North American Bird Conservation Initiative

Advancing Integrated Bird Conservation in North America *Spring 2014*

The All-Bird Bulletin

Inside this issue:

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The Neotropical Migratory Bird Conservation Act (NMBCA): Thirteen Years of Hemispheric Bird Conservation

Guy Foulks, Program Coordinator, Division of Bird Habitat Conservation, U.S. Fish and Wildlife Service (USFWS)

In 2000, responding to alarming declines in many Neotropical migratory bird populations due to habitat loss and degradation, Congress passed the Neotropical Migratory Bird Conservation Act (NMBCA). The legislation created a unique funding source to foster the cooperative conservation needed to sustain these species through all stages of their life cycles, which occur throughout the Western Hemisphere. Since its first year of appropriations in 2002, the NMBCA has become instrumental to migratory bird conservation in the Americas.

Cerulean Warbler, a Neotropical migrant, is a USFWS Bird of Conservation Concern and listed as Vulnerable on the International Union for Conservation of Nature (IUCN) Red List. / Robert Royse

The mission of the North American Bird Conservation Initiative is to ensure that populations and habitats of North America's birds are protected, restored, and enhanced through coordinated efforts at international, national, regional, and local levels, guided by sound science and effective management. The NMBCA's mission is to achieve just this for over 380 Neotropical migratory bird species by providing conservation support within and beyond North America—to Latin America and the Caribbean.

The NMBCA complements other funding sources such as the North American Wetlands Conservation Act by providing resources for migratory landbird conservation as well as funding for migratory birds that depend upon wetland habitats outside of North America. The legislation requires that at least 75 percent of the grant funding support activities outside of the United States, where significant need for scarce conservation resources exists.

The NMBCA program supports a wide variety of conservation actions, including habitat protection and restoration, research, monitoring, outreach, and education. Over the last 13 years, the NMBCA program awarded $50 million dollars in grants

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supporting 451 projects in 36 countries throughout the Western Hemisphere. The Act requires a 3-to-1 match contribution so consequently these grant funds have leveraged over $190 million in matching contributions from over 1100 different partners. In part to meet these matching requirements, it is common for Latin American partners to develop projects that unite conservation objectives such as conserving threatened endemic species in locations that are also important to Neotropical migratory birds. For instance, Asociacíon Armonía is working to conserve the Beni savanna that provides critically important habitat for the Bolivian endemic Blue-throated Macaw as well as the long-distance migrant, Buff-breasted Sandpiper, and other Neotropical and austral migratory birds (see Page 4).

The Neotropical migrant, Bay-breasted Warbler, is a USFWS Bird of Conservation Concern. / Jeff Nadler

In North America alone, the NMBCA has contributed over $30 million to projects with actions occurring either partially or entirely in Canada, the United States, or Mexico. Specifically in Mexico, a country that provides important overwintering and passage habitat to hundreds of Neotropical migratory birds, partners have implemented 128 projects either partially or entirely in the country, with nearly $20 million in grants and $72 million in matching contributions, improving the conservation of millions of acres of habitat.

The NMBCA has built a portfolio of projects that have catalyzed migratory bird conservation where it might not have otherwise occurred, while simultaneously encouraging and supporting partnerships to collaborate within and across borders. These projects have focused on extremely threatened habitats, for example in the Caribbean (see Pages 12 and 20). And we have seen that sustained investment in critically threatened areas can reap significant conservation rewards, such as in the Chihuahua grasslands in Mexico (see Page 22). Other projects have targeted high priority species such as the Golden-cheeked Warbler, a U.S. federally endangered species, by providing resources to partnerships such as the Pine-Oak Alliance, which coordinates activities in Mexico, Guatemala, and Honduras to conserve this species' Mesoamerican wintering habitat (see Page 26). Sustained investment in critically threatened areas or with high priority species can reap significant conservation rewards.

As the NMBCA program matures, it will become more and more important to direct funding where it is needed most and to develop ways to assess the effectiveness of these investments. In 2006, the Secretary of the Interior convened an Advisory Group to the NMBCA to provide strategic advice and garner increased support for Neotropical migratory bird conservation. In consultation with this Advisory Group, in 2012, the U.S. Fish and Wildlife Service started a pilot program, IMPACT (Identifying Measures of Performance and Achieving Conservation Targets) to encourage partners to design conservation strategies at the project or site level to achieve measurable biological improvements in selected high-priority species over ten years. The aim is to investigate what measurable impact NMBCA projects can have on populations of 13 declining bird species, such as the Sprague's Pipit and Bicknell's Thrush (see www.fws.gov/birdhabitat/Grants/NMBCA/InstructionsENG.shtm). The challenge for partners is to identify performance indicators and measure their progress toward desired conservation targets identified in conservation plans for the species.

Articles in this edition of *The All-Bird Bulletin* highlight some of the common themes that have emerged from the hundreds of NMBCA projects funded over the last 13 years. For instance, in many projects, partners have engaged with local communities to help them generate economic benefits by making agricultural or working landscapes productive habitat for people and "friendly" habitat for birds, as well. Examples include CATIE's research in Costa Rica into the effect of different agricultural land uses on bird populations (see Page 8), bird conservation work in rice fields by Aves Uruguay (see Page 10) and Guyra Paraguay (see Page 14), and reforestation projects of American Bird Conservancy and its partners across the Americas (see Page 24).

Although the future holds continued conservation challenges, such as increased habitat loss and degradation and climate change impacts, there are many reasons to remain hopeful. Our ability to track where these birds migrate to and from will improve greatly in the coming years to help us to fully understand the "Flyways of the

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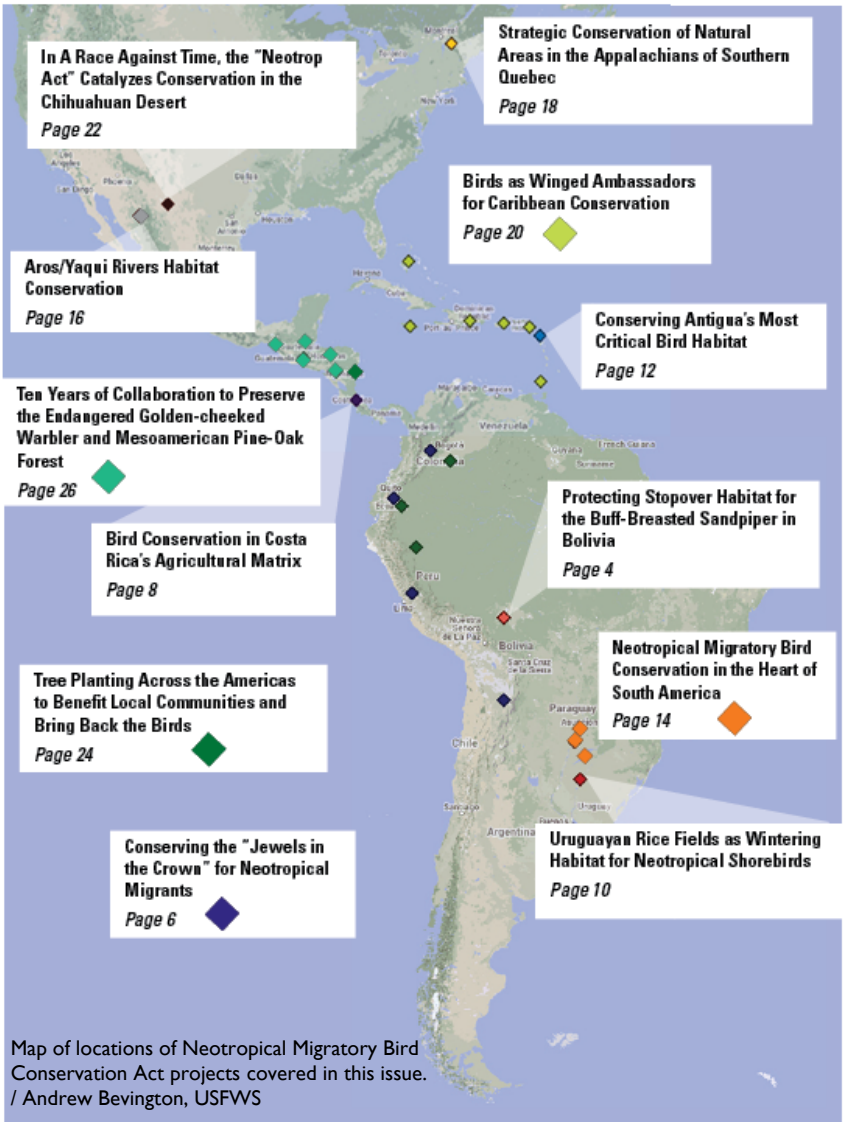
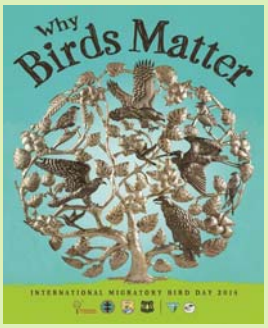
Americas" and strengthen the partnerships needed to support migratory birds throughout their life-cycles. The NMBCA is already encouraging and supporting some of these flyway-wide partnerships for waterbirds (see Page 6) as well as networks of sites for shorebirds and innovative outreach strategies to convey to the public the wonder of migration (see Page 14).

As the bird conservation community continues to develop its flyway-wide strategy for conservation in the Americas, the recent efforts of partners to develop Conservation Business Plans for bird populations and linked breeding and non-breeding habitats bodes well for the future of these species (e.g., Atlantic Flyway Shorebird Business Strategy.) The Partners in Flight V conference in August 2013, advanced eight of the plans, and the number of partners involved in their development continues to grow. These plans will be the roadmaps for strategic investments to improve the status of declining Neotropical migratory birds and other threatened species and their habitats as well as to keep common species common and their habitats healthy. These plans will motivate new and perhaps unconventional stakeholders to work together to align mutual objectives and resources to benefit both people and birds.



Map of locations of Neotropical Migratory Bird Conservation Act projects covered in this issue. / Andrew Bevington, USFWS

Meanwhile, regional and international partnerships that have formed in important ecoregions, like the Chihuahuan Desert Grassland Conservation Regional Alliance and the Southern Cone Grasslands Alliance, will continue to develop and improve their ability to coordinate conservation efforts to sustain Neotropical migratory bird species throughout their flyways. And you can be assured that the NMBCA will be supporting them along the way.



Most of us do not question the importance or value of birds. Others, however, are unaware of the many ecosystem services and economic benefits of birds, in addition to their value to the arts and to the millions of people who take pleasure in seeing birds every day. In 2014, International Migratory Bird Day (IMBD) takes a close-up look at how birds benefit humans and nature.

The annual IMBD art and education materials are critical features of the annual conservation theme. This year, the art and artist hail from Haiti. Elias St. Louis, a talented metal artist with Haiti Gallery, used a traditional "Tree of Life" and highlights 9 bird species, from the master of insect-eating Barn Swallow to nature's garbage disposal, the Turkey Vulture.

In 2013, IMBD reached more people than ever through over 620 events and programs hosted across the Western Hemisphere. These activities are critical to introducing new audiences to the joy and wonder of birds, as well as to sharing important bird conservation messages.

If you are not involved in International Migratory Bird Day now, we invite you to make 2014 an opportunity to join us and to motivate others in your organization to become active partners. For more information, please contact us at: bday@birdday.org www.birdday.org

Protecting Stopover Habitat for the Buff-breasted Sandpiper in Bolivia

Bennett Hennessey, Executive Director, Asociacíon Armonía, and Gustavo Sanchez, Coordinator, Armonía and Loro Parque Fundacíon Blue-throated Macaw Conservation Program

Bolivia is an incredibly diverse country, edged on the north by the Amazonian rainforest. Below this—within the center of Bolivia—lies a large expanse of endemic tropical savanna called the "Beni" (about 35,000 sq. miles). The Beni is an area the size of Maine and almost entirely ranched, with annual massive burns to clear forage for cattle. It is a land of extreme contrasts, with intensive flooding in the summer and months of drought in the winter.

Over 250 bird species depend on the Beni's mosaic of aged grasses, palm forest islands, and aquatic ecosystems, all of which are heavily altered by cattle ranching. The flagship species is the Blue-throated Macaw, an International Union for Conservation of Nature (IUCN) Red List species categorized as Critically Endangered and found only in the Beni. It survives on Motacu Palm fruits, which are dispersed throughout the Beni in "forest islands."

