a danger to island ecology and bird populations throughout the region.

Populations of seabirds potentially being affected by fishing mortality need to be modeled and sustainable take, if any, calculated. To do this requires additional data on such parameters as reproductive success, juvenile and adult mortality, fishing mortality, and extent of buffer population in order to determine what – if any – is the allowable take of seabirds. Sustaining seabird populations must become a goal of all fishery management programs in the Region. Seabird conservation needs to take place in concert with the fishing industry.

Gulf of Alaska

The Gulf of Alaska, including large embayments and estuaries such as Prince William Sound and Cook Inlet, offers a multitude of suitable nesting islands as well as highly productive feeding grounds for marine birds. As a result, the region supports an almost unparalleled diversity and abundance of colonial seabirds in hundreds of nesting places, any one of which would be considered a major wildlife concentration area in less-endowed marine regions of the world. Typical species include murre, kittiwakes, puffins, fulmars, cormorants, auklets, storm-petrels, and guillemots. The world stronghold of both Marbled and Kittlitz's Murrelets is likely contained within this region.

Fox-farming was prevalent on islands throughout the Gulf until the mid 1930s, and the repercussions for ground-nesting seabirds have not yet been entirely reversed. Eradication of foxes and other introduced animals is a top management priority. A majority of the human population of Alaska and the greatest potential for further growth and development occurs along the Gulf coast. Oil spills and other pollution, marine fisheries and boat traffic, logging, recreation and tourism all pose substantial and increasing threats to the long-term well-being of seabird populations throughout the region. Seabirds are widely monitored in the Gulf, not only because of concerns for their continued welfare, but also because these species serve as useful indicators of change in the marine ecosystems of which they are an integral part.

Western Arctic

The Western Arctic region encompasses waters of the eastern Chukchi Sea north of Bering Strait and the Beaufort Sea coast of Alaska and Northwest Territories. The marine ecology of the area is closely tied to the seasonal advance and recession of arctic pack ice. The region around Point Hope includes the northernmost rocky headlands on the Alaska coast, which support large

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colonies of cliff-nesting seabirds. Further north, the coast is flat and the principal habitat for colonial waterbirds consists of low barrier islands that are used for nesting by common eiders and other waterfowl, Glaucous Gulls, arctic terns, and all of the black guillemots that occur in western North America.

Since the mid 1970s, the main concern for environmental degradation in the area pertains to offshore oil development and its potential to disrupt the fragile ecology of barrier islands and associated lagoons. Unregulated subsistence use of seabirds and their eggs occurs in Chukchi colonies, but is generally thought to have a minimal impact on populations. Over the long term, the principal factor affecting the status of colonial waterbirds in this region may prove to be global warming, the strongest and earliest effects of which are expected to occur in the Arctic.

Intermountain West/ Southwestern Desert

The Intermountain West and Southwest Desert Colonial Waterbird Conservation Region covers a huge area of the western United States. Important habitats are along the rivers, including riverine wetlands, banks, islands, and channels, and in reservoirs and lakes, including salt lakes. These habitats provide both nesting and wintering habitat.

Colony site protection is critical throughout the Region since sites are so few. The largest continental colonies of the White Pelican and California Gulls are in this Region. Few sites are permanent, so conservation of sites and potential sites needs to be Regionwide, including the development of a registry and monitoring system. Loss of nesting habitat, such as streamside cottonwoods, due to hydrology changes and grazing, affect nesting sites. Nest sites and potential nest sites especially need to be protected and managed in a long-term fashion in the terminal lakes, where site availability depends on lake levels, which change due to rainfall cycles and water management.

The most critical issues in the region involve control and management of water supplies, which are diverted and managed for urban, agricultural and industrial purposes, leaving little behind to be managed for waterbirds. Natural hydrological cycles in waterbird habitat have been changed throughout the Region. Water access is owned; and traditionally natural systems, including colonial waterbirds, have not had explicit rights to these waters. Water levels in lakes and reservoirs are often too high or too low at the wrong time of year for waterbirds, due to human diversions. Colonial waterbird conservation requires the acquisition of water rights for fish and wildlife, as beneficial purposes. Colonial waterbird conservation must coordinate with habitat management for waterfowl and other wildlife – in fact colonial waterbird conservation must be added to waterfowl conservation as an expected outcome of wetland and preserved land management.

Habitat loss is significant and continuing. Loss of emergent wetlands is critical for a number of species. Urbanization, suburbanization, lakefront development, changes in agricultural practices – especially the loss of flood-irrigation pastures - alter feeding habitat.

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Conflicts occur with sport fisheries and with fish hatcheries. Conflicts can also exist because these birds are natural predators of endangered fish species. Mitigation measures in the design and operation of hatcheries and fish release programs are needed. For other fisheries conflicts, the real impact of predation by colonial waterbirds needs to be considered. Education programs are essential. Colonies must be secured and protected from harassment.

Prey populations have been altered in inland lakes by the introduction of foreign species, which alter food chain but also can become principal waterbird prey. The impact of these fish stocks on colonial waterbirds, and waterbirds on the fish stocks need to be known.

Contaminants continue to be a significant issue in this Region. Pesticides and other contaminants are picked up on wintering grounds. Agricultural applications throughout the cultivated portion of the Region drain into foraging habitats used by colonial waterbirds.

Northern Pacific Coast

The Northern Pacific Coast Colonial Waterbird Conservation Region extends from central California north to the southern Alaska Coast. Habitats range from inland marshes, ponds and lakes, river systems, coastal estuarine systems of islands, marshes, rivers and streams, shore and beaches, rocky islands used by seabirds, and the near shore coastal waters.

Protection of nesting habitat, both inland and on the coast, is a critical issue. Habitat alteration by logging effects forest-nesting species, such as Marbled Murrelet and Great Blue Heron. Predation on birds at colony sites by nonnative and native species can be important. Exploitation of nearshore and ocean resources is a significant issue for seabirds, including competition of fisheries for the birds' food base and killing of birds by fishing activities. Pollution from oil spills and chronic seepage pose significant chronic critical threats.

The collaborative Pacific Seabird Data Base provides information on nesting numbers and other data through much of the Region. All colonies need to be similarly monitored and reported. Research on the relationship of population sustainability to nesting success, adult and juvenile mortality and the availability of prey is needed in order to mesh seabird conservation with fishery management.

Great Plains/Prairie Potholes

This Region includes the northern prairie pothole complex of marshes and agricultural lands and drier prairie habitat stretching south. Important habitats include isolated marshes, lakes, riverine wetlands, beaches and sandbars, forested flood plains, lake margins, reservoirs, and flooded agricultural fields. Due to its changeable nature, habitat management for colonial waterbirds needs to take a Regional and landscape perspective.

Nesting habitat must be identified and managed throughout the Region. Controlling the effects of water management effects on palustrine emergent marshes is critical. -Riverine bars, sand bars, forested flood plains are highly changeable due to flooding. This Region is the continental center

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for marsh nesting gulls and terns, such as Franklin's Gulls and Black Terns. The interior Least Tern is an endangered species. The status of these species over the entire Region needs to be determined and monitored. Habitat management on refuges and other protected areas is critical to these species. Disturbance to nesting sites needs to be managed. Bittern are widely dispersed and of management concern.

Conservation of foraging habitat is even more complicated. Habitat is highly scattered, and under various ownership and management. A landscape approach is essential. Purchase of consistently used sites and conservation easements on other areas are needed. Integrated bird management, such as in the northern Prairie Joint Venture, is an underlying approach to colonial waterbird conservation in this Region.

Conflicts exist between colonial waterbirds and bait-fish industry, and recreational fisheries. Species, such as White Pelicans, may be being affected more by wintering conditions than on their nesting sites.

Gulf of Mexico

The pelagic zone of the Gulf of Mexico supports the foraging of seabirds nesting along the Gulf Coast. Black-capped Petrel and Northern Gannet, and more casual pelagics such as Cory's Shearwater and Band-rumped Storm Petrel use the Region. Little is known about their offshore distribution or interactions with fisheries. Oil exploration and transport poses long-term issues.

Southern Pacific Coast, California Current, and Gulf of California

The Southern Pacific Coast Colonial Waterbird Conservation Region extends from central California south through Baja California and the western Mexican coast. Important habitats include inland waters, such as rivers, lakes (including salt lakes), reservoirs, offshore seabird nesting islands, coastal lagoons and swamps – especially mangrove swamps in Mexico.

Protection of nesting sites is critical. Pollution from industry and urbanization, oil spills and seepage pose long-term threats – this Region that industrial pollution nearly caused local extinction of the Brown Pelican. Urbanization pressures natural habitats and can cause increase in some populations – such as gulls. Increased outdoor activities such as boat traffic encourage disturbance of colony and roosting sites. Inventories and basic knowledge of colonies and feeding areas are needed in Mexico.

Feeding habitat conservation is critical. Seabird populations and nesting success track food availability. Natural climatic fluctuations (El Nino etc.) affect nesting. Conflict with fisheries, including competition for the same food stocks and killing of birds by fishery practices, is an important management issue. Also in Mexico, loss of wetlands to industrial and tourist development is continuing. Conservation of feeding sites and management of fisheries and fish stocks in a way that will support sustainable bird populations is crucial

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Regionwide collaborative monitoring programs need to be developed, including into Mexico. Given information on population trends, research is needed on thresholds for action to be undertaken. Much remains to be done in modeling seabird and colonial bird populations relative to mortality factors.

The California Current supports nesting and non-nesting seabirds along the West Coast of the United States. The current causes upwellings that provide food sources, but can be affected by Pacific-wide climatic events, such as El Nino.

Determining the seasonal and shorter-term use of the current by seabirds remains an important task. Seabirds can conflict with fisheries, both because of competition for the same food source and killing of birds by fishing activities. Determining seabird bycatch and the impact of this mortality of seabird population sustainability are critical.

Upper Mississippi Basin/ Great Lakes

This region includes the shores and open water of the Great Lakes as well as the rivers, river valleys and other inland water bodies of the Upper Mississippi River Basin. Nesting islands, coastal wetlands, flood plain forests, beaches and inland marshes and swamps are critical habitat.

Protecting and managing nesting habitat are critical in the Region. In the Great Lakes a few islands serve as principal nesting sites, and these must be protected and managed through purchase, compensation, or easements. They must be protected from disturbance and vegetation managed, even though the causes and processes of habitat degradation may be complex. Vacation home development threatens some island sites. This is particularly critical in areas where there are few alternative nesting sites available. The populations of some species, such as gulls and cormorants, have increased to the point of being detrimental to other species. Nesting sites where conflicts occur can be intensively managed to militate adverse interactions. Dredge islands are important habitats. Artificial nesting sites can be created where they do not now occur, or to move them from sites of conflict.

Away from the Lakes, nesting habitat includes forests, swamps, lakes, river islands, and river sandbars. These are particularly ephemeral sites. Sites need to be inventoried, monitored, protected when used, and additional sites secured as needed. Appreciating the transitory nature of nesting sites is a critical element of conservation in this Region.

Feeding habitats are threatened by urbanization, suburbanization, other development, agriculture, river impoundment and water management and by falling lake levels. In the Lakes, islands are being connected to the mainland where they are susceptible to predators and intrusion. These sites, and an array of potential sites, need to be managed Regionally. In the River, the dynamics of bar creation determines the short- and long-term availability of nesting sites.

Contaminants affect the food base for colonial waterbirds, especially in the Great Lakes. Research and monitoring is needed. The food web in the Great Lakes is being transformed by exotic species, habitat change, and other cascading ecological effects.

Southeastern Coastal Plain and Appalachian Mountains,

This region encompasses the historic and present center of distribution of coastal and wading birds in North America. It incorporates coastal and inland areas from the Chesapeake Bay through Florida and the southeastern US, including the Piedmont and Appalachian Mountains. Critical nesting habitats include scattered small and large inland wetlands, marshes, and swamps, coastal islands – both artificial and natural, beaches and even roof tops in developed areas. Turnover is high at many colony sites on an annual to decadal basis, and this needs to be considered in conservation planning. Along the coast, artificial islands have become the most important nesting sites over large areas of the Region, perhaps reflecting a long-term shift from inland sites to sites on the coast.

Feeding habitat includes coastal lagoons and wetlands, marshes in the north and mangrove swamps in the south. Tidal areas are important throughout the coastal portions of this area. In the south, huge marshes and swamps along the coast and inland, especially in the Carolinas, Georgia, Florida, are used by colonial waterbirds, for feeding, nesting, and wintering. These include the Sea Islands salt marshes, Okefinokee Swamp, St. Johns Marshes, Everglades, and Big Cypress Swamp. Inland rivers and lakes provide both nesting and feeding areas, as do intermittently flooded pastures and shallow marshes. Coastal lagoons and bays provide important feeding habitat, around the Florida Peninsula.

Populations of wading birds have declined in some areas of the Region, such as in southern Florida, and have increased in others, such as for Wood Storks in southeastern United States. Colonial waterbirds need to be managed on a regional basis throughout the Region. Habitat loss and alteration is the most fundamental issue for colonial waterbird conservation in the Region. Marshes, especially isolated wetlands, are lost to development, agriculture and other encroachment. More critically, wetland hydrology has been altered in ways that are detrimental to colonial waterbirds.

Colony sites need to be identified and monitored. Sites need to be protected against incursion, development, and disturbance through purchase or easements and enforcement. Sites need to be protected even if not being used, given the high turnover of sites in the Region. Feeding sites similarly need to be identified, and management needs to be conducted with consideration for the needs of waterbirds.

Lower Mississippi Valley,

This Region includes the alluvial plain of the inland “Delta” of the Mississippi, as well as many upland lakes rivers and reservoirs in the hill country on both sides of the valley. Important nesting habitats include forested wetlands and other bottomland hardwood swamps, forested islands in lakes and reservoirs, sand bars and riparian forests along rivers. Critical feeding habitat includes lake edges, isolated marshes, flooded agricultural fields, river edges and lakes and reservoirs. Some of the most important feeding habitats in recent years are the ponds provided by aquaculture, particularly catfish ponds and crawfish ponds.

Nesting sites and habitats need to be inventoried throughout the Region and monitoring and management plans developed. This Region is an important area for both wintering and nesting wading birds. The dispersion of feeding habitat use needs to be better understood so as to be able to integrate into habitat management goals for the Region.

The relationship of colonial waterbirds to the aquaculture industry is the most critical issue in the Region. It is likely that the increased food supply provided by aquaculture in this area has influenced the recent population increases of colonial waterbirds, including cormorants and White Pelicans by increasing winter adult survival. These population increases have consequences both in predation pressure on aquaculture in the winter and also on the nesting grounds in the North. Colonial waterbirds, including herons, cormorants, and pelicans, are considered nuisances and as having an economic impact. In actually the impact of herons is minor, as is probably the case for cormorants in most situations. The actual economic impact of colonial waterbirds in different sorts and arrangements of agricultural activities needs to be determined with precision. Additional mitigation measures, including compensation, need to be developed. Depredation permitting needs to be done only after consideration for range-wide effects on population sustainability. Managing colonial waterbirds in this region needs to be done in close cooperation with the aquacultural interests, as well as with the Corps of Engineers.

Prairie, Woodlands, Gulf Coast

This Region encompasses most of inland Texas and the Gulf Coast from the Mississippi Delta into Mexico. Inland lakes, rivers and reservoirs provide important colonial waterbird habitat in an otherwise seasonally dry environment. Along the coast, barrier islands provide nesting habitat for coastal and wading birds. Artificial dredge spoil islands are especially important in this Region as nesting location. The coastal lagoon system provides critically significant feeding habitat for breeding and wintering birds, especially cormorants, gulls, terns, wading birds and pelicans.

The northernmost populations of Neotropical Cormorants occur in the Region. Brown Pelicans nest on only a few islands in the Region, and require management. Double-crested Cormorants are increasing.

Nesting sites conservation is critical in the area, especially along the coast, where management is often required to maintain the suitability of sites. Many sites used are artificial and must be maintained in a suitable state for use to continue. Vegetation or non-vegetated areas need to be maintained, predators such as feral animals and fire ants need to be controlled. Colony sites not in being protected need to be secured by state or federal agencies or NGO's. An array of used and potentially usable sites needs to be provided. Colonies need to be protected from disturbance, particularly along the heavily used beaches of the Region. Public education is needed, especially targeted to recreationists.

There is a need to better understand migration patterns of birds using the Region. There is also a need for research to determine the relative success of colonies on artificial vs natural sites and in different feeding habitats. Standard monitoring is needed throughout the Region.

Mexico Gulf Coast

The Gulf of Mexico coast in Mexico holds some of the most significant colonial waterbird habitat in the continent. In the North, coastal lagoons, islands, and coastal mangrove swamps provide habitat in otherwise arid conditions. Further south, lagoons and extensive marshes and swamps associated with river systems provide significant foraging habitat for wading birds, including the northernmost nesting of Jabiru storks. Coastal islands are nesting habitat for coastal waterbirds.

Inventory and monitoring of colony sites and of habitat use in summer and in winter are needed. Oil production and transport present long-term threats. Conversion of coastal mangrove swamps for development or aquaculture presents significant threats to foraging habitat. Limited conservation and enforcement infrastructure inhibits conservation activity.

Hawaii and Pacific Islands

This Region includes the Hawaiian Islands, the states and territories attached to the United States and the waters between. The important colonial waterbird sites are wetlands on the islands, the coastal and inland nesting sites for seabirds, and the near shore and off shore feeding sites for seabirds throughout the year.

All nesting sites need to be identified, protected, and managed. Disturbance, introduced predators, vegetation, and other factors need to be actively managed on many colony sites. Several seabirds from the area are listed as endangered by the USA or IUCN, including Newell's Shearwater, Hawaiian Petrel, Short-tailed Albatross, and Heinroth's Petrel. It is critical in devising conservation strategies for birds in this area not to focus entirely on rarity in that the welfare of species abundant in the area may depend on proper management within the Region. Tourism, increasing human use of nesting islands, military use of nesting islands, air traffic conflicts all affect nesting sites.

Fishing constitutes the most important seabird conservation issue in the Region. It is essential that sustaining seabird populations become a recognized priority for fishery management. Both nationally and internationally, seabird sustainability needs to be included in fishery planning and implementation. Long-line fisheries kill seabirds, apparently in excess of recruitment. This source of artificial mortality needs to be severely curtailed through changes in fishery practices. Regulating and monitoring of seabird bycatch is essential as is modeling the population dynamics of affected seabird populations. Education campaigns including promoting seabird sustainable fisheries through consumer education are essential to influence industry behavior. All fisheries and conservation entities within the Region must coordinate activities, policies, monitoring, education, and management actions.

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Other non-breeding issues in this region include oiling, recreational fishery conflicts, depletion of food resources from competition with fishing, on shore structures and lights that intercept fledgling mountain nesting species, pollution, tourism, and offshore lights from fishing activity all affect the quality of foraging opportunities.

State/ Provincial Colonial Waterbird Conservation

Conservation planning at the state and provincial level is essential. This is probably the most critical implementation scale in that states and provinces share responsibility with national governments for management of birds and their habitats. In some case they have thee principal responsibility. Further states are closer to local implementation efforts

States and provinces should consider writing state/provincial plans, preferably involving all the colonial waterbird constituencies, if this is useful. States should also participate fully in regional planning at the BCR scale.

States should design and implement statewide monitoring programs that connect to the continental monitoring partnership.

States should employ colonial waterbird coordinators and create mechanisms, such as steering committees, to bring together all partners in bird conservation, including colonial waterbirds, to conserve birds and their habitats across the state on a landscape level. States should provide incentives and facilitation of local colonial waterbird conservation efforts and should establish partnership with NGOs toward this end.

Model State/Provincial Colonial Waterbird Conservation Program

set goal to achieve state-wide colonial waterbird conservation, preferably within all-bird conservation

assess colonial waterbird status and conservation needs from BCR perspective, collaborating with Regional Colonial Waterbird Conservation Working Groups

develop a state/provincial plan based on regional scale assessments of colonial waterbird status, habitat priorities and other needs and opportunities

develop programs to manage waterbirds and their habitats

hire or appoint a Colonial Waterbird Coordinator within a natural resources agency to facilitate, guide and manage colonial waterbird conservation, including participation in BCR scale planning

develop and run comprehensive monitoring of waterbird colony sites, breeding populations, wintering numbers (where appropriate), and habitats, coordinated by the Colonial Waterbird Coordinator and linked to the continent-wide monitoring partnership

develop programs, methods and protocols to protect, conserve and manage habitat used by colonial waterbirds

identify Important Waterbird Areas, and evaluate status, creating a state status if desirable

secure through purchase, easements or other means to assure protection of important colony sites, habitats and IWAs, and manage these sites for colonial waterbirds

develop broad-base partnerships among government, business, and local conservationists for colonial waterbird conservation, including establishing a steering committee/ working group or incorporating colonial waterbird expertise in other conservation committees

develop an information and education strategy including how-to publications for managers and public and provide mechanisms to incorporate colonial waterbirds in education and in state and local outreach programs

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State and provincial conservation planning should focus especially on habitat conservation and management, identifying and monitoring nesting and roosting sites, control of disturbance, and including consideration of colonial waterbird conservation needs in all applicable permitting procedures. States should use species priorities at the BCR scale rather than state scale, since state level prioritization often places species in priorities that are not justified range wide. States are encouraged to identify state/province IWAs, using whatever criteria are useful. States should secure colony sites and habitats through purchase, easements, and management.

