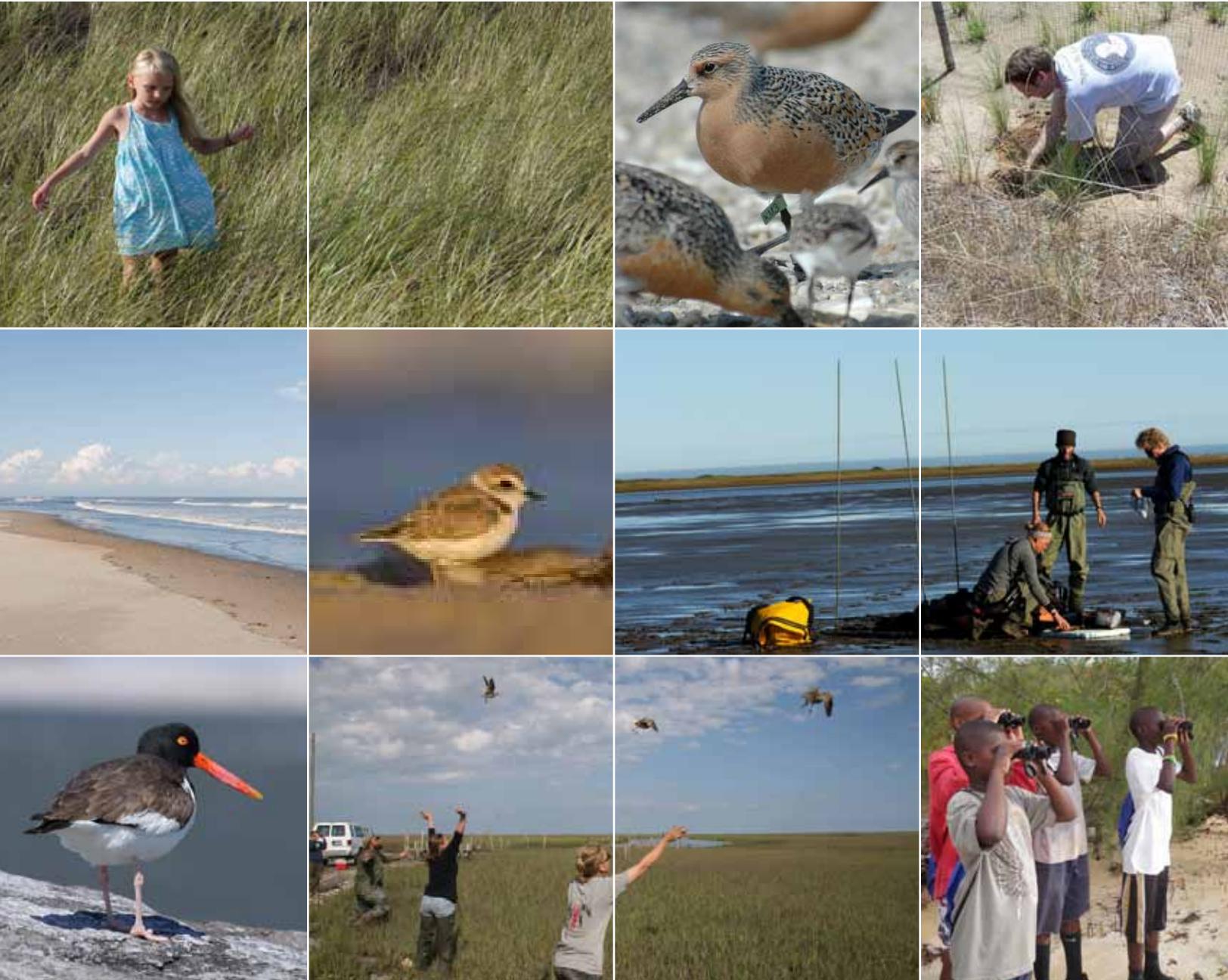


# ATLANTIC FLYWAY SHOREBIRD BUSINESS STRATEGY

## A Call To Action Phase 1



February 2013

## AUTHORS & CONTRIBUTORS



Willet. William Majoros

*“To stand at the edge of the sea, to sense the ebb and flow of the tides, to feel the breath of a mist moving over a great salt marsh, to watch the flight of shore birds that have swept up and down the surf lines of the continents for untold thousands of years, to see the running of the old eels and the young shad to the sea, is to have knowledge of things that are as nearly eternal as any earthly life can be.”*

*Rachel Carson*

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*Cover photos, from top row, left to right: Child walking in path through beach grass, Deb Reynolds; Red Knot, Greg Breese; Coastal restoration, NOAA; Coastal habitat, Jim Fenton; Snowy Plover, Lynn Schmid; Arctic banding, Manomet Center for Conservation Sciences; American Oystercatcher, USFWS; Crew from CCB releasing satellite tagged Whimbrels, Barry Truit; Youth education in the Caribbean, Matt Jeffery*

## WHAT IS A BUSINESS STRATEGY?

Business strategies differ from standard conservation plans by focusing on a set of well-developed actions that link funding to specific, measurable conservation outcomes, rather than producing long lists of possible actions, some of which may not be clearly defined. Typically, a conservation plan describes the natural history of species, lists conservation threats and needs, and presents a painstaking approach that applies objective criteria to determine high priority species. A business strategy builds on the scientific foundation of conservation plans by presenting strategic conservation solutions as actionable investment opportunities.

A business strategy emphasizes three additional aspects generally lacking or minimally developed in a conservation plan: prioritized actions, funding, and outcomes. Prioritizing actions, or grouping actions into tiers that rank their urgency, shows interested parties, particularly potential funders, that some actions need to be implemented more quickly than others to maximize conservation opportunities and successes. Although costs associated with implementing actions are articulated in some conservation plans, the linkage of funding to an explicit outcome goal is central to a business strategy. This linkage allows the success of conservation investments to be evaluated based on progress toward measurable outcomes. Specific outcomes of conservation actions, such as reduced mortality or increased productivity, are often difficult to predict, and some scientists are hesitant to predict such outcomes in the face of uncertainty. Yet the best available information can generally be used to make an educated guess about how organisms will respond to conservation actions. By clearly describing the assumptions of predictions, effectively carrying out informative monitoring systems, and objectively evaluating conservation success, a business strategy can be adapted over time to maximize the benefits of conservation investments in the face of uncertainty.