The Neotropical migrant, Buff-breasted Sandpiper, is a Near Threatened species on the IUCN Red List. / Daniel Alarcon

The Beni is also home to a series of threatened tall grass species, which provide habitat not only for Neotropical migrants flying south from their Arctic breeding grounds to avoid North America's winter, but also for over 150 Austral migrants that annually fly north to pass their winter (May-September) in the region. For example, the Beni is the key wintering area for a majority of bird species from Argentina's Pampas grasslands. The Beni thus provides important habitat for migratory birds throughout the Western Hemisphere, from northern Arctic tundra to southern Patagonia grasslands.

During fall migration, Neotropical migratory shorebirds pass over a thousand miles of inhospitable Amazonian rainforest and arrive in the Beni emaciated and hungry during the dry season from August to October. At this time, lagoons and rivers are at their lowest, creating large areas of ideal foraging habitat: exposed mud flats and short grass. Fall migrating Buff-breasted Sandpipers, for instance, have traveled over 6,000 miles from their Arctic breeding grounds by the time they reach the Beni.

The Beni has undergone hundreds of years of logging, hunting, and cattle ranching. Overgrazing, annual burning, and the planting of exotic grass species have greatly altered the ecosystem. The Beni savanna is thus considered by conservation organizations an endangered ecosystem. But no protected area, without cattle impact and annual grassland burning, existed.

Fortunately, a remarkable synergy of conservation need and partners sparked important achievements in this critical ecosystem, starting in 2008, with the creation of the Barba Azul Nature Reserve.

The Beni savanna and palm forest islands in Santa Ana Municipality provide the most important stopover site for the Buff-breasted Sandpiper and the only remaining dry-season flocks of the Blue-throated Macaw, a species that has declined to no more than 350 individuals. The Neotropical Migratory Bird Conservation Act (NMBCA) of the U.S. Fish and Wildlife Service (USFWS) began supporting the Asociacíon Armonía in Bolivia in 2010, to protect important fall migration foraging areas for the threatened Buff-breasted Sandpiper and all the Arctic shorebirds that stopover in the Beni.

With this assistance, Armonía has been able to catalyze the support of international conservation organizations to more than double the size of the Barba Azul Nature Reserve to 27,182 acres in this priority area of Santa Ana Beni savanna. Many organizations and individuals helped make this conservation achievement a reality. Partners included American Bird Conservancy, International Conservation Fund of Canada, IUCN's National Committee

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of the Netherlands (supported by the Dutch Postcode Lottery), Loro Parque Fundación, USFWS's NMBCA, Rainforest Trust, and World Land Trust. With NMBCA and donor support, we were able to protect habitat and expand the reserve through land purchase, and develop tourism infrastructure.

The creation of Barba Azul protected a mosaic of tropical grasslands, including seven large palm forest islands, the half-mile wide Omi River, 12 miles of water edge short-grass habitat—Buff-breasted Sandpipers' preferred habitat—and over 32 small isolated palm islands. In fact, Barba Azul is large enough to adequately support landscape species—those that require large protected home ranges, such as Jaguars, Pumas, and Maned Wolves.

Giant Anteater is a Vulnerable to Extinction species on the IUCN Red List, and one of many mammals that depend on habitat in the Barba Azul Nature Reserve. / Asociacíon Armonía

Through the NMBCA, Armonía has been able to manage Barba Azul to provide habitat for this very diverse biota. We have been able to improve habitat for all species in need of conservation by fencing out cattle and hunters, conducting an education program directly with neighboring ranchers, creating fire break protection, planning for patch burning, and mowing river edges. The NMBCA grant allowed us to start habitat management and education programs that developed further after the grant period ended. Such activities include local shorebird education and private property habitat protection and improvements such as constructing nest boxes for local wildlife that rely on cavities of large trees, most of which have been removed.

In 2013, we recorded over 1,000 Buff-breasted Sandpipers foraging in Barba Azul from August to October, with the majority of groups staying in the area for four to seven days. Through NMBCA-supported Buff-breasted Sandpiper surveys throughout the Beni, we know that Barba Azul protects the largest number of Buff-breasted Sandpipers in Bolivia. Eleven species of Neotropical shorebirds, which are on the Audubon/ABC Watchlist or are USFWS Birds of Conservation Concern, forage in Barba Azul during fall migration: Buff-breasted Sandpiper, American Golden-Plover, Lesser Yellowlegs, Upland Sandpiper, Hudsonian Godwit, Stilt Sandpiper, White-rumped Sandpiper; and the Greater Yellowlegs, Solitary Sandpiper, Pectoral Sandpiper, and the Wilson's Phalarope.

A protective cover of tall grass in the reserve shelters resident species like the Cock-tailed Tyrant and Black-masked Finch (both categorized on the IUCN Red List as Vulnerable to Extinction) as well as abundant populations of the Near Threatened Orinoco Goose and Greater Rhea. Each year, Barba Azul offers healthy, safe habitat for thousands of Austral migrants like the Orinoco Geese that winter within the protected savannas and aquatics ecosystems. In Barba Azul in 2012, eight pairs of Orinoco Geese used nest boxes and raised 48 chicks to the aquatic fledgling state.

The creation and management of Barba Azul helps protect 27 species of medium and large mammals , including the Vulnerable to Extinction Giant Anteater and Marsh Deer, as well as many Threatened mammals such as Maned Wolf, Jaguar, and Pampas Deer, as well as the Collared Peccary, Puma, and Capybara. The Omi River at Barba Azul is the only year-round water source for a massive area, and many mammals depend on this clean water through the dry season.

A deep interconnection exists among the biota of Beni's ecosystems, where conservation actions for one species can benefit hundreds of species of flora and fauna from endemic local butterflies to continent-crossing avian migrants. We will continue to manage Barba Azul to offer a mosaic of grassland habitats, to protect palm forest islands as they continue to regenerate, and to help aquatic ecosystems return to a state of biological health and abundance.

For more information, contact Bennett Hennessey at abhennessey@armonia-bo.org or visit www.armonia-bo.org/.

Conserving the "Jewels in the Crown" for Neotropical Migrants

Rob Clay, Senior Conservation Manager; Isadora Angarita, Conservation Projects Officer; Amiro Pérez-Leroux, Regional Director; and Arne Lesterhuis, Species Technical Officer, BirdLife International

Meseta del Lago Buenos Aires is the nucleus of a protected area that encompasses the principal known breeding populations of Hooded Grebe. / Aves Argentinas and Ambiente Sur

Running along the spine of the South American Andes is a complex network of high-altitude wetlands that vary from tussock-moss swamps surrounded by montane forests to other-worldly expanses of salt flats and lagoons. These wetlands play a vital role in providing water to ecosystems and human communities at lower elevations, and are home to a unique biodiversity, including significant numbers of highly threatened resident and locally endemic species. As such, they are true "jewels in the crown" of the Andes.

High Andean wetlands also provide important stopover and wintering habitat for numerous Neotropical migrants, including at least 45 Neotropical migratory waterbirds. For instance, they form the core wintering range of Wilson's Phalarope and Baird's Sandpiper, hold important numbers of Greater and Lesser Yellowlegs and Stilt Sandpiper (as well as over-summering migrants) and provide key migration stopover sites for American Golden Plover, Upland Sandpiper, and Buff-breasted Sandpiper, among others. Recent survey efforts have identified 13 wetland sites that support one percent or more of the global or biogeographic populations of several of these species. The same wetland ecosystems are also home to unique and threatened mammals and amphibians, such as the Spectacled Bear, Mountain Tapir, and Lake Junin Giant Frog.

High Andean wetlands face a range of threats, such as mining, unsustainable water extraction, expansion and intensification of agriculture, grazing, urban and infrastructure development and anthropogenic fires. Due to their adaptation to extremes of temperature and rainfall, the fauna and flora of these ecosystems are particularly susceptible to the long-term effects of climate change.

In 2004, BirdLife received a grant from the NMBCA to implement the project "Advancing a Range-wide Waterbird Conservation Approach in the Western Hemisphere" on behalf of the Council for Waterbird Conservation for the Americas. This project documented the importance of High Andean wetlands for migratory waterbird species. A follow-up NMBCA-supported project "Implementing Sustained Conservation Action for Waterbirds in the Neotropical Region" focused on undertaking priority actions at four High Andean wetland sites identified during the previous project: Bogotá wetlands in Colombia, Antisana Ecological Reserve in Ecuador, Junín Lake in Peru, and Pozuelos Lake in Argentina.

In recognition of the precarious state of High Andean wetlands, in 2005, the seven Andean Contracting Parties to the Ramsar Convention (plus Costa Rica) adopted a "Regional Strategy for Conservation and Sustainable Use of High Andean Wetlands" (Ramsar COP9 Doc 26). The Strategy identifies the need to "establish a regional, comprehensive management system for the High Andean Wetlands that helps protect their environmental goods and services and maintains the biodiversity associated with them." As an International Partner Organization to the Ramsar Convention, BirdLife is building upon its early NMBCA-supported work to implement a High Andean wetland initiative within the framework of the Ramsar strategy. The initiative has received additional support from the NMBCA, as well as from the Aage V. Jensen Charity Foundation, Canadian Wildlife Service, and Southern Wings. The NMBCA has supported two phases of the project "Conserving Neotropical migratory birds in high Andean wetlands," the first implemented during 2011-2013, and the second currently underway.

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BirdLife's initiative is focused on the effective and long-term conservation of priority High Andean Wetland sites through participatory site conservation planning, implementation of management and restoration actions, and development of sustainable livelihoods, supported by targeted research and outreach and education activities. All the sites are Important Bird Areas and have been recognized as Ramsar sites (with the exception of the Buenos Aires plateau in Argentina). Some of the most significant conservation achievements to date under this NMBCA grant have been:

Buenos Aires Plateau, Argentina. This plateau covers 280,000 hectares of Patagonian steppe with more than 300 individual wetlands that are home to the Critically Endangered Hooded Grebe and wintering Neotropical migrants. Aves Argentinas (BirdLife in Argentina) has played a pivotal role in the creation of a new 52,000 ha National Park centered on the plateau. Increased dialogue with local ranchers has also led to the implementation of best management practices, helping to reduce overgrazing.

The Critically Endangered Hooded Grebe is endemic to Santa Cruz Province, Argentina, where it breeds in high altitude lakes in Patagonian plateaus. It winters in coastal estuaries, including the Río Gallegos estuary, an important site for *rufa* Red Knot. / Hernán Casañas

Catamarca, Argentina. A 1,228,175 ha area of high Andean endorheic (i.e., closed drainage) river basins, with a complex of saline lakes and Puna grasslands, the Catamarca lagoons provide key habitat for breeding High Andean flamingos and wintering Neotropical migrants. A participatory threat-mapping exercise, by local partner Fundación Yuchan, led to the relocation of a road away from one of the key wetlands, decreasing the impact of traffic and tourism in the area, and was also used to strengthen a proposal for a new protected area.

Poopó and Uru Uru Lakes, Bolivia. These two lakes, covering 264,522 ha in the Bolivian Altiplano, form part of the same wetland basin as Titicaca Lake. Together they are home to the Endangered Titicaca Flightless Grebe. The local non-government organization, Biota, working with Asociación Armonía (BirdLife in Bolivia) documented shrinkage in the extent of wetlands by over 47 percent in the past 25 years, linked, in part, to an increase in quinoa crop production. A conservation plan has been developed in collaboration with local stakeholders and authorities and is now being implemented.

Junín Lake, Peru. Part of a national reserve covering 53,000 ha, Junín Lake is home to two threatened bird species found nowhere else in the world: the Junín Grebe and Junín Rail. Local partner ECOAN has promoted the restoration of overgrazed grasslands, and the sustainable harvest of a kind of marsh grass ("champa") used by the local community as their main fuel source for cooking. Communities have signed agreements with the local authorities regarding the sustainable use of the resource, complemented by the introduction of more fuel efficient stoves, which greatly reduce the amount of grass required. Thus the stoves not only provide greater habitat availability for birds but also benefit local people, who invest less time in harvesting the grass and have stoves that produce less smoke.

Llanganates National Park, Ecuador. This 219,707 ha protected area includes extensive areas wetlands in páramo (high altitude tropical grasslands) and High Andean forests. Aves y Conservación (BirdLife in Ecuador) has worked closely with the park authorities and local communities to implement priority actions, including reforesting 55 ha to protect water courses, a formal proposal to extend the Ramsar site to include wetlands of importance for Neotropical migrants, and an assessment of the ecosystem services provided by the park.

