SOUTHERN Wings

Project Proposals 2019-2020

Protection of Wintering and Stop-Over sites in the Conservation Coast Birdscape, Guatemala

Partners: Fundación para el EcoDesarollo y La Conservacion (FUNDAECO), American Bird Conservancy (ABC)

States that have participated to date: Missouri, Tennessee, Arkansas, Iowa, Texas

Overview: The coastal Caribbean region of Guatemala lies between Belize and Honduras in the province of Izabal. This region includes several unique and isolated massifs rising from sea level up to 1,200 meters, low-land rainforest, large mangrove and natural beach systems and a Ramsar Wetland. The region is bathed in moisture-laden Caribbean trade winds and supports a unique transitional ecosystem from the shoreline to wet rainforests and pine-oak forests on south-facing rain-shadow slopes. The unique combination of topographical and climatic conditions creates important stop over and wintering habitat for at least 153 species of neotropical migrants. As such, this region is defined by ABC as a high priority BirdScape called the Conservation Coast. ABC began implementing its BirdScape Initiative to scale up habitat protection and management in key landscapes for migratory birds. FUNDAECO, ABC's Guatemalan partner, is ensuring the conservation of these sites by purchasing and managing core habitat in areas identified for national protection by the Guatemalan government, who themselves lack the funds to purchase or manage land. Southern Wings, and matching funds procured by ABC and FUNDAECO, have made it possible to create an extensive and robust protected area system in this region. With much of the core habitat already protected, FUNDAECO and ABC are focused on protecting forest and restoring degraded lands in the buffer zones of these protected areas.

Threats: Cattle ranching, oil palm expansion, illegal logging, and slash-and-burn and industrial agriculture in the area continue to threaten forest resources.

Birds: Over 140 neotropical migratory bird species have been identified in the Izabal region of Guatemala including Wood Thrush, Kentucky Warbler, Worm-eating Warbler, Hooded Warbler, Black-throated Green Warbler and Painted Bunting. Past ABC-funded research identified the region's caribbean mountain tops as important spring stopover sites for the Cerulean Warbler. Other Watchlist species that use different FUNDAECO reserves include Golden-winged Warbler, Canada Warbler and Olive-sided Flycatchers. The coastline of Punta de Manabique has been used by Buff-breasted Sandpiper, Sanderling, Stilt Sandpiper, Western Sandpiper, Red Knot and Wilson's Plover during the winter migration. Other migrants in the region include Swainson's Hawk, Blue-winged Warbler, Tennessee Warbler, Magnolia Warbler, Louisiana Waterthrush, Baltimore Oriole, and Indigo Bunting.

Overall project goal: Our goal is to secure the protection of core migratory bird habitat in this important wintering and stopover site through protected area creation and management and implementation of sustainable agroforestry systems with local landowners over 5,000 acres. Critical to the agroforestry approach of land restoration is providing hands-on training and technical expertise to landowners. To that end, ABC and FUNDAECO have started to create a series of "BioCenters," plots of

land we acquire where we can implement agroforestry systems and demonstrate to landowners the methodology of planting native tree species along with black pepper, cacao, and other crops that can be grown in forest cover. BioCenters have the added benefit of selling the products grown in the demonstration plots; profits that can be reinvested back into conservation.

Previous Southern Wings Successes: Since 2012, Southern Wings funding has supported the creation and expansion of five protected areas and one BioCenter. In total, these lands account for 9,014 acres of habit for migratory birds. FUNDAECO has now established protections for core areas within all priority locations of the Conservation Coast. This includes Sierra Caral, Cerro San Gil, Punta Manabique, Rio Sarstun (Tapon Creek) and Sierra Santa Cruz. The Guaytan BioCenter is the largest BioCenter established by FUNDAECO (there are six altogether). Within the Guaytan BioCenter, 16.8 ha of black pepper and 31.2 acres of cinnamon have been established in agroforestry plots to restore cattle pasture.

New Activities: ABC and FUNDAECO will be continuing our multi-pronged conservation approach in the Conservation Coast BirdScape, which includes 1) acquisition and protection of important migratory bird wintering habitat, 2) development of BioCenters as living classrooms and outreach centers for landowners, and 3) working with landowners to implement agroforestry practices on their properties. In 2019-2020, we have identified one small but key property to acquire called Punta de Palma. This 35 ha (86.45) property is located on a small peninsula that juts out into the Bay of Santo Tomas. This peninsula is being looked at by developers for beach tourism, and the habitat it currently contains will likely be destroyed if not purchased and protected for conservation. The property contains a small brackish lagoon that is used by ducks and waterbirds. It also contains some of the last coastal forest and likely of importance for arriving and departing migratory land birds. The first payment on the property is needed to secure a three-year purchase agreement.
In addition, we have identified a property ideal for a new BioCenter where we can facilitate cacao and black pepper production. The property is called the Santa Marta Farm and is 132 ha (326 acres). Here we will restore 10 ha (24.7 acres) with black pepper and another 8 ha (19.76 ha) with cacao. We will also reforest a riparian corridor with native tree species.
Finally, we will continue to support outreach to private landowners and technical assistance with the implementation of agroforestry.
To gauge the success of our efforts for migratory birds, we will continue monitoring in the BirdScape, as well as explore the option of installing MOTUS towers in the region, to add to this hemispheric, coordinated monitoring program. FUNDAECO's reserves are prime locations for these towers as they have a constant management presence, plus an established and trained avian monitoring team.

Matching funds: Guard salaries, market studies, monitoring staff/equipment, REDD+ funding and travel, acquisition match.

Budget: The total budget request is $197,555. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Map: Location of Punta de Palma. Light green polygons are properties protected by FUNDAECO.

Protection of Migratory Bird Habitat of Desert Grasslands in the El Tokio Grassland Priority Conservation Area (in the Saltillo BirdScape)

Partners: Pronatura Noreste (PNE), Universidad Autónoma de Nuevo León, National Forestry Commission (CONAFOR), American Bird Conservancy (ABC)

States that have participated to date: Oklahoma, South Dakota, Nebraska, Iowa, Texas, Kansas

Overview: The desert grasslands, located south of the town of Saltillo in northern Mexico, are fairly high elevation (6,000 to 7,000 feet) grasslands and are important to numerous wintering migratory birds as well as threatened resident bird species and a threatened mammal, the Mexican prairie dog. PNE Chihuahuan Desert Grasslands program goals are to ensure the protection and management of 2,400,000 acres of grassland habitat. ABC is working in partnership with PNE for the improved protection, management, and restoration of grasslands within the El Tokio Grassland Priority Conservation Area (GPCA). Within this GPCA the goal is to ensure habitat sufficient to support 30% of the global Long-billed Curlew population, 12% of the Mountain Plover global population and increase the population of the globally endangered Worthen's Sparrow by 30 individuals by 2020. In 2017, ABC's Migratory Bird Program launched our BirdScape Initiative morphing the El Tokio GPCA into a BirdScape.

Within this area, PNE and ABC have supported conservation efforts on more than 150,000 acres of habitat through the creation of private reserves, ejido (community-based) reserves and conservation agreements that restrict cattle ranching and agriculture practices; and through the installation of erosion control measures and ranching best management practices. The ejidos involved include: La Hediondilla, Matehuapil, Tanque Nuevo, Puerto México, El Cercado, La India, Los Arrieros, and San José del Alamito among others. PNE and ABC also manage two properties, Cuatro Gorriones y Loma del Gorrion, which are now being restored. Each of these properties has unique needs and present different opportunities for conservation for migratory grassland birds. Furthermore, additional ejidos in key areas of both Nuevo León and San Luis Potosí states are being targeted for future work. These include ejidos La Esperanza, La Concha, and, potentially, El Cercado.

Funding is needed to expand conservation actions to new properties in the region and to conduct habitat improvement activities on properties with whom PNE already has conservation agreements. Specific activities include creation of management plans and grazing recommendations, installation of erosion control systems to help restore grasslands, restoration and creation of water sources, installation of water infrastructure, and installation of fencing for livestock control.

Threats: Overgrazing by both cattle and goats on these naturally arid lands has exacerbated drought conditions resulting in poor grassland conditions and loss of the vegetative cover upon which the native and migrant bird species depend. There has also been more rapid conversion of the land to agriculture across the Chihuahuan Desert Grasslands. In El Tokio, potato production is a product that threatens the conversion of grasslands to agriculture. The expansion of the city of Saltillo (population of approximately

700,000) is also beginning to drive land use change away from grassland habitat, threatening grassland bird populations.

Birds: More than 250 bird species are found in El Tokio. Here, high concentrations of grassland wintering birds occur, including significant numbers of Long-billed Curlews (LBCU) (up to 2,000 individuals have been seen in a single flock). This region is also one of the most important wintering areas for Mountain Plovers and Sprague's Pipit. Other Species of Conservation Concern include Loggerhead Shrike, Lark Bunting, Brewer's and Baird's Sparrow and Ferruginous Hawk. Also wintering in the area are Grasshopper, Lark, and Vesper sparrows. Passage migrants include the Upland Sandpiper and Swainson's Hawk. The endemic Worthen's Sparrow is IUCN Endangered and considered and Alliance for Zero Extinction (AZE) species, only being found in this region.

Project goals: The goals for this project is to restore over 370,000 acres of grasslands through improved grassland management and erosion controlAn 80 Km corridor that would connect approximately 15 ejidos and ensure that each has at least a portion of their ejido dedicated to conservation via ejido reserves has been proposed to combat poor land use practices. With ABC's BirdScape approach we are looking to scale up implementation of sustainable land use management for grassland birds throughout the 2.5 million-acre region. The program also has a goal of evaluating conservation actions on bird populations including migratory birds as well as Worthen's Sparrow.

Previous Southern Wings Successes: PNE has conducted restoration on nearly a dozen properties in El Tokio. This includes the protection and management of two PNE owned reserves: Loma del Gorrion and Cuatro Gorriones. With Southern Wings, funding erosion control devices have been installed, degraded land has been restored, reforestation with local junipers has occurred, removal of invasive species, and prescribed fires have been conducted leading to extremely successful restoration of habitat. Southern Wings has also been key in maintaining a guard for these two properties which has been crucial to patrolling and performing repairs to the fences that keep goats out from neighboring properties.

With Southern Wings funding, PNE has also worked with the La Hediondilla, Tanque Nuevo, Matehuapil, San José del Alamito, Puerto México, La Carbonera, and most La Esperanza ejidos. ABC has provided match funding for working in other ejidos like La India. PNE works to develop conservation agreements on these properties and implement management activities that help protect and restore portions of these ejidos. A key success at La Hediondilla was the protection of a pond where thousands of Long-billed Curlews congregate each year. A water management plan which manages the use of water from this pond was implemented, and the pond itself was fenced off for protection. Two livestock management plans were developed for La Carbonera and Puerto México ejidos which will lead to reduce the number of livestock grazing in the ejido and improve the grazing practices. Monitoring has been conducted across multiple ejidos to better understand the distribution of migratory birds and their presence and abundance on different properties. Worthen's Sparrows were monitored in 2017. During this monitoring 256 individuals were observed and 33 Worthen's Sparrow nests found with 93 egg, of which 17 birds successfully left the nest. Over 55% percent of the nest found, were in La Concha.

New Project Activities: ABC and PNE would like to continue partnering with ejidos already in the program, as well as expand into additional ejidos, such as **La Esperanza and La Concha, and San Luis Potosi**. La Esperanza has signed a conservation agreement with PNE but need a conservation and livestock management plan and technical support for implementation. Moreover, this agreement has the potential to convert to a formal protected area. Under the Mexican law, it would be considered an "area voluntarily destined for conservation." Funding for the legal process would be needed. La Concha has been identified as the area with the highest abundance of Worthen's Sparrow nests. There is a need to work with the ejido to establish a reserve and a conservation agreement to protect the remaining grasslands in the area.

In addition, now that **La India** has been designated a state protected area, the reserve needs a management plan. We will continue our campaign to acquire the reserve over the next 5 years, to better ensure its long-term protection. Also, now that **La Carbonera** and **Puerto México** have livestock management plans, it is important to review these with the communities to make sure they will commit to the grazing plan and work on the infrastructure enhancements (e.g., water and fencing). Additional trips to visit the communities will be necessary to guide the installation of new infrastructure.

Excitingly, the new owner of **Los Arbolitos** ranch has shown interest in working with us. The fact that PNE already mapped the property makes it a good candidate to keep advancing the conservation plans that were developed with the previous owner. A management plan is needed, and perhaps infrastructure improvements.

