The Shorebird Recovery Project

Restoring Shorebird Populations and Ecosystems across the Americas

Shorebirds are waterbirds comprising sandpipers, plovers, and related species found primarily along coastal and inland shoreline habitats. Many of the species are extraordinarily long-distance migrants. For example, by its 13th birthday, a Red Knot, smaller than a city pigeon, will fly the distance from the Earth to the Moon—if it overcomes the many threats that confront it throughout its annual cycle. Some other species migrate only short distances, or not at all, and a number are South American endemics. The latter are among the world's least understood groups of birds in both their natural history and their conservation status

The Red Knot has suffered a ten-fold population decrease in the past 20 years. Photo © Art Morris

The Need: Threats to shorebirds and their habitats abound, and are causing dramatic declines toward extinction for many species, indicative of degrading ecosystem health that threatens human and wildlife communities from pole to pole. Figure 1 shows annual decline rates as measured in eastern North America over the years from 1974-1998. Nine species are declining at statistically significant rates, and no species was found to be increasing. At these rates, the American Golden-Plover will be functionally extinct in 45 years; the Hudsonian Godwit in 80.

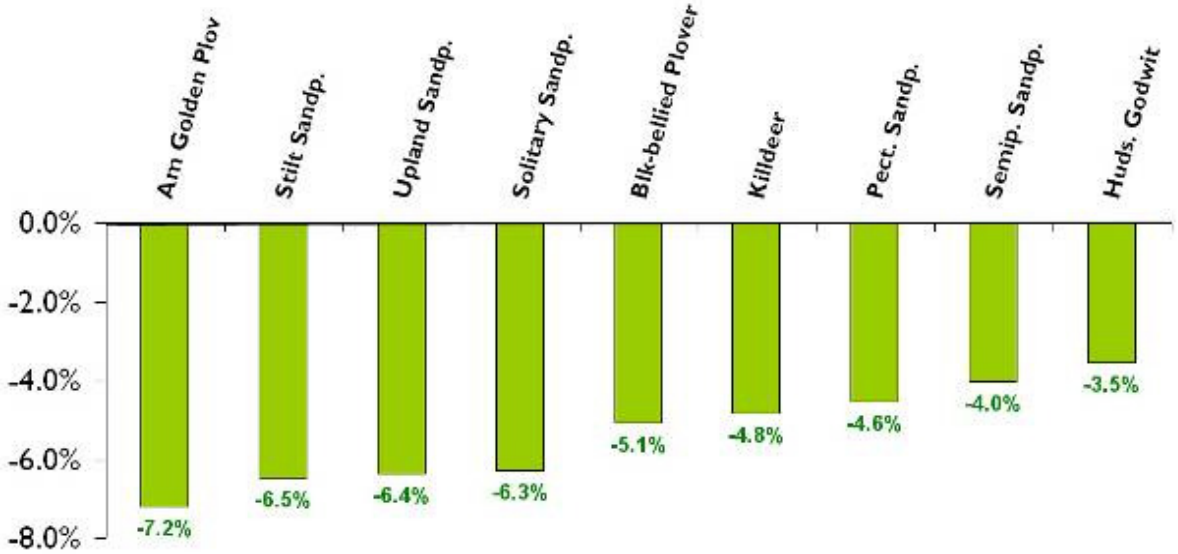


Fig 1. Statistically significant rates of population change for nine species in eastern North America are all sharply negative. Data from Bart, Brown, Morrison, and Harrington, 2007. *J. Avian Biology*, **38:** 73-82.

Other data sets have shown that the *rufa* race of Red Knots breeding in the New World will become extinct by 2010 if trends are not reversed. For many other shorebird species and regions, population trend data are simply not available. Some 25 species are thought to be declining (U.S. Shorebird Conservation Plan, 2nd ed.,

2001); for most there are no appropriate survey data to quantify the suspected trends, and even fewer to pinpoint the cause of their observed declines. Scientists can say for very few species which threats, specifically, are *the* limiting factors that must be addressed through conservation efforts. Possibilities include climate change; habitat loss/degradation on breeding or wintering grounds or at stopover sites; pollution, human disturbance; increased predation; or a combination of these factors. The mystery is that declines are seen across many species with widely differing life histories. What is going on and what can be done?