In collaboration with academic and other conservation institutions, BirdLife has developed a novel approach for rapid ecosystem service assessments: the Toolkit for Ecosystem Service Site-based Assessment (TESSA). TESSA guides non-specialists through a selection of accessible, low-cost methods to identify the ecosystem

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Bird Conservation in Costa Rica's Agricultural Matrix

Alejandra Martínez-Salinas, Doctoral Candidate, Tropical Agricultural Research and Higher Education Center (CATIE) Turrialba, Costa Rica and University of Idaho; Fabrice DeClerck, Programme Leader, Biodiversity International, Montpellier, France; Rachelle DeClerck, Environmental Scientist, Bird Monitoring Program, Montpellier, France; Kelly Garbach, Assistant Professor, Loyola University Chicago; and Natalia Estrada-Carmona, Doctoral Candidate, CATIE and University of Idaho

Understanding the contribution of the agricultural matrix to biodiversity conservation has never been as important as in recent decades. As conservationists we have focused almost exclusively on protecting our forests and networks of protected areas. But we have often neglected to consider the potential value of land uses devoted to production, which often are the dominant landscape matrices within which our forest reserves are imbedded. As the human population grows so does the need to either increase the areas devoted to agriculture or find ways to increase productivity in areas already in use. As we embark on the journey of trying to solve this pressing conservation issue, we should do all we can to maximize the contributions of agricultural lands to our overall conservation goals. Making sound management decisions in these human-dominated habitats is key to unlocking these wildlife benefits.

Golden-winged Warbler is a Neotropical migrant and USFWS Bird of Conservation Concern. / A. Martínez-Salinas

Long-term studies of the bird conservation impacts of agricultural land uses should be a priority especially in tropical regions. Over the past six years, CATIE's long-term Bird Monitoring Program (BMP) has studied the effect of six different agricultural land uses on bird populations: abandoned coffee plantation, cane field, shade coffee plantation, live fence in pasture, cacao plantation, and forest. Land uses under study also are the subject of a larger conservation initiative supported by the Costa Rican government within the Volcanica Central Talamanca Biological Corridor (VCTBC).

Our BMP relies on international and domestic funding sources and recognizes financial support provided by the U.S. Fish and Wildlife Service through their Wildlife Without Borders program and Neotropical Migratory Bird Conservation Act (NMBCA). Financial support has been also provided by the Wallace Genetic Foundation, Coffee Agroforestry Network, Agroforestry Systems with Perennial Crops Scientific Partnership Platform, CATIE, and the Consultative Group on International Agricultural Research's Research Program on Humid tropics. We especially would like to thank the dozens of volunteers, who through the years have helped gathered information with the BMP.

CATIE's Bird Monitoring Program involves a series of activities divided into four main pillars: research, training, environmental education and outreach, all with the common goal of conveying a single message: "management of agricultural land uses is important for bird conservation."

Research. CATIE's BMP research is focused on two main topics. The first is about understanding the differences in bird communities found across land uses (e.g. coffee plantations versus pastures) and what's driving these differences. The second is about understanding how management decisions at the farm level (farmscape) affect bird species and contribute to the overall conservation goal set for these species. The second topic is particularly important to consider if we want to have an impact on bird conservation at the landscape scale. Decisions at the farm level may impair or improve the quality of the overall landscape by interrupting or improving the available connections for bird species to move from one habitat to another. Increasing connections is thus extremely important to ensure population viability.

Thanks to our "Bridges and Barriers" project, funded by the NMBCA, we recently have developed different land use change scenarios to learn about the potential contributions of conservation elements such as live fences, forest strips, and forest patches, at the farmscape level. Using modelling tools, we have learned that management decisions within these farms will have an additive effect at the landscape level. By spatially rearranging conservation elements within farmscapes, we might be able to provide dispersal corridors and increase the overall connectivity of the land-

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scape enabling species to move across different habitats. Through this modelling exercise, knowledge gained about the benefits of these conservation elements can be used to work hand-in-hand with farmers to improve the quality of their farmscapes for biodiversity conservation without impairing their production capabilities and livelihoods. Insights on how different spatial arrangements of conservation elements improve connectivity among quality habitats can also be used to design better biodiversity-friendly certification programs.

Training. During the past six years, we have dedicated time to train and engage local community members in bird conservation through a Citizen Science program aimed at monitoring the trends of 15 target bird species. These species were identified and selected in conjunction with local leaders. Our Participatory Bird Monitoring Program relies on community members, living within the VCTBC, to share reports of sightings of the selected species with the objective of constructing distribution maps and modeling future distribution changes.

Environmental Education. Our "La Vida en Vuelo" environmental education program focuses on children attending primary schools within the VCTBC. In its first three years of operation, "La Vida en Vuelo" has reached more than 30 schools and over 500 students, teachers, and parents. Our main goal is to make conservation of migratory and resident birds and their habitats a core educational component in the schools throughout the VCTBC area.

Children visiting one of our banding stations during a field trip sponsored by our "La Vida en Vuelo" environmental education program. / F. DeClerck

The "La Vida en Vuelo" program fosters an understanding and appreciation for birds and their habitats within local communities in order to change the idea of cultural land use norms, thereby aiding in the protection of migratory and resident bird species. The program teaches biodiversity conservation to children through a "hands-on" approach that enables students to learn about conservation issues through interactive experiences such as play and touch. We also complement the educational program with our sponsored experiential field trips to our banding stations ("Bird in the Hand" activity). The field trips allow students, teachers, and parents to learn about bird conservation initiatives and the importance of bird species to the health of our ecosystems. Through these hands-on experiences, participants leave with a lasting impression of the important impacts they make on the natural world both at home and globally.

Certification and Outreach. Our BMP is invested in helping improve and promote certification programs that can be useful for farmers while supporting ongoing conservation efforts. We believe that biodiversity friendly certification programs serve as a "win-win" mechanism to promote sound production practices that also benefit biodiversity conservation. We offer evidence on the importance of incorporating conservation elements within farmscapes. Particularly we have highlighted the key role of live fences and agroforests in the provision of corridors for a range of forest dependent bird species. We strongly believe that promoting sound production practices, and improving water and fertility management at the farm level, benefits a wide array of species, especially those in need of conservation.

Through our outreach pillar, we are able to reach many different audiences. Participation in scientific symposiums, development of scientific and non-scientific publications, and distribution of free educational materials are a few examples. One important outcome of our outreach efforts and our "Bridges and Barriers" project has been the certification of the dairy section of CATIE's farm in February 2014, the first dairy farm in Costa Rica to become Rainforest Alliance certified.

Changes in one farmscape may not make a huge contribution; however, the additive value of having several farmscapes following the same practices can benefit the conservation of species greatly. Finding the best possible management scenario for agricultural lands—where both producers and wildlife benefit—is our primary goal.

For more information, contact Alejandra Martínez-Salinas at amartinez@catie.ac.cr or visit www.catie.ac.cr/en/

Uruguayan Rice Fields as Wintering Habitat for Neotropical Shorebirds

Joaquín Aldabe, Biologist, Universidad de la República and Aves Uruguay and Pablo Rocca, Biologist, Aves Uruguay

Rice fields throughout the world provide important habitat for waterbirds, including many shorebirds. The global geographic distribution of rice fields overlaps many regions of historic importance for wintering and migrating shorebirds because rice fields are typically created through the conversion of wetlands, although there are some exceptions. Unfortunately, management of this agro-ecosystem, such as through agrochemical use and for tall plant structure, can negatively affect these birds, highlighting the importance of understanding and managing rice fields to benefit shorebirds, many of which are in decline.

With funding from the Neotropical Migratory Bird Conservation Act (NMBCA), Wetlands International (WI), based in Buenos Aires, Argentina, carried out a broad evaluation in 2006, of the use of rice fields by migratory shorebirds in the Southern Cone of South America. The results confirmed the importance of these areas for these species as well as for other waterbirds, with regions differing in their shorebird assemblages. The fields near the Atlantic coast supported species typical of coastal zones such as White-rumped Sandpiper and American Golden Plover, whereas inland fields were dominated by noncoastal shorebirds, such as the Pectoral Sandpiper and Lesser Yellowlegs.

Lesser Yellowlegs is a Neotropical migrant and USFWS Bird of Conservation Concern that overwinters throughout Central and South America and the Caribbean. / Lisa Sorenson

The grasslands of the Southern Cone are highly productive areas, well suited for agriculture and livestock. More recently, Uruguay also has become known for its forestry sector. Because Uruguay and other countries in the region must support the economic productivity of human communities, it is imperative to integrate biodiversity conservation into these production activities.

In Uruguay, rice growing occurs in the eastern and northern regions. But only the eastern region was evaluated in the 2006 study by WI. In 2008, the non-governmental organization Aves Uruguay carried out a follow-up project, funded in part by the NMBCA. The objectives were two-fold: To document the significance of rice fields of northern Uruguay for Neotropical migratory shorebirds, and to conduct outreach to rice producers, local communities, and state agencies to foster an understanding of the value of this agro-ecosystem for shorebirds and their conservation.

We carried out intense field work in coordination with GRUPAMA (Group Active for Environmental Protection), a local biodiversity NGO in the city of Bella Unión in the northernmost point of the country. The rice producers association provided valuable support by allowing us to study their fields and facilitated contacts with other producers. We worked during the southern summer, from November to March, so that we could study the shorebirds throughout their stay in the rice fields.

These studies yielded important information about these species use of rice fields. Shorebirds select fields according to the height of the plants, reducing their use as the plants get taller. This is probably a strategy to protect against predation because shorebirds must be able to detect predators quickly to be able to escape. High vegetation lowers their visibility forcing them to spend valuable feeding time being vigilant. Visual obstruction also prevents visual cues from conspecifics about potential threats, which lowers foraging efficiency. Shorebirds mainly use the early stages of rice plantings as well as post-harvest fields, whereas fields in later growing stages are used by other waterbirds.

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We surveyed 11 shorebird species, of which seven are Neotropical migrants and four are resident. This represents almost 40 percent of the shorebird species found in Uruguay. The most abundant species was Pectoral Sandpiper with 739 individuals, followed by Southern Lapwing with 543 individuals and Lesser Yellowlegs with 225. We even recorded some Upland Sandpiper, American Golden Plover, and Buff-breasted Sandpiper, which are all of global interest due to past hunting activities and more recent habitat loss.

Eggs and nest of the Southern Lapwing, which inhabits grasslands and pastures from Panama and northern South America south to Tierra del Fuego. / Joaquín Aldabe

Once we discovered the species that use the fields in this northern region, we created a poster identifying them. The posters targeted rice growers to help them identify the birds they have on their farms. During this time we also gave talks at schools, to rice producer groups, and with citizens of the town of Bella Unión. We were amazed by the public's show of interest and their particular fascination with the spectacular migratory routes of these species.

With this information, we also published a booklet "Wild Birds in Rice Fields in Northern Uruguay, with Emphasis on Migratory Plovers and Sandpipers," with support from Wetlands International. It uses language and images that appeal to both rice producers and the public. The booklet explains the science of shorebirds and other bird species and their relationship to rice fields and the environment. It includes guidelines that promote bird and biodiversity-friendly management. Because the booklet includes other birds besides waterbirds, it covers the broader issue of biodiversity conservation. This project thus helped create an important vision for biodiversity conservation in Uruguay and the Southern Cone.

In addition, several initiatives such as Southern Cone Grassland Alliance and the National System of Protected Areas now are incorporating in their conservation plans the need to integrate biodiversity conservation and production. However, more knowledge is required to adequately address this important issue such as how to spatially configure rice crops in natural or semi-natural habitats so as to promote high connectivity levels among patches for the greatest wildlife benefits.

Greater Rhea, the largest bird in South America, is endemic to Argentina, Bolivia, Brazil, Paraguay, and Uruguay, and inhabits grasslands, savanna, and grassy wetlands. / Joaquín Aldabe

The support from the NMBCA allowed not just the promotion of Neotropical migratory shorebirds, resident shorebirds, and other waterbirds, but also fostered collaboration among many partners to think strategically about how to address biodiversity conservation and sustainable development. This collaboration is essential to our continuing efforts to conserve these remarkable migratory species.

For more information, contact Joaquín Aldabe at joaquin.aldabe@gmail.com or visit Aves Uruguay at www.avesuruguay.org.uy/avesuruguay2/articulo.asp?f=orria

Conserving Antigua's Most Critical Bird Habitat

Natalya Lawrence, Coordinator, Offshore Islands Conservation Program, Antigua

On the north east coast off Antigua lies a marine protected area and Important Bird Area (IBA) called the North East Marine Management Area (NEMMA). Dotting the waters of this coastal park are picturesque islets, rocks and cays, some of which teem with local wildlife: birds, reptiles and rare plants, many of which can no longer be found on mainland Antigua.

