

Arctic Migratory Bird Initiative (AMBI) – Americas Flyway Implementation Strategy

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Arctic Migratory Bird Initiative-- Americas Flyway Implementation Strategy

To better understand the status and trends of Arctic flora and fauna, the Arctic Council's working group on the Conservation of Arctic Fauna and Flora (CAFF) undertook the Arctic Biodiversity Assessment (ABA; <http://www.arcticbiodiversity.is/>). The purpose of the ABA, as endorsed by the Arctic Council Ministers, was to compile and synthesize information on the status and trends of Arctic species to provide policymakers with the critical information needed in relation to international biodiversity conventions and agreements. In regards to migratory species, the ABA recommends actions to "reduce stressors on migratory species range-wide, including habitat degradation and overharvesting on wintering and staging areas along flyways and other migration routes." The Arctic environment ministers acknowledged this linkage in 2013 when they stated that Arctic biodiversity and ecosystems are irreplaceable assets of local, regional and global importance, and called for decisive international cooperation both within and outside the Arctic to help protect biodiversity and sustain ecosystem services.

The Arctic Migratory Bird Initiative

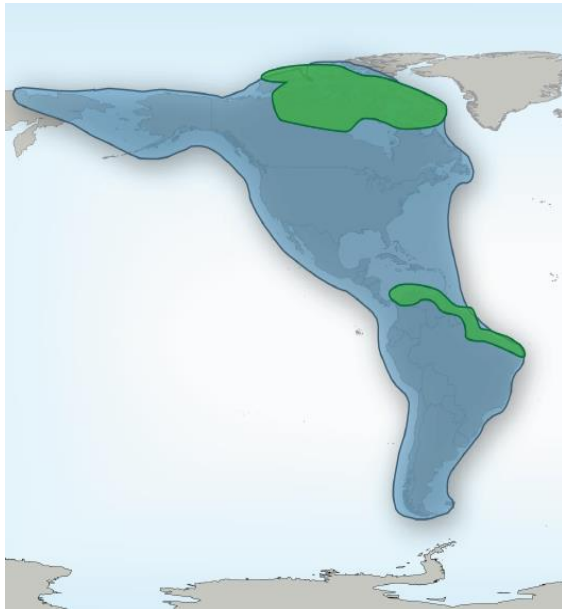
The Arctic Migratory Bird Initiative (AMBI; <http://www.caff.is/arctic-migratory-birds-initiative-ambi>) was designed to fulfill this recommendation of the ABA under CAFF. Specifically, AMBI seeks to conserve Arctic migratory bird species throughout their ranges, using a collaborative approach working with Arctic and non-Arctic countries and other migratory species initiatives. It is based on the recognition that effective conservation of migratory birds requires the joint action of each of the governments along the entire migratory range, as failure to protect the birds in any one location is likely to have disruptive implications along the whole flyway.

In February 2014, experts in Arctic migratory bird species and conservation issues met in Montreal, Canada to identify the major conservation issues facing Arctic migratory birds, including habitat loss and degradation, unsustainable harvest, and marine bycatch. The expert group also identified priority species within each of four flyways (Americas, African-Eurasian, Asian-Australasian, and Circumpolar). Experts within each flyway were then invited to develop flyway-specific work plans to address the corresponding conservation needs of the selected focal species. Draft plans for each of the flyways were also considered and revised as part of a multi-sectoral consultation workshop on AMBI as part of the Arctic Biodiversity Congress held in Trondheim, Norway in December 2014.

AMBI's overall workplan, including subplans for the four flyways, was approved by Arctic Council Ministers in April 2015. It identifies actions that will be undertaken over a four year period to improve the conservation status and secure the long term sustainability of declining Arctic migratory bird populations. It aims to enhance cooperation between Arctic and non-Arctic nations that host Arctic migratory birds during the non-breeding season. Through conservation of a shared natural and cultural resource, AMBI seeks to have a positive impact on societies for whom migratory birds are a source of livelihood and spiritual importance. The Arctic Council recognizes that much of the conservation action needed to meet this objective will occur outside of the Arctic. Therefore AMBI is organized around flyways that Arctic migratory birds traverse throughout their life cycles, and overseen by a Steering Committee comprised of multi-sectoral and international representatives.

Americas Flyway Workplan

To further develop the Americas Flyway workplan under AMBI, UNEP-RONA³ supported a workshop held in Washington, DC, USA in October 2014 that brought together experts from throughout the flyway to further the objectives of the Montreal meeting. The workshop participants developed specific workplan objectives to address habitat loss and degradation affecting Red Knot *Calidris canutus* and Semipalmated Sandpiper *Calidris pusilla*. These two focal species were chosen from a boarder list during this workshop due to their listing under the Convention on Migratory Species (CMS) in Appendix 1, which indicates species where parties should endeavor to provide immediate protection, and the near-threatened status of both species by ICUN listing. Additionally, the Red Knot is listed as endangered in Canada (under the Species at Risk Act), and threatened in the USA (under the US Endangered Species Act).



To help narrow the scope of this initiative and focus efforts on achievable objectives for the focal species, participants in the DC workshop determined that the Americas Flyway workplan should focus on the eastern and central Canadian Arctic, and the northern coast of South America (from Caribbean Colombia to northeastern Brazil). This scope enables AMBI to focus on a well-defined set of issues and actions that are a) not currently being addressed adequately from the perspective of AMBI focal species; b) have serious conservation implications for the focal species; c) will also have benefits to a wide number of co-occurring species; and d) can include significant contributions from indigenous organizations and traditional knowledge holders.

AMBI Americas Objectives

The Americas Flyway Workplan recognizes that threats driving the loss and degradation of wetland habitats are numerous and include coastal development, climate change effects on coastal and tundra habitats, and impairment of key sites through human-induced disturbance. In the central and eastern Canadian Arctic, climate change and habitat destruction by white geese species have an increasing impact on much of the breeding range of the *rufa* subspecies of Red Knot and the Semipalmated Sandpiper. The northern coast of South America, and in particular the coastline from eastern Guyana through Suriname and French Guiana to northern Brazil, is an extremely important wintering area for Arctic (and boreal) breeding shorebirds, and especially for Semipalmated Sandpiper and part of the *rufa* Red Knot population. Development of coastal infrastructure, farming that necessitates impoundment or draining of coastal wetlands, and disturbance at shorebird roosting sites are increasingly having a negative impact on key shorebird habitats in this region.

With these threats and focal geographies in mind, participants in the DC workshop in the October 2014 experts' workshop identified four principal objectives for the Americas workplan:

³ UNEP RONA – United Nations Environment Programme, Regional Office for North America

1. Evaluate, and determine appropriate mitigations, to impacts of overabundant goose populations on Arctic shorebird habitat.
2. Evaluate and determine appropriate mitigations to loss and shifting of shorebird habitat from climate change.
3. Mitigate habitat impairment from human intrusions and disturbance
4. Mitigate habitat destruction and degradation from development

AMBI Flyway Committee

The Americas Flyway Committee is tasked with implementing the AMBI Americas workplan as conceived by the stakeholder workshops (throughout 2014), and approved by the Arctic Council Ministers (April 2015). The committee consists of representatives from organizations involved in migratory bird conservation throughout the Americas.

- Environment and Climate Change Canada-Canadian Wildlife Service (Jennifer Provencher (chair), Garry Donaldson, Vicky Johnston (past Chair/member))
- United States Fish and Wildlife Service (Rick Lanctot)
- United Nations Environment Programme, Regional Office for North America (Monika Thiele)
- Western Hemisphere Shorebird Reserve Network (Rob Clay; past member)

AMBI Americas Implementation Strategy

To accomplish the objectives within the Americas workplan, the Americas Flyway Committee decided to develop detailed implementation strategies for priority action areas from the AMBI Workplan. First, workplan actions were organized into five thematic areas. Multi-stakeholder international expert planning teams were then created for each thematic area to assist with the development of the implementation plans. Planning team participants were selected to bring together a mix of geographic representation, subject area expertise, policy expertise, and experience with other relevant initiatives. Each implementation strategy is intended to be a stand-alone document that describes in detail how groups of action items will be executed. Development of these implementation plans was made possible thanks to support provided by the United Nations Environment Programme, Regional Office for North America (UNEP RONA).