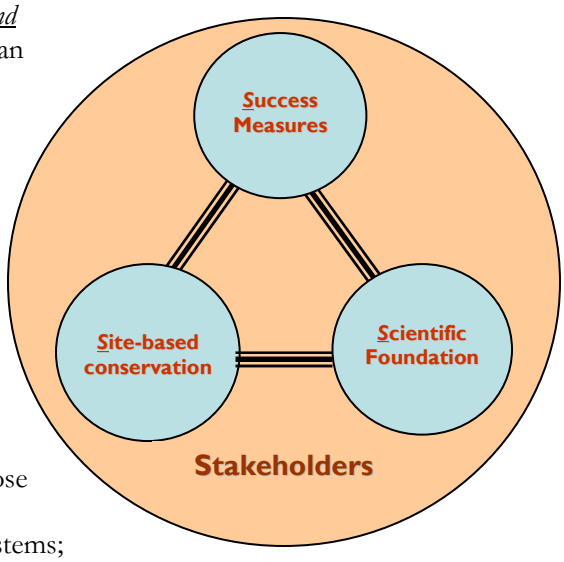
The Goal of the Shorebird Recovery Project is to recover and sustain the populations of shorebirds at the levels called for in the US Shorebird Conservation Plan for Nearctic breeding species and to develop and meet targets for South American breeders.

The work is enormous in scope and can only be accomplished by working collaboratively with many partners: academic and agency scientists, individual landowners including corporations, government officials at all levels, many partner conservation groups, and the funding community. Our role is to provide quiet leadership in creating a common agenda, shared measurement systems, mutually reinforcing activities, and continuous communication. Such efforts have recently been described as "collective impact" efforts and our role as that of a "backbone organization."

Perhaps most importantly from Manomet's institutional perspective, the SRP recognizes that it has become ever-clearer over the past decade that wildlife conservation is inherently connected to human well-being and to the emerging issues, such as climate change, facing humans today. For this reason, the Shorebird Recovery Project will be strengthened by its connection to Manomet's program areas and talents in Natural Capital and Climate Change.

The Approach

We have created a **4-S Strategy** designed to save shorebirds *and* ensure the integrity of the ecosystems upon which they and human communities depend. It combines **Site-based Conservation**, informed by an improved **Science Foundation**; with practical **Success Measures** to evaluate conservation outcomes and strategy effectiveness. All of these are set in a matrix of involving all important stakeholders in an open and transparent manner.



Research identifies and ranks the causal factors that threaten shorebird populations across the Hemisphere. Coherent and coordinated conservation strategies that abate those threats are designed and implemented with conservation partners whose sustained capacity is assured. Measurement of success supports adaptive management, emphasizing results and refinement of those strategies that show the greatest success at the least cost. These measures are both biological (effects on target species and ecosystems; reduction of threats) and economic (return on investment; value of co-benefits). All of these components are included in a matrix of **Stakeholders**: the people and organizations who implement the work and those whose lives are affected by the work. This component has received increased attention as we have learned over the past years how best to implement our 3-**S** strategies.

I. Our **Site-based Conservation** strategy continues and expands the work of the *WHSRN*, a voluntary coalition of 85 sites in thirteen nations protecting some 31 million acres of shorebird habitat. Established in

1985, it is the oldest, most successful conservation network in the Hemisphere. Manomet will continue to serve as it has for many years as home of the international WHSRN Executive Office. Sites critical to shorebird populations are only **conserved through partnership**. We are currently leveraging the conservation activities of network partners such as the National Wildlife Refuge System, Audubon, The Nature Conservancy, Rare Conservation, and BirdLife International, toward more focused and science-driven shorebird conservation. In doing so, we incorporate our goals into theirs, leveraging their resources.