PART 5 COLONIAL WATERBIRD CONSERVATION PLAN IMPLEMENTATION

Implementation Model

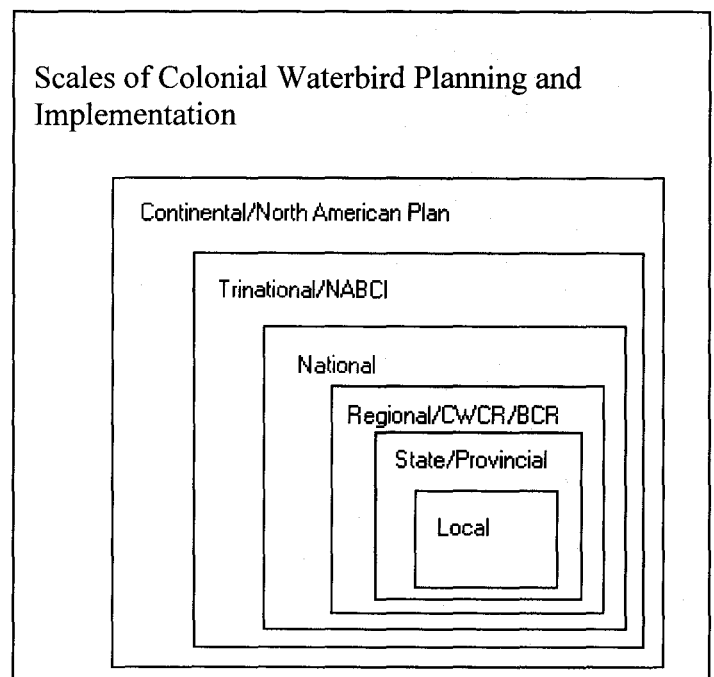
The North American Colonial Waterbird Conservation Plan will be implemented at six scales: continental, trilateral, national, regional, state/provincial, and local (see figure). Conservation implementation is critical at each of these levels. Yet the implementation mechanisms differ substantially, but must fully complement each other to provide the full array of colonial waterbird conservation.

Continental Implementation

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

Membership will initially be elected by the Steering Committee and, thereafter, by the Council itself, as an independent, self-perpetuating non-governmental organization. The Committee will be an independent entity and not a part of any governmental agency or single non-governmental organization. Members will be elected by majority vote and will serve three-year terms, preferably staggered. The Council will select its Chair. Members will be invited to be nominated by the appropriate stakeholders, in ways to be determined by the Council. The initial membership of the Colonial Waterbird Conservation Committee will consist of seventeen members including a Chair.

Scales of Colonial Waterbird Planning and Implementation



COMPOSITION OF NORTH AMERICAN COLONIAL WATERBIRD CONSERVATION COUNCIL

Three members from Canada, from the Federal and provincial governments
Three members from the United States, from the Federal and state governments
Three members from Mexico, Caribbean and/or Central America
Three members from non-government organizations
Three members at large
The chairs of the Technical Working Group and Regional Advisory Committee

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

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

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

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

- Will be the keeper of the North American Colonial Waterbird Conservation Plan, sponsoring and overseeing its implementation and revision
- Will facilitate conservation at all scales, from continental to local, but especially regional
- Will facilitate the acquisition of resources to support colonial waterbird conservation continent-wide
- Will elect a representative to the NABCI-US committee and to other NABCI national committees or national colonial waterbird committees as invited.
- Will appoint new members of the Council and of the North American Colonial Waterbird Technical Working Group

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- Will interact directly with other bird conservation initiatives, joint ventures, states/provinces, national governments, local interests, and others
- Will facilitate and support the North American Colonial Waterbirds Monitoring Partnership
- Will facilitate and support the meeting of scientific information needs
- Will facilitate and support education and outreach programs, and maintenance of the Plan's home page

Continental implementation also requires connection, cooperation and coordinated implementation outside the artificial boundaries of the North American Plan. In the Pacific seabird conservation should coordinate with the Asia Pacific Migratory Bird Strategy, which, presently, does not include seabirds or colonial waterbirds. The Hawaii and Pacific Islands Regional Working Group should attempt to develop liaison relationships with the Asian network. The Canada Colonial Waterbird Council and U.S. Fish and Wildlife Service will work with other countries, such as Greenland or other circumpolar member nations of the Conservation of Arctic Flora and Fauna (CAFF) through its Circumpolar Seabird Working Group, to ensure conservation activities over the entire boreal range of seabirds and colonial waterbirds. The U.S. Fish and Wildlife Service should continue in its capacity within the Beringian Seabird Working Group, overseeing seabird conservation. Colonial waterbird and seabird conservation planning need to be encouraged in South America. Through these planning processes all partners will address the conservation priorities encountered by seabirds and colonial waterbirds, both inside Canada and in other countries in which they spend part of their year.

Continental conservation depends upon management action at the state and provincial level. The Colonial Waterbird Plan and council will coordinate and cooperate with the Colonial Waterbird and Seabird Working Group of the International Association of Fish and Wildlife Agencies and Colonial Waterbird Specialists located in each state or province.

Trilateral/NABCI Implementation

Within Canada, the United States and Mexico, implementation of the North American Colonial Waterbird Conservation Plan will be accomplished where possible within the structure and philosophy of the North American Bird Conservation Initiative, such as through NABCI National Councils, NABCI BCR's and Joint Ventures, the Monitoring Subcommittee, and NGO Subcommittee. NABCI is a trilateral arrangement among Canada, US and Mexico, derived from the North American Free Trade Agreement. The United States has bilateral migratory bird treaties with Mexico and Canada, which also underlie the trilateral partnership.

National Implementation

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

In the United States the primary responsibility for migratory bird management in the United States rests with the US Fish and Wildlife Service. US FWS is encouraged to appoint and support a colonial waterbird coordinator within the Division of Migratory Bird Management. Specifically this position should play a principal support for the North American Colonial Waterbird Conservation Council. It should concentrate on assisting in regional planning and implementation and be the spokesperson for colonial waterbird conservation within the federal agencies. This individual should have a budget sufficient to support travel, facilitation and small grants.

Other US Federal land management and management responsible for bird conservation throughout the Plan area are encouraged to employ and support a national colonial waterbird coordinator/specialist who should be given responsibility for supporting the interests of colonial waterbird management within their agencies.

NABCI-US is managed in the United States by the NABCI Committee, chaired by the director of the US Fish and Wildlife Service and President of the International Association of Fish and Wildlife Agencies. The North American Colonial Waterbird Conservation Plan presently holds a seat on the council, which will be appointed by the North American Colonial Waterbird Conservation Council.

Responsibilities of a National Colonial Waterbird Coordinator:

- Facilitate production of colonial waterbird conservation plans
- Assist in colonial waterbird conservation planning at the regional (BCR, WCR) levels and facilitates work of the Regional Colonial Waterbird Working
- Facilitates population monitoring efforts in nation
- Supports and provides staff support for the North American Colonial Waterbird Council, national colonial waterbird councils, IAFWA Colonial Waterbird and Shorebird Working Group,
- Facilitates the integration of national colonial waterbird planning and implementation into national and international contexts, including national and international NABCI structures and in international treaties and other programs
- Provides technical assistance to national agency staff and other stakeholders in colonial waterbird conservation

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Within Canada, colonial waterbird conservation will be organized and facilitated through the Canadian Colonial Waterbird Plan, "Wings Over Water." CWS is encouraged to continue to appoint and support a colonial waterbird coordinator. If invited, the North American Colonial Waterbird Conservation Council will appoint a contact to the Canadian implementation committee. Canada has indicated that the practical planning and implementation units identified in this Plan for implementation will be used to implement WOW. These are based on traditional CWS and provincial management regions. This is in part because in Canada natural resource and bird management follow this approach due to jurisdictional responsibilities. Integration of a multi-species approach to conservation also requires that comparable, detailed plans be available for all species groups. Shorebird and landbird conservation has also begun following the more traditional regional delineations. Consistency by WOW with their planning units will enable biologists to identify instances where co-operative efforts can be undertaken or where conflicts exist.

In Canada, BCR scale implementation is not at this time practical. Some BCRs in Canada have vast ranges crossing many jurisdictions, making initial planning complex. WOW will work with BCR Joint Ventures in the United States to coordinate actions based within Colonial Waterbird Conservation Regions. Integration will most practically occur first in joint planning regions, where there are species or issues of common concern. As work evolves there should be increasing opportunities for broader continental planning and implementation. The NACWCP WCRs crossing international borders coincide well with traditional management boundaries of provinces and Canadian Wildlife Service regions, facilitating cross-border, continental planning. The WCRs, including the offshore and pelagic WCRs, will ultimately provide the link for management between regions in Canada and on a continental basis.

In Mexico there is not yet identified a program or responsibility specifically for colonial waterbird conservation nationwide in Mexico. The Mexican national NABCI Council, it is hoped will focus some of its attention on colonial waterbirds.

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

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Regional Implementation

The Bird Conservation Region, organized through joint ventures, is adopted as the principal organizing structure for regional implementation of the North America Colonial Waterbird Conservation Plan. Specifically, NACWCP provides the seabird and colonial waterbird component for implementation within the BCRs context of all bird – all habitat conservation. Implementation within BCRs is based on the highly successful geographically based approach of the North American Waterfowl Management Plan. In addition to the geographic framework, NABCI has also advocated adoption of the management mechanism of the North American Waterfowl Management Plan, the joint venture.

A joint venture is a self-directed partnership of agencies, organizations, corporations, tribes, or individuals that has formally accepted responsibility of implementing national and international bird conservation plans within a specific geographical area. Joint ventures bring together stakeholders in a voluntary matrix of cooperative and coordinated actions that have as their objective the achievement of habitat and population goals for a region. JV's are managed by a management board comprised of a broad spectrum of representatives having interests in conservation. They are guided by implementation and evaluation plans. JV's are staffed by a full time Joint Venture Coordinator and other technical staff and supported by a technical committee and other committees as needed.

It is anticipated that BCR Joint Ventures will invite colonial waterbird specialists to participate on technical committees. In regions where colonial waterbird resources are critical, it is hoped that colonial waterbird representation, especially from the associated Colonial Waterbird Regional Working Group, will be invited onto the Management Board. Joint-venture Boards and partners should employ colonial waterbird biologists for each BCR. See the box for a model list of duties. Colonial Waterbird Regional Working Group will assist BCR joint ventures, as requested, to identify colonial waterbird specialists and in setting population and habitat goals, doing technical analysis and evaluation, identifying research needs, and facilitating other implementation actions.

The Colonial Waterbird Conservation Regions, encompassing one or more BCRs, serve

Responsibilities of Joint Venture/BCR Colonial Waterbird Biologist

- coordinates colonial waterbird planning, implementation, and evaluation within a BCR
- serves as staff to JV Coordinator, and Management Board and on the Technical Committees to assure colonial waterbird conservation is addressed within planning and implementation of the Joint Venture program
- serves a liaison to and on the technical committees of the Colonial Waterbird Conservation Regional Working Group
- develops proposals for population, habitat and site goals for colonial waterbirds within the BCR
- assures appropriate monitoring of populations, habitats and sites occurs within the BCR
- helps recognize and define research and monitoring and other information needs and facilitates action to meet these needs

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to organize the priorities for colonial waterbird conservation. Within each Colonial Waterbird Conservation Region, a Regional Colonial Waterbird Conservation Working Group will be formed, selected initially by the North American Colonial Waterbird Conservation Council, and thereafter be self organizing. Conservation priorities will be communicated to the BCRs by participation of representatives of the Regional Colonial Waterbird Conservation Working Group in the governance and operation of the BCR, as invited.

State/Provincial Implementation

Each state and province is encouraged to appoint and support a colonial waterbird coordinator. This coordinator would be responsible within the state and province for ensuring inventory, monitoring, colony and feeding area protection, research identification, Important Colonial Waterbirds Area identification, protection and management, and other conservation measures for colonial waterbirds within the state. States and provinces are encouraged to write a colonial waterbird management plan for their territory to serve as a blueprint for conservation action. States and provinces should encourage and support local conservation efforts on behalf of colonial waterbirds. The state/provincial coordinators are encouraged to participate in bird conservation joint ventures within their territories and facilitate the sharing of data with national data management networks.

Each state and province is encouraged to organize and/or conduct a monitoring program for colonial waterbird populations and, as reasonable, other population and demographic parameters within the state/province. The monitoring program should follow the protocols of this plan and participate in the continental data management program.

Each state and province is encouraged to carry out an environmental education program that reaches into the school system, teaching the conservation of colonial waterbirds in ways appropriate for the region.

Each state and province is encouraged to set up a mechanism to facilitate communication and support from individuals and organizations monitoring, managing, and protecting colonial waterbird sites.

Local Implementation

Given the need to affect colonial waterbird conservation at all these scales, it is to be emphasized that the principal means of implementing colonial waterbird conservation in North America is through local action. To the extent that "all conservation is local," colonial waterbirds must be protected, conserved, monitored, and managed at local sites by local people with the wisdom gained by intimate knowledge of the local situation. All the rest of the implementation infrastructure (such as the Continental Monitoring Program or Colonial Waterbird Conservation Regional Working Groups, or BCR's) must be designed to support local colonial waterbird conservationists and natural resource managers as they implement conservation action at local

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colony, roost, and feeding sites, at local parks, refuges, and sanctuaries, and at local patches of aquatic habitat used by these birds.

On the ground conservation action has to take place at the local scale. The Regional Colonial Waterbird Conservation Working Group and BCR or State/Provincial Colonial Waterbird Specialists will take on the responsibility of facilitating local entities taking responsibility for particular elements within the local conservation arena. Local sites may include individual units, administered by Federal (e.g. National Park System, National Wildlife Refuge System, National Forests and Grasslands, National Estuarine Reserves, etc.) and State (e.g. parks, wildlife management areas, etc.) agencies. Each colony site and important feeding site should have its advocate and guardian, backed by legislation from local and state governments, and linked to other site guardians.

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APPENDICES

Appendix 1. List of species included in the North American Colonial Waterbird Conservation Plan.

EnglishName	SpanishName	FrenchName	scientific name
Agami Heron			<i>Agamia agami</i>
Aleutian Tern		Sterna des Aleoutiennes	<i>Sterna aleutica</i>
American White Pelican	Pelicano Blanco Americano	Pelican blanc d'Amerique	<i>Pelecanus erythrorhynchos</i>
American Wood Stork	Ciguena Americana	Tantale d'Amerique	<i>Mycteria americana</i>
Ancient Murrelet	Mergulo Antiguo	Alque a cou blanc	<i>Synthliboramphus antiquus</i>
Anhinga	Anhinga Americana	Anhinga d'Amerique	<i>Anhinga anhinga</i>
Arctic Tern	Sterna paradisaea	Sterne arctique	<i>Sterna paradisaea</i>
Ashy Storm-Petrel	Paino Cenizo	Petrel cendre	<i>Oceanodroma homochroa</i>
Atlantic Puffin		Macareux moine	<i>Fratercula arctica</i>
Audubon's Shearwater	Pardela de Audubon	Puffin d'Audubon	<i>Puffinus lherminieri</i>
Band-rumped Storm-Petrel	Paino de Harcourt	Petrel de Castro	<i>Oceanodroma castro</i>
Bare-throated Tiger-Heron			<i>Tigrosoma mexicanum</i>
Bermuda Petrel			<i>Pterodroma cahow</i>
Black Guillemot		Guillemot a miroir	<i>Cephus grylle</i>
Black Noddy	Golondrina-boba Negra	Noddi noir	<i>Anous minutus</i>
Black Skimmer	Rayador Americano	Bec-en-ciseaux noir	<i>Rynchops niger</i>
Black Storm-Petrel	Paino Negro	Petrel noir	<i>Oceanodroma melania</i>
Black Tern	Golondrina-marina Negra	Guifette noire	<i>Chlidonias niger</i>
Black-capped Petrel		Diablotin errant	<i>Pterodroma hasitata</i>
Black-crowned Night-Heron	Garza-nocturna Coroninegra	Bihoreau a couronne noire	<i>Nycticorax nycticorax</i>
Black-footed Albatross	Albatros Patinegro	Albatros a pattes noires	<i>Phoebastria nigripes</i>
Black-headed Gull	Gaviota Encapuchada	Mouette rieuse	<i>Larus ridibundus</i>
Black-legged Kittiwake	Gaviota Patinegra	Mouette tridactyle	<i>Rissa tridactyla</i>
Black-vented Shearwater	Pardela Mexicana	Puffin cul noir	<i>Puffinus opisthomelas</i>
Blue-footed Booby	Bobo Patiazul	Fou a pattes bleues	<i>Sula nebouxii</i>
Blue-gray Noddy		Noddi gris	<i>Procelsterna cerulea</i>
Boat-billed Heron	Garza Cucharon		<i>Cochlearius cochlearius</i>
Bonaparte's Gull	Gaviota de Bonaparte	Mouette de Bonaparte	<i>Larus philadelphia</i>
Bonin Petrel		Diablotin des Bonin	<i>Pterodroma hypoleuca</i>
Brandt's Cormorant	Cormoran de Brandt	Cormoran de Brandt	<i>Phalacrocorax penicillatus</i>
Bridled Tern	Golondrina-marina Embridada	Sterne a collier	<i>Sterna anaethetus</i>
Brown Booby	Bobo Ventre-blanc	Fou brun	<i>Sula leucogaster</i>
Brown Noddy	Golondrina-boba Café	Noddi niais	<i>Anous stolidus</i>
Brown Pelican	Pelicano Café	Pelican brun	<i>Pelecanus occidentalis</i>
Buller's Shearwater	Pardela de Buller	Puffin de Buller	<i>Puffinus bulleri</i>
Bulwer's Petrel		Diablotin de Bulwar	<i>Bulweria bulwerii</i>
California Gull	Gaviota Californiana	Goeland de Californie	<i>Larus californicus</i>
Capped Heron			<i>Ptilerodius pileatus</i>
Caspian Tern	Golondrina-marina Caspica	Sterne caspienne	<i>Sterna caspia</i>
Cassin's Auklet	Alcita de Cassin	Alque de Cassin	<i>Ptychoramphus aleuticus</i>
Cattle Egret	Garza Ganadera	Heron garde-boeufs	<i>Bubulcus ibis</i>
Christmas Shearwater	Pardela de Navidad	Puffin de la Nativite	<i>Puffinus nativitatis</i>
Cocoi Heron			<i>Ardea cocoi</i>
Common Murre	Arao Comun	Marmette de Troil	<i>Uria aalge</i>
Common Tern	Sterna h. hirundo	Sterne pierregarin	<i>Sterna hirundo</i>
Common White-Tern	Golondrina-boba Blanca	Sterne blanche	<i>Gygis alba</i>