The over-arching goal of the Implementation Strategies presented here are to increase awareness of the specific actions needed to implement conservation actions, and provide a framework for governments and conservation organizations to undertake focused and concerted conservation efforts that will provide on the ground conservation of migratory bird species. These plans are also intended to provide a platform for continued input from stakeholders throughout the Americas region to ensure conservation actions are undertaken in a meaningful way.

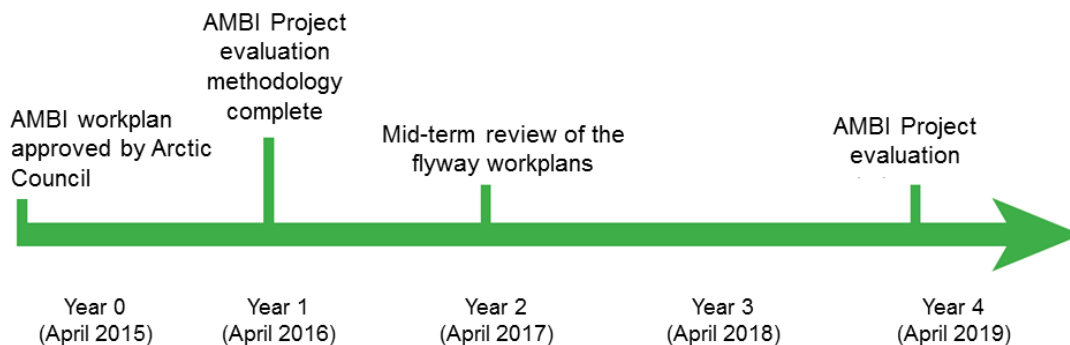
Links to other Initiatives

Importantly, the actions proposed in the AMBI Americas workplan and implementation strategies are designed to bring added value to ongoing conservation programs, or to address issues that are currently underrepresented. As an initiative AMBI seeks to answer the 2013 call by Arctic environment ministers for improved cooperation and joint actions for the conservation of migratory birds. To achieve this will require cooperation between countries, different stakeholder groups, and across migratory species and other initiatives.

Implementation of the AMBI Americas workplan will help governments meet commitments under Multilateral Environmental Agreements at global and hemispheric levels, including the Convention on Biological Diversity, the Convention on Migratory Species, Ramsar Convention, Western Hemisphere Convention, the Migratory Bird Treaty, and contribute to the Bird Conservation Plan Partnerships and to regional initiatives such as the Atlantic Flyway Shorebird Initiative.

AMBI Americas Timeline

The AMBI workplan has been approved by CAFF and the Arctic Council that covers objectives from 2015 to 2019. The AMBI Americas Implementation Strategies were developed by international expert groups to deliver on the Americas AMBI workplan objectives and to ensure programs are in place before the mid-term mark (2017). This implementation strategy was reviewed and approved by the CAFF Board in September 2016.



Theme 1: Evaluate impacts of overabundant geese populations on Arctic shorebird habitat and determine appropriate mitigation measures

Introduction

Populations of white geese (Snow Goose *Chen caerulescens* and Ross's Goose *Chen rossii*) in the eastern and central North American Arctic have dramatically increased over the past 40 years. In some areas, like the west coast of Hudson Bay, large areas that were formerly sedge tundra have been reduced to a monoculture of moss or even bare ground. In less extreme cases, goose grazing reduces sedge height, and can decrease use by nesting shorebirds. So far the Western Canadian and Alaskan Arctic are less affected, but even there geese populations are increasing and significant habitat impacts are expected in the future.⁴



It is believed that stringent hunting regulations introduced in the 20th century (to protect what were then very small goose populations facing high hunting pressure) and the recent abundance of food from agricultural operations on the wintering grounds made the current population explosion possible. A cause-effect relationship between goose-caused habitat impacts and decline in shorebird populations has not been established. However there is evidence for regionally depressed shorebird breeding densities in goose-affected areas and research is ongoing to understand the scale of the issue. This is of particular concern for Semipalmated Sandpiper, an AMBI priority species. The breeding habitats of the declining eastern and central Arctic population of this species overlap significantly with white geese breeding areas.



In recent years scientists have begun to investigate the implications of white goose overabundance on the population sizes and dynamics of co-occurring bird species. Studies are currently underway by Environment and Climate Change Canada and Trent University at colonies in three regions of Nunavut to determine the impacts of white geese on shorebirds, including the Semipalmated Sandpiper. Given the dramatic increase in white goose populations on Alaska's North Slope over the past decade, studies to assess the interspecific dynamics of these population increases are also planned. The primary facilitator of scientific research on this subject is the Arctic Goose Joint Venture, a multi-agency partnership established under the North American Waterfowl Management Plan (NAWMP) to further the scientific understanding and the management of North America's geese populations (<http://www.agjv.ca/>). AMBI's 'value added' to the existing scientific research

⁴ Photos provided by Jim Leafloor

agenda will be to augment current projects or to initiate new ones, and to further the sharing of scientific findings with northern communities, indigenous groups and land managers.

In the Canadian Arctic, white geese are harvested by Inuit for subsistence. Traditional Knowledge of the Arctic environment (referred to as TK⁵), likely includes significant information regarding historical and current white geese populations and their impacts on shorebird habitats. Furthermore, under the co-management systems established by land claim agreements in the Canadian Arctic, TK and the perspectives of Inuit must be utilized in management decisions, including those that relate to the goose-shorebird-habitat issue.

Project Overview

The goal of this project is to identify and quantify the impacts of white geese on the breeding populations of Arctic shorebirds, including defining research questions, documenting impacts and developing management recommendations from the perspective of Inuit Traditional Knowledge. There are two major objectives of this project. The first objective is to encourage research to identify and quantify the magnitude and mechanism(s) of impact that white goose habitat destruction has on breeding populations of shorebirds, in particular Semipalmated Sandpiper, and other co-occurring priority bird species across Arctic regions of North America. The second objective is to utilize Inuit knowledge and advice into white goose management recommendations.

Activities to be undertaken

The regional focus proposed for these activities is the Central and Eastern Canadian Arctic (where white geese impacts appear to be greatest, and where some scientific studies of impacts are already underway), but baseline research is also required in the western Arctic (as a second order of priority).

Objective 1: Assess the impacts on shorebird habitat from white geese

1. Identify opportunities within existing research programs that complements and augments ongoing research into the impacts on white geese on tundra habitat.
2. Identify funding sources and support new research efforts necessary to implement recommended activities (i.e. Nunavut Wildlife Management Board, Western Arctic Wildlife Advisory Council, Arctic Landscape Conservation Cooperative).
3. Share the results of the white geese impacts research (and management recommendations) with Inuit communities, local Area Co-management Committees (ACMCs), and research program partners.

Objective 2: Utilization of Traditional Knowledge in white goose management plans

1. Work with Inuit groups (i.e. Area Co-management Committees) to articulate research questions of relevance to the Inuit about the ecological impacts of white goose (specifically, impacts on co-occurring subsistence harvested? species and their habitat).
2. Work with area co-management area committees to collect Inuit TK from experts in Coral Harbour and Arviat, Nunavut, on the research questions identified as of relevance to the Inuit.

⁵ Working definition of Traditional Knowledge as developed by the Permanent Participants of the Arctic Council

3. Work with committees to collect Inuit TK about shorebirds from experts in the communities of Coral Harbour and Arviat to understand the scope of TK available for non-harvested bird species.
4. Work with committees to develop Inuit management recommendations, if necessary, on options to address the current overabundance of white geese in the Arctic, and on the effects, if any, that the populations are having on co-occurring species and their habitat.
5. Facilitate a dialogue between the Inuit communities, Area Co-management Committees and scientific researchers (participating in Objective 1) with a view to sharing information and perspectives, and work toward developing co-produced recommendations for managing white geese and their impacts on co-occurring species and their habitats.