Whimbrel. Lynn Schmid



Piping Plover chick. Jim Fenton

## SUMMARY

The Atlantic Flyway Shorebird Conservation Business Strategy is an unprecedented endeavor to implement conservation for shorebirds across an enormous geographic scale that involves numerous federal, state, provincial, and local governments, conservation groups, universities, and individuals. The business strategy approach emphasizes the involvement of scientists, advocates, funders, and other practitioners all working together for prioritized on-the-ground actions that move toward specific, measurable outcomes. In short, this strategy presents the needs, actions, and individuals that will recover this remarkable suite of species.

The conservation needs of these species are best represented by the story of the Eskimo Curlew, once an abundant species along the Atlantic coast and now presumably extinct as a result of market hunting and severe habitat loss across its range. The flyway approach is crucial for these species whose range represents virtually the entirety of the globe, from the High Arctic to stopover sites in the mid-latitudes to wintering areas in the southernmost lands of South America. With evidence of threats in all these far-flung areas, a full annual cycle approach is needed. Unless range-wide actions presented in this strategy are taken shorebird species will succumb to threats that are taking a daily toll on these iconic birds, the effects of which will reach an irreversible tipping point.

Through expert opinion, peer-reviewed and published information, and our best-educated guesses, a list of priority focal, species and geographies has been identified and is used throughout this strategy. This list represents the species and geographies with the highest conservation needs and serves to represent other shorebirds that are in a less dire state. Focusing on the priority species should give us the best chance to recover all species of shorebirds (and many associated coastal birds) along the Atlantic Flyway.

We view this business strategy as the implementation of tactical conservation. Above all else, the strategy contains the most important actions and associated costs, predicts measurable outcomes of those actions, and engages potential funders and other action-oriented organizations to ensure implementation. The goal of the strategy—and the motivation of its partners—is to recover species through a tactical process.

### *Overall business strategy goal:*

The goal of this conservation strategy is to create a long-term platform for stability and recovery of focal species identified. The cumulative impact of the projects developed herein, will increase current shorebird population levels by 10-15 %, by 2020, at a cost of approximately \$20 million per year.

### *Disclaimer:*

The strategy contains estimates of costs and outcomes for projects that were developed using the best available information and include predictions that are based on individual expertise and not necessarily on empirical data. Evaluation and assessment of these predictions is critical to ensure adequate tracking of progress.



Baird's Sandpiper. Brad Winn

**Seven key strategies were developed to characterize conservation activities necessary to address major threats to shorebirds:**

**Reduce Threats to Populations**

**Manage and Protect Habitat**

**Strengthen Conservation Regulations**

**Develop Shorebird Conservation Constituencies**

**Engage Hemispheric Partners**

**Assess and Monitor Populations**

**Reduce Gaps in Knowledge**

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## CONSERVATION NEED

The disappearance of the Eskimo Curlew exemplifies the enormous threat that humans have posed to shorebirds and their habitats over the last 150 years. Once tremendously abundant, these birds were hunted to probable extinction in the United States during their north- and south-bound migrations between Canadian tundra breeding sites and South American grassland wintering areas. Curlews were not alone. Almost every other shorebird species using the Atlantic Flyway was at one time hunted for their commercial value (e.g., restaurants, millinery trade) or for unregulated sport. By the 1930s, many species were in serious decline. As the Eskimo Curlew declined toward extinction, many others like the American Golden-Plover and Buff-breasted Sandpiper came perilously close to oblivion before anyone recognized the need for shorebird conservation. Along the Atlantic Flyway, it wasn't just the migrants that were in peril. Locally-breeding species like American Oystercatcher and Willet were also hard hit. We had nearly eliminated an entire suite of species that represented the wildness of our coastlines.

Over the years the plight of these birds began to be recognized. Such recognition became poignant to many avid shorebird hunters, who helped spur the birth of a new conservation ethic and inspired protective laws that allowed populations of most shorebirds to begin recovery. As a result of their call to action, we were given another chance to demonstrate our capacity as stewards for these masters of migration and ambassadors of the special places where land and water meet.

Now, shorebirds are in trouble again. We must reinvigorate our stewardship responsibilities and take action to thwart renewed shorebird declines. Threats to shorebirds have become more diverse and widespread in recent decades and pose serious conservation challenges. The collapse of the Red Knot population, the sharp decline of Whimbrels in the mid-Atlantic, and a free-fall in numbers of Semipalmated Sandpipers wintering on the coast of South America have all taken place during only the last twenty years. Many other species are also in trouble. Cumulative stresses from human population expansion and commerce, particularly along coastlines, are limiting survival of shorebirds throughout the entire Atlantic Flyway.

But there is hope. Recent conservation gains, achieved for beach-nesting species (e.g., Piping Plover, American Oystercatcher, eastern Willet), show that we can reverse these downward spirals across the flyway. However, we must act fast and undertake our own collaborative, far-reaching call to action. The Atlantic Flyway Shorebird Business Strategy identifies major threats and detailed steps needed to reverse shorebird declines and prevent a second, potentially far more extensive wave of shorebird extinctions.



American Golden Plover. David Spieser



Sandpiper. William Majoros

*Migration:*

*The periodic seasonal movement of birds from one geographic region to another, typically coinciding with available food supplies or breeding seasons. Birds may travel hundreds or thousands of miles during migration, depending on the species and the areas they prefer for nesting habitat and wintering grounds, and it may take several weeks to make the entire journey.*

Each year shorebirds use habitats across a vast geography, undertaking some of the longest migrations of any animals on earth. Within the Atlantic Flyway, many shorebird species breed on the Canadian Arctic tundra and winter along the eastern shores of South America, stopping over at a number of critical migratory sites in between, particularly along the east coasts of the U.S. and Canada. Atlantic Flyway shorebirds are exposed to a diverse set of human-induced threats across this network of sites. While the nature and severity of the threats may vary, each site plays a critical role in shorebird survival. Therefore, effective shorebird conservation requires a wide-ranging approach to identify and ameliorate threats that shorebirds face at multiple locations throughout the flyway. Such an approach must attempt to coordinate research, conservation, and management efforts of many groups across many political boundaries and consolidate resources to undertake efficient conservation activities. Only with a collaborative flyway-scale approach can we reverse the serious declines we are witnessing in many of our shorebird populations.