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Cook's Petrel	Petrel de Cook	Diablotin de Cook	<i>Pterodroma cookii</i>
Cory's Shearwater	Pardela de Cory	Puffin cendre	<i>Calonectris diomedea</i>
Craveri's Murrelet	Mergulo de Craveri	Alque a aisselles grises	<i>Synthliboramphus craveri</i>
Crested Auklet	Alcita Crestada	Alque panachee	<i>Aethia cristatella</i>
Dark-rumped Petrel	Petrel de Galapagos	Diablotin d'Hawai	<i>Pterodroma phaeopygia</i>
Double-crested Cormorant	Cormoran Bicrestado	Cormoran a aigrettes	<i>Phalacrocorax auritus</i>
Dovekie		Mergule nain	<i>Alle alle</i>
Eared Grebe	Zambullidor Orejudo	Grebe a cou noir	<i>Podiceps nigricollis</i>
Elegant Tern	Golondrina-marina Elegante	Sterne elegante	<i>Sterna elegans</i>
Fasciated Tiger-Heron			<i>Tigrosoma fasciatum</i>
Flesh-footed Shearwater	Pardela Patipalida	Puffin a pattes pales	<i>Puffinus carneipes</i>
Fork-tailed Storm-Petrel		Petrel a queue fourchue	<i>Oceanodroma furcata</i>
Forster's Tern	Golondrina-marina de Forster	Sterne de Forster	<i>Sterna forsteri</i>
Franklin's Gull	Gaviota de Franklin	Mouette de Franklin	<i>Larus pipixcan</i>
Glaucous Gull	Gaviota Blanca	Goeland bourgmestre	<i>Larus hyperboreus</i>
Glaucous-winged Gull	Gaviota Aliglauca	Goeland a ailes grises	<i>Larus glaucescens</i>
Glossy Ibis	Ibis Lustroso	Ibis falcinelle	<i>Plegadis falcinellus</i>
Gray-backed Tern	Golondrina-marina Dorsigris	Sterne a dos gris	<i>Sterna lunata</i>
Great Black-Backed Gull	Gaviota Dorsinegra Mayor	Goeland a manteau noir	<i>Larus marinus</i>
Great Blue Heron	Garzon Cenizo	Grand Heron	<i>Ardea herodias</i>
Great Cormorant		Grand Cormoran	<i>Phalacrocorax carbo</i>
Great Egret	Garza Grande	Grande Aigrette	<i>Ardea alba</i>
Great Frigatebird	Fragata Pelagica	Fregate du Pacifique	<i>Fregata minor</i>
Great Skua	Pagalo Grande	Grande Labbe	<i>Catharacta skua</i>
Greater Flamingo	Flamenco Americano	Flamant rose	<i>Phoenicopterus ruber</i>
Greater Shearwater	Pardela Mayor	Puffin majuer	<i>Puffinus gravis</i>
Green Heron	Garza Verde	Heron vert	<i>Butorides virescens</i>
Green Ibis			<i>Mesembrinibis cayennensis</i>
Gull-billed Tern	Golondrina-marina Piquigruesa	Sterne hansel	<i>Sterna nilotica</i>
Heermann's Gull	Gaviota de Heermann	Goeland de Heerman	<i>Larus heermanni</i>
Herring Gull	Gaviota Plateada	Goeland argente	<i>Larus argentatus</i>
Horned Puffin		Macareux cornu	<i>Fratercula corniculata</i>
Iceland Gull		Goeland arctique	<i>Larus glaucoides</i>
Ivory Gull		Mouette blanche	<i>Pagophila eburnea</i>
Jabiru	Garzon soldado		<i>Jabiru mycteria</i>
Juan Fernandez Petrel	Petrel de Fernandez	Diablotin de Juan-Fernandez	<i>Pterodroma externa</i>
Kittlitz's Murrelet		Alque pale	<i>Brachyramphus brevirostris</i>
Laughing Gull	Gaviota Reidora	Mouette a tete noire	<i>Larus atricilla</i>
Laysan Albatross	Albatros de Laysan	Albatros de Laysan	<i>Phoebastria immutabilis</i>
Leach's Storm-Petrel	Paino de Leach	Petrel cul-blanc	<i>Oceanodroma leucorhoa</i>
Least Auklet		Alque minuscule	<i>Aethia pusilla</i>
Least Storm-Petrel	Paino Minimo	Petrel minime	<i>Oceanodroma microsoma</i>
Least Tern	Golondrina-marina Minima	Petite Sterne	<i>Sterna antillarum</i>
Lesser Black-backed Gull	Gaviota Dorsinegra Menor	Goeland brun	<i>Larus fuscus</i>
Little Blue Heron	Garza Azul	Aigrette bleue	<i>Egretta caerulea</i>
Little Gull	Gaviota Minima	Mouette pygmee	<i>Larus minutus</i>
Little Tern			<i>Sterna albifrons</i>
Long-tailed Jaeger	Salteador Colilargo	Labbe a longue queue	<i>Stercorarius longicaudus</i>
Magnificent Frigatebird	Fragata Magnifica	Fregate superbe	<i>Fregata magnificens</i>
Manx Shearwater	Pardela Manx	Puffin de Anglais	<i>Puffinus puffinus</i>

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Marbled Murrelet		Alque marbree	<i>Brachyramphus marmoratus</i>
Masked Booby	Bobo Enmascarado	Fou masque	<i>Sula dactylatra</i>
Mew Gull	Gaviota Piquiamarilla	Goeland cendre	<i>Larus canus</i>
Murphy's Petrel		Diablotin de Murphy	<i>Pterodroma ultima</i>
Neotropic Cormorant	Cormoran Neotropical	Cormoran olivatre	<i>Phalacrocorax brasilianus</i>
Newell's Shearwater			<i>Puffinau auricularis newelli</i>
Northern Fulmar	Fulmar Norteno	Fulmar boreal	<i>Fulmarus glacialis</i>
Northern Gannet	Bobo Norteno	Fou de Bassan	<i>Morus bassanus</i>
Parakeet Auklet		Alque perroquet	<i>Aethia psittacula</i>
Parasitic Jaeger	Salteador Parasito	Labbe parasite	<i>Stercorarius parasiticus</i>
Parkinson's Petrel	Petrel de Parkinsoni		<i>Procellaria parkinsoni</i>
Pelagic Cormorant	Cormoran Pelagico	Cormoran pelagique	<i>Phalacrocorax pelagicus</i>
Pigeon Guillemot	Arao Paloma	Guillemot du Pacifique	<i>Cephus columba</i>
Pink-footed Shearwater	Pardela Patirrosada	Puffin a pattes roses	<i>Puffinus creatopus</i>
Pomarine Jaeger	Salteador Pomarino	Labbe pomarin	<i>Stercorarius pomarinus</i>
Razorbill		Petit Pingouin	<i>Alca torda</i>
Red-billed Tropicbird	Rabijunco Piquirrojo	Grand Paille-en-queue	<i>Phaethon aethereus</i>
Reddish Egret	Garza Rojiza	Aigrette roussatre	<i>Egretta rufescens</i>
Red-faced Cormorant		Cormoran a face rouge	<i>Phalacrocorax urile</i>
Red-footed Booby	Bobo Patirrojo	Fou a pattes rouges	<i>Sula sula</i>
Red-legged Kittiwake		Mouette a pattes rouges	<i>Rissa brevirostris</i>
Red-tailed Tropicbird	Rabijunco Colirrojo	Paille-en-queue blanc	<i>Phaethon rubricauda</i>
Rhinoceros Auklet	Cerorhinca monocerata	Macareux rhinoceros	<i>Cerorhinca monocerata</i>
Ring-billed Gull	Gaviota Piquianillada	Goeland a bec cercle	<i>Larus delawarensis</i>
Roseate Spoonbill	Espatula Rosada	Spatule rosee	<i>Ajaia ajaja</i>
Roseate Tern	Sterna d. dougallii	Sterne de Dougall	<i>Sterna dougallii</i>
Ross's Gull		Mouette rosee	<i>Rhodostethia rosea</i>
Royal Tern	Golondrina-marina Real	Sterne royale	<i>Sterna maxima</i>
Rufescent Tiger-Heron			<i>Tigrisoma lineatum</i>
Sabine's Gull	Gaviota de Sabine	Mouette de Sabine	<i>Xema sabini</i>
Sandwich Tern	Sterna sandvicensis	Sterne caugek	<i>Sterna sandvicensis</i>
Scarlet Ibis			<i>Eudocimus ruber</i>
Short-tailed Albatross	Albatros Rabon	Albatros a queue courte	<i>Phoebastria albatrus</i>
Short-tailed Shearwater	Pardela Colicorta	Puffin a bec mince	<i>Puffinus tenuirostris</i>
Slaty-backed Gull		Goeland a manteau ardoise	<i>Larus schistisagus</i>
Snowy Egret	Garza Nivea	Aigrette neigieuse	<i>Egretta thula</i>
Sooty Shearwater	Pardela Gris	Puffin fuligineux	<i>Puffinus griseus</i>
Sooty Tern	Golondrina-marina Oscura	Sterne fuligineuse	<i>Sterna fuscata</i>
South Polar Skua	Pagalo Sureno	Labbe antarctique	<i>Catharacta maccormicki</i>
Striated Heron			<i>Butorides striatus</i>
Thayer's Gull	Gaviota de Thayer	Goeland de Thayer	<i>Larus thayeri</i>
Thick-billed Murre		Marmette de Brunnich	<i>Uria lomvia</i>
Townsend's Shearwater	Pardela de Townsend	Puffin de Townsend	<i>Puffinus auricularis</i>
Tricolored Heron	Garza Tricolor	Aigrette tricolor	<i>Egretta tricolor</i>
Tristram's Storm-Petrel	Paino de Tristram	Petrel de Tristram	<i>Oceanodroma tristrami</i>
Tufted Puffin		Macareux huppe	<i>Fratercula cirrhata</i>
Wedge-rumped Storm-Petrel	Paino de Galapagos	Petrel de Darwin	<i>Oceanodroma tethys</i>
Wedge-tailed Shearwater	Pardela Colicuna	Puffin a queue fine	<i>Puffinus pacificus</i>
Western Grebe	Achichilique piquiamarillo	Grebe elegant	<i>Aechmophorus occidentalis</i>
Western Gull	Gaviota Occidental	Goeland d'Audubon	<i>Larus occidentalis</i>

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Whiskered Auklet		Alque barbue	<i>Aethia pygmaea</i>
White Ibis	Ibis Blanco	Ibis blanc	<i>Eudocimus albus</i>
White-faced Ibis	Ibis Cariblanco	Ibis a face blanche	<i>Plegadis chihi</i>
White-necked Petrel			<i>Pterodroma cervicalis</i>
White-tailed Tropicbird	Rabijunco Coliblanco	Petit Paille-en-queue	<i>Phaethon lepturus</i>
Wilson's Storm-Petrel	Paino de Wilson	Petrel oceanite	<i>Oceanites oceanicus</i>
Xantus's Murrelet	Mergulo de Xantus	Alque a dos noir	<i>Synthliboramphus hypoleucus</i>
Yellow-crowned Night-Heron	Garza-nocturna Coroniclara	Bihoreau violace	<i>Nyctanassa violacea</i>
Yellow-footed Gull	Gaviota Patamarilla	Goeland de Dwight	<i>Larus livens</i>

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Appendix 2. Colonial Waterbirds Accidental or Casual to North America

Band-tailed Gull	<i>Larus belcheri</i>	casual in Panama
Black-bellied Storm Petrel	<i>Fregetta tropica</i>	
Black-browed Albatross	<i>Thalassarche melanophris</i>	breeds around New Zealand; ranges in S. Pacific; Sight reports (none satisfactory) for Atlantic waters off N. America from Newfoundland to Florida.
Black-tailed Gull	<i>Larus crassirostris</i>	accidental or casual in AK, BC, S. CA, Belize, MD, RI, VA, Manitoba
Black-winged Petrel	<i>Pterodroma nigripennis</i>	breeds and ranges in S. Pacific; casual in HI waters
Buff-necked Ibis	<i>Theristicus caudatus</i>	accidental in Panama
Cape Petrel	<i>Daption capense</i>	northern hemisphere reports are questionable but exist
Chinese Egret	<i>Egretta eulophotes</i>	accidental in AK
European Storm-Petrel	<i>Hydrobates pelagicus</i>	accidental in Nova Scotia
Fea's Petrel	<i>Pterodroma feae</i>	reports off of North Carolina
Gray Gull	<i>Larus modestus</i>	accidental off Costa Rica and Colombia
Gray Heron	<i>Ardea cinerea</i>	casual in Lesser Antilles, Trinidad
Great Crested Tern	<i>Sterna bergii</i>	accidental in HI islands
Herald Petrel	<i>Pterodroma arminjoniana</i>	breeds and ranges in S. Pacific; casual or accidental in NY, NC, Lesser Antilles; accidental in HI islands
Inca Tern	<i>Larosterna inca</i>	casual off Pacific coast of Panama
Jouanin's Petrel	<i>Bulweria fallax</i>	accidental in HI islands
Large-billed Tern	<i>Phaetusa simplex</i>	Trinidad, casual in Panama; accidental in Bermuda
Lesser Frigatebird	<i>Fregata ariel</i>	breeds and ranges in S. Pacific; casual to HI; accidental in Maine
Light-mantled Albatross	<i>Phoebastria palpebrata</i>	Accidental off S. CA
Little Egret	<i>Egretta garzetta</i>	accidental in Quebec, Newfoundland, Nova Scotia, NH, MA, VA, Bermuda, Puerto Rico, St. Lucia, Martinique, Trinidad, Surinam
Little Shearwater	<i>Puffinus assimilis</i>	ranges in southern oceans; casual or accidental in HI islands, Nova Scotia, SC
Little Tern	<i>Sterna albifrons</i>	casual in HI islands
Long-billed Murrelet	<i>Brachyramphus perdix</i>	casual in interior N. America (AK, CA, MN, CO, AR, IN, OH, Quebec, St. Lawrence, MA, NC, SC, FL; accidental in coastal CA
Markham's Storm-Petrel	<i>Oceanodroma markhami</i>	casual on western coast of Costa Rica and Panama
Murphy's Petrel	<i>Pterodroma ultima</i>	casual in HI islands, in Oregon, and at sea off of CA
Peruvian Booby	<i>Sula variegata</i>	casual off Pacific coast of Panama
Shy Albatross	<i>Thalassarche cauta</i>	breeds off New Zealand and Australia; ranges in S. Pacific; accidental off coast of WA
Stejneger's Petrel	<i>Pterodroma longirostris</i>	breeds and ranges in S. Pacific (also between HI and N. America); accidental off HI and CA
Streaked Shearwater	<i>Calonectris leucomelas</i>	ranges in western Pacific; casual in CA and HI islands
Swallow-tailed Gull	<i>Creagrus furcatus</i>	sight reports from CA and Panama coasts

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Wandering Albatross	<i>Diomedea exulans</i>	breeds and ranges in S. Pacific; Accidental off CA, Panama
Western Reef Heron	<i>Egretta gularis</i>	accidental in MA; several birds reported from Barbados, Tobago, St. Lucia and Trinidad.
Whiskered Tern	<i>Chlidonias hybridus</i>	accidental in NJ, DE, Barbados
White-bellied Storm Petrel	<i>Fregetta grallaria</i>	very old report (1851) from FL
White-faced Storm-Petrel	<i>Pelagodroma marina</i>	breeds and ranges in S. Pacific; casual in western Atlantic off N. America from Mass to NC
White-vented Storm Petrel	<i>Oceanites gracilis</i>	sight reports off of Panama and Colombia
White-winged Tern	<i>Chlidonias leucopterus</i>	accidental or casual in AK, Canada, Vermont, MA, NY, NJ, DE, VA, Bahamas, Virgin Islands...
Yellow-billed Tern	<i>Sterna superciliaris</i>	accidental in Panama
Yellow-legged Gull	<i>Larus cachinnans</i>	casual in MD, DC; accidental in Quebec, Newfoundland
Yellow-nosed Albatross	<i>Thalassarche chlororhynchos</i>	ranges in S. Pacific; casual or accidental in Quebec, New Brunswick, Maine, New York, Maryland, Florida, Louisiana, Texas. Sight reports off Newfoundland, Maine and south to Florida.

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Appendix 3. Non-game, Non-colonial Waterbirds in North America

American Bittern	<i>Botaurus lentiginosus</i>	
American Coot	<i>Fulica americana</i>	
Arctic Loon	<i>Gavia arctica</i>	
Azure Gallinule	<i>Porphyryla flavirostris</i>	accidental in Trinidad, NY
Black Rail	<i>Laterallus jamicensis</i>	
Caribbean Coot	<i>Fulica caribaea</i>	
Clapper Rail	<i>Rallus longirostris</i>	
Colombian Crake	<i>Neocrex colombianus</i>	
Common Crane	<i>Grus grus</i>	
Common Loon	<i>Gavia immer</i>	
Common Moorhen	<i>Gallinula chloropus</i>	
Corn Crake	<i>Crex crex</i>	casual on Baffin Island, along atlantic coast of N. America, Bermuda
Eurasian Coot	<i>Fulica atra</i>	
Gray-breasted Crake	<i>Laterallus exilis</i>	
Gray-necked Wood-Rail	<i>Aramides cajanea</i>	
Hawaiian Coot	<i>Fulica alai</i>	
Horned Grebe	<i>Podiceps auritus</i>	
King Rail	<i>Rallus elegans</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
Least Grebe	<i>Tachybaptus dominicus</i>	
Limpkin	<i>Aramus guarauna</i>	
Ocellated Crake	<i>Micropygia schomburgkii</i>	one record from Costa Rica
Pacific Loon	<i>Gavia pacifica</i>	
Paint-billed Crake	<i>Neocrex erythrops</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
Pinnated Bittern	<i>Botaurus pinnatus</i>	
Purple Gallinule	<i>Porphyryla martinica</i>	
Red Phalarope	<i>Phalaropus fulicaria</i>	
Red-necked Grebe	<i>Podiceps grisegena</i>	
Red-necked Phalarope	<i>Phalaropus lobatus</i>	
Red-throated Loon	<i>Gavia stellata</i>	
Ruddy Crake	<i>Laterallus ruber</i>	
Rufous-necked Wood-Rail	<i>Aramides axillaris</i>	
Sandhill Crane	<i>Grus canadensis</i>	

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Sora	<i>Porzana carolina</i>	
Spotted Crane	<i>Porzana porzana</i>	accidental in Lesser Antilles
Spotted Rail	<i>Pardirallus maculatus</i>	
Sunbittern	<i>Eurypyga helias</i>	
Sungrebe	<i>Heliornis fulica</i>	
Uniform Crane	<i>Amaurolimnas concolor</i>	
Virginia Rail	<i>Rallus limicola</i>	
White-throated Crane	<i>Laterallus albigularis</i>	
Whooping Crane	<i>Grus americana</i>	
Wilson's Phalarope	<i>Phalaropus tricolor</i>	
Yellow Bittern	<i>Ixobrychus sinensis</i>	accidental in AK
Yellow Rail	<i>Coturnicops noveboracensis</i>	
Yellow-billed Loon	<i>Gavia adamsii</i>	
Yellow-breasted Crane	<i>Porzana flaviventer</i>	
Zapata Rail	<i>Cyanolimnas cerverai</i>	

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Appendix 4 - Regional and global occurrence of North American colonial waterbirds (continental regions)

Colonial Waterbird Regions (CWRs) are conglomerations of Bird Conservation Regions (BCRs) and Large Marine Ecosystems (LMEs) and are being used for regional implementation purposes in the NACWCP. BCRs are biologically based conservation regions developed under the North American Bird Conservation Initiative (NABCI). LMEs (Table 2b), developed by The World Conservation Union (IUCN), United Nations agencies and the U.S. National Oceanic and Atmospheric Administration (NOAA), are regions of ocean space characterized by distinct bathymetry, hydrography, productivity and trophically dependent populations. The continental CWRs 1-18 (Table 2a) correspond to the following land-based regions: 1) Aleutian Islands/Bering Sea, 2) Caribbean Basin, 3) Eastern Arctic, 4) Great Plains/Prairie Potholes, 5) Gulf Coastal Prairie, 6) Gulf of Mexico Coast, 7) Hawaii and Pacific Islands, 8) Intermountain West/Southwestern Desert, 9) Lower Mississippi Valley, 10) NE Maritime, 11) New England/Mid-Atlantic Coast, 12) Northern Pacific Coast, 13) Pacific Coast of Mexico, 14) SE Coastal Plain/Appalachian Mtns, 15) Southern Pacific Coast, 16) Upper Mississippi Basin/Great lakes, 17) Western Arctic and 18) Western Boreal Forest.

Global Distributions (GD) are broad categories concerning the world wide distributions of species. They are North America (NA), Western Hemisphere (WH), Northern Hemisphere (NH), Cosmopolitan (COS) and Peripheral (PER). Within the table, b = breeding and w = wintering. A * indicates a species that has disjunct breeding and wintering habitats. See text for details.