The sites, partnerships, and respect that WHSRN has developed over its 25-year history offer unique opportunities, and the SRP works to leverage them. We seek to provide better information and resource flow to site-partners to increase their conservation knowledge and capacity with specific regard to shorebird conservation.

Building partner capacity through formal and informal education programs will ensure sustainability and the crucial involvement of on-the-ground, in-country colleagues. Manomet was, for many years, the leader in training site managers in shorebird management techniques, and SRP is now rebuilding our workshop series in collaboration with the National Conservation Training Center. The workshops provide critical training to wildlife managers on how to maximize habitat value for shorebirds, leveraging the large investments already made in preservation of public lands,.

Our outreach and capacity-building programs, about habitat management needs and techniques, and about adaptation strategies in the face of climate change, link our site-based conservation work to that of building the science foundation of shorebird conservation, described in the following section. They represent our responsibilities to the many stakeholders involved in WHSRN and in shorebird conservation in our Hemisphere.

II. Building the **Science Foundation** for shorebird conservation requires **targeted conservation research for high priority species** on the causes of their declines. In some cases, this will involve undertaking our own research while in others the more effective approach is to catalyze focused research by others. Complementary science work helps build the network of WHSRN sites by identifying new sites. We learn how shorebirds use sites and their resources to strengthen the science of site management and apply it more effectively.

Participants in Colombia's XVIII National Ornithological Encounter identified key shorebird sites across the country in developing their national shorebird conservation plan. *Photo: C. Duncan.*

For most species of shorebirds, the existing scientific information is inadequate to determine why their populations are declining. Conservation of these imperiled species cannot ultimately be successful without targeted actions to address the factors that limit their populations. Building the science base for conservation of this large group of species is a monumental task, and one that requires participation from many different organizations throughout the species' ranges. Manomet works to catalyze the development of this knowledge base through the Shorebird Research Group of the Americas. The group encourages focused conservation research, supports the development of shorebird scientists through workshops and participation in conferences, and improves communication among shorebird scientists throughout the Western Hemisphere. The current focus of the group is the Arctic Shorebird Demographics Network, which coordinates the work of partners across the North American arctic to cooperatively determine what limits shorebird populations.

III. Our **Success Measures** evaluate progress toward "*Effective Conservation*", defined as the **Biodiversity Health Status** of shorebirds and their ecosystems, **Threat Status** for shorebirds and their habitats, and **Conservation Management Status** of sites, ensuring wildlife and ecosystems can be secured in the long-term. These three elements, also employed by The Nature Conservancy, define success in biodiversity conservation. We also will include an institutional capacity measure to ensure that the work of partners is sustainable across time.

To make them more comprehensible to those not used to these terms, it is helpful to consider how each of these elements is assessed.

Biodiversity Health refers to the population and trends of specific species, ecological systems/habitats, or ecological processes that are chosen to represent and encompass the full suite of biodiversity in the project area. This can either be for place-based conservation or the focus of a thematic program. We measure it through biological census data from efforts such as the Program for Regional and International Shorebird Monitoring, which aims to provide trends for all shorebirds across time. Because it may take years for populations of shorebirds to change in response to conservation interventions, we also use intermediate or indirect metrics, such as changes in food supply at a site or condition of the birds as they depart.

We evaluate **Threat Status** using our own WHSRN Site Assessment Tool (SAT), an Excel worksheet wherein site managers and other experts systematically evaluate the current state of a conservation site, the pressures (threats) it faces, and the conservation responses both past and future to those threats. We work with sites to implement the SAT and to use it as the basis for participatory site-management plans across the important shorebird sites of the Hemisphere.

The **Conservation Management Status** of a site considers the degree to which lands and waters have adequate intent, tenure, and management in place to protect biodiversity. This metric includes an assessment of the institutional capacity of partners to achieve lasting conservation.