In recent years, bird conservation on the mainland has been of growing interest among residents in Antigua and Barbuda, and is conducted by diligent local volunteers, who engage farmers, hunters, students, and just about anyone who will listen. The thrust of conservation work on offshore islands, however, had a different and peculiar beginning… a snake!

A globally recognized Important Bird Area, Redonda is one of Antigua's largest islands and its most remote offshore island. / Adam Long

Yes, this story focuses on birds and people, but it all began with a snake. The last surviving population of one of the world's rarest snakes at the time, the Antiguan Racer, was found on an islet in the NEMMA called Great Bird Island. Actually, around the time the snakes were rediscovered in 1993, barely clinging to survival, the eponymous birds of the island were conspicuously absent. In fact, wildlife in general was scarce, except for alien invaders, such as ubiquitous rats.

Rats decimated offshore island biodiversity and had to be removed. In doing so, what was an initial rescue mission to save a critically endangered snake from extinction's greedy claws (The Antiguan Racer Conservation Project) led to the creation of a broader project named the Offshore Islands Conservation Programme (OICP), which spearheaded bird conservation on Antigua's and Barbuda's offshore islands. The OICP is democratically governed by the Environmental Awareness Group (EAG, local), the Government of Antigua's Forestry Unit (local), Durrell Wildlife Conservation Trust (regional), Fauna and Flora International (international), Island Resources Foundation (regional) and Black Hills State University (international). Clearing the island of rats to save the snake proved to be beneficial to all the plants and animals on the island. The birds came back, gradually, then in record numbers. No longer was there the threat of having their eggs poached or their young ones dragged from the nest by a hungry rat.

In 2010, the EAG successfully acquired a very competitive grant from the U. S. Fish & Wildlife Service (USFWS) under the Neotropical Migratory Bird Conservation Act (NMBCA). This two-year grant allowed the OICP to enhance prime habitat for Neotropical migratory birds as well as sensitize the public on the importance and value of these and other resident birds.

Under this grant, the OICP worked closely with several partners Society for the Conservation and Study of Caribbean Birds (now BirdsCaribbean), Royal Society for the Protection of Birds, Jost Van Dykes Preservation Society, Anguilla National Trust, Saint Lucia National Trust and Wildlife Management International Ltd.) to foster bird conservation on Antigua's and Barbuda's offshore islands, mainland Antigua, and throughout the Caribbean region. The objectives of this grant were as follows:

- Control alien invasive species that endanger birds and their habitats in two IBAs
- Integrate bird conservation into the management of Antigua's newest and largest coastal protected area
- Improve the behavior of recreational users in the project area
- Monitor the effects of conservation actions upon avian populations and habitats so as to evaluate and refine the conservation strategy

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Fortunately, these objectives were all met and even surpassed. A few of the OICP's activities that helped to achieve these objectives are described below.

Biosecurity monitoring. Field officers diligently worked on several restored offshore islands to ensure that they remained free of invasive predators, which is inextricably linked to thriving bird populations. During the two-year period, biosecurity monitoring methods were reviewed and new techniques were tested and refined to ensure that the possibility of invasive predator incursions was minimized and early incursion detection was maximized.

Redonda Feasibility Study. Santa Maria la Redonda, discovered by Christopher Columbus in 1493, is the remaining peak of an extinct volcano, and is the country's most distant and one of its largest offshore islands. Columbus claimed Redonda for Spain but ownership was transferred to Britain in the 1860s. From 1865–1914, Redonda was a thriving mine, harvesting bird guano for fertilizer. During this period, up to 100 soldiers and miners inhabited the island. After World War I, the mining operations ceased, and thus ended the steadiest habitation of this remote and rugged island. Redonda became a dependency of Antigua in 1967.

American Oystercatcher, a Neotropical migrant and USFWS Bird of Conservation Concern, overwinters in the Caribbean. / Nick Hollands

Today, Redonda is dotted with the remains of historical buildings, artifacts, equipment, barracks, bread-ovens, and an old railway and pulley system that was used to move cargo up and down the cliffs, giving us a glimpse into the life of the island's past inhabitants. Old paintings show a forested island with large flocks of birds flying overhead. Historical data show species of plants and animals that are no longer documented on visits to the island, which is in a severely degraded state, resembling the surface of the moon.

Even so, Redonda is home to some unique and rare animals and plants found nowhere else in the world. It is a designated an IBA because it supports colonies of globally significant nesting seabirds, including Brown Boobies, Masked Boobies, Red-footed Boobies, Magnificent Frigatebirds, Red-billed Tropicbirds, Brown Noddies and Bridled Terns. Numbers of individuals of these species are much lower now than in earlier years due to predation by invasive black rats that probably were introduced to the island during the mining period. Introduced goats have also had a severe, negative impact on the island's forest cover.

OICP conducted a rat-eradication feasibility study to determine the possibility of restoring this magnificent island to its former natural glory. This restoration project has been met with strong encouragement from the government of Antigua and Barbuda. Currently, the OICP is in the process of seeking funds to initiate the next stage of the project.

Educational Outreach. OICP conducted floating classrooms, which involves taking students, teachers and parents into the NEMMA and allowing them to learn about, interact with, and appreciate local wildlife, including migratory birds of concern: American Oystercatcher, Ruddy Turnstone, White-Crowned Pigeon, Caribbean Brown Pelican, and Least Tern, among many others. In addition, OICP created wildlife calendars which are very popular with people at the local, regional, and international levels, and are used as educational tools in schools. The calendars depict local wildlife, including many migratory birds, and describe each featured animal or plant its habitat, threats, and a success story.

Seabird and Landbird Monitoring. Surveys enabled the OICP to obtain valuable current data on the numbers and status of nesting birds on the offshore islands. In many cases, these surveys provided opportunities for educating stakeholders and engaging them in citizen science, as described below.

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Neotropical Migratory Bird Conservation in the Heart of South America

Marianela Velilla, Species Conservation Program Manager, Guyra Paraguay

American Golden-Plover breeds on the high Arctic tundra of Alaska and Canada and winters in the grasslands of central and southern South America. / Ron Knight

In the heart of South America lies Paraguay, a landlocked wetland rich country bordered by Argentina, Bolivia, and Brazil. Here, a total of 42 species of Neotropical migratory birds have been recorded and, despite the absence of coastline, 23 of these migrants are shorebirds. Although some of the 42 include rarities like the Dunlin and Blue-winged Teal, at least 28 species are regular visitors that migrate through the country on an annual basis. Some of the more common include Osprey, Mississippi Kite, American Golden Plover, Lesser Yellowlegs, White-rumped Sandpiper, Wilson's Phalarope, Yellow-billed Cuckoo, and Bobolink. Studies over the years have shown that Paraguay is of critical importance to many of these species, in particular to the Buff-breasted Sandpiper with at least three percent of its global population migrating through the country.

The Neotropical Migratory Bird Conservation Act (NMBCA) funded three sets of projects aimed at key site identification, site protection, and habitat protection and which have, in different ways, catalyzed a variety of conservation actions that benefit shorebirds.

Key sites for Neotropical migratory shorebirds. In 2002, the private non-profit organization Guyra Paraguay initiated a pilot program to identify and protect key sites for Neotropical migratory bird species—our first project funded by the NMBCA. The project kick-started migratory bird conservation in Paraguay by identifying the bay along the capital city, Asuncion, and a complex of salty lagoons in the Paraguayan Chaco (referred to as the "Lagunas Saladas") as globally important for migratory shorebirds. Both sites were declared Important Bird Areas (IBA) based on field data gathered as a result of the project. Chaco Lodge, in the Lagunas Saladas area, was also declared a Ramsar Site, and Asuncion Bay was nominated as Paraguay´s first Western Hemisphere Shorebird Reserve Network site and dedicated as such in 2006.

Situated just one mile from downtown, Asunción Bay faces many threats, including urban expansion of the capital city, pollution, overexploitation of natural resources, and habitat destruction. To protect this important site, which provides important stopover habitat for the globally near-threatened Buff-breasted Sandpiper, Guyra Paraguay implemented four projects over the last decade funded by NMBCA. Our efforts resulted in the declaration of Asunción Bay as an Ecological Reserve in 2005. Guyra Paraguay has been monitoring shorebird numbers, and waterbirds in general, in the area for more than ten years. We are currently working with the Ministry of Environment, Ministry of Public Works, and Asuncion's municipal government to restore approximately 25 hectares of important migratory bird habitat that was lost due to the construction of a highway. This is the first project of its kind in Paraguay, involving habitat restoration through collaboration with national and local authorities, and will serve as an example and a learning opportunity for future habitat restoration actions for migratory birds in Paraguay. Based on these successes, supported by bird data, Asunción is a candidate to be the Green Capital of IberoAmerica.

Conserving the Flyway. The NMBCA also supported a project that greatly improved public policies for wetlands conservation in Paraguay. The biggest achievement was the enactment of a law that declared two wetlands as protected areas in the Ñeembucú located in the country's southern region. These protected areas are Laguna Mendez and Laguna Sisi. It also used a novel approach—a sports event—to generate social awareness about environmental issues. The "Mbatui Adventure Race Challenge" succeeded in placing environmental issues on national mass media. The innovative race, involving biking, trekking, and canoeing, promoted public education and awareness of nature protection, the importance of wetlands, and the threats that migratory birds face on

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their travels—all by laying out a route for participants that followed the flyway birds use during part of their annual migration through the country. The race drew a great deal of media and public attention through newspapers, magazines, and television, and brought the issue of nature and migratory bird conservation on to the national level.

Rice Fields as Important Sites for Migratory Shorebirds. Rice is one of the world's most important crops, covering a significant area of arable land. However, these artificially created wetlands also provide important foraging habitat for numerous waterbird species, including Neotropical migratory shorebirds. In 2010, Guyra initiated a NMBCA-funded project that investigated the importance of rice fields for Neotropical migratory birds. The project provided important information on the distribution and scope of rice production in Paraguay, and showed that several species of Arctic breeding shorebirds, including species of concern like the American Golden Plover and the Buff-breasted Sandpiper, used these rice fields, especially in the Tebicuary River Basin in southern Paraguay.

"A good opportunity to disconnect from everything and watch the birds, with their epic flights, connect us across all boundaries, cultures and lives." Flyers used to promote de Mbatui Race under the Flyway project. / Guyra Paraguay

Guyra Paraguay now is implementing a follow up project with NMBCA funds in the Tebicuary River Basin that aims at expanding knowledge of the importance of rice fields for conservation of Neotropical migrants, and to promote and test the adoption of best management practices that benefit both migratory birds and rice production. Already an important outcome is a strong relationship with the Association of Rice Producers of the Tebicuary River Basin, which is open to implementing best management practices and understands the importance of rice fields for waterbird conservation.

Within the scope of best management practices in rice fields, Guyra Paraguay and Asociación Calidris in Colombia are jointly implementing a NMBCA project that aims at strengthening processes to protect habitats in areas of rice cultivation. Specifically the project will create an economic "toolbox" that allows producers to remain financially stable while adopting good environmental practices.

NMBCA provided crucial financial support to our grassroots organization in Paraguay. This funding increased our credibility with the governmental and private sectors, thus creating the opportunity to forge public-private partnerships to conserve Neotropical migrants at their key sites in Paraguay.

The funding also generated co-benefits that have not been duly measured or monitored yet. These include public awareness and responsibility for shared species, obliging Paraguay as a country to see and work domestically but with a vision beyond our political boundaries. The funding from the NMBCA allowed us to conserve sites that are also important for other biodiversity, and generated work for local people, who had never before seen benefits from habitat conservation for migratory species. The projects generated recreational opportunities and enjoyment of nature, and will put birds and their beautiful appearance in the public eye once a year through celebrations and presence monitoring. Media took advantage of the opportunity to show the beneficial side of protected areas and wetlands, which are often considered undesirable areas.