The Atlantic Flyway Shorebird Conservation Business Strategy is a unique effort to initiate coordinated conservation at a flyway scale that will reverse shorebird population declines and maintain Atlantic Flyway shorebirds into the future. The document was drafted using the collective expertise and opinions of over 50 international shorebird scientists, managers, and conservationists from government agencies, NGOs, universities, and the general public. It also incorporates information from existing conservation programs and plans. Specifically, the strategy identifies important activities to be implemented at sites across the Atlantic Flyway by governmental and non-governmental partners representing all countries sharing flyway stewardship responsibilities. While the strategy does not comprise a complete or final list of conservation activities, it details the most efficient and effective activities that can be undertaken to reverse Atlantic Flyway shorebird declines based on the best available collective knowledge of a diverse group of experts. Some critical conservation activities may be lacking, specifically within geographies of the Atlantic Flyway that were underrepresented in our group of experts, such as Latin America. We have made every attempt in this strategy to lay the groundwork for future improvements and expansion. This document is simply the first round of strategic Atlantic Flyway shorebird conservation actions needed.

Fifteen focal shorebird species were selected for this strategy to represent a wide array of regional ecologies and habitats throughout the Atlantic Flyway, taking into account conservation status. Species were also chosen to serve as representatives for other species that share similar conservation needs, making conservation planning more efficient and simplifying implementation. Focal species include taxa that:

1. are highly imperiled or of high concern;
2. represent important habitat suites in the flyway; and
3. have existing conservation plans to make implementation more practical.

The focal species concept will guide shorebird recovery and management efforts in the Atlantic Flyway to maintain high shorebird diversity and support declining or extant regional populations.



Red Knot. Greg Breese

FOCAL SPECIES LIST					
Species	Species Code	USSCP <sup>1</sup> Status	Population Level	WHSRN <sup>2</sup> Species Plan	Rationale notes
American Golden-Plover	AMGP	High Concern	Global	Yes	Representative of grassland migrant and wintering species, Caribbean basin hunting pressure
American Oystercatcher	AMOY	High Concern	North American	Yes	Existing Focal Species with a business plan, temperate beach-nesting representative
Greater Yellowlegs	GRYE	High Concern	Global	No	Boreal nester, hunted in Caribbean and South America
Lesser Yellowlegs	LEYE	High Concern	Global	Yes	Boreal nesters, Birds of Conservation Concern List, hunted in Caribbean and South America
Marbled Godwit	MAGO	High Concern	Global	Yes	Small Atlantic Flyway population, grassland/prairie nesting representative
Piping Plover	PIPL	Highly Imperiled	Global	No	Threatened, High priority, temperate beach nesting representative, Piping Plover Recovery Plan
Purple Sandpiper	PUSA	High Concern	North American	No	Small population, northeast wintering, unique rocky shoreline representative
Red Knot	REKN	Highly Imperiled	Global	Yes	Precipitous decline of Patagonian migrants, candidate for U.S. Endangered Species Act listing
Red-necked Phalarope	RNPH	High Concern	Regional	Yes (Atlantic)	Unique life history, population representative of phalaropes, crash of staging population on Bay of Fundy
Ruddy Turnstone	RUTU	High Concern	North American	No	Declines noted in South American and Delaware Bay surveys
Sanderling	SAND	High Concern	North American	Yes	Representative of dispersed migrants, broad wintering distribution
Semipalmated Sandpiper	SESA	High Concern (Eastern)	Global	Underway	Significant recent population declines along Delaware Bay, Bay of Fundy, and north coast of South America
Snowy Plover	SNPL	Highly Imperiled	North American	Underway	High priority, temperate beach nesting representative
Whimbrel	WHIM	High Concern	North American	Yes	Salt marsh obligate representative, measured decline, hunted in Caribbean
Wilson's Plover	WIPL	High Concern	North American	Underway	High priority, temperate beach nesting representative

Table 1: Focal species selected by the Atlantic Flyway Shorebird working group to represent shorebirds throughout the Atlantic Flyway.

<sup>1</sup>US Shorebird Conservation Plan; <sup>2</sup>Western Hemisphere Shorebird Reserve Network

## FOCAL GEOGRAPHY: CRITICAL PLACES IN THE ATLANTIC FLYWAY

An effective conservation strategy requires the identification of key areas where work should be focused. Focal geographies listed in this strategy were identified by overlaying all available distribution data for individual Focal Species with sites in the Atlantic Flyway previously identified as important to these species (“Focal Sites”). Focal Sites were then aggregated into larger regions (“Focal Geographies”), covering the entire flyway, that shares broad habitat features and conservation issues.

Focal Geographies are:

- ◆ Canadian Arctic & Subarctic
- ◆ Atlantic Canada & Northeastern U.S.
- ◆ Mid-Atlantic & Southeastern U.S.
- ◆ Caribbean
- ◆ Northern South America
- ◆ Southern South America

A comprehensive list of finer-scale Focal Sites<sup>1</sup> is provided in Appendix 1.

<sup>1</sup>The South American Focal Sites are only a first approximation and need further development by partners. Providing support for refining South American Focal Areas is an important first step in implementation of the business strategy.



- Eastern Arctic & Subarctic
- Maritime Canada and Northeast US
- Mid Atlantic and Southeast US
- Caribbean
- Northern South America
- Southern South America

## IMPLEMENTING TACTICAL CONSERVATION

Beginning in late 2011, shorebird conservationists began conceptualizing a strategy that meet the conservation needs of these far-ranging species throughout the geography of their lifecycles. The first-ever flyway-scale strategy for Atlantic Flyway shorebird conservation began by calling together North American shorebird scientists, conservationists, and regulators to discuss needs for breeding, stopover, and wintering sites at a workshops held in 2012 and 2013. Participants emphasized implementation of conservation activities at a project level. Details on the strategy to implement these conservation activities are described below:

1. **Priority Activities.** The Atlantic Flyway Shorebird Conservation Business Strategy is a collection of priority activities that need to take place to recover these species., This list of activities represents “one-stop shopping” for potential funders who want to have the greatest effect on reversing declines and recovering these decimated populations. The tables in the strategy list the highest priorities for immediate implementation.

2. **Evaluation.** Implementation of even the highest priorities can have uncertain outcomes. To reduce this uncertainty and avoid further population declines, we must devote resources to better understanding the effects of implementing priority conservation activities and continuing to refine activities so that will have the greatest benefits.