In **San José del Alamito**, PNE identified a pond, not far from the one restored in La Hediondilla in 2017. The pond could use a fence and some additional restoration to prevent erosion and loss of this water source. It would require 100 hours of machine work and fencing. We would provide the maintenance, and the local government would provide a sand trap to avoid future deterioration. This project would allow PNE to maintain a presence in San José del Alamito and be a part of decision making in the area.

El Cercado is interested in working on grassland conservation. PNE's staff has identified infrastructure needs that could immediately halt further overgrazing in the communities' grasslands. As a way to learn how to approach the community, PNE would like to hold a capacity building workshop.

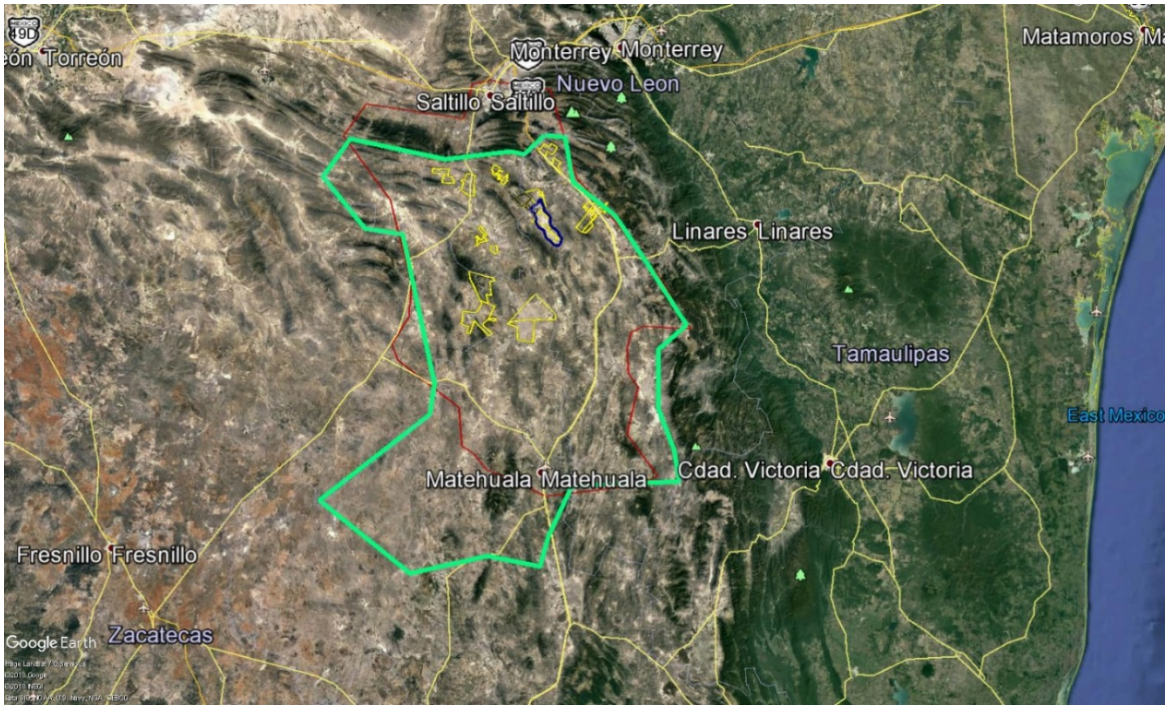
There continues to be monitoring needs. However, capacity to conduct monitoring across all the properties where conservation is underway is posing a great challenge. More trained monitoring personnel are needed.

Finally, CONANP (Natural Protected Area agency) does not currently have the capacity or infrastructure to properly manage the **Llano de Soledad Protected Area** which is made up of multiple ejido reserves with whom PNE has conservation agreements. Thus, there is a need to ensure regular, onsite supervision of these areas to deter land speculation. As such we seek support for a Protected Area Administrator.

Matching Funds – American Bird Conservancy and Pronatura Noreste have secured funding from NMBCA, the Rio Grande Joint Venture, and CONAFOR. Other organizations like the University of Nuevo Leon are

providing in-kind investment in to this project including providing support for monitoring. Ejidos are contributing in-kind match for installation of infrastructure.

Budget: The total budget request is $85,650. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).



Map – Saltillo BirdScape (green), El Tokio GPCA (red) and location of properties PNE is involved with (yellow), and Llano de Soledad Protected Area (blue)

A Sustainable Grazing Network to Protect and Restore Grasslands on Private and Communal Lands in Mexico's Chihuahuan Desert

Partners:

States that have participated to date: Arizona, Colorado, Montana, New Mexico

States with strong biological connections: Seven to 28 species of greatest conservation need in each WAFWA state have a biological connection to the species in the Chihuahuan Desert.

Overview: Grassland birds that overwinter in the Chihuahuan Desert are declining twice as fast as other North American grassland birds, having lost 70% of their global populations since 1970. The Chihuahuan Desert, more than two-thirds of which lies in Mexico, is a continentally-important wintering area for grassland birds. It supports 90% of migratory species breeding in the western Great Plains, including 27 species recognized as high priorities for conservation, such as Baird's Sparrow and Chestnut-collared Longspur, which winter nowhere else. These birds are sentinels for unsustainable practices that are degrading grasslands and aquifers across the continent, especially in Mexico. Conservation and restoration of winter habitat in northern Mexico is needed to stabilize and recover grassland bird populations and prevent the need for additional listings under the Endangered Species Act. Our collaborative, non-regulatory approach to conserving grassland birds addresses the root cause of habitat loss in northern Mexico – desertification due to unsustainable grazing practices. Using scientific guidance from our peer-reviewed research, we collaborate with landowners to foster planned grazing and grassland restoration to protect and improve habitat for grassland birds while at the same time making each ranch more productive, resilient and resistant to land use change. Less farming conserves aquifers that are being depleted, jeopardizing pastoral economies, rural communities, a shared cultural heritage and way of life spanning generations and nations.

Birds: Chestnut-collared Longspur, Vesper Sparrow, Brewer's Sparrow, Savannah Sparrow, Horned Lark, Grasshopper Sparrow, Lark Bunting, Chipping Sparrow, Mourning Dove, Clay-colored Sparrow, Baird's Sparrow, Eastern Meadowlark, Scaled Quail, Cassin's Sparrow, Sprague's Pipit, Loggerhead Shrike, Say's Phoebe, Short-eared Owl, Northern Harrier, Chihuahuan Raven, Western Meadowlark, Red-tailed Hawk, American Kestrel, Mountain Bluebird, Burrowing Owl, Long-billed curlew, Aplomado Falcon, White-tailed Kite, Ferruginous Hawk, Prairie Falcon and Golden Eagle.

Threats: Intensive cropland agriculture is rapidly expanding in Janos and the Valles Centrales, threatening to eliminate remaining native valley-bottom grasslands by 2025. Between 2006 and 2011, croplands in Valles Centrales expanded by 34%, destroying 170,000 acres of grasslands and displacing 355,000 grassland birds, including 133,000 wintering Chestnut-collared Longspurs. Land use change has continued since then, and croplands now occupy more than 63% of former low-slope grasslands in the Valles Centrales. Long-term unsustainable grazing along with increased aridity/drought have reduced rangeland productivity and increased financial strain on ranchers, driving many to sell their land for farming. This phenomenon is also happening across the desert grasslands of northern Mexico.

Success to Date: Bird Conservancy of the Rockies (BCR) and its partners have conducted coordinated bird monitoring across the region since 2007 and have forged working relationships with many landowners that have provided opportunities for collaborative conservation of grassland birds. Together, we are creating a Sustainable Grazing Network (SGN) focused on engaging ranchers in grasslands conservation and management, working collaboratively to support their transition to more efficient and sustainable production practices, and enhancing habitat for birds. Since 2013, we have enrolled 18 ranches on over 250,000 acres into the SGN and have identified another 250,000 acres of ranchlands with a high potential for enrollment. With each landowner we develop an integrated wildlifeand grazing management plan and provide technical and cost-share assistance for implementing the plan. We have improved over 75,000 acres of grasslands through these actions, and we are monitoring the response of birds and vegetation to assess progress and inform our next steps. This collaborative, win-win and science-based approach now has significant proof-of-concept and is ready to be scaled up.

Goals:

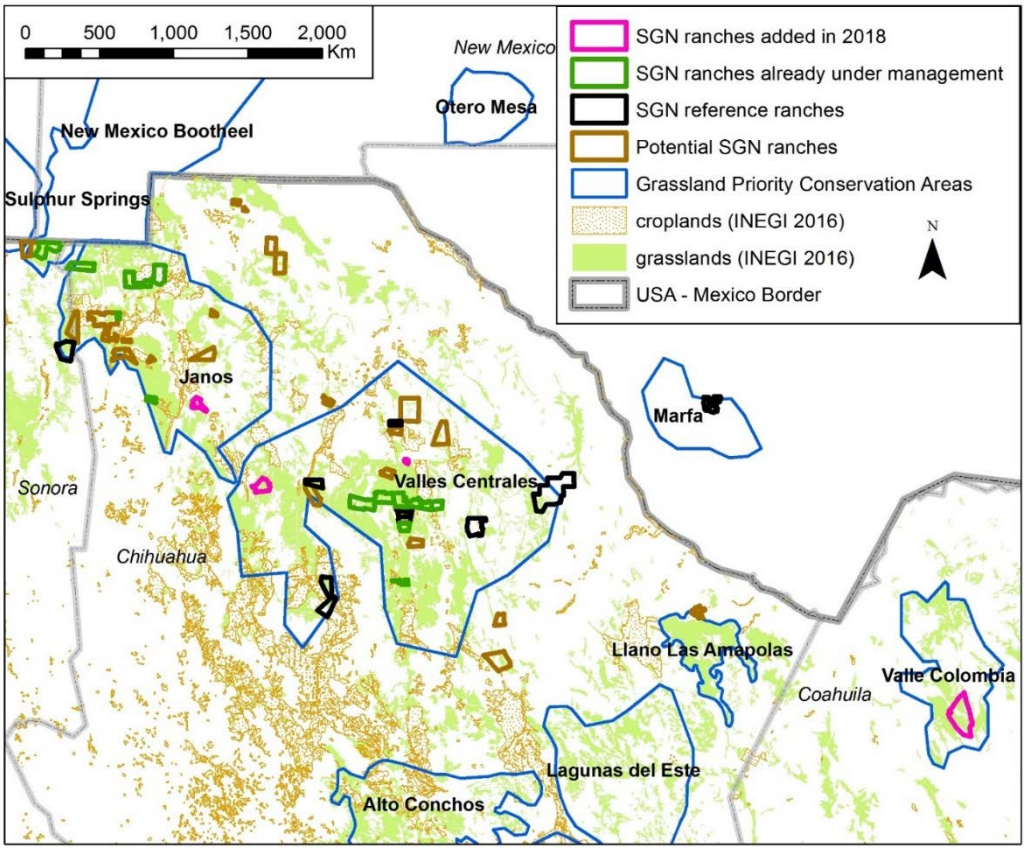
1. Enroll an additional 50,000 acres in the Chihuahuan Desert into the Sustainable Grazing Network (SGN) in 2018, and at least 500,000 acres in total by 2020.
2. Restore, enhance or improve at least an additional 25,000 acres of desert grasslands, and at least 125,000 acres by 2020.
3. Increase abundance and survival of priority grassland bird species on SGN lands, including Sprague's Pipit, Baird's Sparrow and Chestnut-collared Longspur, through habitat restoration.
4. Increase the Aplomado Falcon population to at least 12 breeding pairs and improve habitat for endangered Pronghorn and other resident grassland species.

Current Capacity and Needs: Keeping ranchers on the land by helping them improve their management, profitability and carrying capacity for birds and other wildlife is the most immediate and cost-effective way to slow and begin to reverse the decline in grassland birds. BC collaborates closely with IMC-Vida Silvestre, A.C., a Chihuahua-based non-profit with expertise in landowner outreach,

grazing management and grassland birds. Thanks to support from our many partners, we currently support five full-time private lands biologists at IMC-Vida Silvestre who operate all aspects of the SGN from outreach and landowner relations, to development and implementation of management plans, to bird monitoring and evaluation. Funding is needed to help acquire infrastructure necessary to implement grazing plans and improve grass conditions (i.e., fencing, water lines and storage, etc.), as well as pay for diesel and machinery rental for shrub removal ($230/acre) and sub-soil aeration ($130/acre). Funding is also needed to construct water storage tank escape ladders ($60/each) and Aplomado Falcon nest platforms ($300/each), and support training and outreach events.