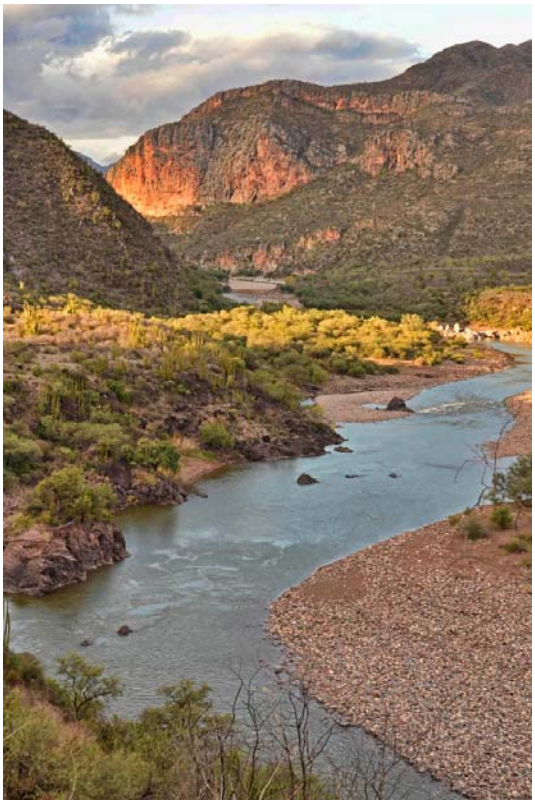
NMBCA projects allowed Guyra Paraguay to begin sharing knowledge and its management, and to gather other organizations and people in a shared vision of how to conserve sites important for migratory birds—and people, too. The migratory journeys of these birds connect habitats from Alaska and Canada all the way down to Chile and Argentina, giving to Paraguay the honor of helping link sites and peoples along the flyways of the Americas, uniting Tundra with Tierra del Fuego!

For more information, contact Marianela Velilla, mvelilla@guyra.org.py or visit www.guyra.org.py.

Aros/Yaqui Rivers Habitat Conservation

Megan Southern, Coordinator, Northern Jaguar Project

The 50,000-acre Northern Jaguar Reserve is located 125 miles south of the U.S.-Mexico border in the western foothills of the Sierra Madre Occidental. The landscape features a variety of biotic communities, including oak and riparian woodlands, extensive areas of Foothills (Sinaloan) thornscrub, montane shrublands, and grasslands. The reserve is located near the center of a broad transition zone between the Nearctic and Neotropical faunal realms and supports flora and fauna with Sonoran, Chihuahuan, Sinaloan, and Madrean affinities. The reserve also includes more than 20 miles of frontage on the Río Aros, which is the longest undammed river in northwest Mexico and part of an inland corridor for Neotropical migratory birds.



Rio Aros and the Northern Jaguar Reserve. / Aaron Flesch

The Northern Jaguar Project (NJP) is a binational non-profit formed in 2003, to preserve and recover the world's northernmost population of the Jaguar, its unique natural habitats, and all native wildlife under its umbrella of protection. Together with our Mexican partner Naturalia, NJP purchased and now co-manages the Northern Jaguar Reserve — which lies in the ecological heart of the area that, in recent years, has had the highest number of northern Jaguar sightings, including females and cubs. We maintain this protected core reserve and work with ranchers, schools, and local communities to promote conservation.

In collaboration with, Naturalia and ornithologist Dr. Aaron D. Flesch of the University of Arizona's School of Natural Resources and the Environment, NJP began a broad effort to document biodiversity on the reserve, assess the distribution, residency, breeding status, and abundance of birds, and to evaluate the merits of a proposed federal Natural Protected Area (NPA). While the coastal migratory corridor for birds in western Mexico has been relatively well studied, our efforts are among the first to assess bird status and distribution along the inland migratory corridor and in this extremely rugged and remote region in the state of Sonora. Moreover, we also provided the first description of a bird community in Foothills thornscrub vegetation, which despite being one of the most dominant vegetation communities in Sonora, has been the focus of little study and is not represented in Mexico's federal system of NPAs.

One of our long-term goals is to foster the safe passage of Neotropical migratory birds on the reserve by promoting greater survival and abundance. We are also conserving resident breeding populations by promoting greater understanding of the habitat needs of birds and by protecting, enhancing, and restoring high-quality habitats. We have specifically targeted three groups of species: long-range Neotropical migrants that traverse an inland flyway and are species of conservation concern, short-range migrants that breed in the neighboring southwest U.S., and tropical migrants that winter to the south and breed in Foothills thornscrub and riparian woodlands.

Since 2007, with support from the Neotropical Migratory Bird Conservation Act (NMBCA), we conducted extensive bird surveys that spanned all seasons and major vegetation communities on the reserve. We have documented 214 bird species on and around the reserve and, based on the observed abundance distribution, estimate as many as 257 species may be present. We recorded 13 species of conservation concern in Mexico—including Bald Eagle and Military Macaw which are endangered in Mexico and found at the extreme southern and northern edge of their breeding ranges respectively—and an additional 24 species of conservation concern in the neighboring U.S. Approximately half of all species were winter residents or passage migrants and another 15 percent were summer residents that migrate from the south. In comparison, only 31 percent were permanent residents.

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We have documented populations of 10 bird species that breed or winter on the reserve in locations to the north of previously described limits of their geographic ranges, including Fan-tailed Warbler, Wilson's Warbler, Common Black-Hawk, Cassin's Kingbird, and Slate-throated Redstart. Other notable breeding species on the reserve include Yellow-green Vireo, Least Grebe, Blue Mockingbird, and White-striped Woodcreeper. These species use extensive riparian woodlands, beachfronts, and Foothills thornscrub along a vast lowland corridor formed by the Río Aros and Río Yaqui, which provides a warm subtropical environment unlike any other in east-central Sonora.

The area surrounding the reserve faces a range of threats, including the clearing of native vegetation, intentional planting and subsequent invasion of exotic buffelgrass, overgrazing by domestic livestock, and large-scale mining and hydroelectric dam projects that could alter hydrologic regimes and flood large areas. In response, we have focused on land purchase, bird and vegetation monitoring, habitat restoration techniques on neighboring private ranches and the reserve, and community outreach to local ranchers, schoolchildren, and educators—all of which has been made possible with NMBCA support.

In 2012, we negotiated with the owner of a ranch next to the reserve to establish a 227-acre cattle-exclusion zone for the protection of a plant community dominated by Mexican Ebony, Catclaw Acacia, Sweet Acacia, Palo Blanco, Mesquite, Bursera, and Ocotillo. This plant community is specifically important to birds that are nectivores and aerial and leaf-gleaning insectivores. This is the largest cattle exclusion accomplished to date, and since it is adjacent to the Northern Jaguar Reserve, expands the reserve's protected habitat. With support from NMBCA, we are conducting vegetation and bird monitoring at cattle-exclusion sites and control plots to assess the ecological effects and conservation benefits of this management practice.

In heavily grazed areas on the reserve and adjacent ranches, restoration efforts have focused on erosion control and water harvesting through gabion construction. Gabions are permeable rock micro-dams designed to slow stream flow, retain soil moisture, and accelerate riparian habitat recovery. In 2011, we built rock gabions across 627 acres, in areas identified as key conservation targets due to the exceptional bird, amphibian, and fish diversity. The gabions are situated perpendicular to the flow of water in head-cuts (i.e. abrupt vertical drops) in areas that have lost vegetative cover. This approach has successfully benefitted soils adjacent to the Río Aros. With the continuing drought in the region, we have constructed gabions on an additional 380 acres of the reserve and adjacent ranches since 2012.

Throughout all of our activities, we are investing resources in building local conservation employment opportunities. One of the reserve's resident cowboys, Laqui Duarte, has taken on increased responsibilities for maintaining and checking our network of motion-triggered wildlife cameras. Since 2010, he has assisted ornithologists in the field during seasonal surveys, month-long arrival/departure censuses of peak migration, and ongoing molt-migration research. Laqui also helps coordinate local work crews and oversees gabion construction. His growing experience in bird and wildlife observation, as well as his extensive knowledge of the landscape, highlights our long-term objective to train local people to carry out and sustain this project.

We are also fostering improved relationships in the community at large, making clear connections between habitat conservation, scientific monitoring, and community education. This includes a long-term commitment to strengthening relationships with local ranchers. Our project illustrates the value of working collaboratively with neighboring ranchers on habitat restoration while simultaneously conserving priority habitat for birds by establishing a large protected reserve along the Río Aros. We know that continuing efforts by private organizations such as NJP and Naturalia, along with a strategic partnership with the NMBCA, are essential for realizing bird conservation in northern Mexico at large scales.

For more information, contact the Northern Jaguar Project at information@northernjaguarproject.org or visit www.northernjaguarproject.org.

Strategic Conservation of Natural Areas in the Appalachians of Southern Quebec

Mélanie Lelièvre, Executive Director and Caroline Daguet, Biologist, Appalachian Corridor, Quebec

Appalachian Corridor is a regional non-profit organization with a mission to protect natural areas in the Appalachian mountains of southern Quebec. Our territory of action falls within the Northern Appalachian/Acadian Ecoregion defined by 2Countries1Forest and targets a strategic location for habitat connectivity in the Green Mountains north of the Vermont border.

Since its creation in 2000, Appalachian Corridor has worked in cooperation with its 15 affiliate members, Nature Conservancy Canada, and many local, regional, national and international partners, including eight U.S. conservation organizations. We have developed a rigorous and structured process, including an ecological analysis at the landscape scale, conservation strategies in specific areas, ecological surveys and conservation plans for targeted properties, monitoring key species at risk, negotiating and completing agreements for land conservation in perpetuity, and education and outreach.

View of the Appalachians in southern Quebec from Mount Chagnon. / Appalachian Corridor

A Unique Model. Our Affiliate Members are local conservation organizations who contribute directly to the protection of the territory by their conservation actions as well as education and outreach activities. Their presence at the grassroot level makes them the primary actors in conservation issues through their privileged contacts in their respective communities. Owing to funding from the Neotropical Migratory Bird Conservation Act (NMBCA) and numerous partners such as the federal Canadian government, Québec's Ministry of Environment, public and private foundations, among others, Appalachian Corridor can support these Affiliate organizations in becoming more autonomous in their conservation approach, namely in terms of negotiating agreements and managing protected properties. During the 2009-2011 round of NMBCA funding, for instance, we have worked in close partnership work with our Affiliates to initiate, negotiate, and conclude conservation projects with eight landowners.

Protecting strategic natural areas. Appalachian Corridor used key funding from the NMBCA Program plus leveraged matching funds from partners—totaling $871,000—to complete the protection in perpetuity of more than 1,110 acres on six different properties in southern Quebec.

One of these projects was the first forest conservation servitude in Québec, signed in 2012, between Nature Conservancy Canada and Bois Champigny Inc., a logging company providing local jobs. (A conservation servitude is the equivalent of a working forest easement in the U.S.) This very large property, totaling 1,200 acres (about 800 acres protected with NMBCA support), is strategically located in the heart of a conservation core—a large, unfragmented forest block—maintaining connectivity between the Sutton Mountains to the southwest and Mount Orford Provincial Park to the northeast.

How it All Started. In February 2010, 150 stakeholders took part in a symposium organized by Appalachian Corridor to bring the forestry and conservation spheres together to find common ground, despite what they used to consider as conflicting views. This was the first time stakeholders from both domains openly acknowledged that they shared a common vision for private forests in southern Quebec. A joint committee was formed, as a result of this event, to focus on developing new legal tools that combine both sustainable forestry and protection of natural habitats on private land.

One of these tools is the Forest Conservation Servitude, which binds a conservation organization and a private landowner in perpetuity. Retaining his or her property rights, the landowner can carry on forestry activities according to jointly agreed terms while ensuring the long-term protection of the sensitive natural characteristics of his land. This very tool was used for the first time in Quebec in 2012, with the forest conservation servitude signed on the Bois Champigny property.

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"We are delighted by this collaboration between foresters and conservation biologists in the pursuit of common goals, being the preservation of forest cover and its attributes as well as benefits for the community. We truly believe that the recently completed conservation initiative will contribute to maintaining essential natural corridors for plants and wildlife," explains Réjean Champigny of Bois Champigny, Inc.

"We are working with NCC and our Affiliate Members to secure a functional ecological network over our territory of action, and this 800-acre Bois Champigny property on Mount Chagnon represents a key piece of the puzzle. By offering technical and financial support to this first Forest Conservation Servitude project, we contribute to making the model we so passionately value actually happen: reconciling conservation and sustainable use of resources in perpetuity," concludes Mélanie Lelièvre, Appalachian Corridor's Executive Director.

Bicknell's Thrush is a Neotropical migrant and USFWS Bird of Conservation Concern that breeds in high elevation coniferous forests of northeastern North America and overwinters in the Greater Antilles. / T.B. Ryder

Monitoring and Protecting Species at Risk—Chimney Swift: Quebec's Chimney Swift population adds up to 2,500 birds and staff from the Regroupement QuébecOiseaux (an association of ornithologists) counted only 450 chimneys used by the species. Chimney Swifts rely on brick chimneys to breed, building a twig nest that clings to mortar joints using the birds' saliva.