3. In devising this strategy, funding considerations have been as much of a priority as determining focal species or actions. Many planning efforts do not seriously consider and prioritize the needs of potential funders. In future drafts of this strategy, we hope that funders will be able to clearly articulate their role in ensuring strategy successes. We will support strategic meetings of funders to ensure that the entirety of the flyway is being conserved.

4. **Dedicated Participants.** We must ensure active partnerships with engaged participants and leadership that continues well after the initial strategy is developed. Adequate implementation and evaluation depend on work by a number of dedicated individuals. Evaluation is a critical element to assess and clarify outcomes, determine if investment objectives were met, and revise objectives based on the new information.

*Goals: The main goal of this Business Strategy is to reverse the decline of Atlantic Flyway shorebirds, increasing their populations by 20% by 2018.*

*This goal will be attained by meeting goals for several activities detailed throughout the strategy. Goals will be assessed as we fund specific projects tied to each activity, and are able to implement a monitoring program to evaluate this conservation work and associated population responses.*

*Funding: This goal will require approximately \$20 million per year -- above current funding levels -- for at least 5 years.*

*As more projects are funded, additional monitoring will be required to fill knowledge gaps and ensure actions are adapted and populations are responding.*



Banding American Oystercatchers.  
Manomet Center for Conservation Sciences

Seven key strategies were developed as core conservation efforts necessary to address limiting factors. Given limited resources, key strategies focus on actions that will have concrete and measurable outcomes on population growth and sustainability. The seven key strategies are identified below, and examples of top tier projects are presented to the right.

**Strategy 1. Reduce Threats to Populations**

Take immediate action to reduce threats to shorebird populations throughout the Atlantic Flyway, including predation, recreational disturbance, and hunting.

**Strategy 2. Manage and Protect Habitat**

Protect shorebird habitat from threats such as development; effectively manage habitat to meet shorebird needs; and create more habitat to recover shorebird populations.

**Strategy 3. Strengthen Conservation Regulations**

Engage and influence existing regulatory structures to ensure that strong and up-to-date regulations are in place for protecting shorebirds and their habitats at local, regional, and flyway scales.

**Strategy 4. Develop Shorebird Conservation Constituencies**

Employ a concerted strategy to engage citizens, organizations, and governments in actions to abate threats facing shorebirds throughout the Atlantic Flyway.

**Strategy 5. Engage Hemispheric Partners**

Facilitate effective international partnerships; coordinate activities across multiple countries within the flyway; and ensure that resources are distributed where they are required to reduce shorebird declines.

**Strategy 6. Assess and Monitor Population**

Gain knowledge of shorebird populations, reproductivity, and survivorship to evaluate risk from human activities, and prioritize corresponding conservation actions. Measure the effects of ongoing actions to ensure they produce maximum conservation benefits relative to the resources invested, and strategically adapt activities and resource allocation as required.

**Strategy 7. Reduce Gaps in Knowledge**

Take immediate and proactive steps to evaluate, and address emergent, latent, and understudied threats to shorebird populations, before they have irreversible consequences.

REPRESENTATIVE PROJECTS FROM KEY STRATEGIES





*Migratory birds know no boundaries. To make this strategy truly hemispheric, engaging partners in the Caribbean and South America is imperative.*

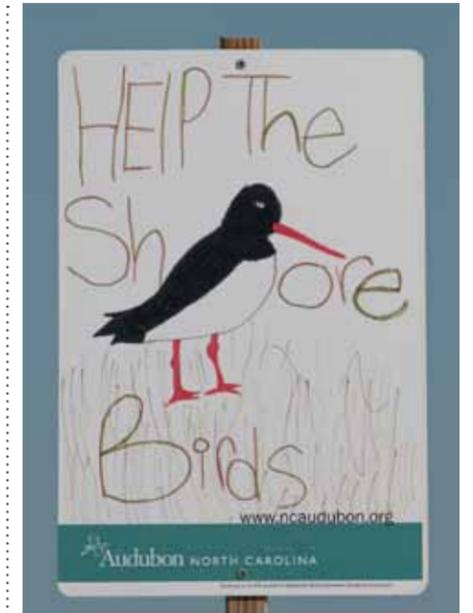
This conservation strategy was developed to target and alleviate regional threats to Atlantic Flyway shorebirds nesting on, wintering in, or migrating through the eastern Canadian Provinces and the eastern coastal United States, with preliminary efforts in the Caribbean Island and South American nations.

To fully address the conservation needs of Atlantic Flyway shorebirds migrating and wintering in the Caribbean and South America, the authors of this strategy recognize the crucial need to seek out and engage shorebird experts in the countries hosting these birds for the majority of the migratory year. Some of the threats to shorebirds, in the Caribbean and South America, will parallel those on North American coasts, but others will be regionally or hemispherically unique. We are interested in building an effective, collaborative, long-term conservation mechanism with Caribbean and South American partners in order to stem the declines and recover populations of these shared migrant species.

This document is the first of three phases of the Atlantic Flyway Shorebird Conservation Business Strategy. The second and third phases will include direct engagement and participation of Caribbean and South American partners to better define priority actions for Atlantic Flyway shorebirds throughout their lifecycles. Caribbean and South American partners have extensive expertise and knowledge of important conservation actions and programs. Engaging these partners will ensure that stopover and wintering sites are equally factored into flyway-scale recovery actions. Included in this strategy are actions to begin engaging with Caribbean And South American partners in 2013.

Shorebirds face numerous threats during their lifetimes. Natural threats, such as predators and severe weather, have been around for eons, and shorebirds have co-evolved to persist with these pressures. However, human-induced threats, such as habitat destruction, recreational disturbance, unregulated hunting, and pollution are relatively new and can wreak havoc on shorebird populations. Shorebirds have not co-evolved with such threats, which produce levels of stress and mortality that can lead to rapid population declines. Humans have also altered natural sources of mortality, producing additional strain on shorebirds. For example, human-introduced or inflated predator populations and altered weather patterns, caused by human emissions of fossil fuels, have turned formerly sustainable causes of mortality into serious sources of population decline.