Matching Funds: This project leverages significant additional investment from Mexican landowners, CONANP, the Carlos Slim Foundation-WWF, Bobolink Foundation, Dixon Water Foundation, Canadian Wildlife Service, Neotropical Migratory Bird Conservation Act (USFWS), Bureau of Land Management, the U.S. Forest Service International Program, U.S. states including Montana, Colorado, New Mexico and Arizona, and the City of Fort Collins, Colorado. Every dollar invested leverages at least one additional dollar from other sources.

Figure 1: The Sustainable Grazing Network (SGN) in 2019



Protecting stopover and wintering habitat for key priority species of shorebirds and waterbirds at Latin America and the Caribbean

Partners: Pronatura Noreste (PNE), National Commission of Protected Areas (CONANP), Rio Grande Joint Venture, Grupo Quetzalli, Manomet, New Jersey Audubon, Aquasis, Honduran Ornithological Society

States that have participated to date: Texas

Overview: Shorebird and waterbird species are experiencing serious population declines. For some we understand the biggest threats, but for many others we are still identifying important stopover and wintering sites, and developing conservation strategies. For example, the Reddish Egret Working Group has been active and is in the process of developing a hemispheric conservation strategy for this species. American Bird Conservancy (ABC) partner, PNE, led the development of a Reddish Egret Conservation Plan for Mexico that identified four priorty regions for that country.

Based on the Reddish Egret Conservation Plan, as well as the Altantic Shorebird Conservation Business Plan and the Pacific Flyway Shorebird Conservation Strategy, we are targeting Reddish Egret, Wilson's Plover, Snowy Plover, Red Knot, Long-billed Curlew, and Piping Plover as high priority species. ABC has identified sites where conservation is most urgently needed.

- Laguna Madre, Mexico
- Gulf of Fonseca, Nicaragua and Honduras
- Maranhão, Brazil (Ilha Grande estuary and Delta do Parnaíba)

Other areas of interest include the Isthumus of Tehuantepec in Oaxaca, Mexico; the Gulf of Nicoya in Costa Rica; Panama Bay in Panama, the Surinam coast; and coastal and freshwater wetlands on multiple Caribbean islands in both the Greater and Lesser Antilles.

ABC is working with a diverse group of partners to identify a conservation strategy that will be appropriate and specific to each of the identified sites. For example, in Laguna Madre our focus is on habitat restoration, biological monitoring, community engagement, and land protection. Laguna Madre specifically falls within the purview of the Rio Grande Joint Venture (RGJV), and any conservation activities implemented through this proposal will help advance the RGJV's conservation plan for this region. In Nicaragua, ABC has identified Grupo Quetzalli as a local organization working with shrimp farmers and women's groups to educate them on bird conservation and reduce impact of shrimping on these species in the Gulf of Fonseca. In Brazil, ABC is working with Aquasis to address the management issues occurring at the Delta do Parnaíba Protected Area in the Ilha Grande estuary. Here, shrimp farming and bivalve harvesting are resulting in habitat loss in important shorebird foraging locations.

Threats: The principal threats to shorebirds include shoreline and wetland modification, aquaculture, poor water management policies and enforcement, habitat disturbance from recreation activities and predators,

invasive species, development, and climate change. Frequently, sites experience many or all of these threats. In Laguna Madre drought is a serious issue and is reducing wetland habitat. The loss of mangroves in this ecosystem has led to increased erosion of barrier islands and is decreasing available resting and roosting habitat for migratory water birds. Furthermore, fishers frequent barrier islands and leave dogs there that disturb and prey on birds. In the Gulf of Fonseca, shrimp farming is an important economic activity, but it has a high environmental impact. Plus, land and water use policies and enforcement are lacking. In Brazil, coastal areas in the northeast are rapidly being developed. Mangroves, intertidal salt flats, and lagoons, are all being lost or being devastated by shrimp farming, bivalve harvesting, and salt harvesting operations.

Birds: The focal species include: Reddish Egret, Wilson's Plover, Snowy Plover, Red Knot, Long-billed Curlew, and Piping Plover. Secondary focal species include: American Oystercatcher, Sanderling, Least Tern, Black Skimmer, Western Sandpiper, and Semipalmated Sandpiper, Redhead.

Project goals: Conservation planning with our partners have identified the following objectives.

- Improve management and conservation of existing habitats
- Cultivate and empower conservation constituencies
- Engage commercial industries impacting natural resources.
- Strengthen compliance and enforcement of local laws
- Develop and improve environmental, water and wildlife policies
- Improve knowledge of current habitat use and threat status
- Increase partner and stakeholder capacity

Activities: In the 240,000-ha Laguna Madre, we will focus on the reforestation of mangroves, fencing of key areas to prevent predators from disturbing bird areas, and educating local constituencies. The loss of soil on many islands within Laguna Madre continues at an accelerated rate due to wave action causing erosion. One of the islands that has been significantly impacted is the Isla de Pajaros, or Bird Island, which is one of the most important sites for colonial waterbirds in Laguna Madre. PNE and CONANP are proposing the establishment of 600m of containment barriers on the south of Bird Island.

In the Gulf of Fonseca, we will engage shrimp farmers to identify management practices to reduce impact on shorebirds and their habitat, while not seriously impacting their livelihood. We will advance educational programming in the area to reduce impacts on mangroves and of upstream farming.

In Brazil, we will develop recommendations for protected area management that we can present to the local environmental management council. Our goal is to promote better consideration of shorebirds into management planning for the Delta do Parnaíba Protected Area (DPPA). A second goal is to evaluate the threat of hunting at the DPPA and determine if the Brazilian Environmental Ministry should be taking action to enforce hunting regulations here. Finally, we seek to address important information gaps on shorebird species diversity and seasonal abundance and to consolidate existing information and provide new information that will allow ABC, Aquasis, and other conservation partners to nominate specific parts of the DPPA for WHSRN site status.

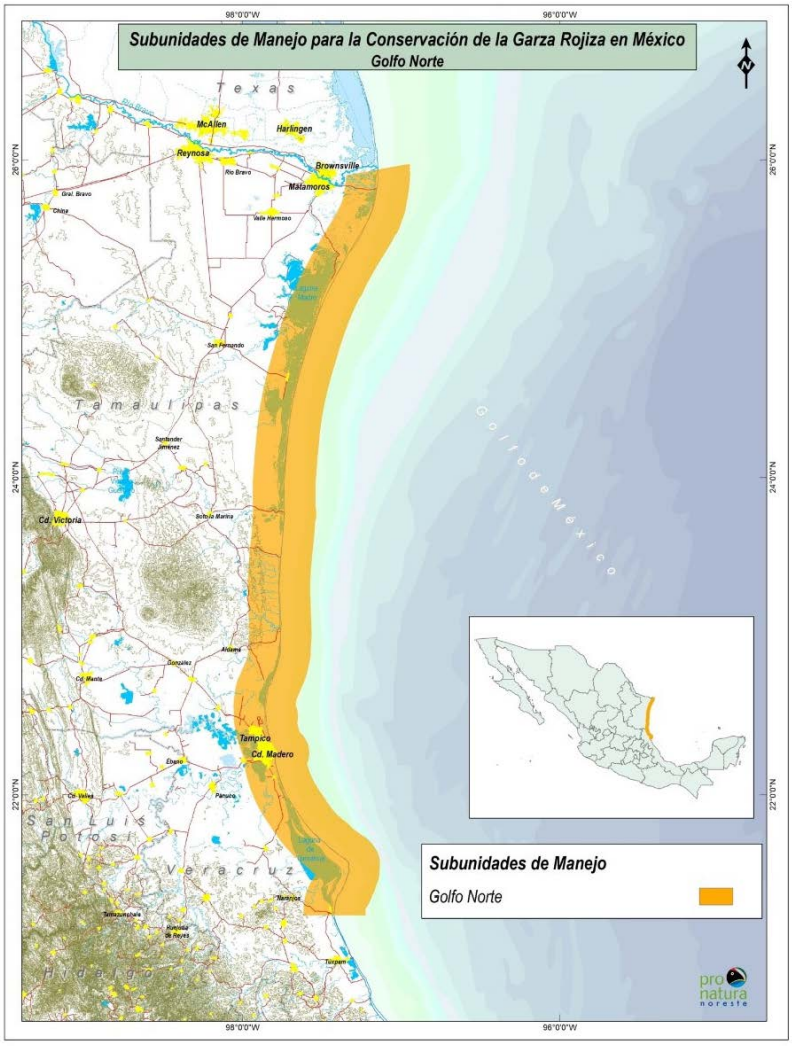
Previous Southern Wings Successes: Southern Wings has been focused on Laguna Madre, Mexico. In 2013 and 2017, Southern Wings invested in the Laguna Madre project, funding mangrove reforestation

that resulted in the planting of nearly 21,000 mangrove saplings over 75.6 acres. Previously, with funding from NFWF, ABC and PNE created two new conservation agreements on private lands totaling over 10,000 acres, began a program to control feral animals on islands, improved fencing to reduce cattle and other agricultural animals from entering sensitive areas of Laguna Madre, conducted focal species monitoring, began mangrove restoration, and protected key nesting and wintering sites. In 2018, Southern Wings funding went to advancing the development of range-wide conservation plan for the Reddish Egret and the development of a Mexico specific conservation plan.

Budget: The total budget request for Laguna Madre is $36,500, for the Gulf of Fonseca is $10,000, and for the Delta do Parnaiba is $42,700. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Matching Funds: Partners as each site fundraise to provide support for the conservation activities. Funds are coming from private foundations as well as in-country government agencies and programs.

Map of Laguna Madre, Mexico



Map Gulf of Fonseca

Migratory Bird Wintering Grounds Conservation in Nicaragua and Honduras

Partners:
Nicaragua**:** El Jaguar Private Wildlife Refuge, American Bird Conservancy (ABC), the Red de las Reservas Silvestres Privadas de Nicaragua (RSP), Indiana University of Pennsylvania (IUP), Audubon North Carolina, North Carolina Museum of Natural Sciences, El Centro de Entendimiento con la Naturaleza (CEN), Cornell Lab of Ornithology, MARENA, URACCAN, SELVA, Wildlife Conservation Society

Honduras**:** American Bird Conservancy (ABC), Wildlife Conservation Society (WCS), La Asociación de Investigación para el Desarrollo Ecológico y Socio Económico (ASIDE), Mesoamerican Development Institute (MDI); US Forest Service; UMASS - Lowell; Universidad Nacional de Agricultura de Honduras (UNA); Instituto Nacional de Conservacion y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre (ICF).

States that have participated to date: Missouri, Indiana, Pennsylvania

Overview: The cloud forests of the northern Nicaragua highlands are fragmented by agriculture, including sun-coffee production, potatoes, cabbage and other annual crops. These highlands, located in the Departments of Jinotega, Matagalpa and Altantico Norte, are important wintering grounds for species such as the Golden-winged Warbler (GWWA) and provide stopover habitat for Bay-breasted and Canada Warblers, plus many other neotropical migrants. Almost all the GWWA Focal Areas identified for Nicaragua are in this region. ABC has established two BirdScapes in northern Nicaragua (Bosawas BirdScape and Northern Highlands BirdScape) and here we work with a broad range of partners to identify conservation opportunities, develop creative solutions, protect existing forest, and improve habitat connectivity through native species reforestation and agroforestry.

In Honduras, our work focused initially on two areas within west-central Honduras: the Agalta Valley and the Yoro Biological Corridor, which connects four national protected areas (Pico Pijol, Maria Auxiliadora Central National Park, Montaña de Yoro National Park, and Texiguat National Wildlife Refuge). With WCS, we have expanded to the eastern slope of the Sierra de Agalta National Park and the larger protected areas of the Río Platano and Tawahka Biosphere Reserves. These reserves, in combination with the Bosawas Biosphere Reserve just across the border in Nicaragua, encompass an area of 19,000 square kilometers and is the largest contiguous parcel of forest in Central America. It is an extremely important area of wintering migratory birds, specifically Wood Thrush. The eastern slope of Sierra de Agalta National Park is also a GWWA Focal Area. In 2016, WCS began a bi-national project that spans these reserves in Honduras and Nicaragua and links agricultural universities in both countries. The goal is to decrease deforestation by providing technical support to community groups, several of them indigenous, to improve cattle management and production practices for cacao and coffee.

Threats: There are unique circumstances in each of the areas mentioned above, but unsustainable land use practices are a common thread. In the Agalta Valley and Río Platano areas cattle ranching methods are a significant concern, while in Sierra de Agalta, Yoro Biological Corridor, and Bosawas, the main threat is agriculture expansion, primarily for coffee and cacao but also other short cycle, intensive crops like corn. In Bosawas, there is also a lack of understanding of indigenous land rights, which makes these communities extremely vulnerable to people moving into this region from other parts of the country, or Central America. Due to high land prices in the pacific volcanic region, many people are selling their lands and moving to the autonomous regions, such as Bosawas. Here with little enforcement people are squatting on lands. Speculators are taking advantage of the situation, facilitating land grabs and forest destruction for new settlements.