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Colonial Waterbird Regions

GD

- 1**
- 2**
- 3**
- 4**
- 5**
- 6**
- 7**
- 8**
- 9**
- 10**
- 11**
- 12**
- 13**
- 14**
- 15**

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16

17

18

BCRs

2

3,7,8

11,17,18,19,20,21

37

36

9,10,16,33,34,35

25,28

14

30

5

27,28,29,31

15,32,33

12,13,22,23,24

3

4,6

Agami Heron

WH

bw

bw

bw

6 December 2000 DRAFT

Aleutian Tern

NH
b

b

American White Pelican*

NA
w
bw
bw
bw
b
w

6 December 2000 DRAFT

w
w
w

b

American Wood Stork

WH

b

bw
bw

bw

bw
bw
bw

Ancient Murrelet

NH
b

6 December 2000 DRAFT

b

Anhinga

WH

bw

w

bw

bw

bw

bw

bw

Arctic Tern

6 December 2000 DRAFT

COS

b

b

b

b

b

Ashy Storm-Petrel

NA

b

6 December 2000 DRAFT

Atlantic Puffin

NH

b

b

Audubon's Shearwater

COS

b

6 December 2000 DRAFT

Band-rumped Storm-Petrel

COS

b

Bare-throated Tiger-Heron

WH

b

6 December 2000 DRAFT

b

b

b

Bermuda Petrel

NA

b

6 December 2000 DRAFT

Black Guillemot

NH
b
b

b

b

Black Noddy

COS
b

b

6 December 2000 DRAFT

b

Black Skimmer

WH

w

b

bw

b

b

w

bw

w

Black Storm-Petrel

WH

6 December 2000 DRAFT

b

Black Tern*

COS

w

b

b

b

b

w

b

b

Black-capped Petrel

WH

6 December 2000 DRAFT
b

Black-crowned Night Heron

COS

bw

b

bw

bw

bw

bw

b

bw

b

bw

bw

bw

6 December 2000 DRAFT

Black-footed Albatross

NH

b

Black-headed Gull

NH

b

6 December 2000 DRAFT

Black-legged Kittiwake

NH

b

b

b

Black-vented Shearwater

NA

6 December 2000 DRAFT

b

Blue-footed Booby

WH

b

Blue-gray Noddy

6 December 2000 DRAFT
WH

b

Boat-billed Heron

WH

bw

bw

bw

6 December 2000 DRAFT

Bonaparte's Gull*

WH
b
w
bw

w
w

bw
w
w
w
bw
w
w
w
w

b

Bonin Petrel

NH

b

6 December 2000 DRAFT

Brandt's Cormorant

NA

bw

bw

Bridled Tern

COS

b

6 December 2000 DRAFT

Brown Booby

COS

b

b

b

b

6 December 2000 DRAFT

Brown Noddy

COS

b

b

b

b

Brown Pelican

WH

bw

bw

bw

w

bw

6 December 2000 DRAFT

bw
bw

Buller's Shearwater

PER

Bulwer's Petrel

COS

b

6 December 2000 DRAFT

California Gull*

NA

b

bw

w

w

w

b

PER

Capped Heron

6 December 2000 DRAFT

bw

Caspian Tern*

COS

bw

b

b

bw

bw

b

bw

b

b

bw

bw

bw

b

6 December 2000 DRAFT
b

Cassin's Auklet

NA
b

b

b

Cattle Egret

COS

bw
w
bw
bw
bw
bw
bw
bw
bw
bw

6 December 2000 DRAFT

bw
bw
bw
bw
bw

Christmas Shearwater

WH

b

Clark's Grebe

NA

b

6 December 2000 DRAFT

bw

b

w

bw

w

b

Cocoi Heron

PER

bw

Common Murrie

6 December 2000 DRAFT

NH

b

b

b

b

b

Common Tern*

COS

bw

b

b

bw

bw

b

bw

b

b

bw

bw

bw

6 December 2000 DRAFT

b

b

Common White Tern

COS

b

Cook's Petrel

PER

6 December 2000 DRAFT

Cory's Shearwater

COS

Craver's Murrelet

NA

6 December 2000 DRAFT

b

Crested Auklet

NH
b

6 December 2000 DRAFT

Dark-rumped Petrel

WH

b

Double-crested Cormorant*

NA
bw
bw
b
b
w
bw

bw
w
b
bw
bw

6 December 2000 DRAFT

bw
bw
bw

b

Dovekie

NH
b
b

Eared Grebe

COS

bw
w
w

6 December 2000 DRAFT

bw

w

w

w

b

WH

Elegant Tern

b

WH

Fasciated Tiger-Heron

6 December 2000 DRAFT
bw

Flesh-footed Shearwater

COS

6 December 2000 DRAFT

Fork-tailed Storm-Petrel

NH
b

b

Forster's Tern*

NA
w
b
bw
bw
b
bw
b

6 December 2000 DRAFT

b
w
w
bw
b
b

Franklin's Gull*

WH

b

Glaucous Gull*

b

NH
bw
bw
w

6 December 2000 DRAFT

w

w

w

w

w

w

b

w

Glaucous-winged Gull

NH

bw

bw

w

Glossy Ibis

6 December 2000 DRAFT
COS

bw

bw
bw

bw
b
b

bw

Gray-backed Tern

WH

b

6 December 2000 DRAFT

Great Black-backed Gull*

NH

bw

bw
bw

w

bw

Great Blue Heron

WH

w

bw

bw

bw

bw

bw

bw

6 December 2000 DRAFT

bw
bw
bw
bw
bw
bw
bw

bw

Great Cormorant

COS

bw

bw

Great Egret

COS

bw

6 December 2000 DRAFT

bw

bw

bw

bw

bw

b

bw

bw

bw

bw

b

Great Frigatebird

COS

b

b

b

6 December 2000 DRAFT

Great Skua

NH

Greater Flamingo

COS

bw

bw

6 December 2000 DRAFT

Jabiru

WH

bw

bw

bw

Juan Fernandez Petrel

6 December 2000 DRAFT
PER

Kermadec Petrel

PER

6 December 2000 DRAFT

Kittlitz's Murrelet

NA
b

b

Laughing Gull

WH

bw

bw
w

w
bw

6 December 2000 DRAFT

b
b

w
bw
bw

Laysan Albatross

NH

b

b

Leach's Storm-Petrel

COS
b

b

6 December 2000 DRAFT

b

b

b

Least Auklet

NH
b

6 December 2000 DRAFT

Least Storm-Petrel

NA

b

Least Tern

WH

bw

b

b

b

b

b

b

bw

6 December 2000 DRAFT

b
b
b

Lesser Black-backed Gull

PER

w

w
w

w

Little Blue Heron

WH

bw

bw
bw
bw

6 December 2000 DRAFT

bw

b

bw

bw

bw

Little Gull*

COS

b

w

w

w

w

w

w

w

bw

Long-tailed Jaeger*

COS

b

6 December 2000 DRAFT

b

b
b

WH

b

b

b

b

Magnificent Frigatebird

6 December 2000 DRAFT

Manx Shearwater

COS

b

Marbled Murrelet

NH
b

6 December 2000 DRAFT
b

b

Masked Booby

COS

b

b

b

Mew Gull*

COS
bw

w

6 December 2000 DRAFT

w

bw

w

bw

PER

Mottled Petrel

Neotropic Cormorant

6 December 2000 DRAFT
WH

bw

b

bw

bw

b

bw

bw

bw

Newell's Shearwater

NA

b

6 December 2000 DRAFT

Northern Fulmar

NH

b

b

b

Northern Gannet

WH

b

6 December 2000 DRAFT
b

Parakeet Auklet

NH
b

b

Parasitic Jaeger*

COS
b
b

6 December 2000 DRAFT

b
b

Parkinson's Petrel

PER

6 December 2000 DRAFT

Pelagic Cormorant

NH
bw

bw

bw

b

Pigeon Guillemot

NH
b

b

6 December 2000 DRAFT

b

b

Pink-footed Shearwater

WH

Pomarine Jaeger

COS
b

b

6 December 2000 DRAFT

Razorbill

b

NH

b

b

Red-billed Tropicbird

COS

6 December 2000 DRAFT

b

b

b

Reddish Egret

WH

bw

bw

bw

bw

bw

bw

bw

6 December 2000 DRAFT

Red-faced Cormorant

NH
bw

bw

Red-footed Booby

COS

b

b

6 December 2000 DRAFT

b

Red-legged Kittiwake

NH
b

Red-tailed Tropicbird

COS

6 December 2000 DRAFT

b

Rhinoceros Auklet

NH
b

b

b

Ring-billed Gull*

6 December 2000 DRAFT
NA

b
b
w
w

bw
w
b
w
w
w
w
w
w
bw

b

Roseate Spoonbill

WH

bw

w
bw
bw

bw

w
bw
bw

6 December 2000 DRAFT

Roseate Tern

COS

bw

w

w

w

bw

bw

w

Ross's Gull

NH

b

6 December 2000 DRAFT

Royal Tern

COS

bw

bw
bw

bw

b

w
bw
bw

Rufescent Tiger-Heron

WH

bw

6 December 2000 DRAFT

Sabine's Gull

COS
b
b

b

6 December 2000 DRAFT

Sandwich Tern

COS

bw

bw

bw

bw

bw

w

bw

Scarlet Ibis

PER

bw

6 December 2000 DRAFT

Short-tailed Albatross

NH

Short-tailed Shearwater

PER

6 December 2000 DRAFT

Slaty-backed Gull

NH

Snail Kite

WH

6 December 2000 DRAFT

bw

bw

bw
bw

Snowy Egret

WH

bw

b

bw

bw

bw

bw

b

bw

bw

bw

bw

bw

bw

b

6 December 2000 DRAFT

Sooty Shearwater

COS

Sooty Tern

COS

b

b

b

b

6 December 2000 DRAFT

b
b

South Polar Skua

COS

Striated Heron

WH

bw

6 December 2000 DRAFT

Thayer's Gull*

NH

bw
w

w

w

w

w

w

Thick-billed Murre

6 December 2000 DRAFT

NH

b

b

b

Townsend's Shearwater

NA

b

6 December 2000 DRAFT

Tricolored Heron

WH

bw

bw

bw

bw

b

bw

bw

bw

Tristram's Storm-Petrel

NH

b

6 December 2000 DRAFT

Tufted Puffin

NH
b

b

Wedge-rumped Storm-Petrel

COS

6 December 2000 DRAFT

Wedge-tailed Shearwater

COS

b

b

6 December 2000 DRAFT

Western Grebe

NA

b

bw

b

w

bw

w

b

Western Gull

NA

bw

6 December 2000 DRAFT

bw

Whiskered Auklet

NH
b

White Ibis

WH

bw

w

w

bw

6 December 2000 DRAFT

bw

w

bw

bw

bw

White-faced Ibis

WH

w

bw

bw

bw

b

bw

bw

bw

bw

White-necked Petrel

PER

6 December 2000 DRAFT

White-tailed Tropicbird

COS

b

b

6 December 2000 DRAFT

Wilson's Storm-Petrel

COS

Xantus's Murrelet

NA

6 December 2000 DRAFT

b

Yellow-crowned Night Heron

WH

bw

b

b

bw

b

b

bw

bw

bw

b

Yellow-footed Gull*

NA

6 December 2000 DRAFT

bw

6 December 2000 DRAFT

Appendix 5 - Regional and global occurrence of North American colonial waterbirds (oceanic regions)

The oceanic CWRs 19-31 correspond to the following ocean-based regions: 19) Bering Sea, 20) Gulf of Alaska, 21) California Current and Gulf of California, 22) Pacific Central American Coastal, 23) Insular Pacific Hawaiian, 24) Gulf of Mexico, 25) Caribbean Sea, 26) Southeast US Continental Shelf, 27) Northeast US Continental Shelf, 28) Scotian Shelf, 29) Newfoundland Shelf and West Greenland Shelf, 30) central Pacific Ocean and 31) central Atlantic Ocean.

	Large Marine Ecosystems	GD	19	20	21	22	23	24	25	26	27	28	29	30	31	
LMEs			1 & 47	2	3 & 4	50	11	5	12	6	7	8	9 & 10	Pac	Atl	
	Agami Heron	WH														
	Aleutian Tern	NH	w	w												
	American White Pelican*	NA														
	American Wood Stork	WH														
	Ancient Murrelet	NH	w	w	w											
	Anhinga	WH														
	Arctic Tern	COS	w	w	w	w				w	w			w	w	
	Ashy Storm-Petrel	NA			w											
	Atlantic Puffin	NH									w	w	w		w	
	Audubon's Shearwater	COS						w	w	w						
	Band-rumped Storm-Petrel	COS				w	w							w		
	Bare-throated Tiger-Heron	WH														
	Bermuda Petrel	NA													w	
	Black Guillemot	NH	w									w	w			
	Black Noddy	COS				w	w	w	w					w	w	
	Black Skimmer	WH														
	Black Storm-Petrel	WH			w	w								w		
	Black Tern*	COS														
	Black-capped Petrel	WH						w	w	w						
	Black-crowned Night Heron	COS														
	Black-footed Albatross	NH	w	w	w	w	w							w		
	Black-headed Gull	NH								w	w	w	w			
	Black-legged Kittiwake	NH	w	w	w						w	w	w	w	w	
	Black-vented Shearwater	NA			w	w										
	Blue-footed Booby	WH			w	w										
	Blue-gray Noddy	WH					w							w		

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Boat-billed Heron	WH																
Bonaparte's Gull*	WH																
Bonin Petrel	NH						w								w		
Brandt's Cormorant	NA																
Bridled Tern	COS							w	w	w							
Brown Booby	COS			w	w			w	w								
Brown Noddy	COS				w	w		w	w								
Brown Pelican	WH																
Buller's Shearwater	PER	w	w	w	w	w									w		
Bulwer's Petrel	COS					w									w		
California Gull*	NA																
Capped Heron	PER																
Caspian Tern*	COS																
Cassin's Auklet	NA	w	w	w													
Cattle Egret	COS																
Christmas Shearwater	WH						w								w		
Clark's Grebe	NA																
Cocoi Heron	PER																
Common Murre	NH	w	w	w									w	w			
Common Tern*	COS																
Common White Tern	COS						w								w		
Cook's Petrel	PER		w	w		w									w		
Cory's Shearwater	COS							w	w	w	w	w	w			w	
Craveri's Murrelet	NA			w													
Crested Auklet	NH	w			w												
Dark-rumped Petrel	WH				w	w									w		
Double-crested Cormorant*	NA																
Dovekie	NH	w										w	w	w		w	
Eared Grebe	COS																
Elegant Tern	WH			w	w												
Fasciated Tiger-Heron	WH																
Flesh-footed Shearwater	COS	w	w	w		w									w		
Fork-tailed Storm-Petrel	NH	w	w	w											w		

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Forster's Tern*	NA																
Franklin's Gull*	WH																
Glaucous Gull*	NH																
Glaucous-winged Gull	NH																
Glossy Ibis	COS																
Gray-backed Tern	WH						w								w		
Great Black-backed Gull*	NH																
Great Blue Heron	WH																
Great Cormorant	COS																
Great Egret	COS																
Great Frigatebird	COS			w	w	w									w		
Great Skua	NH											w	w			w	
Greater Flamingo	COS																
Greater Shearwater	WH								w	w	w	w				w	
Green Heron	NA																
Green Ibis	WH																
Gull-billed Tern	COS																
Heermann's Gull	NA			w	w												
Herring Gull*	COS																
Horned Puffin	NH	w	w												w		
Iceland Gull*	NH																
Ivory Gull	NH	w												w			
Jabiru	WH																
Juan Fernandez Petrel	PER				w	w									w		
Kermadec Petrel	PER					w									w		
Kittlitz's Murrelet	NA	w	w														
Laughing Gull	WH																
Laysan Albatross	NH	w	w	w		w									w		
Leach's Storm-Petrel	COS	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	
Least Auklet	NH	w	w														
Least Storm-Petrel	NA			w													
Least Tern	WH																
Lesser Black-backed Gull	PER																

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Little Blue Heron	WH															
Little Gull*	COS															
Long-tailed Jaeger*	COS	w	w	w	w	w		w	w	w	w	w	w	w	w	
Magnificent Frigatebird	WH			w	w		w	w								
Manx Shearwater	COS									w	w	w			w	
Marbled Murrelet	NH	w	w	w												
Masked Booby	COS			w	w	w	w	w						w		
Mew Gull*	COS															
Mottled Petrel	PER	w	w	w										w		
Neotropic Cormorant	WH															
Newell's Shearwater	NA					w								w		
Northern Fulmar	NH	w	w	w								w	w	w	w	
Northern Gannet	WH						w	w	w	w	w	w	w		w	
Parakeet Auklet	NH	w	w											w		
Parasitic Jaeger*	COS	w	w	w	w	w		w	w	w	w	w	w	w	w	
Parkinson's Petrel	PER			w										w		
Pelagic Cormorant	NH															
Pigeon Guillemot	NH	w	w	w												
Pink-footed Shearwater	WH		w	w	w											
Pomarine Jaeger	COS	w	w	w	w	w	w	w	w	w	w	w	w	w	w	
Razorbill	NH									w	w	w			w	
Red-billed Tropicbird	COS			w	w		w	w								
Reddish Egret	WH															
Red-faced Cormorant	NH															
Red-footed Booby	COS				w	w		w						w		
Red-legged Kittiwake	NH	w	w													
Red-tailed Tropicbird	COS			w										w		
Rhinoceros Auklet	NH	w	w	w												
Ring-billed Gull*	NA															
Roseate Spoonbill	WH															
Roseate Tern	COS															
Ross's Gull	NH												w			
Royal Tern	COS															

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Rufescent Tiger-Heron	WH																
Sabine's Gull	COS	w	w	w	w				w			w	w	w	w		
Sandwich Tern	COS																
Scarlet Ibis	PER																
Short-tailed Albatross	NH	w	w	w		w									w		
Short-tailed Shearwater	PER	w	w	w		w									w		
Slaty-backed Gull	NH	w															
Snail Kite	WH																
Snowy Egret	WH																
Sooty Shearwater	COS	w	w	w	w	w	w	w	w	w	w	w	w	w	w	w	
Sooty Tern	COS			w	w	w	w	w	w	w					w	w	
South Polar Skua	COS	w	w	w	w	w				w	w	w	w	w	w	w	
Striated Heron	WH																
Thayer's Gull*	NH																
Thick-billed Murre	NH		w									w	w				
Townsend's Shearwater	NA			w	w												
Tricolored Heron	WH																
Tristram's Storm-Petrel	NH					w									w		
Tufted Puffin	NH	w	w	w											w		
Wedge-rumped Storm-Petrel	COS			w	w												
Wedge-tailed Shearwater	COS			w	w	w									w		
Western Grebe	NA																
Western Gull	NA																
Whiskered Auklet	NH	w															
White Ibis	WH																
White-faced Ibis	WH																
White-necked Petrel	PER				w	w									w		
White-tailed Tropicbird	COS					w	w	w	w	w					w		
Wilson's Storm-Petrel	COS				w	w	w	w	w	w	w	w	w	w	w	w	
Xantus's Murrelet	NA			w													
Yellow-crowned Night Heron	WH																
Yellow-footed Gull*	NA																

Appendix 6. Categorical Ranks and Global Distributions of North American Colonial Waterbirds

Category	North America	Western Hemisphere	Northern Hemisphere	Cosmopolitan	Peripheral
Highly Imperiled	Bermuda Petrel Newell's Shearwater Townsend's Shearwater	American Wood Stork Black-capped Petrel Brown Pelican Dark-rumped Petrel Least Tern Snail Kite	Ancient Murrelet Marbled Murrelet Short-tail Albatross	Audubon's Shearwater Common Tern Roseate Tern	
Species of High Concern	Black-vented Shearwater Brandt's Cormorant Cassin's Auklet Craveri's Murrelet Kittlitz's Murrelet Least Storm-Petrel	Black Skimmer Black Storm-Petrel Blue-footed Booby Christmas Shearwater Jabiru Little Blue Heron Magnificent Frigatebird Pink-foot Shearwater Reddish Egret Roseate Spoonbill Snowy Egret Tricolored Heron	Red-faced Cormorant Red-legged Kittiwake Tristram Storm-Petrel	Black-cm Night-Heron Bridled Tern Brown Booby Great Frigatebird Little Gull Manx Shearwater Masked Booby Mew Gull Red-billed Tropicbird Red-footed Booby White-tailed Tropicbird	
Species of Moderate Concern	Ashy Storm-Petrel California Gull Clark's Grebe Heermann's Gull Western Grebe Western Gull Xantus' Murrelet Yellow-footed Gull	Anhinga Elegant Tern Franklin's Gull White Ibis White-faced Ibis	Aleutian Tern Atlantic Puffin Black Guillemot Black-legged Kittiwake Crested Auklet Horned Puffin Laysan Albatross Least Auklet Northern Fulmar Parakeet Auklet Pelagic Cormorant Pigeon Guillemot Razorbill Thayer's Gull Thick-billed Murre Tufted Puffin Whiskered Auklet	Black Tern Black-headed Gull Black Noddy Bulwer's Petrel Caspian Tern Common White Tern Glossy Ibis Great Cormorant Gull-billed Tern Herring Gull Leach's Storm-Petrel Long-tailed Jaeger Red-tailed Tropicbird Royal Tern Sooty Tern Wdg-rmp Strm-Petrel Wdg-taild Shearwater	Juan Frnandez Petrel
Species of Low Concern	American White Pelican Forster's Tern	Yell-cm Night-Heron	Common Murre Fork-tail Storm-Petrel Iceland Gull Ivory Gull Rhinceros Auklet	Brown Noddy Eared Grebe Flsh-foot Shearwater Parasitic Jaeger Pomarine Jaeger Sabine's Gull Sandwich Tern	White-necked Petrel
Species Not at Risk	Double-crested Cormorant Green Heron Ring-billed Gull	Great Blue Heron Laughing Gull	Black-footed Albatross Dovekie Glaucous-winged Gull Great Black-back Gull	Greater Flamingo Sooty Shearwater South Polar Skua	Buller's Shearwater Cook's Petrel Short-tail Shearwater
Yet to be ranked		Blue-Grey Noddy Bonaparte's Gull Greater Shearwater Grey-Backed Tern Neotropic Cormorant Northern Gannet	Bonin Petrel Glaucous Gull Great Skua Ross' Gull Slaty-Backed Gull	Arctic Tern Bnd-rmp Storm-Petrel Cattle Egret Cory's Shearwater Great Egret Wilson's Strm-Petrel	Kermadec Petrel Less Black-back Gull Mottled Petrel Parkinson's Petrel
No Informa-tion		Agami Heron Bare-thro Tiger-Heron Boat-billed Heron Fasciated Tiger-Heron Green Ibis Rufescent Tiger-Heron Striated Heron			Capped Heron Cocoi Heron Scarlet Ibis

Bold type = does not breed in North America

Appendix 7. Population Estimates for North American Colonial Waterbirds.