IV. Stakeholders include the governmental agencies at all levels, non-governmental organizations, private sector landowners and the people living near important sites whose quality of life is related to events there. The term "**good governance**" is used to describe the process of understanding the socio-political dimensions of site-management, the role of key actors, and direct and powerful stakeholders. Only by knowing who has authority over the area / critical habitat; how decisions are made; what the relations of power are among the actors and direct stakeholders, and how and to whom the project is accountable are we able to ensure that conservation efforts are sustainable.

An important tool we have begun to implement is "**social marketing**," defined as the systematic application of marketing and related techniques to achieve behavioral goals for a social good. Through "marketing" the excitement, social and economic opportunities that shorebird habitats provide to their host communities, we find the prospect of increased visibility and public support for conservation by the human host-communities at WHSRN sites.

Creating common agendas among stakeholders is in essence a combined task of good governance and **shorebird conservation planning**. We achieve this planning from three complementary approaches: site-based planning using the WHSRN Site Assessment Tool; species-based planning for those species considered to be of high conservation concern; and at the Flyway scale where the results of multiple site- and species-plans can be overlaid in a spatially explicit way to identify threats and strategies that can have the greatest impact at very large geographic scales. Incorporation of new on-line mapping and contributory (Wiki) web tools are being investigated and showing great promise.

Projects

Each of the above core elements of Manomet's approach to shorebird conservation entails significant functions and activities – from discovering and adding new sites to the WHSRN network, to engaging project partners and building their capacity, to establishing cohesive monitoring protocols and activities across the hemisphere (for example). It is a significant body of work built upon the concept of a hemispheric network of partners and their activities.

The following projects are priority ones that Manomet itself intends to shepherd and champion. They have been designed to demonstrate the effectiveness and test the limits of the "4-S Strategy" while undertaking conservation action for high-priority species and sites, and delivering tangible lasting results.

1. **Species Recovery Projects: American Oystercatchers** and **the New World Population of Red Knots** complement and leverage the extensive existing work of many partners across the Hemisphere. These two species have been chosen from the list of high-priority species in part because more is known about the suspected factors responsible for their declines.

   For **Red Knots**, we have helped build and guide a flyway-scale partnership and have published a Conservation Action Plan with measurable objectives and have created and empowered a partnership to monitor the population response of the species in South America. To achieve the population targets of the plan, we and our partners will implement sustainable effective conservation through on-the-ground protection projects and development of annual demographic metrics.

   We have been especially active in supporting the four sites in extreme southern South America where Red Knots winter or stopover on migration. We are collaborating with Rare on three innovative and linked "Pride campaigns" that build community support for a flagship species (the Red Knot in this case) using social marketing techniques. This work has led to the development of the Patagonia focal region project, described below.

   For **American Oystercatchers,** the Working Group that Manomet helped form is engaged in a coordinated program among partners along the entire Atlantic Coast to reduce nest predation and disturbance, to improve habitat availability and quality, and ultimately to increase the population by 30% over 10 years. Manomet has hired an oystercatcher recovery campaign coordinator to guide and coordinate the work of partners across the east coast of the U.S.

   For both species we have been asked by the National Fish and Wildlife Foundation to help shape its strategies and grant-making through creation of business plans and coordinating species working groups.

2. **Focal region projects: Northwest Mexico** and **Patagonia, South America,** both regions of enormous importance for shorebird and habitat conservation. Both projects build on existing efforts and partnerships, expanding them involve all three key elements of the Shorebird Recovery Project's 4-S strategy.

   "The Shorebird Recovery Project in Northwest Mexico" is designed to **conserve sites and species** in the five Mexican states that border the Sea of Cortes. The enormous importance of this area for shorebirds can be seen in there already being nine WHSRN sites (with one of Hemispheric Importance and four of International Importance). Using cutting edge conservation-planning tools we are partnering with the U.S. Forest Service, the Nature Conservancy, Audubon and our in-country partners, especially Pronatura's National Bird Conservation Program and CONANP (the Mexican Federal protected areas system). Together, we are creating a carefully and collaboratively designed approach that

combines all aspects of the 4-S strategy to ensure effective conservation of sufficient habitat and surrounding lands. This collaborative model, with Manomet in its unique and powerful convening role, will be applicable as well to other landscape-scale conservation projects.