In order to maintain and protect Chimney Swift populations, Appalachian Corridor used funding from the NMBCA Program to collect annual data on the species. Once nesting was confirmed, our team met with chimney owners the following year, encouraging them to commit to taking the bird's needs into account when planning their annual sweep or before doing any repairs to the chimney, and to leaving the opening uncapped. Three out of the four owners of chimneys confirmed as nesting sites during the grant period signed letters of intent. The project continued successfully with six more owners making the same commitment for their properties located in three different towns over Appalachian Corridor's territory of action.

Peregrine Falcon: Thanks to funding from the NMBCA Program, Appalachian Corridor staff surveyed quarry cliffs potentially suitable as Peregrine Falcon nesting sites. They discovered a new breeding site in a disused section of an active quarry site in 2010. During the survey period, Appalachian Corridor developed a good relationship with the quarry owner. As a result, when the company informed us of their intention to resume quarrying operations at this abandoned area, we were able to discuss mitigation measures with the landowners, who agreed to respect the Peregrine Falcon's need for no human disturbance at the nesting site during the breeding season.

Bicknell's Thrush: Appalachian Corridor, supported by the NMBCA grant, hired a professional ornithologist for the annual monitoring of the Bicknell's Thrush population found on the Round Top Mountain in the Sutton Mountain Range. His results revealed the fragility and decline of this population, which led to a more detailed assessment of the species' habitat in the Sutton Mountains after the grant period. A research project is now underway to evaluate the carrying capacity of the site and whether the high number of visitors on hiking trails is impacting the bird's critical breeding habitat.

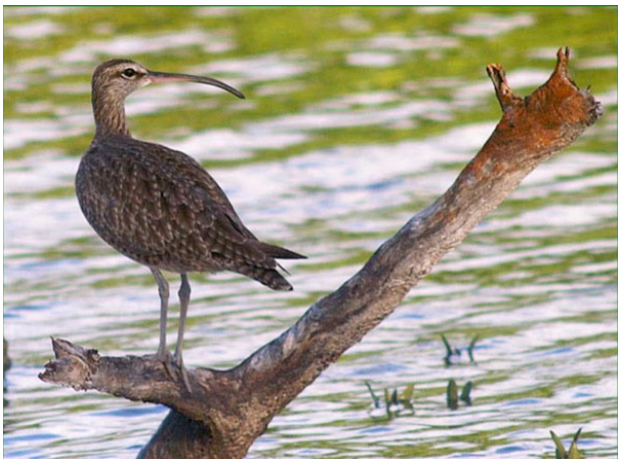
Raising Awareness. As part of this NMBCA-supported project, Appalachian Corridor and its Affiliates used a variety of measures to promote conservation on private land. These included the production of a bilingual newsletter sent to more than 8,000 homes and available on the Appalachian Corridor website, www.appalachiancorridor.ca; the organization of events, workshops, and presentations to raise awareness among the general public and local landowners about species at risk and their importance; habitat conservation issues and the options available for land protection in perpetuity; and the reconciliation of forestry activities and conservation of the natural environment.

For more information, contact Mélanie Lelièvre, Appalachian Corridor, melanie.lelievre@corridorappalachien.ca.

Birds as Winged Ambassadors for Caribbean Conservation

Lisa Sorenson, Executive Director, BirdsCaribbean

For outsiders, especially those who live in colder climates, the islands of the Caribbean conjure up images of endless white sand beaches, sparkling turquoise waters, and warm tropical sun. This is all true, but the region offers so much more—a wealth of biodiversity within its diverse ecosystems—from tidal flats, freshwater marshes, mangroves, and salt ponds to pine, scrub, and rainforests.



Whimbrel, pictured at Ashton Lagoon, Union Island of St. Vincent and the Grenadines, is a Neotropical migrant and USFWS Bird of Conservation Concern. / BirdsCaribbean

Through both their origins and their isolation from the mainland, the islands have given rise to an astonishing number of endemic species of mammals, reptiles, amphibians, plants and birds. Of the 564 Caribbean bird species, 148 (26%) are endemic, including parrots, hummingbirds, todies, and warblers. The islands also provide a critical refuge for hundreds of migratory bird species that flee the cold north to spend up to nine months in Caribbean forests and wetlands, or use them as resting and refueling stops en route to their final destinations in Latin America.

Conservation of these unique birds and their habitats is, however, a challenging prospect in the Caribbean. Environmental concerns are low on the priority list for most governments and as a result critical habitats are often lost to development. Illegal hunting, collecting of birds for the pet trade, overgrazing, invasive species, agricultural expansion, firewood gathering, mining, water mismanagement, and various kinds of pollution are among the many activities that degrade habitats and negatively impact birds. Fifty-four endemic bird species are threatened with extinction, and many others, including Neotropical migrants, are declining.

BirdsCaribbean (formerly the Society for the Conservation and Study of Caribbean Birds - SCSCB) has long believed that conservation of nature begins with education—unless one has an understanding of our interconnectedness with nature and how it supports human societies, there can be little hope for conserving what remains. We also know that spending time in nature enriches our lives immeasurably. Thus, bird education is a primary focus of our work, and for many years, we have been building the capacity of our local partners to carry out bird education.

Birds are excellent ambassadors for raising awareness and appreciation for nature. They are easy to observe, beautifully colored, and have interesting behaviors. They are a part of our natural world that everyone can enjoy, whether simply watching birds at a backyard feeder or visiting a park or nature reserve to view birds. But appreciating "what's in your own backyard" sometimes needs a little nudge.

Through support from the Neotropical Migratory Bird Conservation Act (NMBCA), we have been able to significantly expand and grow several of our bird outreach and education programs, leading to hundreds of thousands of people of all ages being exposed to the wonder of birds, most for the first time.

We organize two major celebrations each year to raise public awareness, knowledge, and appreciation for the region's many resident and migratory bird species. The Caribbean Endemic Bird Festival (CEBF), held for one month each spring, celebrates the large number of endemic birds in the region. During the International Migratory Bird Day (IMBD) Festival, celebrated in the fall, the spotlight is on the long journeys that migratory birds take each year and how critical Caribbean habitats are to their survival during migration and for overwintering.

During these festivals, dedicated volunteers and local coordinators from our partner organizations organize fun and engaging activities such as guided bird and nature walks, tree plantings, art exhibitions and competitions, TV and radio programs, ecology games, clean-ups, articles in the media about birds, and more.

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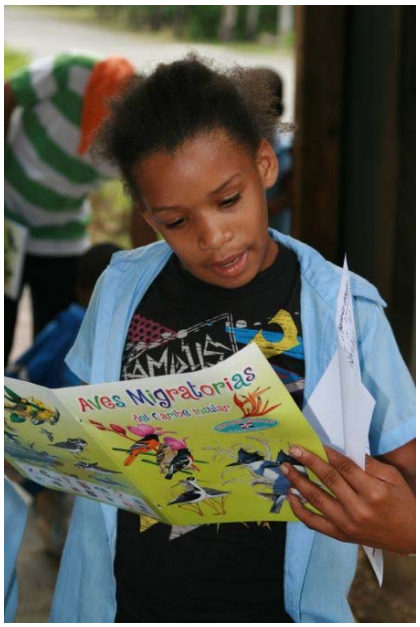
The festivals have had great success. The CEBF, first held in 2002, with 1,000 people participating in eight countries, has grown to more than 100,000 people participating in 22 countries/islands. Our NMBCA grant enabled us to support these festivals by developing and providing local partners with materials such as posters, fact sheets, t-shirts, coloring books, and presentations. In addition, we administered a small grants program, awarding 25 grants (~$500 each) to local coordinators, which enabled them to purchase materials and other items for their festival activities. Our Migratory Birds of the Caribbean Coloring Book, featuring 41 common migrants, has been especially popular with children, while people of all ages appreciate our easy-to-use plastic bird identification cards.



Youth learning about migratory birds. / BirdsCaribbean

Another flagship program, the West Indian Whistling-Duck (WIWD) and Wetlands Conservation Project, provides local teachers and educators with training and educational materials to raise awareness and appreciation of the value for local mangroves and wetlands. With NMBCA support, we published a book on Caribbean wetlands, Wondrous West Indian Wetlands: Teachers' Resource Book, in 3 languages and held training workshops on its use throughout the islands. To date, more than 3,700 teachers and wildlife professionals have participated in our "train the trainer" workshops and delivered the program to local youth and communities.

Thanks to the hard work of our network of partners throughout the region and funding through the NMBCA, our education programs have had innumerable positive outcomes, ranging from formation of local birding clubs and on-the-ground conservation actions, such as building of nest boxes for birds and a reduction in hunting of WIWDs, to increased legal protection for species and habitats. We have also learned of a number of students who became inspired to study and pursue careers in environmental science and conservation biology as a result of being part of our education programs.

Our workshop evaluations, including a "before" and "after" quiz, show a significant increase in knowledge and a positive change in attitudes and perceptions of wetlands and birds following participation in our programs. Participants routinely comment that the workshops are an "eye opening experience" for them, and we have learned that many persons follow up and become involved in conservation in some way.

One outstanding example is the conversion of a former hunter in Antigua to one of the island's most prominent conservationists. Prior to attending one of our workshops, Joseph Prosper used to hunt WIWDs, a globally threatened species. Following attendance, Prosper traded in his gun for binoculars and now devotes all his spare time to conservation and monitoring of WIWDs and other wildlife on the island. Through many hours in the field, he has become an expert on the ecology of several local species, and attends our regional meetings to present his data. One of the most prominent local advocates in Antigua, Prosper also works tirelessly to educate his students and community members about wetlands and wildlife, recruiting many other residents in his efforts to plant mangroves, reduce hunting and pollution, enjoy birdwatching, and more.

By engaging people in the fun and joy of birding and learning about the habitats and conservation actions needed to ensure long-term survival of these species, we have made great strides in raising the public profile of endemic and migratory birds in the Caribbean. Our programs have helped to expand the ranks of people committed to environmental stewardship as well as develop current and future conservation leaders—so vital to influencing decision-making and long-term changes in conservation policy to protect the Caribbean's irreplaceable natural treasures.

Learn more about our work at: www.BirdsCaribbean.org, www.CaribbeanBirdingTrail.org and ebird.org/content/caribbean/ or contact Lisa Sorenson at Lsoren@bu.edu.

In a Race Against Time, the "Neotrop Act" Catalyzes Conservation in the Chihuahuan Desert

Arvind Panjabi, International Director, Rocky Mountain Bird Observatory

I'll never forget when, on January 29, 2008, I looked in my inbox and saw an email from Pedro Calderón, one of the field biologists conducting bird surveys for Rocky Mountain Bird Observatory (RMBO) in northern Mexico. The subject line read "PROBLEMS IN VALLES CENTRALES!" My stomach sank. We had already almost exhausted the available back-up sites in this area for our wintering grassland bird survey. What could be wrong now? I swallowed hard and opened the email to learn that 6 of the 21 sampling blocks we had successfully established the previous year were no longer usable. The grasslands within these 18 by 18 km survey blocks had been virtually eliminated in the intervening year, converted to center-pivot irrigated croplands and ploughed fields. In some cases, the conversion was ongoing as the biologists arrived to conduct their surveys.

Grasshopper Sparrow, a Neotropical migrant that overwinters in the Chihuahuan Desert, is declining throughout its range due to habitat loss and degradation. / Jose Hugo Martinez

We would later learn through a remote sensing analysis of the Valles Centrales Grassland Priority Conservation Area (GPCA) that this rapid expansion of groundwater-fed agriculture would consume more than 70,000 hectares of grasslands and shrublands in the area by 2011. Thanks to the wintering grassland bird data that was being collected under the U.S.-Mexico Grassland Bird Conservation project, funded by the Neotropical Migratory Bird Conservation Act (NMBCA) and other partners, RMBO had the data, capacity and on-the-ground knowledge to document the extent of habitat loss in the Valles Centrales and estimate its impact on grassland birds: 355,000 individuals displaced, including roughly 1,400 Sprague's Pipit, 6,750 Baird's Sparrow, and a whopping 132,700 Chestnut-collared Longspur. Not to mention 11 nesting territories of endangered Aplomado Falcon destroyed, leaving only six breeding pairs in the state. While the Valles Centrales—the largest of eight internationally recognized GPCAs in Mexico at the time—was ground zero for the agricultural boom, similar reports were coming in from the field that grasslands were being converted to croplands across the Chihuahuan Desert.

Being one of the few eyewitnesses to the rapid destruction of these rich yet little known grasslands drove home a sense of responsibility and urgency for us to gather the information needed to begin taking action as soon as possible. Conservationists have long known that the Chihuahuan Desert is the primary wintering ground for migratory grassland birds of the Great Plains: fully 90 percent of these species spend up to eight months a year here. But they've never really known how their populations, or the habitats they require, are distributed across this vast region, which covers parts of three U.S. and 11 Mexican states.