NOTE: Some implementation activities have already begun under the second objective. Environment and Climate Change Canada has confirmed project leads for the activities; the Coral Harbour Area Co-management Committee has confirmed its participation; and the Nunavut Wildlife Management Board has been notified of the plans to undertake the actions described. The Inuit Circumpolar Council has also been consulted on this project, and will continue to be involved.

Measures of Success

- Gaps in research identified and filled, with new support arising as a result of CAFF endorsement.
- Meaningful collaboration of scientists and Indigenous knowledge holders through a workshop attended by both groups and an internal report providing draft co-produced recommendations.
- Research methods, results, and meeting proceedings are made available to wildlife and land managers in the Western Arctic.
- Dedicated outreach efforts to communicate research findings with a focus on sharing research results with stakeholder groups (i.e. via the CAFF data portal).
- Inuit knowledge about white geese, shorebirds, and the impacts of white geese on shorebirds and habitats in the Kivalliq region of Nunavut is documented.
- Inuit research questions and management recommendations are articulated and reported through the local communities, Environment and Climate Change Canada and CAFF.

Conditions of Success

Objective 1:

- A coordination mechanism for collecting the baseline survey data about breeding shorebirds is defined
- Institutional support is committed by a government agency, complemented by non-governmental organizations and research institutions
- Working group of experts is formed inclusive of TK and Research agencies
- Funding secured for conducting scientific studies as defined by research gaps identified

Objective 2:

- Active participation, as part of a Project Board (see Institutional Arrangements section), of Area Co-management Committees (confirmed) and Hunters and Trappers Organizations in the communities of Coral Harbour and Arviat.

- Active support of the Kivalliq Wildlife Board, Nunavut Tunngavik Inc., Nunavut Wildlife Management Board (NWMB) through a project advisory committee (see Institutional Arrangements section).
- NWMB willingness to hear and consider resulting management recommendations.
- Support of Arctic Goose Joint Venture (AGJV) and main science project staff through the project advisory committee.
- Willingness of the AGJV to consider resulting co-produced management recommendations.

Constraints/Risk Analysis

- Timing – Some research on impacts of white geese on co-occurring species is underway. There is a risk that this may be completed and funding not renewed, and thus TK and/or Inuit communities would not have the opportunity to inform future research needs or work with researchers collaboratively.
- Novelty of project – TK-based management recommendations may meet with resistance in science-based management structures (and not be adopted into existing policies or structures).

Necessary Institutional Arrangements

For this project to be successful, corresponding political will and support is necessary from both Inuit management agencies and from agencies mandated to protect and conserve habitat throughout the white geese range (as defined by the Arctic Goose Joint Venture). Specifically, support from the following agencies is critical to executing the proposed project:

- Inuit organizations
- Local hunter and trapper organizations in Arviat and Coral Harbour
- Local Area Co-management Committees
- Kivalliq Wildlife Board
- Environment and Climate Change Canada-Canadian Wildlife Service
- Arctic Goose Joint Venture

If research is conducted in the western Arctic, efforts should be made to include the North Slope Borough Wildlife Department, Alaska Department of Fish and Game, US Fish and Wildlife Service, Bureau of Land Management, the Inuit Circumpolar Council, the Alaska Migratory Bird Co-management Council, and other representatives of local subsistence users.

To achieve the political will and institutional sustainability desired and necessary to execute the kind of long term management actions required for successful restoration of habitats, the formation of management authorities, both voluntary and mandatory, is critical otherwise the project outcomes will not be realized. For example, one arrangement proposed is the creation of a “**Project Board**”. The **Project Board** would, consist of the Environment and Climate Change Canada leads, representatives from the Arviat and Coral Harbour Area Co-management Committees, representatives from Inuit organizations and the science lead for Objective 1. Ideally, this Board would meet in person at least once per year and by teleconference as needed. The Project Board would be supported by the **TK research team**, which could consist of one local interpreter, one local research assistant or community liaison, and one graduate student. Together, the Project Board and the TK Research Team, working collaboratively with the AMBI Americas Working Group, would be responsible for project design and implementation.

A **project advisory committee** (Kivalliq Wildlife Board, Nunavut Wildlife Management Board, one or more staff from ICC/ITK, AMBI coordinator) will be created to provide overall guidance and input to the project design, in line with the broader goals of the AMBI Americas Workplan (hyperlink to online access). This Committee will be asked to review the final report and invited to comment on the management recommendations workshop at the end of the project.

The AMBI coordinator will ensure that final reports are conveyed to the AMBI steering committee and CAFF Secretariat and thereby to the Arctic Council. These progress reports will also be shared with the Arctic Goose Joint Venture, the relevant North American flyway councils, the Atlantic Flyway Shorebird Initiative Executive Committee, and the Pacific Flyway Shorebird Strategy Steering Committee.

Proposed Budget

Estimated cost of activities: US \$125,000 per year for Objective 1; US \$102,000 for Objective 2

Budget Item	Estimated Cost (US \$)
<i>Objective 1</i>	
Researcher salary (per year)	50,000
Helicopter travel (per year)	25,000
Community travel	10,000
Community research assistants	10,000
Field equipment	30,000
<i>Objective 2</i>	
Researcher salary	50,000
Travel	27,000
Community honorariums, interpreters and translation	25,000

Theme 2: Identification of climate resilient shorebird habitats in the Arctic

Introduction



Climate Change is expected to cause large changes in the quantity, quality, and location of Arctic habitats. The majority of Arctic shorebird species, including the Semipalmated Sandpiper, tend to nest in vegetated sedge and grass tundra. This habitat type is expected to be pushed northward as the ameliorating climate permits shrub habitats to advance from the south. Similarly, a drying of tundra ponds is expected in many regions as the permafrost that kept the water at surface level melts, resulting in erosion and eventual drainage of areas. Most Arctic shorebird species depend on aquatic insects to feed chicks at hatch, so this habitat change will have a negative

impact on both of the AMBI Americas Flyway focal species (Red Knot and Semipalmated Sandpiper).⁶

It is predicted that shrub encroachment will be delayed or avoided in the Arctic Archipelago and on other Arctic islands far from the mainland (thereby retaining potential shorebird breeding habitats). If this is correct, it would be prudent to ensure that high-quality tundra (i.e. shrub free) habitats on islands that are generously supplied with a variety of water body types are protected as ‘refugia’ for open tundra-breeding shorebirds. AMBI seeks to facilitate this by building upon the results of an initial analysis of climate resilient habitats⁷ being conducted by the Commission for Environmental Cooperation (CEC) and promoting the conservation of large tracts of such habitats. This includes potentially expanding this work to other regions and other species.

Project Overview

The goal of this Implementation Strategy is to identify and conserve climate resilient habitats for breeding shorebirds in the Arctic, specifically the Red Knot and Semipalmated Sandpiper, with benefits for co-occurring species as well. The primary objective is to encourage the protection of large contiguous tracts of shorebird breeding habitat in parts of the North American Arctic that are most resilient to effects of climate change.

Activities to be undertaken To achieve implementation of this objective, the AMBI Americas workplan and expert groups recommend the protection of large contiguous tracts of shorebird habitat in parts of the North American Arctic that are least susceptible to climate changes.

1. Through the use of modelling exercises that incorporate both climate and landscape habitat variables, researchers should identify regions of shorebird habitat that are most likely to persist under various climate change scenarios.

⁶ Photos provided by Morten Ekker

⁷ Currently being undertaken as part of a project funded by the Commission for Environmental Cooperation to address Objective 2 Action 1 in the AMBI Americas workplan “Undertake an analysis that identifies the attributes and locations of shorebird habitats that are most likely to persist under future climate scenarios”. The results of this project were completed in October 2016.

2. Produce communication products that share results from the modeling exercises to raise awareness and education of the need to protect habitats in the Arctic region. This will aid in disseminating results of the analysis of climate resilient habitats to key audiences (e.g. CAFF and Senior Arctic Officials; federal, territorial, and indigenous land and wildlife managers in Arctic North America and governmental officials).
3. Incorporation of public input into the various proposed critical habitat areas. This should be done through a rigorous consultative process involving government representatives, indigenous landowners and other stakeholders to identify the most appropriate governance option for habitat protection. Options could include, but are not limited to:
 - a. Legally protected areas (Nationally or regionally or locally)
 - b. Set-aside zones within land-use plans
 - c. International site designation such as Ramsar, UNESCO/World Heritage Sites, etc.
 - d. Protections enacted by Aboriginal groups on their lands.
4. Support the implementation of protective measures by seeking funding and logistical assistance to those implementing the measures.