Birds: There is considerable overlap in species between our projects in Honduras and Nicaragua. However, we list each country separately.

Honduras: Wood Thrush, Golden-winged Warbler and Golden-cheeked Warbler. Other migratory bird species include Magnolia Warbler, Blue-winged Warbler, Kentucky Warbler, Worm-eating Warbler, Louisiana Waterthrush, Eastern Wood-Pewee, Yellow-throated Vireo and White-eyed Vireo. The endemic and endangered Honduran Emerald is present within a portion of the project area.

Nicaragua: Golden-winged Warbler, Wood Thrush, Yellow-breasted Chat, Wilson's Warbler, Hooded Warbler, MacGillivray's Warbler, Mourning Warbler, Kentucky Warbler, Louisiana Waterthrush, Northern Waterthrush, Ovenbird, Worm-eating Warbler, Black-and-white Warbler, Black-throated Green Warbler, Chestnut-sided Warbler, Cedar Waxwing, Blue-headed Vireo, Alder Flycatcher, Yellow-bellied Flycatcher, Eastern Wood-Pewee, Yellow-throated Vireo, Northern Parula, Ruby-throated Hummingbird, and Broad-winged Hawk. More than 15 other species use this area as a stop-over site including Canada and Bay-breasted Warbler, and Yellow-billed Cuckoo.

Project goal: Our long-term project goal is to reduce the rate of forest habitat loss in multiple locations in Honduras and Nicaragua to sustain, and eventually increase, the current populations of priority migrants.

Southern Wings Successes to Date:

In Honduras, in the Agalta Valley, we were able to establish a native plant nursery in San Esteban to raise and distribute woody plant seedlings to local ranchers and the El Ciruelo Wildlife Refuge to help restore dry forest. A total of 4,900 trees were planted. We also conducted an analysis of water, cattle rotation, and forage production to develop best management practices for three ranches totaling 9.2 ha (23 acres), and we provided technical assistance in the implementation of these plans. This included creating 10 ha (24.7 acres) forage banks for cattle and fencing materials and plants that could serve as cattle feed. This support was provided to ranchers to reduce the impact of the cattle on remaining forests.

We also conducted a Best Practices exchange with Pronatura NE from Mexico, who has an established grasslands management in Chihuahua. Many ranchers attended this workshop and expressed interest in visiting progressive and ecologically-friendly ranches in Mexico. We were able to facilitate the travel of a small group of Hondurans to Chihuahua to further communication and educational exchange. This has helped showcase rotational grazing practices.

In the Yoro Biological Corridor, we identified 20 identified coffee producers who have indicated a willingness to implement Integrated Open Canopy (IOC) production on approximately 200 ha (490 acres) and have similarly identified forest patches totaling approximately 400 ha (580 acres) on farms with high conservation value. We mapped these IOC farms and determined their carbon value. The carbon sequestration or carbon credit value is added to the purchase price of the coffee to increase the amount of money producers receive. Increasing their profit margins, by being able to sell at a higher price, allows them to keep their forest as forest, decreasing forest and thus habitat conversion. An initial purchase of coffee from the region that includes the carbon offset payments was completed by a coffee company in Ireland called Bewley's. The mapping conducted by Southern Wings funds was key into making the purchase, and the resulting financial benefit to the landowners, possible.

In Sierra de Agalta National Park we have started to identify potential communities and partners, such as the COCACOL Cooperative that represents 75+ coffee growers. We have also begun avian monitoring in Sierra de Agalta and Río Platano Biosphere Reserves in coordination with WCS and their jaguar monitoring program. In

the Sierra de Agalta, 20 plots have been identified where area searches will be conducted twice a year focusing on 12 priority species (6 migratory species, and 6 resident species) which the goal of helping to monitor change of presence and density over the lifetime of our restoration projects. Students were trained using ABC established protocol in the fall of 2018 and surveys have since started at established plots. The target migratory species are: GWWA, Wood Thrush, Black-and-White Warbler, Waterthrush sp (Northern or Louisiana), Wilson's Warbler, and Summer Tanager. In the Coco-Bocay region of Tawahka Biosphere Reserve, there were eight (8) mist netting and point count efforts conducted.

In Nicaragua, Southern Wings support over the past eight years has been instrumental to increasing migratory bird habitat at El Jaguar Reserve and within the El Jaguar – Volcán de Yalí Corridor (a GWWA Focal Area) in northern Nicaragua. Over 100,000 seedlings of native trees, nitrogen fixing trees, and fruit trees have been produced and planted on over 140 properties. Monitoring of migrants at El Jaguar and other locations in the corridor show migrants like GWWA, Wood Thrush, Canada Warbler, Chestnut-sided Warbler and dozens of others continue to use the area in good numbers for wintering or migration habitat. In 2015 and 2016, in this same region, we identified and supported six landowners in enrolling their properties into the National Private Reserve Network. In total these new reserves are protecting nearly 350ha (855 acres) of forest.

Also as part of our work in 2015 and 2016, the Red de Reservas Silvestre Privadas (RSP) was identified as a partner in Nicaragua that can expand conservation efforts to multiple GWWA Focal Areas. Furthermore, the El Centro de Entendimiento con la Naturaleza (CEN) was identified as a local partner within the Peñas Blancas Focal Area. Here workshops for coffee growers were conducted and producers who are interested in planting trees have been identified. In 2017, the tree nursery at the CEN was expanded and the production of plants for reforestation and shade coffee efforts, and planting efforts began leading to a total of 17,800 trees being distributed and planted on 19 farms, across a total 54.34 acres in the Peñas Blancas Focal Area.

In 2017, in the new focal regions of Saslaya National Park and the Bosawas Biosphere Reserve, ABC and WCS organized and conducted a special patrolling operation with the Ministry of Environment, the University of the Autonomous Caribbean Region (URACCAN), and several community members. These patrols utilize a guard patrol protocol developed by WCS called SMART. In November of 2018, similar special patrols were also conducted in Indigenous Territories of Alto Wangky and Bocay, across the 2800 km² territory, using the SMART protocol. A small number of invaders were apprehended and detained and a much larger number of squatters in indigenous conservation zones were identified. Satisfaction was high among the national police, and the indigenous for these operations.

Activities:

<u>HONDURAS</u>

In the Sierra de Agalta National Park (Sierra de Agalta BirdScape), there are nine coffee growing communities around the national park with whom we are working to improve or re-establish at least 400 acres of shade coffee production. Our plan is to remove old non-productive coffee bushes, replace them with roya (a fungus) resistant coffee bushes and plant native trees for shade within the plantations. In return for this support, communities will agree to protect areas of intact forest that is within the Sierra de Agalta National Park and its buffer zone. In addition, due to the extreme lack of resources by national government, there are few park guards in the region. Community members have a vested interest in ensuring the integrity of the park and its environs, particularly for water security. Over the next year we will be training community members in the WCS SMART protocol to help conduct patrols and report infractions. Specifically, we will:

- hire a technical coordinator to oversee communication with coffee producers in the Sierra de Agalta BirdScape, as well as identify and map at least 100 ha of forest fragments in hands of coffee producers that could be added to IOC coffee supply chain,

- maintain a nursery and facilitate the planting of 3000 native hardwood species on coffee properties,
- purchase and install a minimum of 1000 meters of fencing materials for reforestation protection and cattle management at reforested areas and to keep cattle out of adjoining watershed areas,
- hold two workshops for training in bird friendly coffee production including IOC coffee concepts,
- provide training (using SMART® type protocol) in protected area control and GPS use to 27 persons selected from three (3) cooperatives, and
- conduct migratory bird monitoring annually in forested and reforested areas of properties where conservation actions are occurring in the Sierra de Agalta.

In the Tawahka and Río Platano Biosphere Reserves, we want to explore the possibility of creating an agroforestry corridor along the Patuca River. There is an existing market for cacao from this region, and we see the potential to engage growers in more sustainable methods that would ultimately help them increase the quality of their cacao. To advance this idea, we will identify and map cacao farms along the Patuca River and complete an analysis of the economic impact of cacao.

In La Muralla National Park, a GWWA and GCWA Focal Area, ABC has not yet initiated a project but it is a protected area co-managed by ABC's partner, ASIDE. The area's pine forests that have been destroyed by pine beetles and then ravaged by fires. With the loss of trees, the park is now more susceptible to illegal incursions and the park is poorly protected. With funding we would like to support park guards and conduct patrol operations; and start pine reforestation over 400 ha (988 acres).

NICARAGUA

In 2019 and 2020 our primary focus is on improving cacao production techniques and promoting silvipasture in the Bosawas Reserve. We have a target of reducing the number of acres of land dedicated to cattle grazing by 200 ha, while working to reforest at least another 50 ha. We will do the following.

- Identify buyers of cacao who would be interested in working with producers to improve their quality and gain better market access and higher prices for their beans. Making cacao production more profitable will reduce the need to supplement income with annual crops such as beans and tubers, which typically involve expansion into forest.
- Build capacity and improve production by working with entities such as ECOM, a commodity trader, who has programs for improving product quality.
- Promote rotational grazing to reduce the impact of cattle ranching.
- Introduce biodigestors to communities. Biodigestors utilize cow manure to produce a gas that is contained and can be used for cooking, reducing the need for fuel wood from the forest. They also provide an incentive to keep cows penned (as opposed to roaming free, browsing in the forest) to better facilitate manure collection for the biodigestor.

At El Jaguar Reserve we intend to complete the installation of the MOTUS tower, and in Penas Blancas we will continue to identify additional landowners to work with in partnership with the Camara de Red de Reservas Privadas (Red-RSP). We have a goal of creating at least two private reserves that could be added to the reserve network in the next year. We will also:

- continue education and training on Bird-Friendly coffee and cacao production and certification to interested farmers in Peñas Blancas,
- complete a market study for cacao and coffee to assess how to increase product quality and value, and better understand the marketplace in general, and

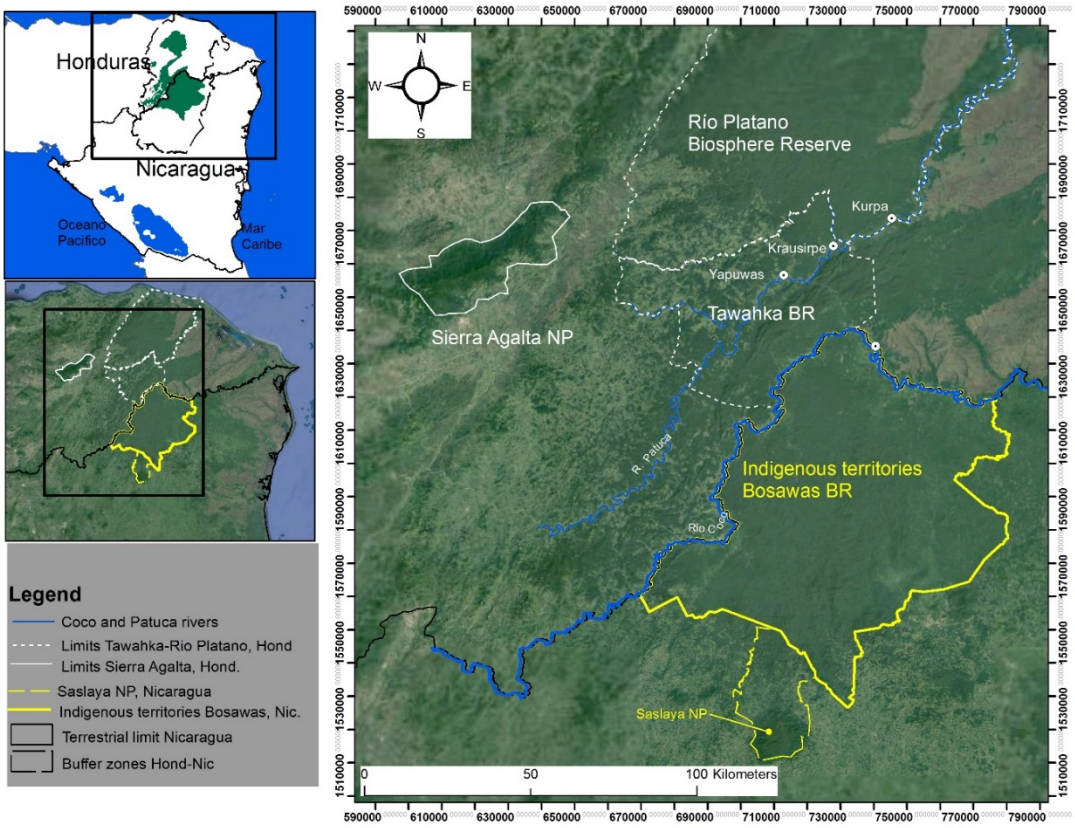
- explore the feasibility of apiculture and meliponiculture (i.e., honey production) with native bees as an economical bird-friendly alternative for the farmers. Nicaragua exports about 90% of the honey the country produces and is an industry that can provide an important source of income for families.