RMBO's Chihuahuan Desert grassland bird survey was designed to identify distribution, density, and habitat use patterns of grassland birds of conservation concern, like Sprague's Pipit, Baird's Sparrow and Chestnut-collared Longspur. Although the extent of grasslands in the Chihuahuan Desert is only one-sixth of that in the Great Plains, these grasslands support most of the global population of these and several other bird species that migrate between these regions. Given the rapid changes we were witnessing, we strongly suspected that winter habitat loss would become a bottleneck for grassland birds, if it wasn't already, furthering the steep declines of the past half-century.

We immediately got busy refining and expanding the survey to more thoroughly cover the region's grasslands. Over the next six years, we trained over 50 Mexican biologists from 15 organizations in grassland bird identification and survey techniques, and deployed up to 24 biologists each winter to gather data from over 1,200 sites across the Chihuahuan Desert. We used our newfound knowledge of Chihuahuan Desert grasslands to revise and expand the GPCA network, more than doubling its extent in Mexico. We produced annual reports on wintering densities and habitat use, a grassland bird conservation plan and a Spanish-language grassland bird pocket guide and best practices manual to engage local people in grassland bird conservation and management. We developed investigations to

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address related questions concerning grassland bird winter survival and home range use. The winter survival research is ongoing, and several manuscripts are in preparation. And we've now deployed a team of grassland bird biologists and range ecologists to work with landowners and other conservation partners to improve grassland bird habitat on over 300,000 acres of private lands and create a win-win for livestock producers and birds in the Valles Centrales.

Aerial view of the advancing agricultural front in the Tarabillas Valley, Chihuahua. / Ken Stinnett

Thanks to the U.S.-Mexico Grassland Bird Conservation project, we now better understand the key wintering areas, habitats, and limiting factors for migratory grassland birds, as well as the challenges and solutions to conserve them. Grassland bird populations are highly mobile, taking advantage of optimal conditions across their range. All of the Chihuahuan Desert grasslands are important for one species or another at some point in time. But what ultimately drives habitat suitability is vegetation structure, especially shrub cover. Sprague's Pipit, Chestnut-collared Longspur, and Baird's Sparrow simply will not use areas with too many shrubs or with grass that is too tall, too short, too sparse or too dense for their individual liking. Current grazing paradigms have resulted in extensive shrub encroachment and uniformity in vegetation structure. Thus only a small portion of desert grasslands are currently suitable for these species. However, through adaptive management and restoration we can increase the available habitat.

Much is left to be done to protect the vulnerable grasslands of this globally important landscape and reverse population declines. The work that RMBO and partners have begun in the Valles Centrales is a model for how grassland bird conservation objectives can be achieved, and scaled up, across the network of priority sites. To secure and enhance these rapidly disappearing grasslands and relieve the bottleneck of winter habitat loss, we must deploy more boots on the ground to expand outreach, management, and restoration efforts to all 17 of the Chihuahuan Desert GPCAs, while also working to protect key grasslands threatened by cropland and other development. We must also address the elephant in the room: the unsustainable and largely unregulated expansion of groundwater-irrigated agriculture in northern Mexico.

Map showing extent of NMBCA-funded grassland bird survey. / RMBO

The core support, provided by the NMBCA, was critical to catalyzing this project and leveraging additional support from other interested partners like The Nature Conservancy, USDA Forest Service International Program, National Fish and Wildlife Foundation, Bureau of Land Management, Commission for Environmental Cooperation, National Park Service, Sul Ross State University, Texas Parks and Wildlife, Rio Grande Joint Venture, Sonoran Joint Venture, National Audubon Society, the City of Fort Collins, Colorado Parks and Wildlife, Colorado State Land Board, Cuenca Los Ojos, American Bird Conservancy and Tutuaca Mountain School, who in addition to supporting the actions described above, helped to protect and manage hundreds of thousands of acres of grasslands on both sides of the border for grassland birds.

None of this work would have been possible without the collaboration and dedication of our many Mexican university and NGO partners who spent countless hours in the field, often in remote and desolate places, learning about these small and secretive birds and the grasslands they call home. In particular, the Universidad Autónoma de Nuevo Leon was the leader in coordinating the on-the-ground survey teams from the Universidad Juarez del Estado de Durango, Universidad Autónoma de Chihuahua, TNC-Mexico, Profauna-Coahuila, Profauna-Chihuahua, Pronatura Noroeste and Pronatura Noroeste.

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Tree Planting Across the Americas to Benefit Local Communities and Bring Back the Birds

Daniel Lebbin, Conservation Biologist, American Bird Conservancy

Leaf litter crunches underfoot and a few sun spots dapple the ground underneath a closed shady canopy of alders in the Peruvian Andes. It is hard to imagine that just four years earlier this spot was an open pasture without trees, leaf litter, or shade. Alders fix nitrogen, improving soil nutrition for other species, and now the local people who manage this land are ready to plant slower growing hardwoods that require better soil and shade to increase the diversity and value of their restored forest plots.

The ground-nesting Canada Warbler is a Neotropical migrant and USFWS Bird of Conservation Concern. / Matt Orsie

Although this forest may never fully replicate the original forest that was here before the land was cleared for cattle or crops, it is amazing how much ecological function—in terms of soil quality, enhanced shade and humidity, and birds—can recover rapidly with a little support from people. Likewise, with support of grants from the U.S. Fish and Wildlife Service (USFWS) through the Neotropical Migratory Bird Conservation Act (NMBCA) and other donors, American Bird Conservancy (ABC) and our partners have been able to achieve impressive restoration results in a short time span. Over the last decade, ABC and our partners have planted over 3.1 million trees and bushes belonging to 223 species to enhance habitat quality and connectivity for both migratory and resident birds on well over 6,000 acres in and near critically important nature reserves throughout Latin America and the Caribbean.

Planting such a large number of trees over such a large area is not easy. Such results were made possible by working in collaboration with many partners across many countries, including Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Nicaragua, and Peru. Priority restoration sites are those situated in or near reserves or other protected lands and that can enhance the value of those places for both people and wildlife. Most of our restoration sites are in prime wintering areas for priority Neotropical migrants, such as Olive-sided Flycatcher, Golden-winged Warbler, Cerulean Warbler, Canada Warbler, and many more. Restoration also contributes to the retention and improvement of ecosystem services by sequestering carbon, protecting watersheds, improving soil quality, enhancing habitat for biodiversity, and providing sources of fruit, flowers, and timber to benefit private landowners and improve their livelihoods. Our network of restoration sites are often near lodges or research stations and would make excellent study sites for researchers studying restoration ecology.

The availability of native trees is often a limiting factor. So we helped our partners establish or operate 27 tree nurseries to produce locally native tree saplings, often within the reserves and communities where the tree planting occurs. Local people are trained and provided with supplies. Over the years, these locals have improved their production capabilities, learning how to cultivate additional tree species, mix better soil to germinate seeds and raise seedlings in, and compost to create natural fertilizers. Practitioners in different countries have shared their experiences and lessons learned with each other at workshops organized by ABC and funded by the USFWS.

When seedlings are ready, they are planted by partner staff and local people on degraded lands in four major types of reforestation systems. The first is our favorite and preferred system—planting a variety of native species to replicate as close as possible a diverse mixed-species forest. We conduct this type of restoration within nature reserves, conservation easements, and on private lands with willing land owners.

Restoring mixed forests on private and communal agricultural lands is not always an available option. The next best restoration is shade agriculture, where we plant native trees as shade for coffee, cacao, or other crops. Often we are able to plant a diversity of native shade trees in this way, and the resulting agroforestry supports many

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Neotropical migrant and resident birds. Our third system is silvipasture, where we plant native trees in pastures to provide shade and increase humidity to improve grass forage for cattle, enhancing connectivity and habitat for canopy birds. Fourth, we plant native trees in lines as living fences to support barbed-wire, control erosion, protect stream buffers, provide cattle with shade, all while enhancing habitat quality and connectivity for canopy birds.

The breathtaking Blackburnian Warbler is a Neotropical migrant that overwinters in South America. / Bill Thompson

In exceptional cases, to protect remnant native forests from fuelwood collecting, we have planted native and some exotic trees on degraded lands in a fifth system of fuelwood plantations. Communities harvest trees on these plantations as an alternative to damaging their remaining patches of native forests.

Once trees are planted, the work is not over. In many cases, planted saplings require weeding around their base until they reach a certain height or competing weeds are shaded out. In some cases, such as in drier habitats, planted saplings may be watered by irrigation systems to enhance their chance of survival past the first couple years when they might be more vulnerable. With proper care as needed, planted trees generally have high survival and grow well, and we measure tree growth and survival of planted saplings.

But the most exciting part for us is monitoring the use of restoration sites by birds to document how reforestation efforts are succeeding. We are working on measuring the impact on migrant populations, and, with our partners, are standardizing monitoring methods for both trees and birds. For instance, our partner in Nicaragua at the Reserva El Jaguar are monitoring the condition of overwintering migrants like the Golden-winged Warbler in restored shade-coffee systems. Wintering Blackburnian Warbler and highly threatened species such as the Jocotoco Antpitta and Golden-plumed Parakeet were observed in May 2013, inside reforestation plots established in Ecuador by our partner Fundación Jocotoco. Golden-winged Warbler, Cerulean Warbler, and the critically endangered Niceforo's Wren have been observed in a restoration corridor in Colombia where our partner Fundación ProAves works. I have watched vulnerable Little Woodstars feed on flowering bushes planted only a few years earlier by our partner ECOAN in northern Peru. Through tree planting and habitat restoration, ABC and our partners are bringing birds back!

We are grateful to all the supporters, partners, and communities who have inspired and made these achievements possible, and particularly for the support of the USFWS through the NMBCA, which provided much of the funding for this project.

For more information, contact Daniel Lebbin at dlebbin@abcbirds.org.

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We now have a veritable army of grassland bird biologists in Mexico, capable of incorporating grassland bird conservation into their projects and organizational mandates—and they are poised to act. Some continue to work with RMBO to this day, like Pedro Calderón, who is now part of our grassland bird habitat management initiative in the Valles Centrales.

These days when I get an email from Pedro, it's usually good news, like how the Aplomado Falcons at our project sites are taking to our nest platforms, or how much interest he's seeing from ranchers in improving their lands for grassland birds. And we can all use some good news every once in a while.

You can stay on top of what's happening with RMBO's Chihuahuan Desert Grasslands project by visiting our Blog and following us on Facebook. For more information, contact Arvind Panjabi at arvind.panjabi@rmbo.org.

Ten Years of Collaboration to Preserve the Endangered Golden-cheeked Warbler and Mesoamerican Pine-Oak Forest

Claudia Macias Caballero, Conservation Director, Pronatura Sur, A.C.

In early 2000, the non-governmental organizations Pronatura Sur in Chiapas, Mexico, Defenders de la Naturaleza in Guatemala, and SalvaNatura in El Salvador began a dialogue about finding records of Golden-cheeked Warbler (GCWA) in the pine-oak forests of Mesoamerica. Given the endangered status of this species, and the growing threats facing pine-oak forests, these organizations began to promote the establishment of a multinational collaborative initiative to protect forests, birds, and the high endemic biodiversity of this region.

The Golden-cheeked Warbler is federally endangered in the U.S. and on the IUCN Red List; pictured in San Cristóbal de Las Casas, Chiapas, Mexico. / Alberto Martínez Fernández

With support from the U.S. Fish and Wildlife Service's Neotropical Migratory Bird Conservation Act (NMBCA), this collaboration laid the foundation to establish the "Alliance for the Conservation of Mesoamerican Pine-Oak Forests" in 2003. This voluntary, international partnership consists of 15 institutions in the United States, Mexico, Guatemala, El Salvador, Honduras, and Nicaragua working cooperatively to conserve the Mesoamerican pine-oak forest region and its avifauna (www.alianzapinoencino.com/). The federally endangered Golden-cheeked Warbler was naturally selected as the flagship species for the Alliance's conservation efforts.

Importance of Mesoamerican Pine-Oak Forests for Birds and Wildlife. The Central American Pine-Oak Forest Ecoregion extends through the highlands of southern Mexico, Guatemala, central Honduras, northern El Salvador, and northwestern Nicaragua. The region covers 103,843 square kilometers, but only 26,728.35 km² (or 26 percent of the total area) remains forested and less than 8 percent of the region (8,047 km²) is under protection. The main threats are unsustainable forestry practices, forest fires, and extraction of forestry products.