Measures of Success

- Identification of robust potential protection options for communities and governments to consider in land planning use that include input from a variety of stakeholders.
- Uptake of recommendations by planning used bodies in the focal region.
- An increase in the amount of habitat that is effectively protected through legislation or other effective means, in a manner that is acceptable to regional landowners, co-management bodies, and government agencies.

Conditions of Success

- Communication tools – Success will depend on the availability of funds and staff time to produce communication materials, and of staff time to deliver presentations at face to face meetings of northern co-management boards and government meetings.
- Modelling results – Success of the project depends on the production of “refugia” maps that can be used for discussions with stakeholders, and sharing with policy markers.

Constraints/Risk Analysis

- Inclusion of stakeholders – while the modelling exercises will determine what regions are most likely to be resilient to changing climatic conditions, only the inclusion of stakeholders in discussions exploring land use options and protected status will result in long term implementation of protected regions.
- Communication products – clear and informative communication products are a critical component to protecting lands identified in this project as important to shorebird conservation. Without communication tools targeted and disseminated to communities, stakeholders and policy makers, there will be little uptake of this knowledge.

Necessary Institutional Arrangements

Successful implementation of this plan, and long-term management, will be dependent on the involvement of a combination of government agencies, indigenous associations and planning commissions. Importantly, this implementation strategy aims to bolster ongoing habitat

protection efforts in the region. It will also be important to engage the national focal points and experts groups and working groups for the United Nations Framework Convention on Climate Change. It is considered likely that most of the areas identified will be located in the eastern and central Canadian Arctic, therefore the key institutional partners will most likely be those that operate in Nunavut. Specifically, the following organizations need to be involved or informed:

- Nunavut Planning Commission (Nunavut Land Use Plan)
- Regional Inuit Associations (e.g. depending on the project area, some or all of Kitikemot Inuit Association, Kivalliq Inuit Association, Qikiqtani Inuit Association)
- Environment and Climate Change Canada (Canadian Wildlife Service, and Wildlife and Landscapes Science Division)
- Parks Canada (if any identified areas include any of Nunavut’s National Parks)
- Indigenous and Northern Affairs Canada (who manages crown land in Nunavut)
- Inuit Circumpolar Council
- Inuit communities
- Government of Nunavut

A **project advisory committee** will be formed with representation from at least some of the above organizations to help develop and test communications products and to provide advice on identification and evaluation of protection options. The Americas Flyway coordinator will ensure that regular progress reports are conveyed to the AMBI steering committee and CAFF management board. These will also be shared with the Arctic Goose Joint Venture, and where appropriate, the Atlantic Flyway Shorebird Initiative Executive Committee, and the Pacific Flyway Shorebird Strategy Steering Committee.

Proposed Budget

Estimated cost of activities: US \$110,000

Budget Item	Estimated Cost (US \$)
Identification of proposed critical habitat (modelling exercise) including adjusts salary, program fees, and continued time for including stakeholder input	50,000
Final communication tools (i.e. report, infographics, translation of communication products, interactive online mapping tool on CAFF website)	10,000
Stakeholder consultation meeting #1 – including researcher travel, community honorariums, interpreters and translation	25,000
Stakeholder consultation meeting #2 – including researcher travel, community honorariums, interpreters and translation	25,000

Theme 3: Assessing threats to priority sites for shorebirds in northern South America

Introduction

Arctic-breeding shorebirds face numerous threats across multiple geographies and political landscapes during their annual life cycle. In their migration staging (passage stopover) and wintering areas in northern South America, four primary anthropogenic threats have been identified as key sources of mortality: 1) habitat loss and change, 2) human disturbance, 3) hunting, and 4) predation. However, ultimately, climate change and associated sea level rise could prove to be the single largest threat to shorebird populations, both locally and globally.⁸



Given the dependence of many shorebird species and populations on a limited number of migration stopover and wintering sites, the birds are particularly vulnerable to threats affecting the quality and function of these sites. Understanding what those threats are and identifying strategies that address them can have concrete and measurable outcomes for maintaining or recovering populations. Consequently, AMBI has identified several priority activities. The first is to conduct a systematic assessment of threats to key shorebird sites in northern South America. The second is to take action to help raise the profile of these key sites and describe how the threats impact shorebird populations. The latter is particularly important given that the impacts of human activity on shorebirds and their habitat are not well known to many local communities or governments around these stopover or wintering sites.

To help prioritize actions related to addressing critical habitat loss and degradation, AMBI seeks to work with communities and other stakeholders living in and around the key staging and wintering areas for Red Knot and Semipalmated Sandpiper to conduct assessments to identify critical threats and the sources of those threats to the species and their habitats. Then, strategies will be developed and proposed to mitigate priority threats. Priority will be given to those sites that have not already participated in recent threat assessment exercises (such as “Site Assessments” at Western Hemisphere Shorebird Reserve Network –WHSRN– sites www.whsrn.org, and monitoring at Important Bird and Biodiversity Areas – IBAs www.birdlife.org/ibas). Threat assessments were recently completed at all three WHSRN sites in Suriname, one WHSRN site and one candidate site in Brazil, two candidate sites in French Guiana, and one candidate site in Colombia.

⁸ Photo provided by Morten Ekker

Along the coast of northern South America, key shorebird habitats are liable to be negatively impacted by climate change in the form of sea level rise, increased intensity and frequency of coastal storms, and changes in sediment deposition rates along the coastline. However, the magnitude and rate at which these threats will affect shorebird populations (and effective mitigation measures) is not known. Fortunately, there is only limited development (to date) along most of the coast of northern South America, although there is very rapid development (wind energy, urbanization, tourism) along the semi-arid coastline of Brazil from Piauí to Rio Grande do Norte. Much of the coastline (especially along the Guianas) is very dynamic, primarily as a result of cycles of die-off and colonization of mangrove and intertidal sediment deposition related to alluvial dynamics of the Amazon and the Guianan Current. Consequently, it may already have high resilience to climate change. Nonetheless, there is a clear need to plan for potential climate change mitigation and adaptation measures, such that the resiliency of both habitats and populations is strengthened. To do this, AMBI seeks to conduct assessments that assess the vulnerability of key sites for shorebirds on the north coast of South America to climate change. AMBI will also facilitate the transfer of the knowledge and recommendations to habitat managers at the relevant sites.

Project Overview

The goal of this project is to assess threats due to climate change and anthropogenic activities impacting priority shorebird habitat along staging and wintering sites in northern South America and to facilitate the development of cost-effective strategies to address these threats, conserve sites and build habitat resiliency. The project objectives specifically are to:

1. Assess and quantify the vulnerability of key sites for shorebirds on the north coast of South America to climate change, and develop recommendations to mitigate and/or to adapt to these impacts.
2. Conduct assessments at priority sites for shorebirds to identify critical threats to sites and species and develop strategies to mitigate those threats.

Activities to be undertaken

There are a suite of activities necessary to the objective including the following activities:

Objective 1

1. Work is needed to assess how species distributions are changing along these wintering sites. This will be done by modeling current Semipalmated Sandpiper and Red Knot occurrence with climate and habitat variables (including sediment deposition).
2. Computer modeling techniques should be used to predict wintering range shifts for Semipalmated Sandpiper and Red Knot using a range of general circulation models under different scenarios of future emissions of greenhouse gases, using the latest climate projections. This should include overlaying boundaries of current key sites for shorebirds with the Semipalmated Sandpiper and Red Knot climate envelope predictions (i.e. predictions of areas of suitable climate).
3. Using results from the above modelling exercises, sites should be identified that have potentially high future conservation value for Semipalmated Sandpiper and Red Knot.