Activities presented in this strategy address the most serious human-induced threats known to affect shorebirds and shorebird habitats in the Atlantic Flyway. Unidentified and lesser understood threats can also greatly reduce shorebird populations. Therefore, the strategy includes activities aimed at filling critical gaps in knowledge so effective management actions can be undertaken to alleviate such threats. Contributors are confident that alleviating many of the threats detailed in the strategy will reverse shorebird declines in the Atlantic Flyway.



*School children developed a sign for Audubon North Carolina to protect shorebirds and their habitats. Walker Golder*

**The strategies to implement shorebird conservation are organized around five threats:**

**Hunting**

**Predation**

**Human Disturbance**

**Habitat Loss and Change**

**Lack of Knowledge**

# HUNTING

## Focal Species

- American Golden Plover\*
- Greater Yellowlegs
- Lesser Yellowlegs
- Semipalmated Sandpiper^
- Whimbrel

\*Caribbean only

^Northern South America only

Biologists suspect that shorebird hunting at Caribbean and South American stopover and wintering sites is substantially contributing to the population declines observed in the Atlantic Flyway. However, information on the scale and magnitude of the harvest is limited. There is a pressing need to better understand the geographic scale and rates of harvest to determine how hunting affects shorebird populations. With this information, efficient and effective hunting policies, enforcement, and habitat protections can be instituted to ensure that shorebird hunting is sustainable. Carrying out conservation activities within the diverse regulatory and cultural landscapes that govern shorebird hunting across the Caribbean and South America will require an international effort that focuses not only on scientific knowledge and policy enforcement but also on outreach and education.



Hunted shorebirds. Anthony Levesque



Lesser Yellowlegs. BSI

## OBJECTIVE

1. Reduce harvest of all shorebirds to sustainable levels of 4% per year of adult populations.

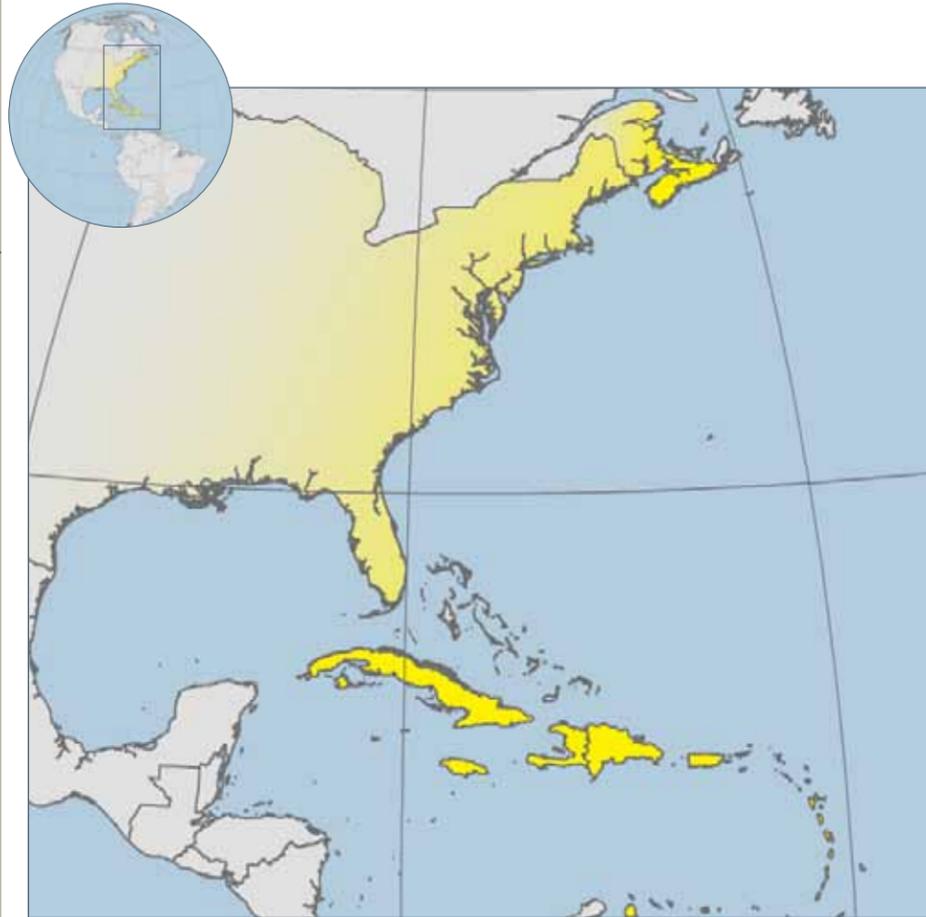
CARIBBEAN, NORTHERN SOUTH AMERICA, SAINT PIERRE & MIQUELON					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Estimate mortality limits for sustainability	Reduce Gaps in Knowledge	Number and confidence intervals for sustainable annual mortality levels estimated.	All	2013	30,000
Determine geographic extent of hunting	Reduce Gaps in Knowledge	Document is developed to detail current shorebird hunting policies and practices in countries throughout the Atlantic Flyway.	All	2013-2014	75,000
Assess hunting and harvest rates	Reduce Gaps in Knowledge	Harvest rates are estimated throughout northern South America and the Caribbean relative to mortality limits for sustainable populations.	AMGP, GRYE, LEYE, WHIM, SESA, REKN, RUTU, WHIM	2013-2015	200,000
Determine baseline demographic information	Reduce Gaps in Knowledge	Baseline demographic data is obtained to improve estimates of sustainable harvest rates.	All	2014-2017	200,000
Create hunter and public outreach campaigns	Develop Shorebird Conservation Constituencies	Public perception and behavior are influenced through education, outreach, and social marketing, resulting in sustainable harvests for all focal species.	All	2013-2018	625,000
Influence hunting policy	Strengthen Conservation Regulations	Migratory shorebird harvest is reduced to sustainable levels through development and enforcement of effective regulations.	AMGP, GRYE, LEYE, WHIM, SESA, REKN, RUTU, WHIM	2013-2018	625,000
Establish hunting-free shorebird preserves	Reduce Threats to Populations	Populations are increased by providing hunt-free refugia for migrating shorebirds and reducing harvest rates to sustainable limits.	AMGP, GRYE, LEYE, WHIM, SESA, REKN, RUTU, WHIM	2013-2018	1,325,000
Create "Caribbean Flyway Council"	Engage Hemispheric Partnerships	International forum is initiated to discuss and implement the most effective harvest regulations across the Flyway.	AMGP, GRYE, LEYE, WHIM, SESA, REKN, RUTU, WHIM	2014-2018	160,000

# PREDATION

## Focal Species

- American Oystercatcher
- Piping Plover
- Snowy Plover
- Wilson's Plover

Many predator populations grow artificially large in association with the high numbers of people living along the coast. Overabundant predators kill shorebird eggs, chicks, and adults in great numbers, leading to population declines. Human development of prime shorebird nesting habitat forces shorebirds to nest in less desirable areas with more predators, further increasing depredation risks. A successful conservation strategy requires resources for supporting predator management efforts at important nesting locations and reliable techniques for measuring management success. New predator control methods must be developed to maximize effectiveness, and outreach efforts to educate the public and garner their support need to be increased.