EnglishName	NA # birds	Source
Agami Heron		
Aleutian Tern	12,950	M.North-BNA
Amer White Pelican	>120,000	F.Knopf & T. King
American Wood Stork	30,000-46,000	M. Coulter, J. Ogden, J. Kushlan & J. Rodgers
Ancient Murrelet	1,300,000	T. Gaston
Anhinga	20,000-34,000	P. Frederick-BNA
Arctic Tern		T. Diamond
Ashy Storm-Petrel	<10,000	BNA/library
Atlantic Puffin	750,000 - 760,000	M. Rodway
Audubon's Shearwater	~10,000 in West Indies	D. Lee
Band-rumped Storm-Petrel		AOU/library
Bare-throated Tiger Heron		library
Bermuda Petrel	150	library
Black Guillemot	100,000 - 200,000	library
Black Noddy	324,200-600,000	BNA
Black Skimmer	65,000-70,000	R. M. Erwin
Black Storm-Petrel	10,000 -100,000 probably <20,000	B. Tershy
Black Tern	100,000-500,000	E. Dunn-BNA
Black-capped Petrel	4,000 - 10,000	C. Hunter
Black-Crn Night Heron	50,000+	BNA
Black-Foot. Albatross	200,000	G. Causey-Whittow-BNA
Black-Headed Gull	40	W. Montevicchi-BNA
Black-Leg Kittiwake	2,600,000	BNA
Black-vented Shearwater	1,000-2,000(Guadalupe and San Benito) 300,000 (Natividad)	B. Keitt-BNA
Blue-footed Booby	~90,000 in Gulf of CA	B. Tershy
Blue-Grey Noddy		AOU/library
Boat-Billed Heron		
Bonaparte's Gull		PIF
Bonin Petrel		AOU/library
Brandt's Cormorant	151,200	G. Wallace-BNA
Bridled Tern	>16,000	BNA/library
Brown Booby	120, 000 breeding in Gulf of CA alone; 20,000 - 29,600 in Caribbean & HI	B. Tershy
Brown Noddy	344,800 - 400,600	R. Morris-BNA
Brown Pelican	87,000	M. Shields
Buller's Shearwater	2,500,000	K. Morgan

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Bulwer's Petrel	260,000	J. Megyesi-BNA
California Gull	500,000 - 1,000,000	D. Winkler
Capped Heron		
Caspian Tern	33,000-35,000	J.Quinn
Cassin's Auklet	3,200,000-3,300,000	D. Manuwal-BNA
Cattle Egret	1160000 (TX only)	R. Telfair
Christmas Shearwater	2,500-3,300	N. Seto - BNA
Clark's Grebe	10,000 (?)	G. Nuechterlein-BNA
Cocoi Heron		
Common Murre	4,250,000	T. Gaston
Common Tern	5,600-7,000 breeding birds (Great Lakes region only)	R. Morris & H. Hays
Common White Tern	30,000	BNA
Cook's Petrel	>100,000	S. Bailey
Cory's Shearwater		PIF
Craveri's Murrelet	10,000	B. Tershy
Crested Auklet	3,000,000	BNA
Dark-rumped Petrel	34,000	T. Simons-BNA
Dble-Crest. Cormorant	1,000,000 - 2,000,000	J. Glahn, T. King & S. Werner
Dovekie	10,000,000+	B. Montevecchi-BNA
Eared Grebe	4,100,000	S. Cullen & J.R. Jehl Jr.
Elegant Tern	34,000 - 60,000	G. Burness & B. Tershy
Fasciated Tiger-Heron		
Flesh-footed Shearwater	1,500,000	K. Morgan
Fork-Tail. Storm-Petrel	5,000,000 - 6,000,000	M. Rodway
Forster's Tern	37,000 - 40,000	PIF/library
Franklin's Gull	500,000	BNA
Glaucous Gull		PIF
Glaucous-Winged Gull	380,000	N.A.M. Verbeek-BNA
Glossy Ibis	13,000 - 15,000	B. Williams
Great Black-Backed Gull	34,000 in ME; 77,284 from ME to VA	T. Good-BNA
Great Blue Heron	70,000	J. Glahn & T. King
Great Cormorant	5,373	library
Great Egret	18,000 in MI	J.F. Glahn
Great Frigatebird	6-8000 (pairs?)	E.A.Schreiber
Great Skua		PIF
Greater Flamingo	90,000 - 150,000	PIF
Greater Shearwater		F. Huettmann
Green Heron	unknown	J. Kushlan-BNA
Green Ibis		
Grey-Backed Tern	72,000-104,000	library
Gull-Billed Tern	6,000-8,000	R.M.Erwin-BNA
Heermann's Gull	300,000	B. Tershy
Herring Gull	246,000+ (?)	G. Fox
Horned Puffin	1,000,000	M. Rodway
Iceland Gull	10,000 - 100,000	T. Gaston

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Ivory Gull	<30,000	BNA
Jabiru	<100	internet
Juan Fernandez Petrel	>1,000,000	S. Bailey
Kermadec Petrel		
Kittlitz's Murrelet	12,000 - 50,000	R.H.Day & K. Kuletz
Laughing Gull	518,000	BNA
Laysan Albatross	2,500,000	G.Causey-Whittow-BNA
Leach's Storm-Petrel	7,600,000	R.G. Butler-BNA
Least Auklet	9,000,000	BNA
Least Storm-Petrel	>1,000,000	B. Tershy-BNA
Least Tern	60,000-100,000	B.C.Thompson-BNA
Lesser Black-backed Gull		
Little Blue Heron	unknown	J.A.Rodgers Jr-BNA
Little Gull	<397	?
Long-tailed Jaeger	150,000+	PIF
Magnif. Frigatebird	14,000	library
Manx Shearwater	360	PIF
Marbled Murrelet	300,000 - 800,000	K.J. Kuletz & K. Nelson
Masked Booby	8,000+	BNA
Mew Gull	160,000 - 240,000	J. King - BNA
Mottled Petrel		
Neotropic Cormorant	16,000 in US, MX?	R. Telfair
Newell's Shearwater	84,000	T.Telfer-BNA
Northern Fulmar	2,800,000	S.A.Hatch-BNA
Northern Gannet		B. Montevecchi
Parakeet Auklet	400,000	G.V.Byrd
Parasitic Jaeger	?	K. Morgan
Parkinson's Petrel		
Pelagic Cormorant	130,000 - 250,000	K.A.Hobson-BNA
Pigeon Guillemot	235,000+	BNA
Pink-footed Shearwater	?	K. Morgan
Pomarine Jaeger	20,000-40,000	M. Belisle
Razorbill	40,000 - 74,000	G. Chapdelaine, T. Diamond, F. Huettman & G. Robertson
Red-billed Tropicbird	>5,000	B. Tershy-BNA
Reddish Egret	6,000-10,000	library/internet
Red-faced Cormorant	100,000	D. Siegel-Causey
Red-Footed Booby	32-40,000	E.A.Schrieber-BNA
Red-Legged Kittiwake	160,000-180,000	G.V.Byrd
Red-tailed Tropicbird	32,000	BNA
Rhinoceros Auklet	1,500,000 - 1,750,000	T. Gaston & S. Hatch
Ring-Billed Gull	3,500,000	J.P.Ryder-BNA
Roseate Spoonbill	21,000	BNA
Roseate Tern	16,000	H. Hays & J. Spendelow
Ross' Gull	<200	A. Bledsoe
Royal Tern	150,000	R.M. Erwin
Rufescent Tiger-Heron		

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Sabine's Gull	200,000-400,000	R. Day-BNA
Sandwich Tern	75,000-100,000 *probably close to 100,000	D. Shealer
Scarlet Ibis		
Short-Tail. Albatross	~1,300	K. Rivera
Short-tailed Shearwater	30,000,000	K. Morgan
Slaty-Backed Gull		
Snail Kite	600-1,000	J. Rodgers-BNA
Snowy Egret	40,000	R.M. Erwin & P. Frederick
Sooty Shearwater	30,000,000	F. Huettmann & K. Morgan
Sooty Tern	230,000-400,000	library
South Polar Skua	?	K. Morgan
Striated Heron		
Thayer's Gull	<10,000 in Canada	T. Gaston
Thick-Billed Murre	8,000,000	T. Gaston
Townsend's Shearwater	46,400	B. Tershy
Tricolored Heron	194,000	P. Frederick
Tristram's Storm-Petrel	<10,000	AOU/library
Tufted Puffin	2.75-3 million	library
Wedge-rumped Storm-Petrel	>500,000	S. Bailey
Wedge-Tailed Shearwater	1,330,000	G. Causey-Whittow-BNA
Western Grebe	110,000+	BNA
Western Gull	40,000	BNA
Whiskered Auklet	25,000+	G.V.Byrd-BNA
White Ibis	>100,000	K. Bildstein, P. Frederick & J. Kushlan
White-Faced Ibis	20,000+	BNA
White-necked Petrel	>100,000	S. Bailey
White-tailed Tropicbird	10,000-12,000 in N. Atlantic; NW HI a few pairs; HI islands 1000 - 6000; TOTAL - 11,000-18,000	D. Lee
White-tailed Tropicbird	10,000-12,000 in N. Atlantic; NW HI a few pairs; HI islands 1000 - 6000; TOTAL - 11,000-18,000	D. Lee
Wilson's Storm-Petrel		PIF
Xantus' Murrelet	20,000?	B. Keitt
Yel-Crn. Night-Heron	unknown	BNA
Yellow-footed Gull	40,000	M/ Pattern & B. Tershy

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Appendix 8 — Foraging Habitats of Breeding North American Colonial Waterbirds

Species	Commuting Distance from Colony	General Habitat Type	Source
Agami Heron		margins of pools and small watercourses in dense tropical forest+C28	Heron Handbook
Aleutian Tern	up to 11 km from Seward Peninsula; >50 km from other colonies	shallow water: tidal rips, along rivers, inshore marine waters; not on freshwater lakes on Alaskan Peninsula; freshwater ponds and marshes in other areas; over bays and fjords; probably strictly pelagic in winter but no data	BNA
American White Pelican	often >50 km from colony	shallow water, open areas within marshes, along lake or river edges, rapids, less commonly in deep water, shallow coastal marine areas in winter; areas unstable because of natural flooding	BNA
American Wood Stork	S. FL 10-50 km from colony usually 25-50 km, max 97-130 km; N. FL 12.1 km, max 65 km; E. central GA 12.7 km, max >63 km)	available wetlands, artificial and natural; no difference in characteristics of wetlands used suggesting abundance of suitable foraging sites; estuarine and tidal creeks, palustrine sites. More frequently in open canopy than closed canopy.	BNA
Ancient Murrelet	waters on edge of continental shelf; may also occur in large #'s within a few km of land	Breeding - continental shelf or slope waters, sometimes inshore waters Non-breeding - continental shelf and coastal waters where tidal currents concentrate prey	BNA
Anhinga			
Arctic Tern			
Ashy Storm-Petrel	year round on continental slope sometimes within a few km of shore, sometimes > or = 50 km from shore	continental slope waters sometimes within a few km of land and other times > 50 km from land	BNA
Atlantic Puffin	often close to colony; 3-100km; generally 5km or so	not much data on depth; however none known to be caught in gill nets set at 60m but commonly caught in nets set 0-30m	The Atlantic Alcidae
Audubon's Shearwater		surface feeder and plunger	
Band-rumped Storm-Petrel		surface feeder	
Bare-throated Tiger-Heron		mangroves and salt or brackish waters; also tropical marshes and swamps	Heron Handbook
Bermuda Petrel			
Black Guillemot	closer to colony than most other alcids; 1.5-4km; birds have been recorded out to 30 km but they were non-breeders	divers; accounts stress the BLGU's association with sublittoral zones less than 18m deep so to suggest that they do not dive deeper than that typically; up to 37m documented	The Atlantic Alcidae
Black Noddy	abundant within 80 km of roosting or nesting; feed mainly within 10 km from shore, sometimes within a few meters	ocean surface; lagoons of atolls; mainly inshore < 10km sometimes within a few m of shore; also use brackish water of coastal ponds	BNA

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Species	Commuting Distance from Colony	General Habitat Type	Source
Black Skimmer	< or = 8 km from NY colony; 5.2 km from GA colony	tidal waters of bays, estuaries, lagoons, rivers, salt marsh pools, creeks, ditches;	BNA
Black Storm-Petrel		surface feeder	
Black Tern	up to 4 km	breeding grounds - shallow freshwater marshes with emergent vegetation; sometimes cultivated rice fields; open or forested country; non-breeding - largely marine up to 30 km of land; coastal areas, productive freshwater lakes near coasts but sometimes inland	BNA
Black-capped Petrel	evidence suggests regular commutes from breeding sites in Hispaniola to the coast of Cuba and SE US as far as NC	surface feeder	West Indian Seabirds
Black-crowned Night Heron	may fly up to 24 km	shallow, weedy pond margins, creeks, marshes; along coasts Spartina marshes, mudflats, tidal creeks and ditches, pilings and boat riggings; grassy salt marsh most important foraging area; wide variety of wetland habitats in breeding and non-breeding	BNA
Black-footed Albatross		surface of ocean; at sea feeding affected by food distribution and winds	BNA
Black-headed Gull			
Black-legged Kittiwake	NE Canada < or = 50 km from colony during chick rearing; GOA 1-5 km from colony; Bering Sea <1 to >40 km from colony; Winter at least 185 km offshore	Breeders - close to shore over continental shelf; Non-breeders - further offshore over shelf break and oceanic regions	BNA
Black-vented Shearwater		surface feeder and plunger	
Blue-footed Booby			
Blue-gray Noddy			
Boat-billed Heron		wooded or mangrove fringes of freshwater creeks, lakes and inundated marshland	Heron Handbook
Bonaparte's Gull			
Bonin Petrel			
Brandt's Cormorant	rarely >10 km from shore; foraging preference >50 m from shore; winter usually 1 km from coast	over rocky reefs; flat sand or mud, flat areas near rocks, near kelp beds, inshore waters	BNA
Bridled Tern	8-10 km offshore; sometimes 2-3 km; up to 30 km; non-breeding 50-130 km offshore	exhibits strong association with marine flotsam for foraging; open sea usually 8-10 km offshore during breeding; Sometimes within 2-3 km and up to 30 km from colony; non-breeding - at sea	BNA
Brown Booby	thought to feed closer than other boobies; plunge divers;	pelagic	West Indian Seabirds
Brown Noddy	in water within sight of colony out to several tens of km	surface feeder; nearshore to offshore waters; not as pelagic as sooty tern. Breeding - water in sight of colony out to tens of km from colony; non-breeding - no data but probably related to schools of predatory fish	BNA
Brown Pelican			

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Species	Commuting Distance from Colony	General Habitat Type	Source
Buller's Shearwater		surface feeder and plunger	
Bulwer's Petrel	may be hundreds or thousand of square kilometers; one observation 120 km from colony	little info; non-breeding - highly pelagic associated with predatory fish;	BNA
California Gull	Montana avg 17.4 km from colony; max 61 km; up to 60 km from colony	open areas in farmlands, marshes, meadows, garbage dumps, parks, streams, rivers; very variable with common denominator of having food that they can capture and swallow and being fairly open	BNA
Capped Heron		edges of ponds and streams, wet savanna in unvegetated patches and trails	Heron Handbook
Caspian Tern			
Cassin's Auklet	coastal upwellings along continental shelf in spring + summer; about 50% up to 150 km in late fall and winter	CA- relatively clear water; coastal upwellings in spring and summer; up to 150 km off shore during winter and fall; little known on winter foraging area	BNA
Cattle Egret	26-32 km	diverse diet; most foraging in close association with grazing cattle or livestock; also gleans elsewhere, margins of aquatic areas and fields where machinery is being used on fields; arboreal foraging unusual but reported; migration may forage on marine coasts	BNA
Christmas Shearwater		surface feeder and plunger	
Clark's Grebe	adults may go several km to feed if water connections are available from breeding site	tends to forage further offshore than Western Grebe in deeper fresh or salt water	BNA
Cocoi Heron		shallows and shallow rapids; lake shores, swamps, rivers, estuaries - no dense forest, high altitude or arid coastal zones	Heron Handbook
Common Murre	unknown mostly; in theory (derived from flight time) 50-150 km but this could be an overestimate. Seen foraging at 10km	divers possibly up to 60m or so even more; range 60-100	The Atlantic Alcidae
Common Tern			
Common White Tern	breeding birds forage close to colonies, non-breeders go further	little known; surface of ocean; primarily inshore waters, shoals and banks but also offshore waters	BNA
Cook's Petrel			
Cory's Shearwater		surface feeder and plunger	
Craveri's Murrelet			
Crested Auklet	little known; open ocean in deep water; long distances from colony; also near shore eg. Aleutian passes	little known; open ocean in deep water, far from shore, long distances from colonies; also feeds in near shore areas	BNA
Dark-rumped Petrel	up to thousands of km from colony	range widely at sea even during breeding; surface feeders	BNA
Double-crested Cormorant	WI avg <3km; MA a few at 30 km but most less; CA roundtrip 70 km from Farallons; generally < 5 km from shore	shallow open water (<8m), close to shore (<5km), may feed over sandy bottoms or among rocks and beds of sea grass or kelp; bottom and midwater feeders; responds rapidly to concentrations of prey.	BNA

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Species	Commuting Distance from Colony	General Habitat Type	Source
Dovekie	2.5-100 km, may shorten for breeding birds during chick rearing; generally < 17 km	divers possibly up to 35-50m	The Atlantic Alcidae
Eared Grebe	forages on breeding grounds	shallow saline ponds, lakes; also near shore in coastal bays; diving depths up to 9m; not much documented	BNA
Elegant Tern			
Fasciated Tiger-Heron		fast-flowing rivers	Heron Handbook
Flesh-footed Shearwater		surface feeder and plunger	
Fork-tailed Storm-Petrel		surface feeder	
Forster's Tern			
Franklin's Gull	within 30 km from colony	Non-breeding - along shores and inland on fields; Breeding- wet pastures, aerially on insects	
Glaucous Gull			
Glaucous-winged Gull	in BC feeds within 100 km of shore with a few going as far as 300 km	omnivorous; coastal and inland; at sea around submarine features that concentrate prey, intertidal and shallow subtidal	BNA
Glossy Ibis			
Gray-backed Tern			
Great Black-backed Gull	up to 100 km from colony; typically within 20km	vaires with food taken; rocky shores, low intertidal and shallow subtidal, mudflats, at sea around submarine features	BNA
Great Blue Heron	30 km from colony; most closer	grasslands, estuarine marshes, intertidal beaches, riverbanks; mostly in slow moving or calm freshwater, and along seacoasts	BNA
Great Cormorant			
Great Egret		shallow water near shore but also on shore or dry habitats; wet habitats of all sorts, fresh and marine	Heron Handbook
Great Frigatebird			
Great Skua			
Greater Flamingo			
Greater Shearwater		surface feeder and plunger	
Green Heron		water's edge in very shallow water; perches on branches, vegetation and rocks to access deeper water; plunges after prey into deeper water; generally under cover of thick vegetation but will feed on open mudflats, tide channels, open marshes, pond edges etc.; swampy thickets, riparian zones, marshes, human made ditches, canals, salt marshes, ponds, lake edges, open flood plains, mangrove swamps and pastures	BNA
Green Ibis			
Gull-billed Tern	no estimates available	opportunistic; does not generally plunge dive like most other terns; primarily over beaches and salt marshes, also over inland plowed fields and shrubby habitats	BNA