Objective 2

1. Carry out surveys to determine the primary physical qualities (i.e. sediment source) in Semipalmated Sandpiper and Red Knot habitat, and model likely changes to supply under different scenarios of climate and sea level.
2. Use modelling exercises to understand and visualize likely changes to sites as a result of sea level rise.
3. Conduct stakeholder workshops at each to assess the current conservation status, to identify threats and their drivers, and to prioritize actions for improved management/conservation.
4. Use the WHSRN Site Assessment Tool (see <http://www.whsrn.org/tools>) or similar tools (such as for IBA monitoring <http://www.birdlife.org/datazone/info/ibamonitoring>) to ensure a cost-effective consensus-based participatory means of identifying critical threats and developing strategies to mitigate these threats at key sites where these or similar tools have not been applied.
5. Facilitate participatory processes with site managers and local communities using climate change tools (such as WHSRN's Vulnerability Assessment of Shorebird Habitat tool <http://www.whsrn.org/tools/climate-change-tool>) to assess the vulnerability of habitats, and work with site managers and local communities to use the results to identify potential mitigation and adaptation options and develop recommendations.
6. For sites where there is limited knowledge or lack of understanding of threats and driving factors (i.e. too little for an effective assessment of threats), research and monitoring will be conducted to address knowledge gaps.
7. Support the development of local site management teams (drawing from site assessment experts) and develop site management plans.

Measures of Success

The successful implementation of these project objectives will be measured in terms of the extent to which threats and drivers to shorebird habitats are understood; the degree to which remedial actions have been identified and prioritized; the quality of the recommendations generated; and the degree of transmission of relevant information to local communities, site managers and management authorities. A sample of measures of success include the following:

- Vulnerability to climate change and sea level rise assessed for all key wintering sites for Red Knot and Semipalmated Sandpiper on the north coast of South America.
- Potential new key areas for both species are identified under different future climate scenarios.
- Mitigation and adaptation measures are planned for at each key site, and recommendations made to site managers.
- Systematic assessment of threats and their drivers are completed for all key wintering sites for Red Knot and Semipalmated Sandpiper on the north coast of South America.
- Research and monitoring priorities are identified for all key wintering sites, where appropriate.
- Actions are identified and prioritized for improved management and conservation of all critical sites.

Conditions of Success

- All key wintering sites for shorebirds must be identified and prioritized based on their importance for target shorebird populations.
- Expert stakeholder groups have been identified for each priority site.
- Sufficient knowledge and information exists for each site to be able to undertake threat assessments.
- The effects and outcomes of climate change and sea level rise on shorebird habitat in northern South America are understood and documented.
- Scientific research is undertaken to better understand current and likely future local impacts of climate change.
- Sufficient information exists to model sea rise level impacts in the region of interest.
- Climate change impacts on migratory wildlife are treated as a priority by government agencies, research institutes and site managers.
- Site managers and local communities are trained in evaluating the vulnerability of habitats to climate change.
- Local communities are willing to participate and effectively engage in the threat assessment process, and commit to the long term conservation efforts.

Constraints/Risk Analysis

Some potential barriers to effective implementation of this plan include the following general constraints:

Overall

- The lack of baseline data on shorebird diversity and abundance from on the ground monitoring creates the potential to overlook currently unrecognized important bird areas.
- Data about migratory bird habitat is very limited in many sites. It may be necessary to fill a lot of these knowledge gaps before being able to assess threats, let alone to develop effective threat mitigation strategies.

The vulnerability of shorebird habitats to climate change may be difficult to assess due to the following challenging conditions:

- Shorebird habitat exists within very complex coastal systems, exposed to an extremely dynamic and mobile coastline.
- It is difficult to take into account the effects of climate change on the Amazon Basin and potential changes in sediment outflow.
- Limited capacity, knowledge and data for conducting modelling work. Addressing this and developing effective climate change impact models is likely to be outside of the timeframe of site managers and many NGOs.
- Access to climate and sediment deposition information is difficult to acquire.

An accurate assessment of threats could be challenging to conclude for the following reasons:

- Need for results of the threat analysis to be validated by experts, national and local government agencies, local communities, and to be presented within global context.
- Integration of local community, NGO and local and national government agendas and policies.

- Limited number of local experts and groups available or interested to lead and carry out research and threat mitigation programs.

Necessary Institutional Arrangements

Successful implementation of this plan will be dependent on the involvement of a combination of government agencies, research organizations, conservation groups, site managers, local communities and local community organizations and business. More specifically, it will be important to involve in-country researchers and experts to investigate and propose climate change impacts. It will also be important to engage the national focal points and experts groups and working groups for the United Nations Framework Convention on Climate Change. A stakeholder identification process will be undertaken at each site to make sure that all key stakeholders participate in the threat assessment processes. The threat assessment process will also include an analysis of institutional capacity and recommendations to undertake actions to address the known constraints and contribute to improving the conditions for success.

A project advisory committee will be formed with representation from key agencies/organizations in each country to provide overall guidance and input to the project design, implementation and evaluation methods. The AMBI coordinator will ensure that regular progress reports are conveyed to the AMBI steering committee and CAFF management board. These will also be shared with the Atlantic Flyway Shorebird Initiative Executive Committee, and the national focal points for the Convention on Biological Diversity, the Convention on Migratory Species, the Framework Convention on Climate Change, and the Ramsar Convention.

Proposed Budget

Estimated cost of activities for the vulnerability analysis: US \$70,000. Estimated cost for assessment of threats to key sites: US \$5,000-10,000 per site, with 5-10 sites to be assessed.

Budget Item	Estimated Cost (US \$)
<i>Objective 1</i>	
Researcher salaries	40,000
Travel	15,000
Site workshops	15,000
<i>Objective 2</i>	
Workshop facilitation and analysis	25,000
Travel	15,000
Workshop costs	30,000

Theme 4: Reducing threats from rice and shrimp farming in northern South America

Introduction

In northern South America, rapidly growing rice and shrimp farming industries potentially threaten key migration and wintering habitats for Arctic-breeding shorebirds. Mangrove habitats are being converted to managed wetlands (e.g., impoundments) to grow shrimp, while wetland areas just inland from mangroves are converted to rice fields. Additionally, shorebirds may be exposed to contaminants used in shrimp grow-out ponds designed to eliminate pathogens, metabolites and predators, reduce organic matter and increase pH. Disposal of excess feed can also have adverse effects on wetlands in close proximity to shrimp farms through contamination and eutrophication.



Shrimp and rice farming activities can have both positive and negative effects on shorebirds, but the magnitude of the effect depends on the location and farming practices. Currently, the extent of the impact (positive or negative) is not clear as the locations of shrimp and rice farms have not been mapped and overlain with key shorebird habitats. There is also a need to assess the exposure of shorebirds to contaminants used in shrimp aquaculture and rice cultivation. Nor is there information on whether and how much shorebirds use shrimp and rice farms in use today. AMBI seeks to address this by mapping the overlap of rice and shrimp farms with key shorebird sites, and by studying the use of rice fields and shrimp farms by shorebirds.

While further loss of some coastal and wetland habitat to development is inevitable, a concerted effort is needed to ensure that the expansion of rice and shrimp farming does not encroach on any key habitats, and where possible, that productive activities implement Best Management Practices that help sustain shorebird populations. BMPs are increasingly being developed for rice and shrimp farming in different parts of the world, and there may be the potential to adapt them for use in northern South America. AMBI will seek to address this by facilitating access to BMPs that are relevant for rice cultivation and shrimp farming in northern South America. BMPs should take into account the potential exposure of shorebirds to harmful chemicals used in rice cultivation and shrimp farming, both in terms of type and application, and the timing of habitat use by shorebirds (e.g. for feeding, roosting, or both).

The activities proposed here will build upon existing and ongoing work, including a project led by Conserve Wildlife Foundation of New Jersey to map areas threatened by shrimp farms in Pará and Maranhão States, Brazil; a project led by New Jersey Audubon Society to investigate potential contaminant exposure of shorebirds at commercial shrimp farms in northeastern Brazil, with the goal of developing BMPs to reduce exposure; and project led by Aquasis, conducted in 2008-09 to investigate the impacts of shrimp farms on intertidal habitats in Ceará and Rio Grande do Norte states, Brazil.