Shorebirds are common prey for Red Fox in coastal areas. USFWS



Snowy Plover are susceptible to predators, especially before they fledge. Lynn Schmid

## OBJECTIVE

1. Increase productivity of temperate breeders to a level that allows 10% annual population growth by 2018 (e.g., 1.5 chicks/pair)

\*\*Meeting objective also requires human disturbance-breeding reduction effort.

NORTH AMERICAN ATLANTIC COAST & CARIBBEAN					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Identify important nesting areas with high predation rates as priorities for management	Reduce Gaps in Knowledge	Maps of areas prioritized for management are produced	AMOY, PIPL, SNPL, WIPL	2013	25,000
Provide guidance for maximally effective predator management	Strengthen Conservation Regulations	Guidance for best management practices are developed and distributed to constituencies in 14 U.S. states and the Caribbean	AMOY, PIPL, SNPL, WIPL	2013-2018	815,000
Initiate public outreach programs	Develop Conservation Constituencies	The proportion of public objection to predator management is reduced by $\geq 30\%$	AMOY, PIPL, SNPL, WIPL	2013-2018	375,000
Implement predator management programs	Reduce Threats to Populations	Productivity of focal species is increased by $\geq 12.5\%$	AMOY, PIPL, SNPL, WIPL	2013-2018	9,500,000



Piping Plover enclosure. Paul Erickson; Close-up of Piping Plover eggs. Jim Fenton

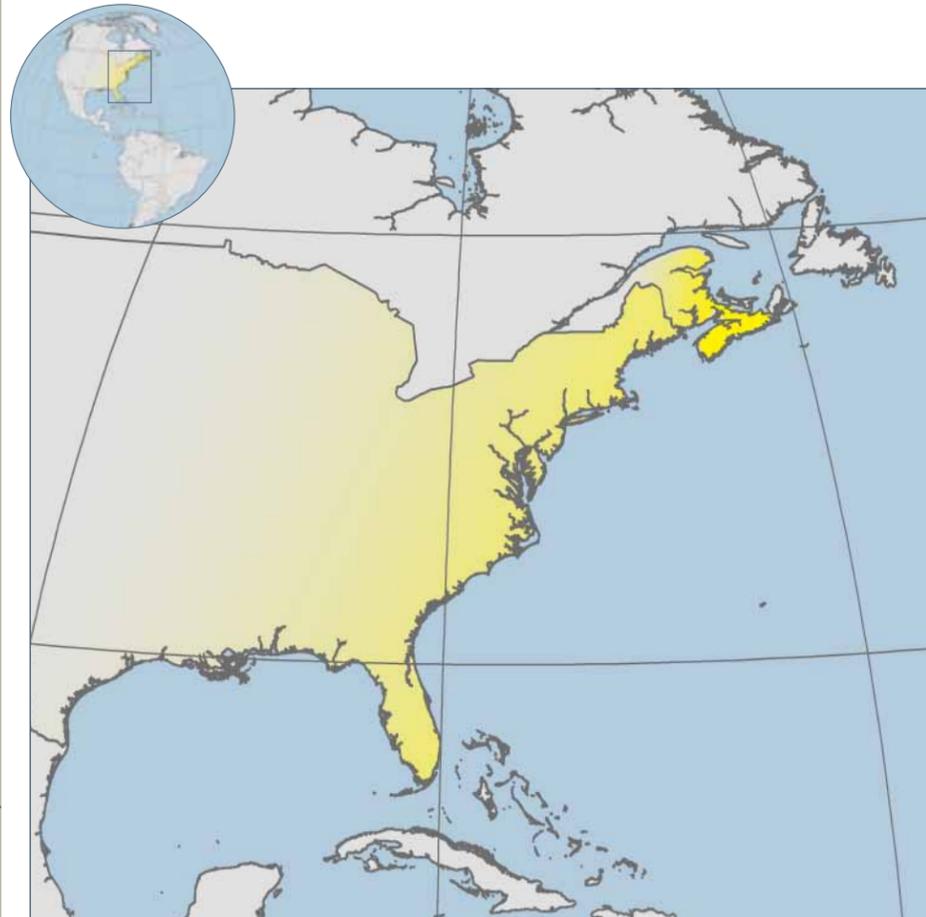
# HUMAN DISTURBANCE

## Focal Species

- American Golden Plover
- American Oystercatcher\*
- Greater Yellowlegs
- Lesser Yellowlegs
- Marbled Godwit
- Piping Plover\*
- Purple Sandpiper
- Red Knot
- Ruddy Turnstone
- Sanderling
- Semipalmated Sandpiper
- Snowy Plover\*
- Wilson's Plover\*
- Whimbrel

\*Breeding, Wintering, & Stopover

Human disturbance of shorebirds can decrease habitat quality and rates of survival. Recreational beach use, such as off-road vehicle use, is of particular concern. An effective conservation strategy must address human disturbance issues using a diverse set of activities. Here we focus on standardizing shorebird protection on public lands, enhancing and increasing enforcement of shorebird protection laws, establishing broad shorebird constituencies, and delivering focused public outreach and education.



Disturbance to roosting shorebirds can effect their ability to breed. Patrick Leary



American Oystercatcher populations are threatened by disturbance. Brad Winn

## OBJECTIVE

1. Increase productivity of temperate breeders to the level (e.g., 1.5 chicks/pair) that allows 10% annual population growth by 2018

\*\*Meeting objective also requires predation reduction efforts in these breeding areas..