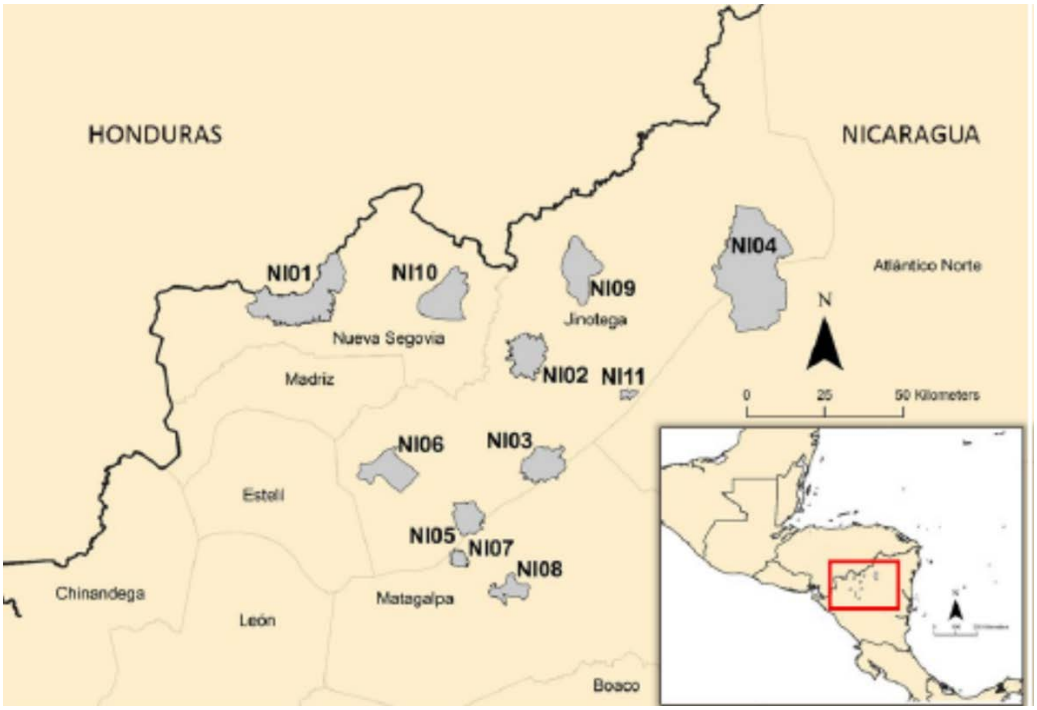
Monitoring is proposed to continue at all sites. ABC has established an area search protocol that can be used at all three sites to determine changes in presence and density in treatment areas over time.

Budget: The total budget request for Honduras is $104,030 and for Nicarugua is $144,600. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Maps:

The two polygons on the map above indicate the location of ABC's BirdScapes in Honduras 1: Yoro and 2: Sierra de Agalta. The map below shows the bi-national region of this project, encompassing several areas in Nicaragua and Honduras.





The El Jaguar – Cerros de Yali Focal Area #NI06; Peñas Blancas #NI03; Saslaya #NI04, Kilambe #NI02

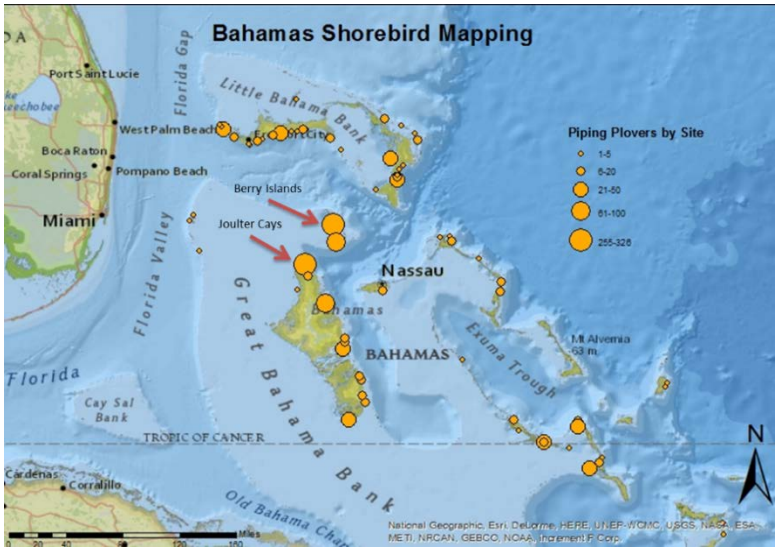
Conserving Critical Piping Plover and other Shorebirds Wintering Sites in the Bahamas

Partners: Bahamas National Trust, National Audubon Society, USFWS – NMBCA, Foundations, Private Donors

States that have participated to date: NEAFWA, Virgina, North Carolina

States with strong biological connections: CT, DE, MD, ME, MA, NH, NY, NC, RI, VT, and VA

Overview: More than thirty-three species of shorebirds that breed along the Atlantic coast of the United States, Canada and the Artic complete a perilous migratory journey each fall to reach remote islands of the Bahamas where they spend up to ten months each year. These include around half of the Atlantic population of the endangered Piping Plover. **Audubon, in partnership with The Bahamas National Trust, is working to protect critical coastal habitats that wintering plovers and other declining shorebird species depend on.**



Shorebirds worldwide are in precipitous decline. The Piping Plover, with an estimated global population of only 8,024 individuals, is the most endangered shorebird breeding in the United States and Canada. Concern about the species has triggered widespread, intensive conservation action throughout its breeding range, but protecting its wintering grounds —where it can spend up to ten months of the year—has received little attention until recently.

The importance of The Bahamas for wintering Piping Plovers and other declining shorebirds was first understood in 2006, when Audubon scientists discovered high numbers of the Atlantic breeding population spending the winter months in remote parts of the archipelago. **Now, Audubon, The Bahamas National Trust (BNT) and other partners are taking ambitious steps to conserve and protect the vital Bahamas laces necessary for the survival of these wintering shorebirds.** By protecting these habitats, we are helping many vulnerable species, including the Red Knot and the Semipalmated Sandpiper—and supporting important fish nurseries, coral reefs and eel grass beds necessary for sustainable fisheries and traditional economic opportunities for local communities.

Project goals: Our goals are listed below. Each is an essential step toward durable, seamless protection for Piping Plovers and other shorebirds along the Atlantic Flyway, from their summer nesting sites on the beaches of the U.S. and Canada to their wintering grounds in the Caribbean and South America.

1. **Long term protection of Bahamas wintering habitats** that support at least 20% of the Atlantic breeding population of Piping Plover, 32 other important shorebird species and local marine and terrestrial wildlife.
2. **Communities actively engaged in conserving** important migratory and endemic bird species on all major islands of the Bahamas.
3. **Local conservation capacity is improved** when Audubon shares our science, policy and organizational expertise with BNT and other organizations.

Activities: Specifically the following actions to advance our science and monitoring needs which will lead to future land protection and on the ground habitat management actions.

- **Monitoring efforts** focused on Andros/Joulter Cays (10-15% Atlantic PIPL pop), the Berry islands (7%) and Long Island (1-2%). This is a high prioirty for two reasons: 1. The Berry Islands and Long Island are moving toward formal protection by the Bahamian Government and additional research information will help in the final stages of securing the sites; 2. Hurricane Joaquim (2015) and Hurricane Matthew (2016) apear to have had major impacts on PIPL populations and the habitats that they rely upon (possible loss of 100-150 PIPL on Joulter Cays). We need to continue to collect critical data from these sites to measure their recovery and to better assess the impacts that could have implications for recovery targets in the US and Canada. The resight work also takes advantage of and supports research efforts in the US and Canada where PIPL are banded.
- **Engagement of communities** on Long Island and Andros through outreach efforts including guide and bird club

From Discovery to Protection

2006: Audubon discovers over 400 Piping Plovers wintering on several islands.

2010: 57 plovers are banded on three islands in The Bahamas.

2011: 41 banded plovers are found along the Atlantic coast, from North Carolina to Nova Scotia.

2011: 1,066 Piping Plovers are found on 14 Bahamas islands by 31 researchers from 10 organizations

2012: Audubon focuses efforts and discovers 708 birds or 20% of the Atlantic Piping Plovers wintering on just 3 islands Andros, the Joulter Cays and The Barry Islands.

2013: Audubon and BNT submit a proposal to the Bahamanian government for establishment of a 92,000 acre National Park on the Joulter Cays.

2015: The Bahamian Government declared the 92,000 acre Joulter Cays a National Park protecting winter habitat for over 10% of the Atlantic breeding population of Piping Plover.

2016: International Plover Census records 1404 Piping Plovers in the Bahamas and adds important sites in Turks and Caicos.

2017: First Motus Tracking efforts from the Bahamas maps initial migration pathways.

2018: Critical shorebird and seabird sites included in recommendations to Bahamian Government for new protections, including Berry Islands IBA (7% PIPL pop) and Long Island.

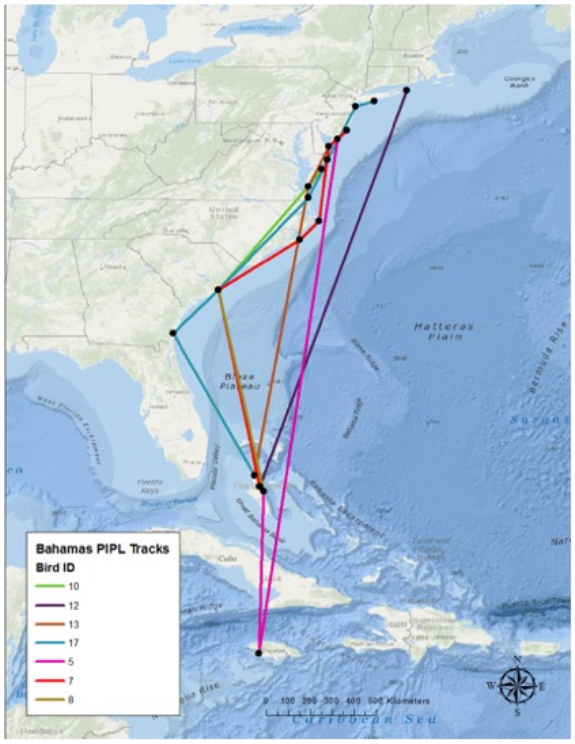
identification training and the use of eBird to support the establishment of new protected areas and future research efforts.