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Species	Commuting Distance from Colony	General Habitat Type	Source
Heermann's Gull			
Herring Gull	up to 100 km from colony; typically within 20km	generalist and predator on pelagic and intertidal marine; opportunistic; individual specialization common; varies with food; along rocky shore, low intertidal and shallow subtidal; at sea around submarine features	BNA
Horned Puffin			
Iceland Gull			
Ivory Gull		typically forages pelagically; sea surface, beaches, gravel banks beneath glaciers, glacier fronts, ice leads and melt ponds; may associate with seals and whales	BNA
Jabiru			
Juan Fernandez Petrel			
Kittlitz's Murrelet	1-120 km from shore, around icebergs at sea; most birds < or = 27 km from shore	Prince William Sound nearshore zone (<200m); only 25% frequency of feeding >200m from shore; uses rip tides; forages extensively near outflows of glaciers	BNA
Laughing Gull	non-breeding summer birds 30-60 km inland from coastal breeding sites; breeders may fly 40 km for food	coast at edge of water; inland during high tides and high winds and to find insects in meadows and plowed fields; also feeds on inland lakes, marshes, coastal marshes, impoundments and pools	BNA
Laysan Albatross		completely pelagic; most sightings seaward of continental shelf; area related to food distribution; surface feeder	BNA
Leach's Storm-Petrel	within 200 km but capable of feeding further; uncommon within 50 km of land	1-10 km offshore depending on food availability; surface feeder	BNA
Least Auklet	open ocean far from shore; sometimes near shore	at sea distribution affected by hydrography; may forage near or far from shore depending on presence of suitable features	BNA
Least Storm-Petrel		surface feeder	
Least Tern	3-12 km from colony	variety of shallow water habitats; on marine coasts - bays, lagoons, estuaries, river and creek mouths, tidal marshes and lakes, occasionally offshore; Inland sites - rivers, streams, sloughs, dike fields, marshes, ponds, sand pits and reservoirs	BNA
Lesser Black-backed Gull			

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Species	Commuting Distance from Colony	General Habitat Type	Source
Little Blue Heron	avg in FL 6.7 km from freshwater interior colony; 10.2 km from marine colony (2.9-10.2 km)	various freshwater and marine-estuarine wetland habitats; rarely in upland pasture sites; shallow water and often uses densely vegetated foraging sites; choices highly variable; FL Bay - adjacent mangrove and coastal prairie habitats; non-breeders mostly on tidal flats and mangrove island marshes. Lake Okeechobee, FL - riverine, lake and pond edge, marsh and forested wetlands. Mid-Atlantic - open pools and channel edges of Spartine marshes; FL 6.7 km from freshwater interior colony; 10.2 km from marine island colony; NC - 2.9 from coastal colony	BNA
Little Gull	within site of wetlands, lakes, rivers, marine coasts	highly adaptable but primarily aquatic habitat; water surface in sight of land in wetlands, lakes, rivers, sewage treatment plants, or marine coasts; offshore foraging unknown	BNA
Long-tailed Jaeger	males on outer part of territory or sometimes at sea; females within few hundred meters; non-breeding not usually less than 35 km from coast	tundra barren, wet meadows, along fjord ice, intertidal pools; where lemmings are absent they are mostly on coast and at sea	BNA
Magnificent Frigatebird	seen hundreds of miles from colony when not breeding		West Indian Seabirds
Manx Shearwater	coastal inshore feeder	surface divers; opportunistic foraging over schools of predatory fish	BNA
Marbled Murrelet	within 5 km of shore but known to forage up to 300 km offshore	nearshore and protected waters; rarely found in open pelagic water (>60km; 300 km in AK), usually within 5 km of shore<60 m deep; may get prey from throughout water column; probably within 50 m of surface; also feeds in freshwater lakes in AK, BC and WA (up to 75 km inland) but not in winter usually	BNA
Masked Booby	often 100's of km from land; breeding birds forage closer to colony; Galapagos up to 65 km from colony	often hundreds of km from land; breeders probably closer to land; documented to be at least 65 km from colony; plunge diver	BNA
Mew Gull			
Mottled Petrel			
Neotropic Cormorant	inshore waters	shallow inshore waters in coastal feeding areas; also reported foraging in strong surf; freshwater swift, shallow rapids of mtn streams, marshes, ponds, resevoirs	BNA
Newell's Shearwater		further out than Townsend's Shearwater, only over deep oceanic water >2000 m deep; surface feeder and plunger	BNA
Northern Fulmar	>100 km from colony, possibly up to 300 km; Greenland 1,000 from colony before egg laying, 40-200 km during incubation and rearing	N. Bering Sea and Can. Arctic-ephemeral concentrations of ice-associated macrozooplankton, local upwellings, tide rip currents and eddies caused by landforms and ice; non-breeders rarely >100km offshore	BNA
Northern Gannet			
Parakeet Auklet			

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Species	Commuting Distance from Colony	General Habitat Type	Source
Parasitic Jaeger	widely scattered within 20-50 km of coast in N. Canada during breeding	AK - upland tundra and along rivers; pelagically during migration	BNA
Parkinson's Petrel			
Pelagic Cormorant	rarely observed more than a few kilometer from land; feeds inshore; in Farallons ranges up to 15 km from colonies but usually much closer	inshore areas or shallow intertidal areas; AK - swirling water of riptides and storm tides; CA - seaward fringe of kelp forests, rocky reefs, over sand and mud; deep diver	BNA
Pigeon Guillemot	within 7 km of colony; (0.2-7 km); some possible up to 15 km	feed on bottom dwelling organisms up to 45 m deep; underwater rises, shelfbreaks, and tidal races often favored; Summer - 0.2-7km from colony some up to 15 km, little info for other times of year	BNA
Pink-footed Shearwater		surface feeder and plunger	
Pomarine Jaeger		tundra within nesting territory while breeding; otherwise open ocean	BNA
Razorbill	poorly known; possibly up to 15 km but really unknown	divers: in coastal waters up to 11m; generally < 5 up to 10-15	The Atlantic Alcidae
Red-billed Tropicbird			
Reddish Egret		open, very shallow water; frequently found at salt evaporation pools; open marine flats and shorelines	Heron Handbook
Red-faced Cormorant			
Red-footed Booby	possibly 100-200 km from colony	little known; generally in deep water	BNA
Red-legged Kittiwake			
Red-tailed Tropicbird	possibly 200-500 km from colony	offshore, generally out of site of land; feed singly apparently; plunge divers	BNA
Rhinoceros Auklet	close to shore; one island in WA ~50 km from colony	Breeding - inshore waters and tide rips, dives to mean max of 30m +- 3.7 SD but most at < 10 m	BNA
Ring-billed Gull	10.8 + or - 5.9 km (range 2-31 km)	opportunistic; on land, in water in a great variety of habitats. 10.8km +- 5.9 SD from colony; 87% ground feeding	BNA
Roseate Spoonbill	FL Bay avg. 12 km from colony; adults frequently fly longer distances 30 km, as great as 65 km documented; TX documented 1-1.5 km	open, shallow water (brackish, fresh, salt, hypersaline), mangrove estuaries and freshwater everglands in FL; as dry season advances, move to deeper creeks and moats around tree islands; seen to use roadside ditches and ponds, mosquito control impoundments; mas depth about 20 cm but will feed in water above chest; mean distance from nesting 12.4 km +- 5.8	BNA
Roseate Tern	up to 30 km	over shallow sandbars, shoals, inlets or schools of predatory fish; also pelagically over schools of predatory fish; shallow water, closer to land than Commons; up to 30 km from colony	BNA
Ross's Gull			
Royal Tern	seldom seen inland and seldom wander more than a few km from land; plunge divers		

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Species	Commuting Distance from Colony	General Habitat Type	Source
Rufescent Tiger-Heron		tropical swamps and marshes; slower moving rivers, mangroves and groundwater forest;	Heron Handbook
Sabine's Gull			
Sandwich Tern		coastal areas	West Indian Seabirds
Scarlet Ibis			
Short-tailed Albatross		surface feeder	
Short-tailed Shearwater		surface feeder and plunger	
Slaty-backed Gull			
Snail Kite	>1 to >6 km, generally < 2 km; extreme distance 18.5 km	open water patches dispersed in emergent marsh vegetation, shallow lake edges, ponds, ephemeral wetlands, shallow banks of rivers, canals etc	BNA
Snowy Egret	FL abg. 2.8 km from colony; less than 1.4 km typical of birds in FL Everglades	great variety in foraging habitat - salt marsh pools, tidal channels and flats, freshwater marshes/swamps, ocean inlets and lake margins, brackish/marine habitats with relatively shallow water and shoreline	BNA
Sooty Shearwater		surface feeder and plunger	
Sooty Tern			
South Polar Skua			
Striated Heron			
Thayer's Gull			
Thick-billed Murre	up to 170 km in straight line out and back; range greater in incubation than chick rearing; generally 2-25 km	dive up to 210 m; mean depths 7-33m; may go up to 170 km from colony to feed, diving to sample food at random distances; generally dive 75-100m	BNA
Townsend's Shearwater		pursuit plungers up to 10 m; surface upwelling fronts over continental slope 200-2000 meters deep	BNA
Tricolored Heron	mean 5.6 km up to 25 km; postbreeding birds significantly farther away from colony	wide variety of habitats; entirely in wetlands usually in open or semiopen areas with low vegetation; brackish or salt marsh; often in water touching belly (deeper than Snowies and Little Blues), shoreline; foraging radius 5.6 km +- 6.0 SD up to 25 km	BNA
Tristram's Storm-Petrel		surface feeder	
Tufted Puffin			
Wedge-rumped Storm-Petrel		surface feeder	
Wedge-tailed Shearwater	within 80 km of HI islands	surface feeder and plunger; offshore within 80 km of HI islands; birds from Johnston Atoll recovered 480 km from shore during breeding season	BNA
Western Grebe	adults may go several km to feed if water connections are available from breeding site	open fresh or salt water of varying depths	BNA

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Species	Commuting Distance from Colony	General Habitat Type	Source
Western Gull	up to 80 km from colony; more typically within 20 km	varies according to food; rocky shores in low intertidal and shallow subtidal zones; at sea around submerging features that concentrate prey	BNA
Whiskered Auklet	usually within 16 km of islands; where zooplankton is concentrated	convergent tidal fronts usually within 16 km of islands; mostly found in depths < 100m	BNA
White Ibis	will travel > or = 40 km	Breeding - inland wetlands, shallow seasonal sedge marshes, shallow cypress swamps as well as lawns, pastures and shallow ponds. Coastal feeding habitat is salt marsh in North and lagoonal salines and mangrove swamps in south. Also flooded pastures. In general, broad microhabitat requirements for foraging	BNA
White-faced Ibis	3-6 km from colony (up to 18 km) in NV; in ID 40-48 km	shallowly flooded pond margins, resevoirs, marshes, mudflats; mostly documented feeding on flooded agricultural fields, especially alfalfa.	BNA
White-necked Petrel			
White-tailed Tropicbird	documented foraging at 89 km from colony; non-breeders documented at 1,000 km from colonies	plunge divers up to 15-20 m; over deep waters far from land; believed to feed closer to nesting islands than Red-tailed or Red-billed Tropicbirds	BNA
Wilson's Storm-Petrel		surface feeder	
Xantus's Murrelet	2-14 km from colony; non-breeding 20-100 km offshore	Non-breeding - warm, clear, epipelagic waters generally far offshore. Breeding - remain relatively close to land (2-14 km) with few within 1 km and few > 15km	BNA
Yellow-crowned Night Heron	avg in NC 1.4 km; in VA <0.5 km	along water margins including tidal marshes, tide pools, mudflats, beaches, rocky shorelines, ponds, rivers and creeks; also shallow waters like tidal creeks, surf, swamps and mangroves; occasionally in upland sites like plowed fields and lawns; will use human made aquatic habitat like shrimp farms and sewage treatment plants; prefer marshes dominated with cordgrass near nest sites	BNA
Yellow-footed Gull	most within 10 km of colony	varies according to food; deep water and marine intertidal; around submarine mounts, sandbars and upwellings that concentrate prey	BNA

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Appendix 9 - Candidate Sites for Important Colonial Waterbird Areas.

Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Alaska Maritime National Wildlife Refuge, Alaska	USA			USA IBA
Pribilof Islands, Alaska	USA			USA IBA
Felsenthal National Wildlife Refuge, Arkansas	USA			USA IBA – Regional Workshop
Channel Islands National Park, California	USA			USA IBA
Farallon Islands, California	USA			USA IBA
Mono Lake, California	USA			USA IBA
Salton Sea, California	USA			USA IBA – Regional Workshop
Santa Margarita River Valley (Camp Pendleton), California	USA			USA IBA
Sweetwater Marsh National Wildlife Refuge, California	USA			USA IBA
Cumberland Island National Seashore, Georgia	USA			USA IBA
Okefenokee National Wildlife Refuge, Georgia and Florida	USA			USA IBA – Regional Workshop
Dry Tortugas National Park, Florida	USA	Sooty Terns, Brown Noddy Terns		USA IBA – Regional Workshop
Everglades National Park, Florida	USA			USA IBA – Regional Workshop
Bear Lake National Wildlife Refuge, Idaho	USA	White-faced Ibis, California Gull, Snowy Egret, Franklin's Gull, Caspian Tern, Black Tern, Forester's Tern, Double-crested Cormorant, Ring-billed		USA IBA – Regional Workshop

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Gull, Western Grebe, Clark's Grebe, Black- crowned Night-Heron, Great Blue Heron		
Atchafalaya River Basin and Delta, Louisiana	USA			USA IBA – Regional Workshop
Breton National Wildlife Refuge, Louisiana	USA	Black Tern, Franklin's Gull, White-faced Ibis, Black- crowned Night-Heron		USA IBA – Regional Workshop
Assateague Island National Seashore, Maryland and Virginia	USA			USA IBA
Agassiz National Wildlife Refuge, Minnesota	USA	Franklin's Gull		USA IBA– Regional Workshop
Benton Lake National Wildlife Refuge, Montana	USA	Black Tern, Franklin's Gull, White-faced Ibis, Black- crowned Night-Heron		USA IBA – Regional Workshop
Charles M. Russell National Wildlife Refuge, Montana	USA			USA IBA
Medicine Lake National Wildlife Refuge, Montana	USA	American White Pelican		USA IBA – Regional Workshop
Bitter Lake National Wildlife Refuge, New Mexico	USA			USA IBA
Ruby Lake National Wildlife Refuge, Nevada	USA			USA IBA
Stillwater National Wildlife Refuge, Nevada	USA			USA IBA
Great Gull Island, New York	USA			USA IBA
Shinnecock Bay, New York	USA			USA IBA
West Hempstead Bay/Jones Beach West, New York	USA			USA IBA
Cape Lookout National	USA			USA IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Seashore, North Carolina				
Chase Lake National Wildlife Refuge, North Dakota	USA	American White Pelican		USA IBA Regional Workshop
J. Clark Salyer National Wildlife Refuge, North Dakota	USA	Franklin's Gull		USA IBA – Regional Workshop
Lake Alice National Wildlife Refuge, North Dakota	USA	Franklin's Gull		USA IBA – Regional Workshop
Salt Plains National Wildlife Refuge, Oklahoma	USA			USA IBA
Malheur National Wildlife Refuge, Oregon	USA			USA IBA
Tule Lake and Lower Klamath Refuges, Oregon and California	USA			USA IBA
ACE Basin, South Carolina	USA			USA IBA
Cape Romain National Wildlife Refuge, South Carolina	USA			USA IBA
Santee Coastal Reserve, South Carolina	USA			USA IBA
Sand Lake National Wildlife Refuge, South Dakota	USA	Black Tern, Franklin's Gull		USA IBA - Regional Workshop
Bear River Migratory Bird Refuge and Great Salt Lake, Utah	USA			USA IBA – Regional Workshop
Virginia Coast Reserve Barrier Islands, Virginia	USA			USA IBA
Protection Island, Washinton	USA			USA IBA
Washington Islands Refuge, Washington, Washington	USA			USA IBA
San Juan Islands National Wildlife Refuge, Washington	USA			USA IBA
Horicon Marsh, Wisconsin	USA			USA IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Laguna Ojo de Liebre, Baja, California	Mexico	Double-crested Cormorant Brandt's Cormorant Caspian Tern Royal Tern Western Gull Great Blue Heron Reddish Egret Laughing Gull	National	Mexico IBA
Laguna de San Ignacio, Baja, California	Mexico	Brown Pelican Double-crested Cormorant Great Blue Heron Great Egret Snowy Egret Little Blue Heron Tricolored Heron Reddish Egret Green Heron Royal Tern	Global	Mexico IBA
Bahia Magdalena, Caja California Sur	Mexico	Brown Pelican Magnificent Frigatebird Double-crested Cormorant Great Blue Heron Western Gull Least Tern	National	Mexico IBA
Isla Isabel, Nayarit	Mexico	Blue-footed Booby Brown Booby Red-footed Booby Brown Pelican Magificent Frigatebird Heermann's Gull Sooty Tern	Global	Mexico IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Cieneas del Lerma, Estado de Mexico	Mexico	Least Bittern		Mexico IBA
Central Veracruz	Mexico	American White Pelican Wood Stork	National	Mexico IBA
Laguna de Terminos, Campeche	Mexico	Wood Stork White Ibis	National	Mexico IBA
Ria Celestun, Yucatan	Mexico	Greater Flamingo	Global	Mexico IBA
Sian Kaan, Quintana Roo	Mexico			
Isla Contoy, Quintana Roo	Mexico	Brown Pelican Sandwich Tern Magnificent Frigatebird Least Tern	National	Mexico IBA
Crooked Tree Lagoon Area	Belize			RAMSAR – Regional Workshop
Mexico and Jones Lagoon Area	Belize			RAMSAR – Regional Workshop
Inagua National Park	Bahamas			RAMSAR – Regional Workshop
Cano Negro	Costa Rica			RAMSAR
Gandoca-Manzanillo	Costa Rica			RAMSAR
Humedal Caribe Noreste	Costa Rica			RAMSAR
Isla del Coco	Costa Rica			RAMSAR
Laguna Respringue	Costa Rica			RAMSAR
Manglar de Potrero Grande	Costa Rica			RAMSAR
Palo Verde	Costa Rica			RAMSAR
Tamarindo	Costa Rica			RAMSAR
Terraba-Sierpe	Costa Rica			RAMSAR
Black River Lower Morass	Jamaica			RAMSAR – Regional Workshop
Het Spaans Lagoen, Aruba	Netherlands-Antilles			RAMSAR – Regional Workshop

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Farewell Spit	New Zealand			RAMSAR
Firth of Thames	New Zealand			RAMSAR
Kopuatai Peat Dome	New Zealand			RAMSAR
Waituna Lagoon	New Zealand			RAMSAR
Whangamarino	New Zealand			RAMSAR
Golfo de Montijo	Panama			RAMSAR
Punta Patino	Panama			RAMSAR
San San – Pond Sak Bocas del Toro	Panama			RAMSAR – Regional Workshop
Lake Kutubu	Panama			RAMSAR
Tonda Wildlife Management Area	Panama			RAMSAR
Ichkeul	Tunisia			RAMSAR
Western Salt Ponds of Anegada	United Kingdom – British Virgin Islands			RAMSAR – Regional Workshop
Booby Pond & Rookery	United Kingdom – Cayman Islands			RAMSAR – Regional Workshop
Archipelago Los Roques	Venezuela			RAMSAR
Cienaga de Los Olivitos	Venezuela			RAMSAR
Cuare	Venezuela			RAMSAR
Laguna de la Restinga	Venezuela			RAMSAR
Laguna de Tacarigua	Venezuela			RAMSAR
Frederick Island	Canada	Ancient Murrelet, Cassin's Auklet, Pigeon Guillemot		Canada IBA
Tian Bay-PO	Canada	Pelagic Cormorant, Cassin's Auklet, Fork-tailed Storm Petrel, Leach's Storm Petrel, Marbled Murrelet, Pigeon Guillemot,		