Project Overview

To reduce the threats to Arctic-breeding shorebirds from rice farms and shrimp farms in northern South America, and where possible develop approaches such as Best Management Practices that benefit both shorebirds and farming communities. The objectives of this implementation strategy are:

1. Map rice fields, shrimp farms, and key shorebird sites in northern South America and look for areas of overlap.
2. Determine the use of rice fields and shrimp farms by shorebirds, and the value of these agricultural habitats for shorebird populations.
3. Develop (if necessary) and provide access to BMPs for rice cultivation and shrimp farming of relevance to northern South America.

Activities to be undertaken

There are three sets of objectives within this project that aim to reduce the threats to shorebird habitat from rice and shrimp farming.

Objective 1

1. Conduct a classification of habitat types and land-use in key areas used by shorebirds in northern South America through an analysis of satellite imagery using a semi-supervised classification approach with visual inspection.
2. Compile existing data on rates of mangrove loss in northern South America.
3. Conduct a multi-temporal change detection analysis of vegetation cover and land-use to determine the rate of conversion of natural shorebird habitats to shrimp farms and rice farms.
4. Ground truth/validate the habitat/land-use classification and multi-temporal change detection analysis.
5. Produce thematic maps showing overlap between rice and shrimp farms and key shorebird areas, and the rate of habitat conversion.
6. Identify areas of natural habitat where conversion to rice fields or shrimp farms will have a limited to negligible impact on shorebirds.
7. Identify focal geography to prioritize efforts for implementation of BMPs.

Objective 2

1. Undertake studies/surveys to determine the species composition, abundance, population structure and use of shrimp farms and rice fields by shorebirds (including through consultations with farmers).
2. Compare the use of agricultural habitats to the use of natural habitats in the surrounding areas.
3. Working with associations of farmers and farming cooperatives, compile information on current management techniques to identify practices that may be detrimental and those that may be beneficial to shorebird populations.
4. Undertake studies to develop, and when existing, assess the impact of BMPs on shorebirds in rice fields and shrimp farms.
5. Undertake studies to assess the exposure of shorebirds to contaminants used in shrimp aquaculture and rice cultivation.

Objective 3

1. In collaboration with associations of farmers and farming cooperatives, develop a “profile” of current rice and shrimp farming in northern South America, to help identify BMPs that may be relevant.
2. Compile BMPs for rice cultivation and shrimp farming of potential relevance to northern South America (drawn from around the world).
3. Compile case studies of application of the BMPs and the benefits accrued from their application (economic, ecological and social).
4. Form an advisory body to guide the selection of BMPs of relevance to northern South America (bearing in mind that BMPs will vary geographically).
5. Develop a manual or manuals of BMPs and translate into appropriate languages.
6. Identify mechanisms to incentivize the implementation of BMPs.
7. Work with relevant national authorities and local authorities (e.g. Ministries of Agriculture), associations of farmers and farming cooperatives to provide searchable access to BMPs through their websites and other information outlets.
8. Train agricultural extension agents in the application of the BMPs.

Measures of Success

- Detailed map of rice fields, shrimp-farms and important shorebird habitats within AMBI focal geography (northern South America).
- Calculation of land-use changes - number of ha of natural habitats transformed as a result of the installation of rice fields and shrimp-farms.
- Scientific paper publishing the results of the rice and shrimp farm and shorebird habitats overlap analyses.
- Technical reports and/or scientific publications of analyses that describe the species composition and demographic structure of shorebird populations using rice/shrimp farms, how shorebirds use the farms compared to natural habitats, and an assessments of risks from contaminants.
- Compilation of BMPs readily available, and advisory body to guide their application.
- Percentage and extent of existing rice-fields and shrimp-farms within the focal geography adopt BMPs by end of project.

Conditions of Success

- Key sites for Red Knot and Semipalmated Sandpipers defined, so that habitat classification can focus on these areas (though with sufficient funding, all rice fields and shrimp farms could be mapped and then compared to key sites/habitat for shorebirds).
- Need to adopt or develop a classification scheme for production systems. For instance, for shrimp farms (proposed by Juan Navedo):
 - Intensity of use: (extensive, semi-intensive and intensive (following Edwards 1993).
 - With/without fallow period immediately after harvesting
- Communication Plan and Materials developed. Need for a ‘traveling exhibition’ to show producers (both rice and shrimp) the overall situation, proposed BMPs and the potential benefits of BMP implementation in their production.

- Key stakeholder engagement. Need a few shrimp or rice producers to advocate on behalf of the implementation of BMPs.
- Effective BMPs based on an understanding of the economics of the overall situation (e.g. both the cost of land protection and the economic benefits of land conversion, and ideally any economic losses due to conversion, e.g., due to lost services).

Constraints/Risk Analysis

- Willingness (or lack thereof) of the farming production sector to work with the conservation sector to develop BMPs that limit impacts and/or benefit shorebirds while also benefiting producers.
- Lack of cooperation of producers regarding sharing information about current production techniques (e.g. about amount of fertilizers and antimicrobials used for production; or efforts to scare birds away from farms), and willingness to provide on-farm access for studies.
- Economic and social differences between rice and shrimp farming will likely result in different industry-specific constraints (and thus strategies needed) to successful implementation of BMPs.

Necessary Institutional Arrangements

Successful implementation of this plan will be dependent on the involvement of a combination of government agencies (both conservation and agriculture/aquaculture); research organizations; conservation groups; shrimp and rice farmer associations, cooperatives and businesses, and the industries supporting them; and agricultural/aquacultural extension agents.

A project advisory committee will be formed with representation from key agencies/organizations in each country to provide overall guidance and input to the project design, implementation and evaluation. The AMBI coordinator will ensure that regular progress reports are conveyed to the AMBI steering committee and CAFF management board. These will also be shared with the Atlantic Flyway Shorebird Initiative Executive Committee, and the national focal points for the Convention on Biological Diversity, the Convention on Migratory Species, and the Ramsar Convention.

Proposed Budget

Estimated cost of activities: US \$150,000 – 250,000 (depending on number of countries/area participating).

Budget Item	Estimated Cost (US \$)
<i>Objective 1</i>	
Remote sensing analysis	20,000
Ground validation (travel)	10,000
<i>Objective 2</i>	
Researcher salary	20,000
International travel	15,000
Fieldwork costs	25,000
<i>Objective 3</i>	
Researcher salary	30,000
Case studies (5)	10,000
Travel	20,000
BMP manual development	20,000

Theme 5: Measures to protect and safeguard sites

Introduction

Habitats and sites important for Arctic migratory shorebirds are increasingly threatened by many types of human development. Coastal areas are rapidly being lost to commercial developments, including hotels, resorts, marinas and cruise ship ports. Industrial developments such as cargo shipping ports and power plants are also a major threat. Sand mining, coastal engineering (armoring, dredging, etc.) and residential development are also adversely impacting habitats for shorebirds. Finally, various forms of pollution often associated with development, including sedimentation, solid waste, mercury and oil spills are severely damaging habitats and limiting the availability of high quality habitat for shorebirds.⁹



While further loss of some coastal and wetland habitats to development is inevitable, a concerted effort is needed to identify remaining key wetland/intertidal sites (many, if not all, of which will be Important Bird and Biodiversity Areas, IBAs) for Red Knot and Semipalmated Sandpipers (and other Arctic migratory shorebirds), and ensure that these habitats are protected and properly managed. Furthermore, the recognition and “endorsement” of these sites as having values critical to the region’s future and contributing to local economies through sustainable livelihoods can help ensure that they are not lost to development.

In northern South America, and especially in the Guianas, the majority of the population (and residential and commercial development) is concentrated in a narrow strip along the coast. Although there is only limited development of this coastline at present, there are coastal development projects planned that could have significant impacts on sites and habitats critical for Arctic migratory shorebirds. Some of these projects are likely to be funded by development banks and/or bilateral/multilateral cooperation. The requirements of shorebirds and their habitats need to be considered in the planning stages of any coastal development project. Accurate information about key sites and habitats must be available to developers and their financiers to inform proper planning and support protection of key sites.