Budget: The total budget request is $14,950. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Match: Disney Conservation Fund ($15,000))

Maps:

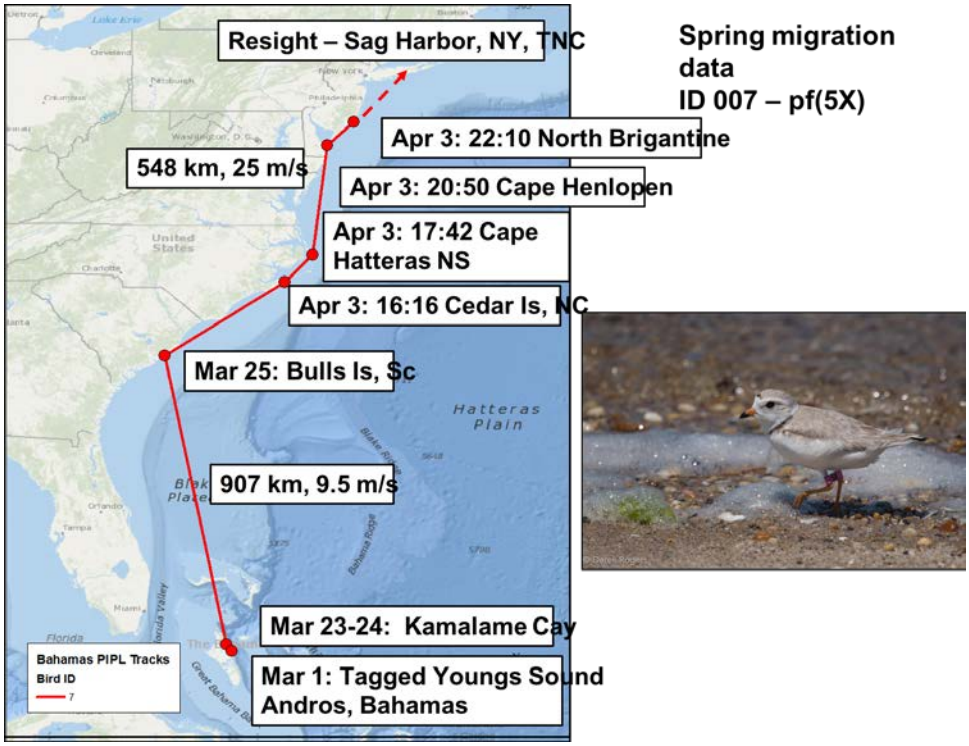
Motus Wildlife Tracking of Northern Migration Piping Plovers



Spring migration data

- **10 tags deployed in Bahamas**
- **7 tags w/spring migration data**
- **Duration (days):**
  - **Mean 40 (SD 40; 19-21)**
- **Distance (km, Euclidean):**
  - **Mean 1862 (SD 649, 932-3087)**

Spring Migration Data



Conservation and Management of Neotropical Migratory Birds and Thick-billed Parrots in old-growth forests of the Sierra Madre Occidental, Mexico

Partners: Organización Vida Silvestre A.C (OVIS), Ejidos (local communities), Comisión Nacional de Áreas Naturales Protegidas (CONANP), Comisión Nacional Forestal (CONAFOR), Arizona Game and Fish Department (AGFD), Unidad Forestal Galván, San Diego Zoo Global (SDZG), U.S. Fish and Wildlife Service (Neotropical Migratory Bird Conservation Act), Universidad Autónoma de Nuevo León.

Overview: Mexico's national forest management policy, which now considers the management of biodiversity, presents an opportunity to work at reducing significant threats (e.g., destructive fires, over-harvesting of timber) to maintain or restore populations of birds in remaining forests of the Sierra Madre Occidental (SMO). Timber harvesting for the past 70 years has been implemented through Forest Management Units. These units cover vast territories where various timber harvesting treatments have been applied, sometimes including destructive clear-cutting and high-intensity timbering. Through new partnerships, forest managers are adopting and implementing practices that promote sustainable forest production and productivity and explicitly integrate biodiversity conservation objectives and indicators.

This project focuses specifically on establishing and maintaining a network of forests under conservation schemes and integrating best management into forest management plans. The project area encompasses the high elevation forests found in the mountainous regions of Chihuahua and Durango (1,000,000 ha) where threats are severe and eminent. Continued loss of old-growth forests will inevitably lead to loss and/or significant population declines of species associated with these old-growth forests. One of the most dramatic examples is the almost complete loss of remnant old-growth forests in northern Durango and Cerro Mohinora in southern Chihuahua and with it the loss of locally-nesting populations of thick-billed parrots (TBPA) (an endemic species) and Neotropical migrant populations dependent on old-growth forests.

The project will implement strategies outlined in the Partners in Flight Conservation Business Plan for the Sierra Madre Pine-Oak and Cloud-Forests / Western Mixed Coniferous Forests. Furthermore, the project addresses threats identified in the species recovery plan for the TBPA.

Threats: The birds of the SMO are seriously threatened from the loss and degradation of habitat because of poor forest management policies over more than a hundred years, as well as from fire suppression and a higher incidence of catastrophic fires. Large scale timber harvest has been practiced for many decades without considering the need to also manage for biodiversity. These main threats to forests have caused the Imperial Woodpecker to be considered extinct and for two other species endemic to the Sierra Madre to be critically endangered (Sierra Madre Sparrow and the TBPA). Forest exploitation has eliminated old-growth forests (it's estimated that less than 1% remains of their original distribution) affecting whole groups of birds that depend on mature forests to provide cavities for nesting and shelter, such as trogons, woodpeckers, and owls.

There is an urgency to advance the conservation of the TBPA, a species listed as endangered by both the United States and Mexico. This parrot historically occurred in Arizona but is now only found in the

mountain ranges of the SMO (in mix conifer forest habitats). Thick-billed Parrots are seriously threatened from the loss and degradation of habitat because of poor forest management policies, as well as from fire suppression and a higher incidence of catastrophic fires. Actions addressing these and other threats to the species will significantly contribute to its overall management and conservation.

Birds: The rugged Sierra Madre harbors a system of canyons dominated by temperate forests in the higher areas and jungles in the lower areas. As a result, the footprint of the project can be felt over an extensive area of critical habitat for more than 300 bird species, 45% of which are Neotropical.

At least 19 species in the region are considered species of common concern (USFWS 2008) and more than 30 species are listed as high priority by Partners in Flight, including Band-tailed Pigeon, Bell's Vireo, Calliope Hummingbird, Elegant Trogon, Flammulated Owl, Grace's Warbler, Hermit Warbler, Loggerhead Shrike, Lucy's Warbler, Purple Martin, Rufous Hummingbird, Short-eared Owl, and Yellow-billed Cuckoo. Other species include Dusky Flycatcher, Hammond's Flycatcher, and Painted Bunting.

General Strategies: The project focuses on conserving habitat (protection, restoration, management), including promoting forest management practices that benefit Neotropical migratory birds and TBPAs. Also, in partnership with AGFD, the project will implement management actions and monitoring of breeding populations of TBPA in the protected natural areas of Tutuaca, Papigochi, Campo Verde, Mesa de Guacamayas, Madera and other known/suspected areas occupied by TBPAs (see Fig. 5).

Project Goal: Integrate habitat needs of Neotropical migratory birds and the TBPA into forest management plans developed under Mexico's national forest management policy and actively manage and monitor breeding populations of TBPAs. The national policy incorporates biodiversity and habitat management, and environmental education in the Sierra Madre Occidental.

Southern Wings Successes 2018: Organización Vida Silvestre A.C. and partners accomplished the following conservation actions.

1. Finalized content for the habitat guide "Forestry Manual of Best Management Practices to Benefit Thick-billed Parrot" and distribute guides to forest management practitioners" (Fig. 1).
2. Planned, organized and executed three training workshops (on application of the habitat guide -item 1) for forest managers, national parks staff and other decision makers of government agencies with direct responsibilities in forest and biodiversity management (Fig. 4).
3. Protected core TBPA breeding site in Papigochic (148 acres) through the construction of a perimeter fence. In the Tutuaca breeding area enhanced drinking sites by stabilizing them to increase permanency of water availability.
4. Conducted outreach to school children in Cerro Mohinora. Also developed outreach materials for kids, identification guide (Fig. 2) for forestry technicians, and educational posters.
5. Worked with forestry practitioners to integrate TBPA habitat needs (and other biodiversity values) into forest management plans to promote sustainable forest certifications.
6. Deployed two prototype satellite transmitters on two adult TBPAs (Fig. 3). Effort resulted in the first ever successful tracking of a migrating individual along the SMO. Also deployed 15 camera traps to assess potential predators of nesting TBPAs, with preliminary results indicating mammalian predators may be a significant threat.

7. Partners also held two annual binational coordination meetings to plan and discuss short term conservation activities for mix-conifer forests to benefit Neotropical migratory and resident species and identified management priorities for TBPAs.

Specific Activities planned for 2019: Organización Vida Silvestre A.C. and partners will implement the following conservation actions;

Monitor populations of Neotropical migratory species and TBPAs.

- Conduct point counts to monitor migrant and resident species.
- Survey TBPA populations and monitor breeding colonies.

Implement habitat conservation measures to protect, restore, and manage mix-conifer forests

- Apply various legal mechanisms (e.g., conservation easements, voluntary designation of conservation areas) to segregate core habitat areas from timbering.
- Exclude sites of high avian conservation value from active timbering or other unsustainable use. Approaches may include installing physical barriers (fencing with barbed wire) around critical habitat patches and marking/identifying snags and old mature trees.
- Work with foresters and other partners to integrate best management practices into forest management plans for more sustainable forests that maintain biodiversity values.

Coordinate with communities, government agencies and others to promote conservation of old growth forests to benefit resident (including TBPA) and migratory species

- Help establish the official advisory council for the federal protected area of Tutuaca.
- Support tasks to update the *Program of Conservation and Management of Protected Natural Areas in the Sierra Madre Occidental*.

Manage breeding populations of TBPAs

- Monitor and manage accessible nests to increase reproductive success.
- Continue research (using camera traps) to identify potential predators and develop approaches to mitigating threat.
- Continue research at understanding migratory patterns of TBPA populations through use of satellite transmitters.
- Manufacture and install artificial nest boxes in Cerro Mohinora to aid in TBPA recovery in this area.
- Enhance naturally occurring water drinking sites to ensure adequate water availability for TBPAs.

Budget: Contributions of $5,000 to $20,000 each will significantly advance implementation of these actions. Arizona will provide $USD 8,860 for the completion of some of the project's activities:

Fig. 1. Best Management Practices manual for conserving SMO habitats to benefit Neotropical migratory species and TBPAs.

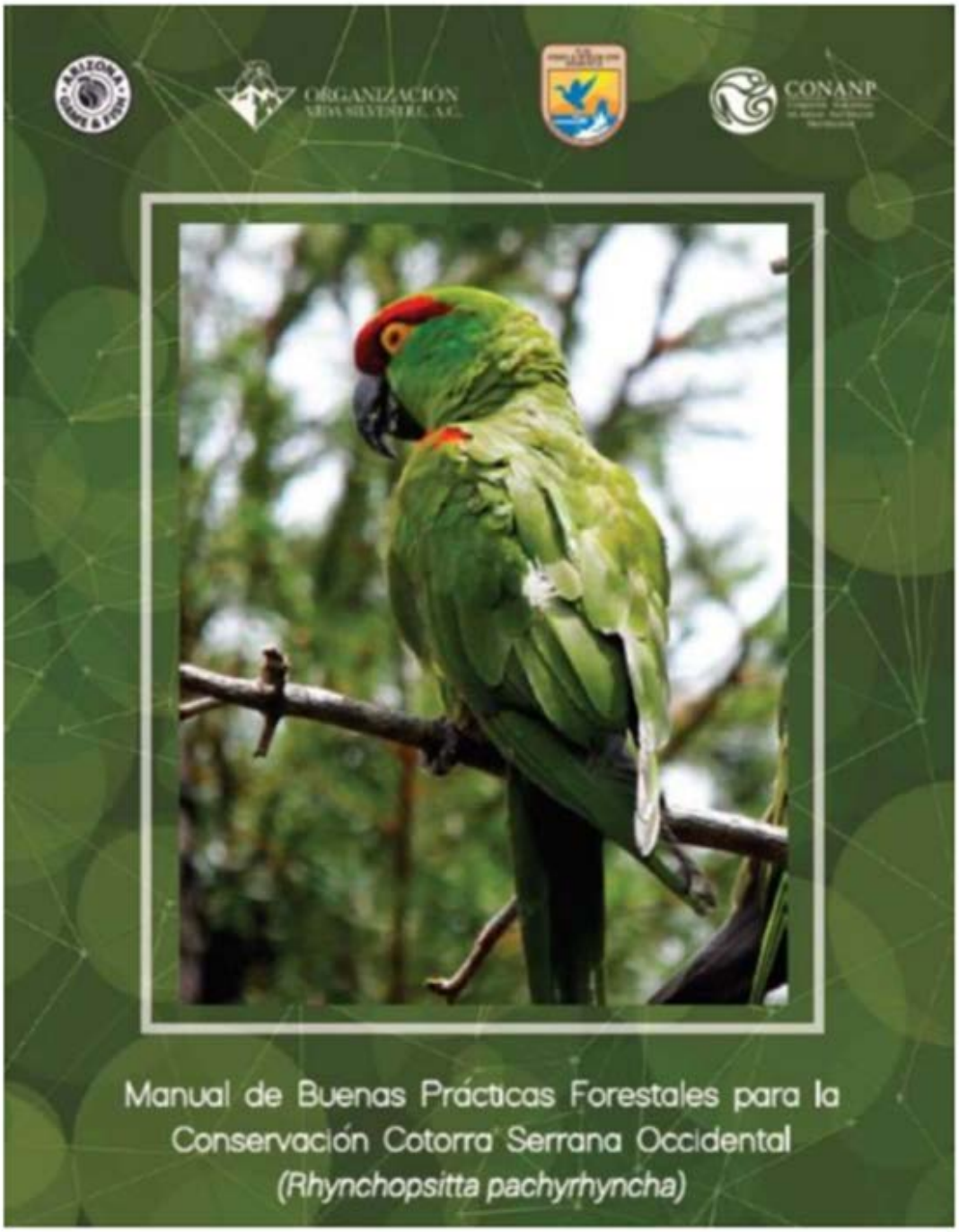
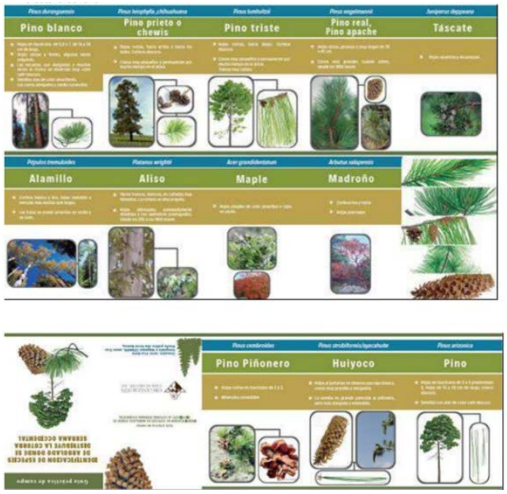
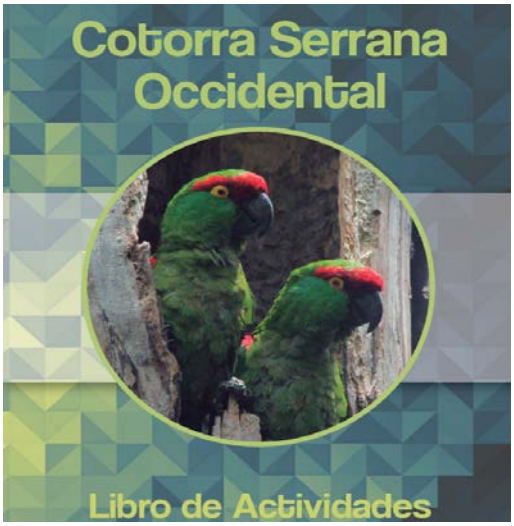
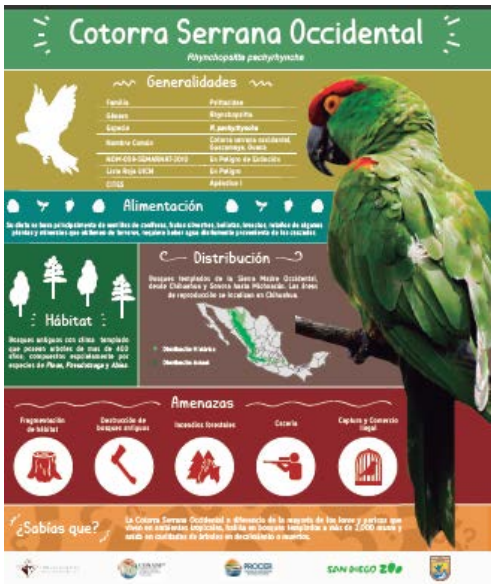