NORTH AMERICAN ATLANTIC COAST - BREEDING AREA					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Expand and coordinate stewardship at important sites	Manage and Protect Habitat	Coordinated stewardship is expanded in all Atlantic Flyway states and provinces by adding 3000 seasonal staff and volunteers by 2018	AMOY, PIPL, SNPL, WIPL	2013-2018	6,800,000
Create and deliver social marketing campaign	Develop Shorebird Conservation Constituencies	Concern for shorebird breeding disturbance issues is increased in all states and provinces to create constituencies and change behaviors	AMOY, PIPL, SNPL, WIPL	2013-2018	5,550,000
Influence policy improvements at national, state/provincial, and local levels	Strengthen Conservation Regulations	Regulatory policy is improved to increase acres designated for shorebird nesting by 30% and enforcement efforts by 30%	AMOY, PIPL, SNPL, WIPL	2013-2018	3,707,500

## OBJECTIVE

1. Increase in suitable, disturbance-free wintering habitat by 40% by 2018.

NORTH AMERICAN ATLANTIC COAST - WINTERING & MIGRATORY STOPOVER AREAS					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Expand and coordinate stewardship at important sites	Manage and Protect Habitat	Coordinated stewardship is expanded in all Atlantic Flyway states and provinces by adding 1500 seasonal staff and volunteers (some year-round) by 2018	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013-2018	7,875,000
Create and deliver social marketing campaign	Develop Shorebird Conservation Constituencies	Concern for shorebird overwintering and stopover disturbance issues is increased in all states and provinces to create constituencies and change behaviors	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013 - 2018	7,500,000
Influence policy improvements at national, state/provincial, and local levels	Strengthen Conservation Regulations	Regulatory policy is improved to increase acres preserved for shorebird winter and stopover use by 30% and associated enforcement efforts by 30%	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013 - 2018	3,087,500

Activities and outcomes in the Caribbean & South America wintering and migration stopover areas will be presented in Phases 2 and 3 of the Business Strategy, following upcoming engagements with Caribbean and Latin American conservation partners.

# HABITAT LOSS & CHANGE

## Focal Species

All\*

\*Purple Sandpiper and Red-necked Phalarope only in Eastern Canada and Northeastern U.S.

Many land management practices along the U.S. Atlantic coast have long-term impacts on populations of Atlantic Flyway shorebirds, eliminating beach and intertidal conditions that they require to persist. Widespread coastal engineering projects, including channel dredging, rock armoring, and beach rebuilding, affect survival of beach-nesting, migrant, and wintering shorebirds. Other habitat management practices can also reduce critical shorebird food resources. This conservation strategy proposes to work with state and federal agencies to: (1) develop and implement best practices for managing, restoring, enhancing, and creating shorebird habitat; and (2) strengthen and enforce regulatory protection of important shorebird sites. It also proposes that new management and regulatory practices be made adaptive, to account for habitat modifications resulting from climate change.



Sprawl. USFWS



Greater Yellowlegs. William Majoros

## OBJECTIVES

1. Increase the amount of protected and adequately managed shorebird habitat in focal areas across the flyway by 50,000 acres.
2. Develop and incorporate adaptive habitat management models and strategies for climate change scenarios for each region.
3. Achieve no net loss of shorebird habitat from coastal engineering and development projects.

ATLANTIC FLYWAY					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Engage Caribbean and South American constituencies to build support for conservation of shorebirds and wetlands	Develop Conservation Constituencies	Actions are implemented by governments and NGOs at 30 priority areas to increase the public's interest in and concern for shorebirds and wetlands to the public	All	2013-2018	Caribbean: 9,490,000 South America: 7,570,000
Develop best management practices for coastal engineering and inlet projects	Manage and Protect Habitat	Consistent best management practices are initiated in all focal geographies	All	2013-2018	NE US & Atlantic Canada: 200,000; Mid- & SE-US: 200,000; Caribbean: 200,000
Develop science-based standards for coastal habitat management and enforcement on public lands	Strengthen Conservation Regulations	Agencies adopt consistent habitat management policies that result in an increase in shorebird use on managed lands by 25% by 2018	All	2013-2018	NE US & Atlantic Canada: 437,500; Mid- & SE-US: 437,500; Caribbean: 1,500,000 Flyway-wide: 250,000
Increase quality of shorebird foraging habitat and food resources	Manage and Protect Habitat	Critical food resources increased by 25% through protection or restoration at 12 sites	All	2013-2018	NE US & Atlantic Canada: 80,000; Mid- & SE-US: 2,930,000
Model changes to critical shorebird habitat predicted under climate change scenarios	Reduce Gaps in Knowledge	Climate adaptation strategies are implemented into state, provincial, regional, and national coastal land use plans	All	2013 - 2018	NE US & Atlantic Canada: 250,000; Mid- & SE-US: 125,000; Caribbean & South America: 850,000
Restore, enhance, create, and manage, and protect shorebird breeding, stopover, and foraging habitat	Manage and Protect Habitat	Managed and protected shorebird habitat (including food resources) is increased by 50,000 acres, with climate change contingencies	All	2013-2018	NE US & Atlantic Canada: 10,400,000; Mid- & SE-US: 13,400,000; Caribbean: 1,500,000

Activities and outcomes in South America will be included in Phase 3 of the Business Strategy, following upcoming engagements with South American conservation partners.

# LACK OF KNOWLEDGE

## Focal Species All Species\*

\* Purple Sandpiper and Red-necked Phalarope not included in the Caribbean

Piping Plover, Purple Sandpiper and Red-necked Phalarope not included in North & South America

American Oystercatcher, Piping Plover, Snowy Plover, Wilson's Plover not included in Eastern Arctic & Subarctic

We lack important information about many shorebirds in the Atlantic Flyway, including the locations of critical habitats and resources they require to persist throughout the annual cycle, how they move across their ranges, major threats they face and how to mitigate them, and the most effective ways to measure population sizes and document demographic trends. These knowledge gaps threaten our ability to efficiently allocate resources to shorebird conservation and impede us from evaluating conservation successes. Effective shorebird conservation requires broad collaboration to reduce knowledge gaps.



Dunlin. Jeff Nadler



Wilson's Plover. Jim Fenton

## OBJECTIVES

1. Determine current knowledge of distribution and abundance of shorebirds in the Caribbean and South America and the most pressing threats affecting them.
2. Conduct comprehensive studies to identify priority areas for conservation and fill knowledge gaps.
3. Build capacity for monitoring, management and conservation.