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Glaucous-winged Gull		
Lepas Bay Island	Canada	Leach's Storm Petrel, Cassin's Auklet, Glaucous-winged Gull, Fork-tailed Storm Petrel, Pigeon Guillemot		Canada IBA
Langara Island	Canada	Marbled Murrelet, Ancient Murrelet, Pelagic Cormorant, Pigeon Guillemot		Canada IBA
Hippa Island	Canada	Pelagic Cormorant, Glaucous-winged Gull, Tufted Puffin, Fork-tailed Storm Petrel, Leach's Storm Petrel, Ancient Murrelet, Cassin's Auklet		Canada IBA
Englefield B	Canada	Pelagic Cormorant, Glaucous-winged Gull, Tufted Puffin, Fork-tailed Storm Petrel, Leach's Storm Petrel, Cassin's Auklet, Rhinoceros Auklet, Ancient Murrelet, Pigeon Guillemot		Canada IBA
Anthony Isle	Canada	Pelagic Cormorant, Ancient Murrelet, Tufted Puffin, Horned Puffin, Fork-tailed Storm Petrel, Leach's Storm Petrel, Cassin's Auklet, Rhinoceros Auklet, Pigeon Guillemot, Glaucous-winged Gull		Canada IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Keround and	Canada	Glaucous-winged Gull, Pelagic Cormorant, Pigeon Guillemot, Sooty Shearwater, Cassin's Auklet, Common Murre, Tufted Puffin		Canada IBA
Scott Island	Canada	Thick-billed Murre, Horned Puffin, Sooty Shearwater, Fork-tailed Storm Petrel, Leach's Storm Petrel, Brandt's Cormorant, Pelagic Cormorant, Glaucous-winged Gull, Common Murre, Pigeon Guillemot		Canada IBA
Duke of Edi	Canada	Cassin's Auklet, Fork- tailed Storm Petrel, Leach's Storm Petrel, Rhinoceros Auklet, Pigeon Guillemot, Glaucous- winged Gull		Canada IBA
Tofino Mudf	Canada	Great Blue Heron		Canada IBA
McFadden	Canada	Great Blue Heron		Canada IBA
Active Pass	Canada	Brandt's Cormorant, Bonaparte's Gull		Canada IBA
Redberry L	Canada	American White Pelican		Canada IBA
Luck Lake	Canada	Franklin's Gull		Canada IBA
Lavallee Lake	Canada	Ring-billed Gull, American White Pelican, Double- crested Cormorant		Canada IBA
Last Mtn La	Canada	American White Pelican, Double-crested Cormorant,		Canada IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Black Tern, Black-crowned Night-Heron, Caspian Tern, Forester's Tern		
Delta Marsh and Oak Hammock, Manitoba	Canada	Western Grebe, Franklin's Gull		Canada IBA – Regional Workshop
Prince Leop	Canada	Parasitic Jaeger, Glaucous Gull, Northern Fulmar, Black-legged Kittiwake, Thick-billed Murre, Black Guillemot		Canada IBA
Point Pelee	Canada	Double-crested Cormorant, Bonaparte's Gull, Common Tern, Forester's Tern, Black Tern		Canada IBA
Coats Island	Canada	Black Guillemot, Glaucous Gull, Sabine's Gull, Thick-billed Murre		Canada IBA
Cape Hay	Canada	Black-legged Kittiwake, Thick-billed Murre		Canada IBA
Long Point	Canada	Bonaparte's Gull, Common Tern, Least Bittern		Canada IBA
Cambridge	Canada	Glaucous Gull, Black Guillemot, Northern Fulmar, Black-legged Kittiwake, Thick-billed Murre		Canada IBA
Niagara River	Canada	Black-crowned Night-Heron, Common Tern, Ring-billed Gull, Bonaparte's Gull, Herring		Canada IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Gull		
Presqi'lle	Canada	LEBI, Black Tern, Double-crested Cormorant, Ring-billed Gull, Caspian Tern		Canada IBA
Digges Sou	Canada	Black Guillemot, Iceland Gull, Atlantic Puffin, Thick-billed Murre		Canada IBA
Foxe Basin	Canada	HEGU, Sabine's Gull		Canada IBA
Akpatok Island	Canada	Black Guillemot, Thick-billed Murre		Canada IBA
Bon Portag	Canada	Leach's Storm Petrel , Great Blue Heron, Black-crowned Night-Heron, Snowy Egret		Canada IBA
Tabusintac	Canada	GBHE, Common Tern		Canada IBA
Kouchiboug	Canada	Ring-billed Gull, Herring Gull, Great Black-backed Gull, Common Tern		Canada IBA
Lle Bonavent	Canada	Double-crested Cormorant, Great Black-backed Gull, Herring Gull, Black Guillemot, Razorbill, Atlantic Puffin, Leach's Storm Petrel, Northern Gannet, Black-legged Kittiwake, Common Murre		Canada IBA
Cape Searl	Canada	Glaucous Gull, Black Guillemot, Northern Fulmar		Canada IBA
Gannet Island	Canada	Thick-billed Murre, Black Guillemot, Northern		Canada IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Fulmar, Black-legged Kittiwake, Great Black-backed Gull, Leach's Storm Petrel, Razorbill, Common Murre, Atlantic Puffin		
Cape St. Ma	Canada	Thick-billed Murre, Razorbill, Black Guillemot, Herring Gull, Great Black-backed Gull, Great Cormorant, Double-crested Cormorant, Northern Gannet, Common Murre, Black-legged Kittiwake		Canada IBA
Funk Island	Canada	Atlantic Puffin, Razorbill, Northern Fulmar, Herring Gull, Great Black-backed Gull, Black-legged Kittiwake, Thick-billed Murre, Common Murre, Northern Gannet		Canada IBA
Witless Bay	Canada	Great Black-backed Gull, Black Guillemot, Thick-billed Murre, Razorbill, Northern Fulmar, Atlantic Puffin, Leach's Storm Petrel, Common Murre, Black-legged Kittiwake, Herring Gull		Canada IBA
Baccalieu Is	Canada	Common Murre, Thick-billed Murre, Razorbill, Black Guillemot, Northern Fulmar, Herring Gull, Great		Canada IBA

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Black-backed Gull, Leach's Storm Petrel, Atlantic Puffin, Black-legged Kittiwake, Northern Gannet		
Rio Colorado, Baja California	Mexico			Continental IBA's
Cuatrocienagas Flora and Fauna Reserve, Copahuila	Mexico			Continental IBA's
National Marshlands Region, Sinaloa-Nayarit	Mexico			Continental IBA's
Centla Swampland Biosphere Reserve, Tabasco	Mexico			Continental IBA's
Ria Lagartos Special Biosphere Reserve, Yucatan	Mexico			Continental IBA's
La Encrucijada Biosphere Reserve, Chiapas	Mexico			Continental IBA's
Laguna del Tigre Biotope, El Peten	Guatemala			Continental IBA's
Bocas del Polochic Wildlife Refuge, Lake Izabal Region	Guatemala			Continental IBA's
Manchon-Guamuchal, San Marcos	Guatemala			Continental IBA's
Jeanette Kawas National Park, Atlantida	Honduras			Continental IBA's – Regional Workshop
Punto Izopo Wildlife Refuge, Atlantida	Honduras			Continental IBA's – Regional Workshop
Barras de los Rios Cuero y Salado National Wildlife Refuge, Atlantida	Honduras			Continental IBA's - Regional Workshop
Laugna El Jocotal Wildlife Refuge, San Miguel	El Salvador			Continental IBA's

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Los Guatusos, South of Lake Nicaragua	Nicaragua			Continental IBA's
Northeast Caribbean Wetlands (Tortuguero), Limon	Costa Rica			Continental IBA's
Coco Island, Puntarenas, Pacific Ocean	Costa Rica			Continental IBA's
Andros Island	Bahamas			Regional Workshops
Zapata Swamp	Cuba			Regional Workshops
North Coast of Cuba	Cuba			Regional Workshops
Bahia de Nепie	Cuba			Regional Workshops
Golfo de Batalbano	Cuba			Regional Workshops
De Slagbaai, Bonaire	Netherlands Antilles			Regional Workshops
Het Gotomeer	Netherlands Antilles			Regional Workshops
Het Lac	Netherlands Antilles			Regional Workshops
Het Pekelmee	Netherlands Antilles			Regional Workshops
Klein Bonaire Island and adjacent sea	Netherlands Antilles			Regional Workshops
Golfe de la Gonave	Haiti			Regional Workshops
North Coast Hispaniola				Regional Workshops
South Coast Dominican Republic				Regional Workshops
Nariva Swamp, Trinidad	Trinidad and Tobago			Regional Workshops
Cabo Rojo National Wildlife Refuge	Puerto Rico			Regional Workshops
Jabos Bay Estuarine Reserve	Puerto Rico			Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Palmyra	Northern Line Islands	Red-footed Bobby		Regional Workshops
Rose Atoll	American Samoa			Regional Workshops
Jarvis Island	Northern Line Island	Masked Bobby, White-throated Storm Petrel, Audubon Shearwater, Blue-gray Noddy		Regional Workshops
Manaua Island, Oahu, Hawaii	USA	Red-tailed Tropic Bird, Wedge-tailed Shearwater, Bonin Petrel		Regional Workshops
Kaohikipu Islands, Oahu, Hawaii	USA	Wedge-tailed Shearwater, Bonin Petrel		Regional Workshops
Mokulva Islands, Oahu, Hawaii	USA	Wedge-tailed Shearwater, Bonin Petrel		Regional Workshops
Popoia Island, Oahu, Hawaii	USA	Wedge-tailed Shearwater, Bonin Petrel		Regional Workshops
Mokulea Island, Oahu, Hawaii	USA	Bonin Petrel		Regional Workshops
Mokumanu, Oahu, Hawaii	USA	Wedge-tailed Shearwater, Christmas Shearwater, Brown Booby, Masked Booby, Red-footed Booby, great Frigatebird, Gray-backed Tern, Sooty Tern Brown Noddy, Black Noddy		Regional Workshops
Mokuauia, Oahu, Hawaii	USA	Wedge-tailed Shearwater		Regional Workshops
Molokai, Oahu, Hawaii	USA	Wedge-tailed Shearwater		Regional Workshops
Kuri Atoll, Oahu, Hawaii	USA	Wedge-tailed Shearwater, Christmas Shearwater, Brown Booby, Masked Booby, Red-footed Booby, Great Frigatebird, Gray-		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		backed Tern, Sooty Tern, Brown Noddy		
Christmas Island, Kimbatu		Phoenix Petrel, White- throated Storm Petrel		Regional Workshops
Kauai, Hawaii	USA	Newell's Shearwater, Band- rumped Storm Petrel		Regional Workshops
Maui, Hawaii	USA	Dark-rumped Petrel		Regional Workshops
Helen Reef, Palau		Great-crested Tern, White- fronted Tern		Regional Workshops
Kure, Hawaii	USA			Regional Workshops
Midway Island	USA	Laysan Albatross		Regional Workshops
Laysan Island	USA	Black-footed Albatross		Regional Workshops
Lesianshi, Hawaii	USA	Laughing Gull Colony		Regional Workshops
French Frigate Shoals, Hawaii	USA	Laughing Gull		Regional Workshops
Nichoa, Hawaii	USA	Blue-gray Noddy		Regional Workshops
Necker Islands, Hawaii	USA	Blue-gray Noddy		Regional Workshops
Tutuila Island, American Samoa		Brown Noddie, Blue Noddie, Gray Noddie and Black Noddie, Frigatebird, Red-footed boobies, Herald Petrel, Audubon Shearwater and Wedgetail Shearwater		Regional Workshops
Larsen Bay		Fagatele Bay Blue Grey Noddy, Grey-backed Tern		Regional Workshops
Tahiti Summit Area		Possibly Phoenix Petrel		Regional Workshops
Olosega Island, American Samoa		Brown Noddy, Black Noddy, Brown Booby		Regional Workshops
Ofu Island and Nu'utele Islet, American Samoa		Brown Noddy, Black Noddy, Brown Booby		Regional Workshops
Ta'u Island Summit, American Samoa		Herald Petrel, Tahiti Petrel, Phoenix Petrel, Wedge-tail		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Shearwater, Audubon Shearwater		
Ta'u, SE Coast Tree Habitats		Black Noddy		Regional Workshops
Lower Colorado River, Arizona	USA			Regional Workshops
Wilcox Playa, Arizona	USA			Regional Workshops
Bosque del Apache National Wildlife Refuge, New Mexico	USA			Regional Workshops
Middle Rio Grande Corridor, New Mexico	USA			Regional Workshops
Oxford Slough WPA, Idaho	USA	White-faced Ibis, Snowy Egret, Franklin's Gull, Black Tern, Foster's Tern, Western Grebe, Clark's Grebe, Black-crowned Night-Heron, Great Blue Heron		Regional Workshops
Camas National Wildlife Research Refuge, Idaho	USA	White-faced Ibis, Snowy Egret, Franklin's Gull, Black Tern, Forester's Tern, Western Grebe, Clark's Grebe, Black-crowned Night-Heron, Great Blue Heron		Regional Workshops
Gray's Lake National Wildlife Refuge, Idaho	USA	White-faced Ibis, Franklin's Gull		Regional Workshops
Minidoka National Wildlife Refuge, Idaho	USA	California Gull, Snowy Egret, Caspian Tern, Double-crested Cormorant, Western Grebe, Clark's Grebe, Black-crowned Night-Heron, Great Blue Heron, Cattle Egret,		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		American White Pelican		
Market Lake WMA, Idaho	USA	White-faced Ibis, Snowy Egret, Franklin's Gull, Black Tern, Forester's Tern, Western Grebe, Clark's Grebe, Black-crowned Night-Heron, Great Blue Heron		Regional Workshops
Fort Hall Indian Reservation, Idaho	USA			Regional Workshops
Blackfoot Reservoir, Idaho	USA	Gulls		Regional Workshops
American Falls Reservoir, Idaho	USA	California Gull, Ring-billed Gull, Western Grebe, Clark's Grebe		Regional Workshops
Columbia River Islands, Washington	USA	American White Pelican, California Gull, Ring-billed Gull, Caspian Tern, Forester's Tern		Regional Workshops
Potholes Reservoir, Washington	USA	Black-crowned Night-Heron, Green Heron, Great Egret, Double-crested Cormorant, Western Grebe, Clark's Grebe		Regional Workshops
Moses Lake, Washington	USA	Western Grebe, Clark's Grebe		Regional Workshops
Soap Lake, Washington	USA	Eared Grebe		Regional Workshops
Saddle Mountain National Wildlife Refuge, Washington	USA	Western Grebe, Clark's Grebe, Heron, Gull		Regional Workshops
Bear River Marshes, Wyoming	USA	White-faced Ibis, Black Tern, Black-crowned Night-Heron, Snowy Egret		Regional Workshops
Molly Islands, Wyoming	USA	American White Pelican,		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Caspian Tern		
Laramie Plains Lakes, Wyoming	USA	Black-crowned Night-Heron, White-faced Ibis, American White Pelican, Forester's Tern, Snowy Egret, Cattle Egret, Caspian Tern, Western Grebe, Clark's Grebe, Eared Grebe		Regional Workshops
Soda Lake, Wyoming	USA	Black-crowned Night-Heron, Caspian Tern, California Gull, Double-crested Cormorant		Regional Workshops
Pathfinder Reserve Bird Island, Wyoming	USA	American White Pelican, Great Blue Heron, Double-crested Cormorant		Regional Workshops
Bucklin Reserve, Wyoming	USA	Black-crowned Night-Heron, Western Grebe, Clark's Grebe, Eared Grebe		Regional Workshops
Old Eden Reserve, Wyoming	USA	Black-crowned Night-Heron, Snowy Egret		Regional Workshops
North Platte River, Wyoming	USA	Great Blue Heron		Regional Workshops
Green River, Wyoming	USA	Great Blue Heron		Regional Workshops
Tongue River, Wyoming	USA	Great Blue Heron		Regional Workshops
Powder River, Wyoming	USA	Great Blue Heron		Regional Workshops
Snake River, Wyoming	USA	Great Blue Heron		Regional Workshops
Centennial Valley, Montana	USA	Black Tern, Eared Grebe		Regional Workshops
Missouri River Drainage, Montana	USA	White Pelican, Black Tern, Eared Grebe, Western Grebe, California Gull, American White Pelican		Regional Workshops
Freezeout Lake WMA, Montana	USA	Franklin's Gull, Common		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Tern, Forester's Tern, Black Tern, Eared Grebe, Clark's Grebe, Western Grebe, American White Pelican, White-faced Ibis, Black-crowned Night-Heron		
Arod Lakes, Montana	USA	American White Pelican		Regional Workshops
Mission (Flathead) Valley, Montana	USA	California Gull, Ring-billed Gull, Great Blue Heron, Double-crested Cormorant, Western Grebe		Regional Workshops
Bowdoin National Wildlife Refuge, Montana	USA	American White Pelican		Regional Workshops
Fort Peck, Montana	USA	American White Pelican		Regional Workshops
Yellowstone River, Montana	USA	Great Blue Heron, Double-crested Cormorant		Regional Workshops
Great Salt Lake Ecosystem, Utah	USA	Eared Grebes		Regional Workshops
TNC West Layton Preserve, Utah	USA			Regional Workshops
Utah Lake, Utah	USA			Regional Workshops
Cutler Marsh, Upper Bear River, Utah	USA			Regional Workshops
New Ponoit Reservoir, Utah	USA			Regional Workshops
Weber River, Utah	USA			Regional Workshops
Provo River, Utah	USA			Regional Workshops
Fish Springs, National Wildlife Refuge, Utah	USA			Regional Workshops
Oray National Wildlife Refuge, Utah	USA			Regional Workshops
Timbalier Islands, Louisiana	USA			Regional Workshops
Mississippi River Delta,	USA			Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Louisiana				
Cypress Island/Lake Martin, Louisiana	USA			Regional Workshops
Catahoula Lake, Louisiana	USA			Regional Workshops
Miller's Lake, Louisiana	USA			Regional Workshops
Terrebonne Parish freshwater marshes, Louisiana	USA			Regional Workshops
Lac Des Allemands area, Louisiana	USA			Regional Workshops
Lake Verret area, Louisiana	USA			Regional Workshops
Manchac swamp area, Louisiana	USA			Regional Workshops
St. Bernard Parish salt marsh Islands, Louisiana	USA			Regional Workshops
Plaquemines Parish salt marsh Islands, Louisiana	USA			Regional Workshops
Sand Island, Mississippi	USA			Regional Workshops
Morgan Break National Wildlife Refuge, Mississippi	USA			Regional Workshops
Hillside National Wildlife Refuge, Mississippi	USA			Regional Workshops
Jones Lake National Wildlife Refuge, Mississippi	USA			Regional Workshops
Yazoo National Wildlife Refuge, Mississippi	USA			Regional Workshops
St. Catherine Creek National Wildlife Refuge, Mississippi	USA			Regional Workshops
White River National Wildlife Refuge, Arkansas	USA			Regional Workshops
Pond Creek National Wildlife Refuge, Arkansas	USA			Regional Workshops
Wapomocca National Wildlife	USA			Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
Refuge, Arkansas				
Overflow National Wildlife Refuge, Arkansas	USA			Regional Workshops
Oakwood National Wildlife Refuge, Arkansas	USA			Regional Workshops
Lake Chicot, Arkansas	USA			Regional Workshops
Grassy Lake, Arkansas	USA			Regional Workshops
Lake Andes, South Dakota	USA			Regional Workshops
Quivera, Kansas	USA			Regional Workshops
Lac qui Parle State Wildlife Management Area, Minnesota	USA			Regional Workshops
Waubay WMD, South Dakota	USA			Regional Workshops
Lake of the Woods, Minnesota	USA			Regional Workshops
Des Lacs National Wildlife Refuge, North Dakota	USA	Western Grebe		Regional Workshops
Minnewauken Flats, North Dakota	USA			Regional Workshops
Crescent Lake, Nebraska	USA			Regional Workshops
Valentine Refuge, Nebraska	USA			Regional Workshops
Fergus Falls, Minnesota	USA			Regional Workshops
James River, South Dakota	USA			Regional Workshops
Appalachicola Bay, Florida	USA			Regional Workshops
Banana River/Mosquito Lagoon/Merritt Island, Florida	USA			Regional Workshops
Big Cypress Swamp, Florida	USA			Regional Workshops
Cedar Keys, Florida	USA			Regional Workshops
Chesapeake Bay, Maryland	USA			Regional Workshops
Delaware Bay, Delaware	USA			Regional Workshops
Drum Island, South Carolina	USA			Regional Workshops
Florida Bay, Florida	USA	Great Blue Heron (Great White Heron), Reddish		Regional Workshops

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Appendix 9. Candidate Sites for Important Colonial Waterbird Areas				
Name of Area	Country	Species	Possible Category	Source
		Egrets		
Great Dismal Swamp, Georgia	USA			Regional Workshops
Kissimmee Prairie, Florida	USA			Regional Workshops
Lake Okeechobee, Florida	USA			Regional Workshops
Marquesas Atoll, Florida	USA	Magnificent Frigatebird		Regional Workshops
North Inlet and Pumpkinseed Island S				Regional Workshops
Pea Patch Island, South Carolina	USA			Regional Workshops
St. Johns Marshes, Florida	USA			Regional Workshops
Tampa Bay, Florida	USA			Regional Workshops

Appendix 10. Species Prioritization Protocol and Species Scores for North American Colonial Waterbirds

Prioritization Protocol for Colonial Waterbirds

This protocol was adapted from the Partners in Flight (PIF) and National Shorebird Conservation Priorities guidelines and accommodates the special conservation issues of species that aggregate during breeding season. Priority scores have been developed for most colonial species by (PIF) using the landbird protocol. However, these are acknowledged to be in need of improvement because they are based on Breeding Bird Survey data which underestimate colonially-nesting species and do not accommodate linear coastal ranges or pelagic species. In addition, the NACWCP includes North America as it defines: Canada, USA, Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Bahamas, Cuba, Turks & Caicos, Jamaica, Caiman Islands, Haiti, Dominican Republic, Puerto Rico, U.S. Virgin Islands, British Virgin Islands, Anguilla, St. Martin, St. Barthelemy, Antigua & Barbuda, St. Kitts & Nevis, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent & Grenadines, Barbados, Granada, Trinidad & Tobago, Aruba-Bonaire-Curacao, and the islands off the coasts of Venezuela and Colombia.