Fig. 2. Training/outreach materials on Sierra Madre Occidental trees and TBPA identification.







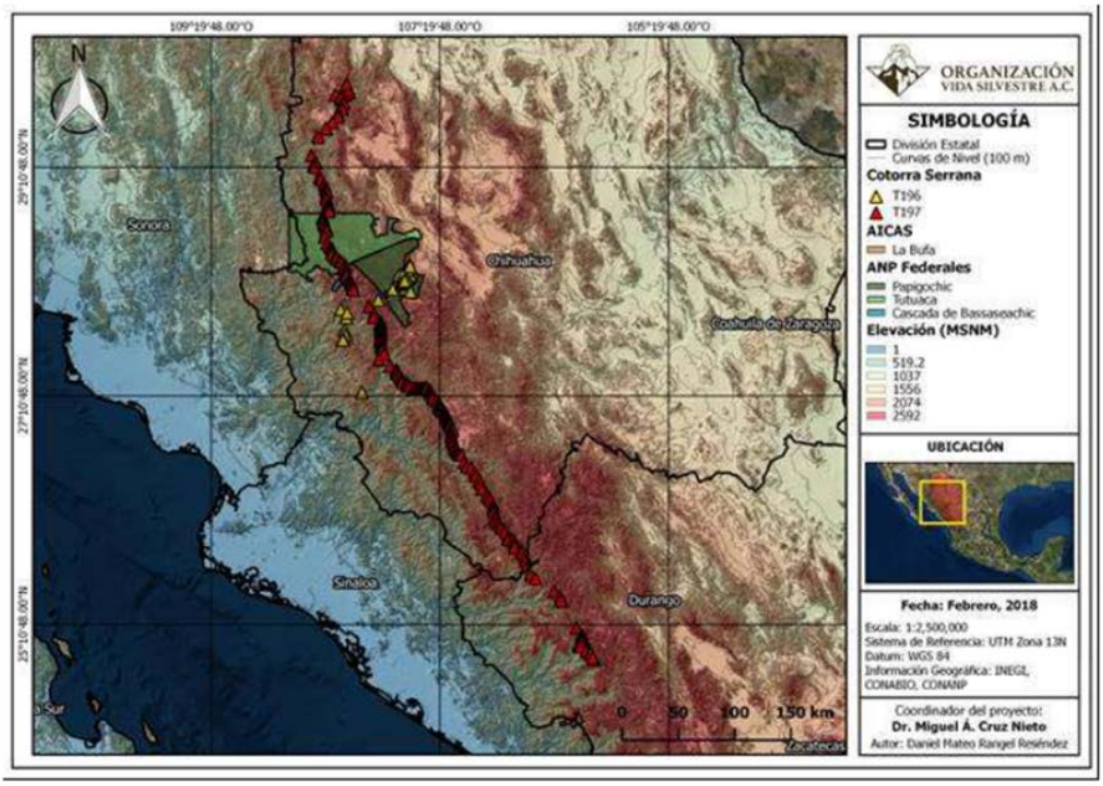


Fig. 3. Migratory pattern of adult TBPA (T297) tracked along the SMO using a satellite transmitter in 2018.

Fig 4. Location of project activities: 1) Protecting critical habitat for Neotropical migratory species and TBPAs through a mix of legal mechanisms like forest segregation, and integration of best management practices into forest management plans.

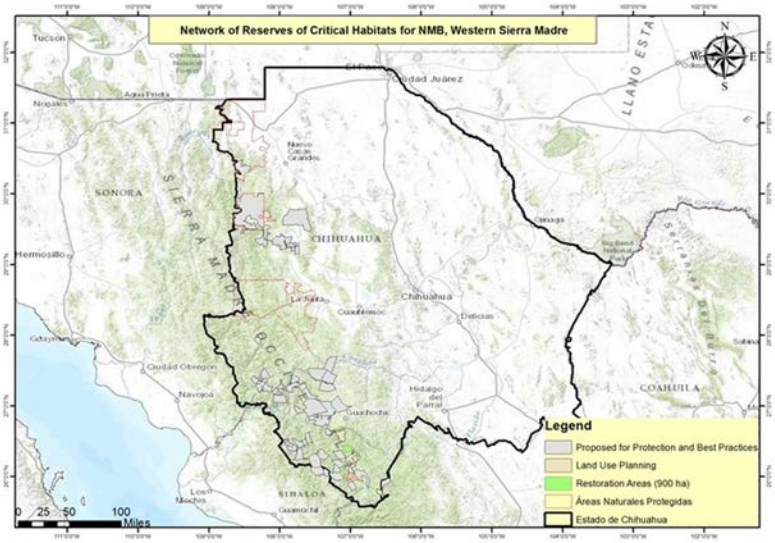
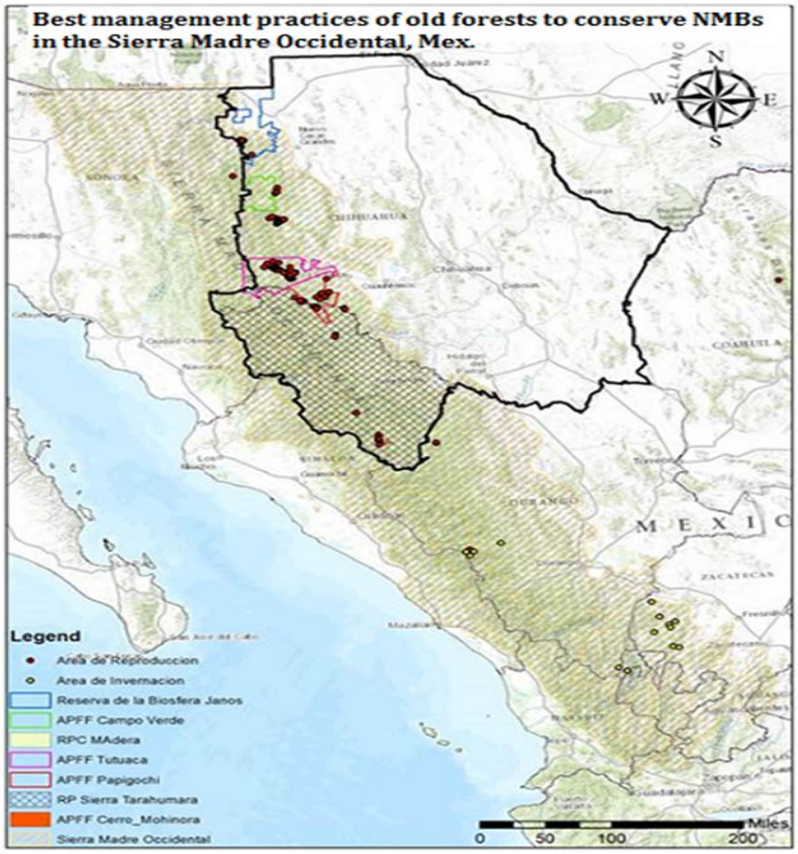


Fig. 5. Designated Natural Protected Areas (high elevation mix-conifer forest habitats) in the Mexican state of Chihuahua, within the Sierra Madre Occidental. Breeding localities of TBPAs include: (1) Mesa de las Guacamayas at Ejido 5 de Mayo in the Janos Biosphere Reserve (2) At the Ejido El Largo Maderal and Socorro Rivera in RPC Madera, (3) Ejidos Tutuaca and Conoachi in APFF Tutuaca. (4) Ejidos Heredia, Rojo Gómez, El Ranchito and Cerro Rumúrachic in APFF Papigochi and (5) Ejido Las Pomas and Heroínas in APFF Campo Verde. (6) RPC Cerro Mohinora where parrot nests were registered until 2011 (Cruz 1998 and Cruz et al. 2014). Potential locations of Thick Billed Parrots in the winter range: Durango, Zacatecas, Jalisco and Michoacán (all south of Chihuahua).



Conserving Golden Eagles in Northwest Mexico

Partners: Pronatura Noroeste A.C (PNO), Arizona Game and Fish Department (AGFD), Comisión Nacional de Áreas Naturales Protegidas (CONANP), BirdLife-CEMEX.

Overview: Golden eagles (GOEA) are a globally distributed species with a range including North America, Europe, Asia and North Africa. Within North America, this species occurs from Alaska and Canada to central Mexico, with nesting locations associated with rugged terrain. Golden Eagles are a SGCN species for AGFD, as well as species of conservation concern for the USFWS. Increased conservation actions and a better understanding of species population status in Mexico will significantly contribute to the overall management and conservation of the species.

CONANP has developed a Program of Action for the Conservation of the Species (PACE), Mexico's version of a recovery plan, which provides a framework and establishes objectives for the conservation of Golden Eagles. This Recovery Plan was revised in 2015 and published in 2017.

Guided by the PACE, collaborators in Mexico have implemented a monitoring program and engaged in other conservation actions to conserve habitat and protect the species. To date 145 nests and 81 reproductive pairs of Golden Eagles have been identified across seven states in Mexico (Baja California, Chihuahua, Coahuila, Durango, Zacatecas, Aguascalientes and San Luis Potosí). However, there are significant gaps in information regarding foraging areas and juvenile dispersal sites, among other aspects of the species' life history.

Birds: Golden Eagle.

Threats: Habitat loss, illegal shooting, electrocutions, human disturbance at nesting sites, illegal pet trade, and poisoning

Project Goals: Train biologists to deploy satellite tracking technology, identify occupied territories and areas for conservation, determine causes of mortality, enhance habitat conservation in selected communal land holdings, and conduct environmental education and capacity building.