The diversity of pines and oaks in this region is high: At least 36 oak and 11 pine species occur in mature pine-oak forests throughout Mesoamerica. These forests provide habitat for a great number of threatened and endemic species. Conservation International considers this region to be an Endemic Bird Area and a High Priority Terrestrial Ecoregion, or "Hotspot," because of the 21 endemic species that occur there. At least 55 Neotropical migratory bird species overwinter in the region. At least six of those species—Golden-cheeked, Golden-winged, Canada, Worm-eating, Red-faced, and Hermit Warblers—have been identified by Partners in Flight (PIF), National Audubon Society, American Bird Conservancy, and U.S. Fish and Wildlife Service as species of conservation concern. Additionally, the region is a critical trans-regional migratory route for at least 225 Neotropical migratory bird species. These migratory species join the Chiapas year-round residents, many of them equally threatened, including Pink-headed warbler, Garnet-throated Hummingbird, Bearded Screech-Owl, Unspotted Saw-whet Owl, and Black Thrush, which are also recognized as species of high tri-national concern by PIF (www.savingoursharedbirds.org/).

Aligning Conservation Objectives Across Organizations and Countries. In 2007, the Alliance developed a Conservation Plan for the pine-oak forests and the GCWA. Since then, the Alliance, through its 15 institutional members, has contributed to the conservation and sustainability of pine-oak forests and birds in all five Mesoamerican countries, with an emphasis in the three countries with the majority of pine-oak forest: México, Guatemala and Honduras. Actions have included sustainable forest management, fire management, forest restoration, identification of quantitative habitat targets for conservation, GCWA and wildlife monitoring, incorporation of wildlife values into forest management, land protection, financial mechanisms for forest protection, and advocacy and outreach activities. The Alliance represents one the few initiatives born in the Neotropics that promotes sustainable management and conservation in an area of great cultural and ethnic richness, but also of high poverty rates. The history and geog-

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raphy of much of the Central American pine-oak forest ecoregion coincide with the distribution and occupation of the Mayan civilization during the Formative and Middle (Pre-Classic) Periods. These areas currently have the largest indigenous population, which are now geographically differentiated sub-groups with distinct languages, dialects, customs and, unfortunately, the highest poverty and extreme poverty indexes. Poverty reaches extreme levels in all the region's countries, mainly in the rural areas.


Pine-Oak Forest in Honduras. / Alberto Martínez Fernández

The NMBCA has played an extremely important role in the growth and consolidation of the Alliance, through financial support to operate at least six projects from 2004 to today. The projects developed with NMBCA support contributed significantly to the implementation of four strategic objectives defined in the Alliance's Conservation Plan:

Institutional Coordination. We strengthened the operation of the Alliance by defining its organizational structure, communication mechanisms, and institutional processes. We hired an Alliance coordinator, formed national and multi-sectoral working groups, and created a logo and a webpage.

Sustainable Forest Management. We included over 200,000 hectares of forest under long-term, sustainable management through actions such as communal forestry management, technical capacity building, incentives for managing and restoring forests, forest management plan and technical guideline development, community exchanges, and strengthening local communities' organizational decision-making about the management of their forests.

Integrated Fire Management. We conducted integrated fire management on about 50,000 hectares throughout the ecoregion. This was accomplished through training, capacity building, and equipping communal fire brigades; prescribed burns and management of combustible material; inter-institutional coordination to establish Incident Management Systems; developing fire management plans; standardizing integrated fire management; and exchanging lessons learned.

Formal Conservation Mechanisms. Using multiple mechanisms, we contributed to increasing the amount of forest under formal protection by over 100,000 hectares throughout the ecoregion. The mechanisms varied among national contexts and occurred at various scales: federal or national, state, private, municipal, and communal. We also used ecosystem payment services for forest protection and restoration. Other actions included territorial planning and standardization, patrolling and monitoring, capacity building, and exchange of lessons learned among landowners.

In addition, through NMBCA projects, we carried out complementary actions such as diagnostic studies of the ecoregion, environmental education and outreach, analysis of potential impacts of climate change on forests of the ecoregion, and more. While developed at the regional level, with participation of most Alliance members, these projects have had important national impacts and involved local communities across multiple public sectors in sustainably managing and conserving pine-oak ecosystems.

NMBCA support has allowed partners to leverage additional financial resources for conservation. The above projects have catalyzed subsequent investments by other funders such as the two-year project coordinated by Conservation International with funds from the Critical Ecosystem Partnership Fund, and the three-year project coordinated by The Nature Conservancy and Conservation International with funds from Legacy Fund. Implementation of these projects benefited greatly from cooperation among Alliance organizations.

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Members of Mesoamerican Pine-Oak Forest Alliance at their 2011 meeting

Members of the Mesoamerican Pine-Oak Forest Alliance

Chiapas, Mexico:
Comisión Nacional de Áreas Naturales Protegidas
Conservación Internacional
Pronatura Sur
The Nature Conservancy (TNC)
Secretaría de Medio Ambiente y Recursos Naturales
El Colegio de la Frontera Sur

El Salvador:
Ministerio de Medio Ambiente y Recursos Naturales
SalvaNATURA

Guatemala:
Conservación Internacional
Fundación Defensores de la Naturaleza
Instituto Nacional de Bosques
TNC

Honduras:
Fundación EDUCA
Instituto Nacional de Conservación y Desarrollo Forestal - Áreas Protegidas y Vida Silvestre
TNC
Universidad Nacional Agraria

Nicaragua:
Alianza para las Áreas Silvestres
TNC

USA:
TNC
Texas Parks and Wildlife Department

The Alliance's next step is to update the conservation plan to set goals and objectives for increasing the extent of Golden-cheeked Warbler wintering habitat that is under legal protection or managed under sustainable agroforestry. Partners will also establish a monitoring system to develop measurable Golden-cheeked Warbler population objectives for the next five to ten year conservation plan. The updated plan will include current threats and challenges to the forests and will focus on priority issues to pay attention to in the near future.

After ten years of significant progress in each country, the Alliance still has much to do, as new challenges arise for the forests and the people living there. These challenges include climate change impacts such as shortage of water supplies, dryer forests, and increasing of forest fires; higher demand for non-regulated forest products like firewood, and medicinal and ornamental plants; and demographic, economic, and health population issues.

Neotropical migratory birds like as the Golden-cheeked Warbler can inspire organizations in Latin America to join forces to conserve priority ecosystems, through extensive collaboration and participation across national borders. These efforts not only benefit habitat for the GCWA but also for the highly endangered endemic biodiversity of pine-oak forests.

Local people benefit, too—from land use planning efforts, capacity building for incorporating sustainable forest management practices in their land, and integrated fire management practices. They can receive environmental payment services for protecting and/or restoring their forest, learn from other communities' experiences, and improve policies related to forest management. Strengthening the ability of social organizations to make better decisions regarding the use, management, and preservation of their forests and ecosystem services reaps great gains not only for wildlife but people, too.

For more information, contact Claudia Macias Caballero at cmacias@pronatura-sur.org.

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Stakeholder Training. The OICP has executed many other successful activities to further enhance bird conservation. Through one-on-one interactions with field biologists and officers, stakeholders gained a greater understanding and appreciation for birds and other wildlife and began practicing behaviors that foster conservation of our biodiversity. Stakeholders would meet with field officers on the islands as they carried out their surveys or monitoring activities. These meetings were sometimes scheduled but in other cases occurred spontaneously when both parties happened to be on the islands.

Antiguan students learning about and celebrating birds. / Tom Aveling

In addition, workshops and field training exercises ensured that local volunteers and regional partners had sufficient the conservation management capabilities. The workshops ranged from courses on conservation management and leadership skills to seabird, landbird and shorebird monitoring. Other vital training included stakeholder interaction skills, educational outreach techniques and invasive species prevention, detection, control and/or ethical eradication.

To further promote awareness and appreciation of endemic and migratory birds, the OICP, in collaboration with BirdsCaribbean, held local bird festivities, including art competitions, nature walks, bird presentations and identification games, monitoring of key wetlands through the Caribbean Waterbird Census, television and radio interviews, and surveying and mapping important migratory bird habitat. Using local and social media, the public was encouraged to participate in/attend at least one of the above-mentioned birding activities. Not only were these activities fun, but in many instances, important monitoring skills were gained as well.

Since the conclusion of the NMBCA grant, EAG has made several strides in bird conservation in Antigua and Barbuda, including OICP's securement of a competitive grant with the Critical Ecosystem Partnership Fund (CEPF), the completion of a birding trail on the mainland, establishment of the Redonda Restoration Project, implementation of the Caribbean BirdSleuth Program (in collaboration with BirdsCaribbean and the Cornell Lab of Ornithology), and hosting a familiarization trip with the country's leader and Minister of the Environment, the Honorable Dr. W. Baldwin Spencer and Honorable Hilson N. Baptiste, respectively.

Over the years, the work of the OICP has led to the offshore islands in the NEMMA garnering several coveted designations, including Alliance for Zero Extinction Site, Key Biodiversity Area (CEPF designation) and Important Bird Area. Our efforts have also led to a notable increase in local awareness and knowledge of birds and their conservation, as evidenced by a decrease in blatant or ignorant acts of habitat destruction on the islands. As we interact with residents, we can also discern a higher level of knowledge of and concern for local wildlife. We hear mention of our organization and projects on the radio, television, social media, and in the papers, and receive many requests for talks at schools and with assistance with school projects.

As we continue to fight for the conservation of our wildlife, we acknowledge the valuable support of all our staff, volunteers, partners, and donors such as the USFWS, without whom our efforts would not be possible.

For additional information on OICP, including reports and presentations, please contact Natalya Lawrence at eagantigua@gmail.com. Also see www.youtube.com/watch?v=-IEEYtFPlkU.

The North American Bird Conservation Initiative (NABCI) is a coalition of organizations and partnerships dedicated to advancing integrated bird conservation in North America.

The vision of NABCI is to see populations and habitats of North America's birds protected, restored, and enhanced through coordinated efforts at international, national, regional, state, and local levels, guided by sound science and effective management.

The goal of NABCI is to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships.

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The All-Bird Bulletin publishes information on infrastructure, planning, science, funding, and other advancements in the field of integrated bird conservation and management. For submissions, include author's name, organization, title, and contact information. Pictures are welcome but not necessary.

Populating High Andean wetlands in Peru, Chile, Bolivia and Argentina, Puna or James's Flamingo is a Near Threatened species on the IUCN Red List, and has suffered rapid declines due to exploitation (e.g. harvesting of eggs) and habitat loss (in part due to mining). / Fundación Yuchan

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services important at a site level, and to evaluate the benefits that people receive from them now, compared with those expected under alternative land-uses. As part of the NMBCA project "Conserving Neotropical migratory birds in high Andean wetlands" this toolkit was used to conduct a simple ecosystem services evaluation at four of the sites, and a detailed assessment at Llanganates.

The simple evaluations prioritized the ecosystem services most affected by the current management scenarios. The results informed conservation action plans for Catamarca, Poopó, and Uru Uru lakes; helped the local conservation management committee prioritize their actions at Junín Lake; and helped justify the new protected area at the Buenos Aires Plateau.

The detailed assessment at Llanganates focused on five ecosystem services, nature-based tourism, grass for livestock grazing, water (for human consumption, irrigation, and hydro-electricity), crops, and climate regulation, which were prioritized by the local communities—the direct users. The assessment demonstrated that the current management scheme would reduce the provision of ecosystem services, with losses to local economies and effects on the surrounding human populations. The results also revealed how livestock grazing in the páramo affects its capacity to store and regulate water flow. Aves y Conservación used this information to develop a plan with the local communities for the gradual elimination of livestock from the protected area by identifying alternative sources of livestock forage outside of the park. The elimination of livestock from the protected area will contribute to the recovery of important habitats for Neotropical migrants, through natural regeneration of páramo grasslands and montane forest.

Given the effectiveness of BirdLife's participatory ecosystem services assessment toolkit in Llanganates, Ecuador, Andean national governments and the Ramsar Secretariat have decided to use it to assess ecosystem services throughout the Andes as part of a GEF UNEP project that aims to conserve High Andean wetlands through increased sustainability. Given that various Andean countries are using the provision of ecosystem services as the basis for establishing payment schemes for those services—some of which are highly controversial—a unique opportunity now exists to further advance the conservation of High Andean critical sites for Neotropical migrants and associated biodiversity.

For more information, contact Amiro Pérez-Leroux at Amiro.Perez-Leroux@birdlife.org.