"The Shorebird Recovery Project in Patagonia" both builds on and strengthens the work we have done with partners on the coasts of southern South America in our Red Knot focal species project (above). There are four WHSRN sites in the region, two of Hemispheric Importance and two of International Importance. These are crucial areas for Red Knots as well as Hudsonian Godwits and several South American endemics. Recent projects catalyzed and coordinated by Manomet, including the Rare "Pride campaigns" and collaborative projects that mitigate the effects of an oil spill in Delaware Bay in 1996, have led to excellent relations with the key conservation actors in the area: the Chilean National Oil Company, the Ministry of the Environment of Chile, provincial agencies in Tierra del Fuego and Santa Cruz, Argentina, as well as conservation NGOs. We are applying lessons learned from our project in Northwest Mexico, replicating the successful conservation-planning efforts used there to build a set of strategies for Patagonia that address the threats identified for this region to achieve quantified conservation outcomes.

With support of the David and Lucille Packard Foundation, we have taken on the role of backbone organization with a coalition of international and local partners to implement a conservation area plan for the key shorebird sites of Chiloé, Chile. The project is not only essential in its own right for the effective protection of this site of hemispheric importance, but it is an almost ideal case-study of our approach combining science, success measures, and conservation action using good governance and social marketing.

The mayor of Quincho, Chiloé, expresses to other mayors his belief that shorebird conservation is their collective duty and that their ordinances are the tools.

3. Our **Rice and Shorebirds** project advances two important themes. The first is maintaining or expanding existing well-managed ricefields and crawfish ponds to replace lost natural habitat for shorebirds and other aquatic species. Secondly, we seek to reduce or eliminate the use of agro-chemicals that are toxic to shorebirds in other ricelands. For each theme, the 4-S strategy will be applied. We are using the initiative to learn—and export—the key elements of a bigger "Working Wetlands" strategy. The approach involves collaborations with rice growers, government technical staff, extension agents and conservation partners. Collaborators include the California Rice Commission, the Louisiana Rice Growers Association, USA Rice Federation, PRBO Conservation Science, Wetlands International, the National Institute of Agricultural Technology (Argentina), FEDEARROZ (Colombia) and a variety of individual growers. Key landscapes include the Central Valley of California, the Gulf Coast states, and rice-growing regions both in the Southern Cone and northern South America.

4. Our **Arctic Shorebird Project** recognizes that the arctic is the major breeding ground for many of the most highly imperiled shorebird species. Protection and management of arctic habitats is a critical aspect of our hemispheric approach to shorebird conservation. Because shorebirds are dispersed and move among many sites during migration, the best time to accurately measure the status and trend of many shorebird populations is while they are on breeding territories in the arctic tundra.

A collaborative of state, federal, and non-government partners is carrying out carefully targeted surveys of breeding arctic shorebirds as part of the Program for Regional and International Shorebird Monitoring, a hemispheric program developed under the U.S. and Canadian Shorebird Conservation Plans. Moreover, Manomet has just launched the Arctic Shorebird Demographic Network, a project that will for the first-time ever yield statistically reliable conclusions showing at what life history stage (such as reproduction or adult over-wintering survival) may be limiting shorebird populations, using eight field sites across the Alaskan and Canadian Arctic. The enormous geographic scale and the challenging field conditions may be daunting, but there is no simpler way to obtain this crucial information.

5. **Creating Resilient Shorebird Conservation Sites in the Face of Climate Change.** By virtue of their depending on coastal and wetland habitats and timing of food availability for breeding and migration, shorebirds are particularly vulnerable to climate change. In fact, climate change may trump or compound many of the current threats that draw our attention currently. Understanding the impacts of climate change and finding solutions for adaptation for key species and for WHSRN sites is of the highest priority. Through this endeavor, we ensure that our strategies are confronting climate change head-on.

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The growth and success of the Shorebird Recovery since its creation in 2008 has been in considerable measure due to the financial support of several groups, and we are pleased to thank them here.

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