The result of this protocol is for each colonial waterbird species included in the conservation plan to have its own individual factor scores for several variables, its own categorical rank, and information sources (species experts).

FACTOR SCORES: The factor scores are six variables to be considered when evaluating the conservation status of the species. All variables are scaled from one to five, with five indicating greatest conservation need. Each species is put in a category of conservation priority (such as *Highly Imperiled*, *Species of High Concern* etc.) based on these factor scores.

1. **Breeding Distribution** (BD): This variable ranks the size of the breeding ranges for species that breed in North America. The species are ranked on a scale from 1-5 in order of decreasing area in which they breed. The scale was created by log transforming the breeding ranges of all the species (to approximate a normal distribution), and then dividing the results into quintiles. The distributions are expressed in square miles and in miles of coast. Both the linear and areal forms of distributions have separate scales. Experts are asked to assign the appropriate score to their species.

- | | |
|---|---|
| 5 | highly restricted (up to 220 sq. mi. or 2,700 mi. of coast) |
| 4 | local (220 – 2,400 sq. mi. or 2,700 – 4,800 mi. of coast) |
| 3 | intermediate (2,400 – 26,000 sq. mi. or 4,800 – 8,500 mi. of coast) |
| 2 | widespread (26,000 – 290,000 sq. mi. or 8,500 – 15,000 mi. of coast) |
| 1 | very widespread (290,000 – 3,200,000 sq. mi. or 15,000 – 28,000 mi. of coast) |

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2. **Non-breeding Distribution** (ND): This variable ranks the size of the non-breeding ranges. The same method was used as for determining breeding distributions. Experts are asked to note if the distribution of their species is pelagic and to provide any additional information as to those pelagic habits.

- 5 highly restricted (up to 220 sq. mi. or 2,700 mi. of coast)
- 4 local (220 – 2,400 sq. mi. or 2,700 – 4,800 mi. of coast)
- 3 intermediate (2,400 – 26,000 sq. mi. or 4,800 – 8,500 mi. of coast)
- 2 widespread (26,000 – 290,000 sq. mi. or 8,500 – 15,000 mi. of coast)
- 1 very widespread (290,000 – 3,200,000 sq. mi. or 15,000 – 28,000 mi. of coast)

3. **Relative Abundance** (RA): This variable ranks the population sizes of the species included in the plan. Species experts are asked to estimate the total North American population and to assign the appropriate score. The 1-5 scale was created (as above) by log transforming the populations numbers and then by dividing the results into quintiles. If information is inadequate to estimate total population, experts are asked to provide estimates for geographic areas where data exist.

- 5 up to 14,000 individuals
- 4 14,000 – 55,000 individuals
- 3 55,000 – 170,000 individuals
- 2 170,000 – 550,000 individuals
- 1 550,000 – 10,000,000 individuals

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

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

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

- 5 very uncertain; no data exist
- 4 uncertain; but data exist to allow estimation
- 3 relatively certain; data exist at 10 year intervals for most of population

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- 2 certain; data exist at >10 year intervals for most of population
- 1 well documented; annual data available for total North American population

6. **Threats to Breeding (TB)**: This variable rates the threats impacting most or all of the total North American population of each species during their breeding season. The factor of concentration (coloniality) risk is considered for this variable.

- 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

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

CATEGORICAL RANK: Experts are asked to use the scores given in the above variables to place the species in an appropriate conservation category. The categories are:

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

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

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

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

3. **Species of Moderate Concern**: Populations of these species are either a) declining with moderate threats or distributions; b) stable with known or potential threats and moderate to restricted distributions; c) relatively small; d) relatively restricted; and e) declining but

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with no other known threats

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

4. **Species of Low Concern:** Populations of these species are either a) stable with moderate threats and distributions; b) increasing but with known or potential threats and moderate to restricted distributions; or c) of moderate size.

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

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

Global Distributions

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

No Information

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
WH	Agami Heron	?	?	3	3	2	3			
WH	Bare-throated Tiger Heron	?	?	3	3	2	2	library		
WH	Boat-Billed Heron	3	?	3	3	2	2			
WH	Fasciated Tiger-Heron	?	?	3	3	2	2			
WH	Green Ibis	?	?	3	3					
WH	Rufescent Tiger-Heron	?	?	3	3	2	2			

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WH	Striated Heron	?	?	3	3	3	3			
PER	Capped Heron	?	?	3	3	3	3			
PER	Cocoi Heron	?	?	3	3	3	3			
PER	Scarlet Ibis	?	?							

Not yet Ranked

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
WH	Blue-Grey Noddy					4	3	AOU/library		
WH	Bonaparte's Gull	1		2	2	1	3	PIF		
WH	Greater Shearwater	3		na	3		2	F. Huettmann		
WH	Grey-Backed Tern		2			4	3	library		
WH	Neotropic Cormorant	2		3	3	1	1	R. Telfair		
WH	Northern Gannet	2		3?	2	4	3	B. Montevecchi		
NH	Bonin Petrel					4	4	AOU/library		
NH	Glaucous Gull	2		1	1	1	3	PIF		
NH	Great Skua	3		na	2		2	PIF		
NH	Ross' Gull	?	5	2	?	4	2	A. Bledsoe		
NH	Slaty-Backed Gull			na			5			
COS	Arctic Tern					1	1	T. Diamond		
COS	Band-rumped Storm-Petrel					3	2	AOU/library		
COS	Cattle Egret	3		2	3	1	1	R. Telfair		
COS	Cory's Shearwater	3		3	2		2	PIF		
COS	Great Egret	1		2	2	1	1	J.F. Glahn		
COS	Wilson's Storm-Petrel	3		2	2		2	PIF		
PER	Kermadec Petrel						2			
PER	Lesser Black-backed Gull			na			5			
PER	Mottled Petrel						2			
PER	Parkinson's Petrel			na			4			

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Highly Imperiled

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
NA	Bermuda Petrel	2	5	5	5	5	5	library	Highly Imperiled	E
NA	Newell's Shearwater	5	2	5	2	4	5	T.Telfer-BNA	Highly Imperiled	1a
NA	Townsend's Shearwater	5	3	5	2	5	4	B. Tershy	Highly Imperiled	1a
WH	American Wood Stork	3	3	4	3	4	4	M. Coulter, J. Ogden, J. Kushlan & J. Rodgers	Highly Imperiled	E
WH	Black-capped Petrel	5	3	5	3	4	4	C. Hunter	Highly Imperiled	1a
WH	Brown Pelican	4	2	4	4	2	1	M. Shields and WI Seabird book	Highly Imperiled	E
WH	Dark-rumped Petrel	4	3	5	2	3	3	T. Simons-BNA	Highly Imperiled	E
WH	Least Tern	4	2	5	4	1	4	B.C.Thompson-BNA	Highly Imperiled	E
WH	Snail Kite	2	4	5	5	4	4	J. Rodgers-BNA	Highly Imperiled	E
NH	Ancient Murrelet	5	1	5	4	4	4	T. Gaston & M. Rodway	Highly Imperiled	1a
NH	Marbled Murrelet	5	2	4	4	4	5	K.J. Kuletz, K. Nelson & M. Rodway	Highly Imperiled	1a
NH	Short-Tail. Albatross	2	4	na	(5)5		2	K. Rivera	Highly Imperiled	E
COS	Audubon's Shearwater	5	3	5	4	3	3	D. Lee	Highly Imperiled	1a
COS	Common Tern	5	3	5	5	1		R. Morris & H. Hays	Highly Imperiled	1a
COS	Roseate Tern	4	3	5	5	2	2?	H. Hays & J. Spendelow	Highly Imperiled	E

Species of High Concern

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
NA	Black-vented Shearwater	4	2	5	3	4	4	B. Keitt-BNA	High	2a
NA	Brandt's Cormorant	4	2	5	4	4	4	G. Wallace-BNA	High	2a
NA	Cassin's Auklet	4	1	3	3	5	4	D. Manuwal-BNA & M. Rodway	High	2a
NA	Craveri's Murrelet	4	3	5	3	4	5	B. Tershy	High	2a
NA	Kittlitz's Murrelet	4	3	4	4	5	4	R.H.Day & K. Kuletz	High	2a
NA	Least Storm-Petrel	4	1	5	2	3	5	B. Tershy-BNA	High	2a
WH	Black Skimmer	4	3	4	3	4	5	R. M. Erwin	High	2a
WH	Black Storm-Petrel	4	3	5	3	3	3	B. Tershy	High	2a
WH	Blue-footed Booby	4	2	5	5	4	4	B. Tershy	High	2a

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WH	Christmas Shearwater	3	4	4	4	4	4	N. Seto-BNA	High	2b	
WH	Jabiru	4	5	5	5	3	3	P. Frederick	High	2a	
WH	Little Blue Heron	4	?	4	4	3	3?	J.A.Rodgers Jr-BNA	High	2a	
WH	Magnif. Frigatebird	4	3	4	2	2	4	library	High	2a	
WH	Pink-footed Shearwater	4	?	na	(4)	4	na	3	K. Morgan	High	2a
WH	Reddish Egret	4	3	5	5	3	3	R. Paul	High	2a	
WH	Roseate Spoonbill	4	3	5	5	3	3	J. Dumas - BNA	High	2a	
WH	Snowy Egret	4	3	4	3	3	3	R.M. Erwin & P. Frederick	High	2a	
WH	Tricolored Heron	4	2	4	3	3	3	P. Frederick	High	2a	
NH	Red-faced Cormorant	4	2	4	4	5	5	D. Siegel-Causey	High	2a	
NH	Red-Legged Kittiwake	5	2	4	3	4	3	G.V.Byrd	High	2a	
NH	Tristram's Storm-Petrel	4	3	5	4	4	4	AOU/library	High	2a	
COS	Black-Crn Night Heron	4	3	4	3	1	1	BNA	High	2a	
COS	Bridled Tern	4	3	4	3	2	4	BNA/library	High	2a	
COS	Brown Booby	4	2	5	3	3	3	B. Tershy	High	2a	
COS	Great Frigatebird	4	3	2	3	4	2	E.A.Schreiber	High	2a	
COS	Little Gull	4	5	3	1?	2	2	C. Weseloh	High	2a	
COS	Manx Shearwater	3	5	3	2	5	2	PIF	High	2b	
COS	Masked Booby	4	3	4	2	3	2	D. Anderson -BNA	High	2a	
COS	Mew Gull	4	2	1	1	1	5	J. King - BNA	High	2a	
COS	Red-billed Tropicbird	4	4	5	2	3	3	B. Tershy-BNA	High	2a	
COS	Red-Footed Booby	4	3	5	5	4	2	E.A.Schrieber-BNA	High	2a	
COS	White-tailed Tropicbird	4	3	5	3	2	2	D. Lee	High	2a	

Species of Moderate Concern

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
NA	Ashy Storm-Petrel	3	3	4	3	2	5	BNA/library	Moderate	3b
NA	California Gull	3	2	5	2	1	4	D. Winkler	Moderate	3b
NA	Clark's Grebe	3	3	3	3	1	4	G. Nuechterlein-BNA	Moderate	3b
NA	Heermann's Gull	3	2	4	5	4	2	B. Tershy	Moderate	3b

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NA	Western Grebe	3	2	4	4	1	4	BNA	Moderate	3b
NA	Western Gull	2	3	4	3	5	5	K. Morgan	Moderate	3c
NA	Xantus' Murrelet	3	3	4	1	4	5	B. Keitt	Moderate	3b
NA	Yellow-footed Gull	3	3	3	3	4	3	M/ Pattern & B. Tershy	Moderate	3b
WH	Anhinga	3	3	3	3	1	5	P. Frederick (BNA) & D. Siegel Causey	Moderate	3b
WH	Elegant Tern	3	3	4	4	4	4	G. Burness & B. Tershy	Moderate	3b
WH	Franklin's Gull	3	2	4	3	1	na	BNA	Moderate	3b
WH	White Ibis	4	2	3	3	2	2	K. Bildstein, P. Frederick & J. Kushlan	Moderate	3a
WH	White-Faced Ibis	3	3	4	3	1	1	BNA	Moderate	3b
NH	Aleutian Tern	3	3	3	3	1	4	M.North-BNA	Moderate	3b
NH	Atlantic Puffin	3	2	4	4	3	2	M. Rodway	Moderate	3b
NH	Black Guillemot	3	2	4	4	3	1	D. Cairns & library	Moderate	3b
NH	Black-Leg Kittiwake	3	1	4	2	3	1	BNA	Moderate	3b
NH	Crested Auklet	3	1	4	3	2	4	BNA	Moderate	3b
NH	Horned Puffin	3	1	4	4	4	3	M. Rodway	Moderate	3b
NH	Laysan Albatross	3	1	4	4	4	2	G.Causey-Whittow-BNA	Moderate	3b
NH	Least Auklet	3	1	2	2	3	4	BNA	Moderate	3b
NH	Northern Fulmar	3	1	4	2	4	2	S.A.Hatch-BNA	Moderate	3b
NH	Parakeet Auklet	3	2	2	2	5	3	G.V.Byrd	Moderate	3b
NH	Pelagic Cormorant	3	2	4	3	3	5	K.A Hobson (BNA) & D. Siegel-Causey	Moderate	3b
NH	Pigeon Guillemot	3	2	4	4	3	3	BNA	Moderate	3b
NH	Razorbill	3	3	4	4	4	3	G. Chapdelaine, T. Diamond, F. Huettman & G. Robertson	Moderate	3b
NH	Thayer's Gull	?	3	2	2	5	5	T. Gaston	Moderate	3c
NH	Thick-Billed Murre	3	1	2	2	4	1	T. Gaston	Moderate	3b
NH	Tufted Puffin	3	1	4	2	3	3	G. Vernon Byrd & M. Rodway	Moderate	3b
NH	Whiskered Auklet	3	3	3	3	4	5	G.V.Byrd-BNA	Moderate	3b
COS	Black Tern	3	2	4	3	1	5	E. Dunn-BNA	Moderate	3b
COS	Black-Headed Gull	3	5	3	3	?	5	W. Montevicchi-BNA	Moderate	3b
COS	Black Noddy	3	2	5	5	3	2	BNA	Moderate	3b
COS	Bulwer's Petrel	3	2	5	3	3	2	J. Megyesi-BNA	Moderate	3b
COS	Caspian Tern	3	3	5	2	3	5	J.Quinn	Moderate	3b
COS	Common White Tern	3	3	5	3	4	3	BNA	Moderate	3b
COS	Glossy Ibis	1	3	3	2	4	4	B. Williams	Moderate	3c

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COS	Great Cormorant	2	4	3	2	3	3	C. Weseloh	Moderate	3d
COS	Gull-Billed Tern	3	3	3	2	4	4	R.M. Erwin-BNA	Moderate	3b
COS	Herring Gull	3	2	4	2	1	1	G. Fox	Moderate	3b
COS	Leach's Storm-Petrel	3	1	4	3	2	1	R.G. Butler-BNA	Moderate	3b
COS	Long-tailed Jaeger	3	2	2	2	1	4	BNA/library	Moderate	3b
COS	Red-tailed Tropicbird	3	3	4	3	4	4	BNA	Moderate	3b
COS	Royal Tern	3	2	4	3	4	4	R.M. Erwin, P.A. & Francine Buckley	Moderate	3b
COS	Sooty Tern	3	2	2	2	4	1	library	Moderate	3b
COS	Wedge-rumped Storm-Petrel	3	2	na (4)	3		4	S. Bailey	Moderate	3b
COS	Wedge-Tailed Shearwater	3	1	3	2	4	3	G. Causey-Whittow-BNA	Moderate	3b
PER	Juan Fernandez Petrel	4	1	na (4)	3		2	S. Bailey	Moderate	3a

Species of Low Concern

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
NA	Amer White Pelican	2	2	4	3	1	1	F.Knopf & T. King	Low	4b
NA	Forster's Tern	1	3	3	2	3	3	PIF/library	Low	4c
WH	Yel-Crn. Night-Heron	3	?	2	3	1	2	BNA	Low	4a
NH	Common Murre	2	1	4	4	3	1	T. Gaston, H.Carter, W.Sydeman	Low	4b
NH	Fork-Tail. Storm-Petrel	2	1	4	2	4	3	M. Rodway	Low	4b
NH	Iceland Gull	?	3	2	2	2	3	T. Gaston	Low	4c
NH	Ivory Gull	3	3	3	3	2	2	BNA	Low	4a
NH	Rhinoceros Auklet	2	1	4	2	3	4	T. Gaston, S. Hatch & M. Rodway	Low	4b
COS	Brown Noddy	2	2	4	3	3	2	R. Morris-BNA	Low	4b
COS	Eared Grebe	3	1	3	3	1	1	S. Cullen & J.R. Jehl Jr.	Low	4a
COS	Flesh-footed Shearwater	3	1	na (3)	3		3	K. Morgan	Low	4a
COS	Parasitic Jaeger	3	?	3	2	1	1	K. Morgan	Low	4a

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COS	Pomarine Jaeger	3	3	2	2	1	1	M. Belisle	Low	4a
COS	Sabine's Gull	2	2	2	4	4	1	R. Day-BNA	Low	4b
COS	Sandwich Tern	2	2	3	2	4	4	D. Shealer	Low	4b
PER	White-necked Petrel	3	2	na (4)	3		2	S. Bailey	Low	4a

Species Not at Risk

GD	EnglishName	PT	RA	TB	TN	BD	ND	Source	Category	Rule
NA	Dble-Crest. Cormorant	1	1	2	1	1	3	J. Glahn, T. King & S. Werner, D. SiegelCausey	Not at risk	5
NA	Green Heron	2	?	2	3	1	1	J. Kushlan-BNA	Not at risk	5
NA	Ring-Billed Gull	1	1	1	1	1	1	J.P.Ryder-BNA	Not at risk	5
WH	Great Blue Heron	1	2	2	2	1	1	J. Glahn & T. King	Not at risk	5
WH	Laughing Gull	1	2	1	2	2	1	BNA	Not at risk	5
NH	Black-Foot. Albatross	1	2	4	5	3	2	G. Causey-Whittow-BNA	Not at risk	5
NH	Dovekie	1	1	2	2	5	2	B. Montevicchi-BNA	Not at risk	5
NH	Glaucous-Winged Gull	2	2	2	2	3	3	N.A.M. Verbeek-BNA	Not at risk	5
NH	Great Black-Backed Gull	1	2	2	2	4	4	T. Good-BNA	Not at risk	5
COS	Greater Flamingo	2	2	2	2	3	3	G. Baldassarre	Not at risk	5
COS	Sooty Shearwater	3	1	na (2)	2	na	1	K. Morgan & F. Huettman	Not at risk	5
COS	South Polar Skua	3	?	na (3)	2	na	1	K. Morgan	Not at risk	5
PER	Buller's Shearwater	2	2	na (3)	2	na	2	K. Morgan	Not at risk	5
PER	Cook's Petrel	3	2	na (5)	2	na	2	S. Bailey	Not at risk	5
PER	Short-tailed Shearwater	3	1	na (2)	2	na	2	K. Morgan	Not at risk	5