Through this implementation plan, AMBI seeks to ensure that key sites for shorebirds have been clearly identified (e.g. as IBAs) and documented in publicly-available databases (such as the IBA Database); that information on these sites is incorporated into development bank/multilateral agreement decision tools (such as the Integrated Biodiversity Assessment Tool, IBAT) and environmental safeguard policies; and, that the information is readily available to governments in the focal area and incorporated into development plans. AMBI also aims to support the attainment of international designations (e.g. Western Hemispheric Shorebird Reserve Network,

⁹ Photo provided by Morten Ekker

Ramsar Site) for key sites, and to ensure that information about each site's characteristics and ecosystem services is transmitted to relevant local and national government agencies.

Project Overview

To ensure that measures are in place to protect and/or safeguard key sites (IBAs) and habitats for Arctic-breeding shorebirds in northern South America. The objectives of this implementation strategy are:

1. Ensure that key sites for shorebirds have been clearly documented and incorporated within development decision making tools and plans.
2. Support the safeguarding of key sites under appropriate policy mechanisms.
3. Support the designation of key sites under international mechanisms that help provide protection.

Activities to be undertaken

For each objective there are several activities that must be undertaken in order to meet each goal:

Objective 1:

1. Review existing, mapped key sites for Red Knot and Semipalmated Sandpiper, and identify any key sites not already defined.
2. Compile a comprehensive inventory of all other potential key sites for Red Knot and Semipalmated Sandpiper, identifying the species and numbers that use each site and their seasonality, and highlighting specific areas/habitats of importance (e.g. key roosting or foraging areas within a site).
3. Map any additional key sites and identify any information gaps.
4. Share site inventory with existing site information tools to enable them to update their information holdings, and ensure that the latest information is readily available to their pre-existing user groups.
5. Share site inventory with development banks and incorporate information into their decision support tools.
6. Share site inventory with other flyway/migratory bird initiatives (e.g. Atlantic Flyway Shorebird Initiative) and the Secretariats of relevant multilateral agreements (e.g. Ramsar Convention, Convention on Migratory Species, Convention on Biological Diversity, World Heritage Convention).
7. Prepare inventories per country in appropriate languages(s) and share with relevant authorities (including CBD, CMS and Ramsar national focal points, and land-use planning authorities).

Objective 2:

1. Compile an inventory of policies for bird conservation in each country and identify policy gaps as relevant to the conservation of sites and habitats for Red Knot and Semipalmated Sandpiper.
2. Assess the effects of existing national conservation policies on land-use and sea-use as relevant to Red Knot and Semipalmated Sandpiper.
3. Identify opportunities to promote the conservation and/or safeguarding of key sites for Red Knot and Semipalmated Sandpiper under existing conservation policies.
4. Assess how land-users and local communities at key sites perceive conservation policies.

5. Build the capacity of local stakeholders, including indigenous communities, conservation organizations and agencies to review and provide comments on Environment Impact Assessments and other project documents when they are undergoing public consultation through information sharing.

Objective 3:

1. Share the site inventory with the WHSRN Executive Office and the Ramsar Convention Secretariat and National Focal Points.
2. Share the information for each site with local authorities, landowners and communities.
3. Work collaboratively with local communities to demonstrate and advocate for the co-benefits in terms of livelihoods, rights and ecosystem services of safeguarding key shorebird sites.
4. Implement community engagement/outreach and education activities to build support for the designation of sites.
5. Work with local site partners and Ramsar National Focal Points to develop proposals for the designation of sites as WHSRN and/or Ramsar sites (incorporating key information about the sites into the proposals).
6. Evaluate the potential of other international initiatives/agreements to help protect or safeguard sites (e.g. World Heritage Convention).

Measures of Success

- Inventory (including maps) of all known sites (i.e. IBAs) holding 1% or more of the population of Red Knot and/or Semipalmated Sandpiper readily available, and information integrated into existing site information tools, and shared with development banks, national government and multilateral environmental agreements.
- Policy mechanisms for conserving and safeguarding sites and habitats for Red Knot and Semipalmated Sandpiper identified, promoted and are readily available as “tools”.
- Local stakeholders and conservation organizations have increased capacity to respond to potential development threats to key sites and habitats.
- Sites holding 10% or more of a shorebird population are designated as WHSRN and/or Ramsar sites.

Conditions of Success

- Decision-makers, local managers and local communities are familiar with the boundaries of the shorebird sites.
- Policies take into consideration the socio-economic characteristics of the local stakeholders (e.g. local communities).
- Local communities and site users are aware and are sufficiently engaged to feel motivated to comply with policies/rules.

Constraints/Risk Analysis

- Engagement – stakeholders at all levels must be engaged for this project to be successful, if groups do not feel that their knowledge is valued or considered, implementing protected regions may be difficult to impossible to achieve at the practical level.
- Effective protection – effective and appropriate protection options need to be considered to ensure that shorebirds, and their habitats, are conserved.

Necessary Institutional Arrangements

Successful implementation of this plan will be dependent on the involvement of a combination of government agencies, research organizations, conservation groups, development banks and other financial institutions, multilateral environmental agreements, site managers, and local communities. Specifically, the following organizations should understand and support the project:

- National and regional/local environmental agencies and land-use planning agencies
- InterAmerican Development Bank
- World Bank
- Latin American Development Bank (Corporación Andina de Fomento)
- National development banks and development financiers
- International and national conservation NGOs, including the BirdLife International partnership (that manages the IBA inventory and database)
- National focal points and Secretariats of the Ramsar Convention, Convention on Migratory Species, Convention on Biological Diversity, World Heritage Convention
- Environmental law institutes
- Local communities

A stakeholder identification process should be undertaken at each key site to identify the stakeholders that should be involved in or informed of the project and its results.

A project advisory committee will be formed with representation from key agencies/organizations in each country to provide overall guidance and input to the project design, implementation and evaluation. The AMBI coordinator will ensure that regular progress reports are conveyed to the AMBI steering committee and CAFF management board. These will also be shared with the Atlantic Flyway Shorebird Initiative Executive Committee, and the national focal points for the Convention on Biological Diversity, the Convention on Migratory Species, the Ramsar Convention and the World Heritage Convention.

Proposed Budget

Estimated cost of activities: US \$200,000 – 250,000.

Budget Item	Estimated Cost (US \$)
<i>Objective 1</i>	
Researcher salary	10,000
National inventories	50,000
<i>Objective 2</i>	
Researcher salary	25,000
Case studies (5 sites)	25,000
Capacity-building workshops	25,000
<i>Objective 3</i>	
Researcher salary	30,000
Travel	20,000
Community engagement (5 sites)	25,000

Americas Flyway Implementation Strategy Review Process

The Americas Flyway Committee designed the creation of the Implementation Strategies to include a wide range of stakeholder groups. First, implementation strategies were developed by expert groups using the AMBI workplan as the guiding document. These expert groups were identified by the AMBI Americas Flyway Committee. Each expert group was asked to outline the specific needs and actions required to implement projects that addressed AMBI's objectives (Table 1).

Drafted implementation strategies were shared with a wide range stakeholder groups who were asked to review and provide input. This included wildlife managers, indigenous groups, NGOs and others working on conservation projects in the regions (Table 2). In addition to this consultation process the AMBI Americas committee held a workshop at the ArcticNet Annual Science Meeting in Vancouver in 2015 to discuss and consult on AMBI and the implementation strategies. Input from this session, as well as from this group of stakeholders was incorporated into the strategies as well (Table 3). Stakeholders were either asked to review all five implementation strategies, or just those that applied to their region (either Arctic or northern South America). Feedback from these groups were then incorporated into the draft plans as presented here. This document represents a draft of the implementation plans that we continue to seek input and guidance on, including from CAFF, observer countries, and other stakeholders in the region. To further the uptake and implementation of these strategies, the Americas Flyway committee is currently seeking money to host a stakeholder meeting in northern South America in 2017.

The purpose of the implementation strategies is to create road maps for groups to use to initiate projects that address AMBI and regional priorities, and to attract funding and high level support. A number of the projects identified in the Arctic implementation strategies are already being used to apply for funding and garner project support.



Table 1. Expert groups by theme that developed the implementation strategies to deliver an action plan for the AMBI Americas workplan.