CARIBBEAN & SOUTH AMERICA					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Hold a working meeting to engage regional conservation partnerships for coordinating work on priorities and allocation of resources	Engage Hemispheric Partnerships	A collaborative plan is implemented to conduct priority conservation actions using a business strategy approach -To be incorporated into Phase 2 of the Shorebird Strategy	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013	Caribbean: 40,000 South America: 160,000
Conduct surveys to identify important breeding, stopover and wintering sites, and monitor population trends and habitats	Assess and Monitor Populations	Important sites are identified, with top 50 Caribbean and top 50 South American sites prioritized based on shorebird populations and habitat conditions	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013-2018	Caribbean: 1,598,000 South America: 2,659,000
Implement Caribbean banding and resighting program to identify important habitat networks for focal species	Reduce Gaps in Knowledge	Capacity of local shorebird conservation professionals and volunteers is increased facilitating identification of networks of important sites for each focal species	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2013-2018	Caribbean: 800,000
Assess threats and develop conservation plans for each important site	Manage and Protect Habitat	Standard threat evaluations are completed, and conservation actions are prioritized for 50 key Caribbean sites and 50 key South American sites	AMGP, AMOY, GRYE, LEYE, MAGO, PIPL, REKN, RUTU, SAND, SESA, SNPL, WHIM, WIPL	2014-2018	Caribbean: 114,500 South America: 179,500

# LACK OF KNOWLEDGE CONTINUED...

## OBJECTIVE

1. Estimate and monitor baseline demographic data for all focal arctic-breeding shorebirds and determine factors affecting demography in the Canadian Arctic.

CANADIAN ARCTIC					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Conduct population dynamics and demographic studies at existing and new study sites	Reduce Gaps in Knowledge	Trends in population size, survival, and reproductive rates, and factors effecting those rates are estimated for all focal Arctic breeding shorebirds	AMGP, GRYE, LEYE, MAGO, PUSA, REKN, RNPH, RUTU, SAND, SESA, WHIM	2013-2018	3,459,000



Brad Winn

Monitoring. Brad Winn

## OBJECTIVE

1. Identify the network of sites most critical to the conservation of each focal species and prioritize those sites most in need of conservation action.

ATLANTIC FLYWAY					
Activity	Key Strategy	Outcomes	Focal Species	Time Frame	Funding Gap
Compile and analyze existing data on connectivity among important sites	Reduce Gaps in Knowledge	Current knowledge about connectivity of important sites is identified for all focal species	All	2013-2015	210,000
Expand marking and resighting and tracking efforts	Reduce Gaps in Knowledge	Network of important sites is identified for each focal species, and information on timing, use, and demographics is obtained	All	2013-2018	3,235,000
Improve and institutionalize methods to implement annual standardized, large scale monitoring programs	Assess and Monitor Populations	Trends are detected in populations of shorebird species and subspecies	All	2013 - 2018	2,000,000
Use standardized methods to identify threats at important sites	Manage and Protect Habitat	Results of comprehensive threat evaluations are compiled for all important sites to inform actions supporting long-term viability of each focal species	All	2013 - 2018	155,000
Develop a process to prioritize delivery of conservation actions to the most critical sites	Manage and Protect Habitat	Five critical sites are selected as needing the most immediate action by 2015 (reevaluated through 2018)	All	2015	20,000



Aerial survey. Ellen Jedry



American Oystercatcher eggs. USFWS

The enormous task of reversing serious declines in shorebird populations can feel daunting at times. However, inspiration can be gained through stories of partners “called to action.” -- examples of how the focused commitment of conservationists succeeded in restoring formerly declining populations.

Most shorebird species in North America began showing seriously declining trends in 1970. Most of these species are still undergoing continued declines. But one species -- the American Oystercatcher -- was the lucky recipient of a highly focused partnership effort to restore its population. The following recovery example occurred during the late 1990’s and following the publication of the U.S. Shorebird Plan, which helped rally and focus management.

**The American Oystercatcher**

The American Oystercatcher tells the story of a population responding directly to conservation action. This large, conspicuous shorebird breeds along the Atlantic Coast from Cape Cod to Florida and along the Gulf Coast from Florida to Mexico. The American Oystercatcher population was on a downward trend that could have made the species a candidate for listing as endangered or threatened.

The American Oystercatcher Recovery Campaign began in 2007 with the development of the first-ever Business Plan for Conservation, a radical departure from other conservation plans that tied recovery of the population to a specific funding level. More than twenty organizations and agencies are now working together to achieve the goals of the campaign. The campaign is coordinated by the Manomet Center for Conservation Sciences and supported by the National Fish and Wildlife Foundation, the U.S. Fish and Wildlife Service, state agencies, and multiple private foundations and individuals.



Figure 1. This graph shows American Oystercatchers’ projected rebound after recovery campaign is implemented in 2009. Photo by Jack Rogers

**Canadian Arctic and Subarctic**

- High Arctic Islands
- Mid Arctic Islands
- Mackenzie River Delta
- Central Arctic
- Foxe Basin and Baffin Island
- Southampton and Coats Islands
- Hudson Bay Coast
- Belcher Islands
- James Bay and Akimiski Island
- St. Lawrence River Corridor

**Atlantic Canada and Northeastern United States**

- Newfoundland/Purple Sandpiper Areas
- Nova Scotia/Purple Sandpiper Areas
- Bay of Fundy/Nova Scotia Coast
- Coastal Maine
- Plum Island Sound
- Cape and Islands
- Long Island South Shore

**Mid-Atlantic and Southeast United States**

- New Jersey Barrier Coast
- Greater Delaware Bay
- Delaware/Virginia Coast
- North Carolina Outer Banks
- Southeastern Barrier Island Coast2
- Northern Florida Gulf Coast
- Southern Florida Gulf Coast

**Caribbean**

- Bahamas/Turks and Caicos
- Cuba
- Puerto Rico/Lesser Antilles

**Northern South America**

- Suriname/French Guiana Coast
- Reentrancias Maranhenses/Maranhao, Brazil

**Southern South America**

- Lagoa do Peixe/Laguna de Rocha
- Bahia Samborombon
- Bahia Blanca
- Bahia de San Antonio
- Bahia Bustamante
- Comodoro Rivadavia
- Rio Gallegos
- Bahia Lomas
- Costa Atlantica de Tierra del Fuego



Snowy Plover. Lynn Schmid