NAME	Title	Affiliation	Email
Theme 1			
Dominique Henri	Wildlife Science and Traditional Knowledge Specialis	Environment and Climate Canada	dominique.henri@ec.gc.ca
Joel Ingram	Head, Population Management	Environment and Climate Canada	joel.ingram@ec.gc.ca
Vicky Johnston	Senior Policy Analyst (North)	Environment and Climate Canada	Vicky.Johnston@ec.gc.ca
Dan Ruthrauff	Wildlife Biologist	US Geological Survey	druthrauff@usgs.gov
Paul Smith	Research Scientist	Environment and Climate Canada	PaulAllen.Smith@ec.gc.ca
Theme 2			
Stephen Brown	Vice-President, Shorebird Conservation	Manomet	sbrown@manomet.org
Richard Lanctot	Region 7 Shorebird Coordinator	US Fish and Wildlife Service	richard_lanctot@fws.gov
David Payer	Coordinator, Arctic LCC	US Fish and Wildlife Service	david_payer@fws.gov
Vicky Johnston	Senior Policy Analyst (North)	Environment and Climate Canada	Vicky.Johnston@ec.gc.ca
Jennie Rausch	Shorebird Biologist	Environment and Climate Canada	jennie.rausch@ec.gc.ca
Paul Smith	Research Scientist	Environment and Climate Canada	PaulAllen.Smith@ec.gc.ca
Theme 3			
Juliana B. Almeida	Project Manager	SAVE Brasil	juliana.almeida@savebrasil.org.br
Nyls de Pracontal	Director	GEPOG	nyls.depracontal@gepog.org
Marie Djosetro	Deputy Permanent Secretary	Forest and Nature Department	mdjosetro@yahoo.com
Sandra Giner	Shorebird Researcher	Universidad Central de Venezuela	sandrabginer@gmail.com
David Mizrahi	Vice President, Research and Monitoring	New Jersey Audubon Society	david.mizrahi@njudubon.org
Jason Mobley	Coordinator, Threatened Bird Species	Conservation Program AQUASIS	Jason.a.mobley@gmail.com
Carlos Ruiz	Shorebird Researcher	Asociacion Calidris	cjrui@calidris.org.co

Table 1 continued

Theme 4			
Daniel Blanco	Executive Director	Wetlands International – Latin America and Caribbean	deblanco@humedales.org.ar
Chris Elphick	Shorebird Researcher	University of Connecticut	chris.elphick@uconn.edu
Guillermo Fernandez	Reseracher	Unidad Académica Mazatlán ICML-UNAM	gfernandez@ola.icmyl.unam.mx
Monica Iglecia	Assistant Director of Shorebird Habitat Management	Manomet	miglecia@manomet.org
David Mizrahi	Vice President, Research and Monitoring	New Jersey Audubon Society	david.mizrahi@njudubon.org
Roberta Rodriguez	Shorebird Biologist		robertacrodriques@gmail.com
Theme 5			
Nyls de Pracontal	Director	GEPOG	nyls.depracontal@gepog.org
Marie Djosetro	Deputy Permanent Secretary	Forest and Nature Department	mdjosetro@yahoo.com
David Wege	Head of Conservation Action and Science	BirdLife International	David.wege@birdlife.org
Rachel Atkinson	Especialista Ambiental - Environmental Specialist	Interamerican Development Bank	ratkinson@IADB.ORG
Danielle Paludo	Coordenadora PAN Aves Limícolas Migratórias Centro Nacional de Pesquisa e Conservação das Aves Silvestres	CEMAVE	danielle.paludo@icmbio.gov.br
Maria Rivera	Senior Advisor for the Americas	Secretaria de Ramsar	RIVERA@ramsar.org

Table 2. Stakeholder groups consulted with on the AMBI Americas Implementation Strategies. Stakeholders were either asked to review all five implementation strategies (A), or just those that applied to their region (either Arctic (B) or northern South America (C)).

A - Stakeholder consultation group (all 5 themes)

NAME	Title	Affiliation	Email
Brad Andres	National Shorebird Coordinator, Division of Migratory Birds	U.S. Fish and Wildlife Service	brad_andres@fws.gov
Daniel Lebbin	Director for International Programs	American Bird Conservancy	dlebbin@abcbirds.org
Deborah Hahn	International Resource Director	Association of Fish and Wildlife Agencies	DHahn@fishwildlife.org
Frank Hawkins	Director, Washington DC Office	IUCN	frank.hawkins@iucn.org
Silke Neve	Manager, Migratory Birds Conservation and Management	Environment and Climate Change Canada	Silke.Neve@ec.gc.ca
Greg Butcher	Migratory Species Coordinator, International Programs	US Forest Service	gsbutcher@fs.fed.us
Ian Davidson	Director, Bird Conservation	National Fish and Wildlife Foundation	Ian.Davidson@NFWF.ORG
Scott M. Johnston	Chair of Atlantic Flyway Shorebird Initiative, Migratory Bird Division	U.S. Fish & Wildlife Service	scott_johnston@fws.gov
Guy Foulks	Division of Bird Habitat Conservation	U.S. Fish and Wildlife Service	guy_b_foulks@fws.gov
Maria Rivera	Senior Advisor	Ramsar Convention, Secretariat	RIVERA@ramsar.org
John Beavers	Vice President, International Alliances Program	National Audubon Society	jbeavers@audubon.org
David Wege	Head of Conservation Action and Science	BirdLife International, Americas Secretariat,	David.wege@birdlife.org
Carolina Behe	Indigenous Knowledge/Science Advisor	Inuit Circumpolar Council Alaska	carolina@iccalaska.org

Table 2B - Stakeholder consultation group (Arctic themes)

NAME	Title	Affiliation	Email
Pitseolalaq Moss-Davies	Research Coordinator	Inuit Circumpolar Council	pmoss-davies@inuitcircumpolar.com
Stephanie Meakin	Science Advisor	Inuit Circumpolar Council	meakin.steph@gmail.com
Scot Nickels	Director of Inuit Qaujisarvingat	Inuit Tapiriit Kanatami	nickels@itk.ca
Paul Irngaut	Director of the Wildlife and Environment Department	Nunavut Tunngavik Inc	pirngaut@tunngavik.com
Amie Black	Arctic Science Coordinator	Environment and Climate Change Canada	amie.black@canada.ca
Sabrina Dadrian-Kassabian	Program Officer, Environment and Energy	Canadian Embassy, Washington D.C.	Sabrina.dadrian-kassabian@international.gc.ca
Gregor Gilbert	Resource Management Coordinator	Makivik Corporation	g_gilbert@makivik.org
Mike Gill		Polar Knowledge Canada	mike.gill@polar.gc.ca
Jack Hughes	Population Conservation Office	Environment and Climate Change Canada	jack.hughes@canada.ca
Olaf Jensen	Protected Areas Manager	Environment and Climate Change Canada	olaf.jensen@canada.ca
Peter Kydd	Wildlife Director	Nunavut Wildlife Management Board	pkydd@nwmb.com
Jim Leafloor	Arctic Goose Joint Venture	Environment and Climate Change Canada	jim.leafloor@canada.ca
Bruce MacDonald	Manager Northern Conservation	Environment and Climate Change Canada	bruce.macdonald2@canada.ca
Bill Mansfield	Senior Advisor	UNEP RONA	Bill.Mansfield@unep.org
Adrianna Muir	Deputy Senior Arctic Official	U.S. Department of State	muiraa@state.gov
Lev Neretin	Arctic 2020 GEF/STAP	GEF/Scientific & Technical Advisory Panel	Lev.neretin@unep.org
Lisa Pirie-Dominix	Acting Section Head	Environment and Climate Change Canada	Lisa.Pirie@EC.GC.CA
Nils Warnock	Director	Audubon Alaska	nwarnock@audubon.org
Lauren Wenzel	Director	NOAA -National Marine Protected Areas Center	lauren.wenzel@noaa.gov

Table 2C - Stakeholder consultation group (northern South America themes)

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Table 3. Stakeholders engaged at the ArcticNet Annual Science Meeting in Vancouver in December 2015, and included in review of the consultation process.

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