Southern Wings Successes 2018:

Golden Eagle Monitoring-

- Analyzed data from satellite transmitters form January through March, indicating movement and dispersal of approximately 5,700 km^2 between January to March, followed by a drastic reduction in dispersal area to 36 km^2 (Map 1 & 2) in April to June.
- Trained 13 members of a community in March to organize them as a dedicated community brigade to monitor Golden Eagles. Community brigades reported two Golden Eagles in Ejido Cebadilla de Dolores, municipality of Madera (still needing field

confirmation), and an adult pair with a juvenile have been reported at el Yeso in the low lands (near the CEMEX quarry), hunting for prey.

- Conducted field work in Rancho El Yeso (Cerro de Las Aguilas y Las Cañadas), Rancho Los Alamitos, El Chupadero II, Mina Santo Domingo, in Sonora; Las Mesitas, La Calendaria and El Embudo in Chihuahua. Nine adults, one sub-adult, one indeterminate were observed, two nests were found.
- Documented three direct threats to Golden Eagles, a forest fire of approximately 12,000 ha. in size around Campo Verde, a forest fire in a nesting area in Candelaria, Ejido El Largo and a sub-adult Bald Eagle was killed by shooting in La Norteña, Chihuahua.

Habitat Conservation-

- Completed a habitat restoration plan and trained local brigades (community crews) to conduct restoration work.
- Finalized a guide for the field identification of GOEAs to identify birds of different ages.

Activities planned for 2019: Pronatura Noroeste and partners will implement the following activities.

GOEA Monitoring-

- Track and evaluate data from GOEA(s) tagged with satellite transmitters to better understand movement and habitat use patterns.
- Train community brigades to monitor GOEA territories.
- Document breeding territories and monitor breeding pairs in historical breeding areas (states of Sonora and/or Chihuahua), evaluate reproductive success. Investigate causes of any direct mortality reports.
- Work with partners to assist in the retrieval of any satellite transmitters from downed GOEAS that may have been tagged in the United States.
- Train community brigades and environmental promotors in Birdwatching, in collaboration with National Commission for Knowledge and Use of Biodiversity.

Habitat Conservation-

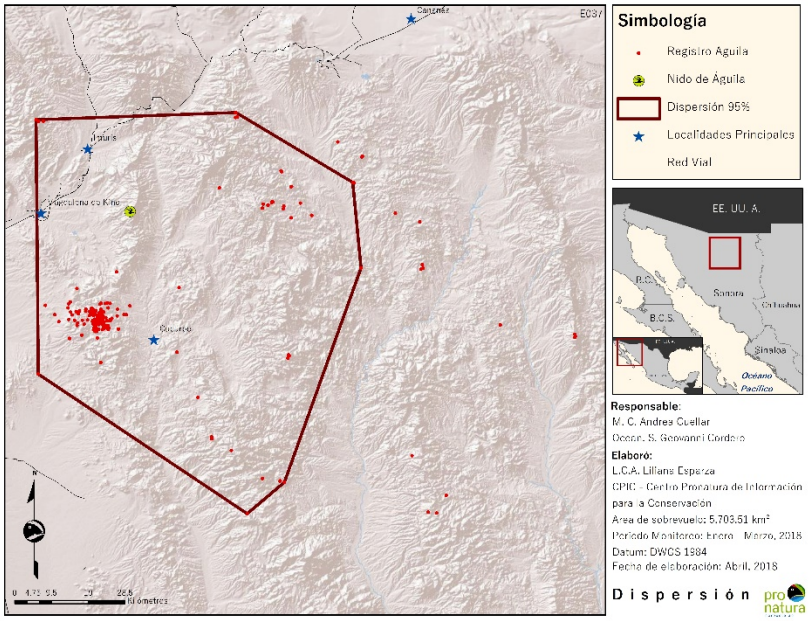
- Work with partners to develop a strategy to reduce the threat of Buffelgrass encroachment and explore ways to control or minimize established patches of Buffelgrass in a micro-watershed.

Budget: Contributions of $5,000 to $10,000 each will significantly advance implementation of these actions.

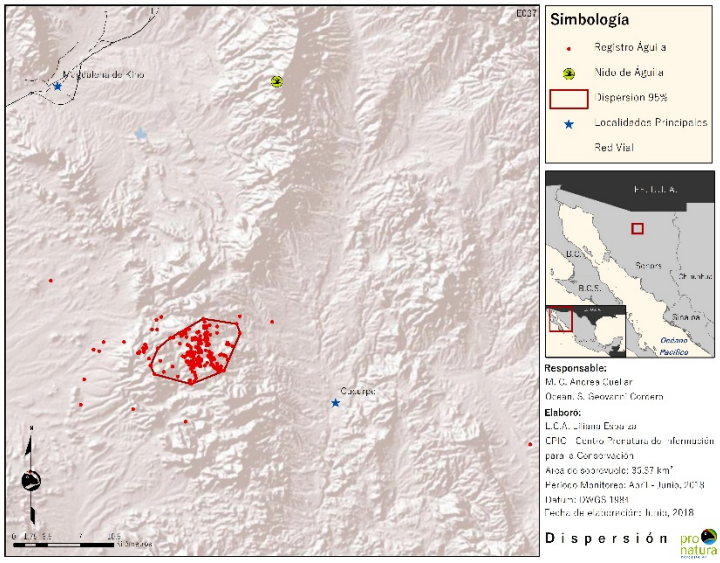
Arizona	BirdLife-CEMEX	Pronatura Noroeste	Total
6,156.00	11,500.00	6,300.00	23,956.00

Maps:

Movement patterns of tracked GOEA in Sonora Mexico, 2018



1) Movements of GOEA during Jan- March.



2) Movements of GOEA during April-June.

Status of Western Yellow-billed Cuckoos in Sonora, Mexico

Partners: Universidad Estatal de Sonora, Arizona Game and Fish Department, Southern Sierra Research Station (SSR).

Overview: The Western Yellow-billed Cuckoo (*Coccyzus americanus*) was listed as Threatened in 2014 under the Endangered Species Act. Cuckoos (YBCU) have declined in the western United States within the last 100 years due to widespread habitat loss of riparian habitat. An integral assessment of the conservation status of YBCU must consider the totality of the species' range, including northern Mexico. Population status of the YBCU in northern Mexico is difficult to assess given the lack of long-term monitoring programs. Loss and degradation of riparian habitat due to disturbance of fluvial regimes habitat are prevalent in northern Mexico (Scott et al. 2009). There is a need to better understand YBCU populations in the state of Sonora, whose conservation and management could contribute to the recovery of YBCU populations in Arizona. The YBCU is a common summer resident in Sonora, and was observed with higher frequency than in adjacent Arizona by Russell and Monson (1998). YBCU occupy a broader range of habitats in Sonora including willow-cottonwood riparian woodland, older mesquite woodland, tropical deciduous forest, and tropical thorn scrub habitats (Russell and Monson 1998, Flesch 2008) and desert arroyos. During 2016, we started a monitoring program in Sonora to document changes in abundance and presence of YBCU in Sonora to contribute to a better assessment of the species' conservation status. Because YBCUs occupy a large variety of habitats in Sonora, the contribution of non-riparian habitat to the dynamics of regional population may be highly relevant to the species status. We attempted to evaluate the YBCU occupancy of non-riparian habitats as well during Year 4 of this project.

Threats: Loss and degradation of riparian habitat.

Birds: Western Yellow-billed Cuckoo.

Southern Wings Successes 2018: We surveyed for YBCU in Sonora during 2018 following the standard survey protocol by Halterman et al. (2015). We surveyed 13 transects twice in three habitat types: 8 in riparian habitat, 3 in desert arroyos, and 2 in upland habitat (Figure 1 and Table 1). The first surveys occurred from 28 June to 20 July (first period), and the second surveys, from 23 July to 15 August 2018 (second period). We detected 117 and 85 YBCU in the first and second period, respectively (Table 2).

Using survey data from 2015-2018, we compared YBCU counts between years, 1st and 2nd surveys, and habitats using a log-Poisson regression (Kutner et al. 2005) with number of broadcast stops as offset. We used the delta method to estimate standard errors for multiplicative factors for cuckoo counts between levels (Powell 2007). We found that the count of YBCU per transect differed by surveys and habitats, but not by year (Table 3). The mean number of YBCU per transect at riparian habitat in 2018 was 9.72 individuals (95%CI: 8.29-11.15 individuals). YBCU counts per transect in the first periods were 1.16 times higher (95%CI: 1.03-1.33 times) than those of the second periods. Riparian habitats had 1.54 times more

cuckoos (95%CI: 1.24-1.54 times) than desert arroyos, and 1.39 times higher (95%CI: 1.16-1.62) than upland habitats. Once the 2019 YBCU surveys are completed, the survey dataset will have a sufficient sample size to conduct a global hierarchical Bayesian statistical analyses to estimate of abundance, detection and occupancy rates, and the effect of habitat type on occupancy rate estimates.

Specific Activities planned for 2019: Universidad Estatal de Sonora will implement the following.

- Survey for YBCU at a subset of locations surveyed by this project from 2015-2019 to document changes in the species' presence and abundance.
    - Evaluate and assess safety of proposed survey locations in riparian and non-riparian habitat.
    - Produce a sample design using 13 locations from 37 locations surveyed in Sonora from 2015-2018 (Fig. 2) that optimizes the estimates of abundance, occupancy rates and the effect of habitat type on occupancy estimates.
    - Train field crew and volunteers on USFWS survey protocol (with partners).
    - Conduct call playback surveys (targeting breeding individuals) at 13 sampling locations during a minimum of two times per location in 2019 using the USFWS protocol.
- Characterize YBCU habitat through photographic documentation.
- Conduct a global hierarchical Bayesian statistical analyses of survey data to estimate of abundance, detection and occupancy rates, and the effect of habitat type on occupancy rate estimates.
- Produce a manuscript for peer-reviewed publication.

Budget: Arizona will contribute $ 8,370 to the project activities proposed above. Universidad de Sonora is contributing $4800. Contributions of $5,000 to $10,000 each will add survey sites.

Table 1. UTM coordinates of the 13 YBCU transects surveyed in 2018

Survey site	UTM easting (^{m}E)	UTM northing (^{m}N)
Agua Caliente (R)	513,839	3,424,544
La Reforma Norte (R)	459,213	3,420,619
El Encino (U)	648,706	3,308,715
Granados (R)	663,964	3,305,022
Mazocahui (R)	577,925	3,263,017
El Gavilán (R)	544,507	3,243,623
Mazatan (U)	580,254	3,220,763
El Cajón de la Uvalama (D)	546,360	3,167,903
El Sapo (D)	468,129	3,167,584
Oviachic (R)	608,268	3,073,468
Mocúsarit (R)	685,197	3,706,121
Cuchujaqui (R)	708,511	2,980,386
Jambiolabampo (D)	663,897	2,960,786

Figure 1. Location of 13 YBCU survey sites in Sonora, Mexico, surveyed twice during 2018.

Table 2. Counts of YBCU surveys for 2018 in Sonora, Mexico, showing the number of cuckoos detected and the number of counting broadcast points for each transect.

Survey site	1st period (28/06–20/07)		2nd period (23/07–	
	Cuckoos detected	Broadcast points	Cuckoos detected	Broadcast points
Agua Caliente (Riparian)	7	25	2	25
La Reforma Norte (Riparian)	12	25	7	25
El Encino (Upland)	7	19	11	16
Granados (Riparian)	12	24	11	23
Mazocahui (Riparian)	15	28	12	22
El Gavilán (Riparian)	8	24	1	16
Mazatán (Upland)	8	28	3	31
El Cajón de la Uvalama (Desert	7	31	13	26
El Sapo (Desert arroyo)	8	22	7	15
Oviachic (Riparian)	4	32	2	28
Mocúsarit (Riparian)	10	23	9	16
Cuchujaqui (Riparian)	17	26	7	27
Jambiolabampo (Desert arroyo)	2	18	0	23
Total sum	**117**	**325**	**85**	**293**

Table 3. Parameter estimates of a log-Poisson regression on Yellow-billed cuckoo counts as a linear function of factors *YEAR*, *PERIOD* and *HABITAT*. The values *z* and *P* denote the test statistic and the observed significance level for the hypothesis test H_0: $\beta = 0$. Boldface parameters denote significant effect.

Parameter (β)	Estimate ($\hat{\beta}$)	Standard Error	*z*	*P*
Intercept	-1.158	0.117	-9.892	>0.001
YEAR (2016)	0.152	0.093	1.641	0.101
YEAR (2017)	-0.075	0.099	-0.762	0.446
YEAR (2018)	-0.124	0.090	-1.372	0.170
***PERIOD* (2nd)**	**-0.154**	**0.062**	**-2.482**	**0.013**
HABITAT (upland)	0.098	0.103	0.956	0.339
***HABITAT* (riparian)**	**0.429**	**0.097**	**4.443**	**>0.001**

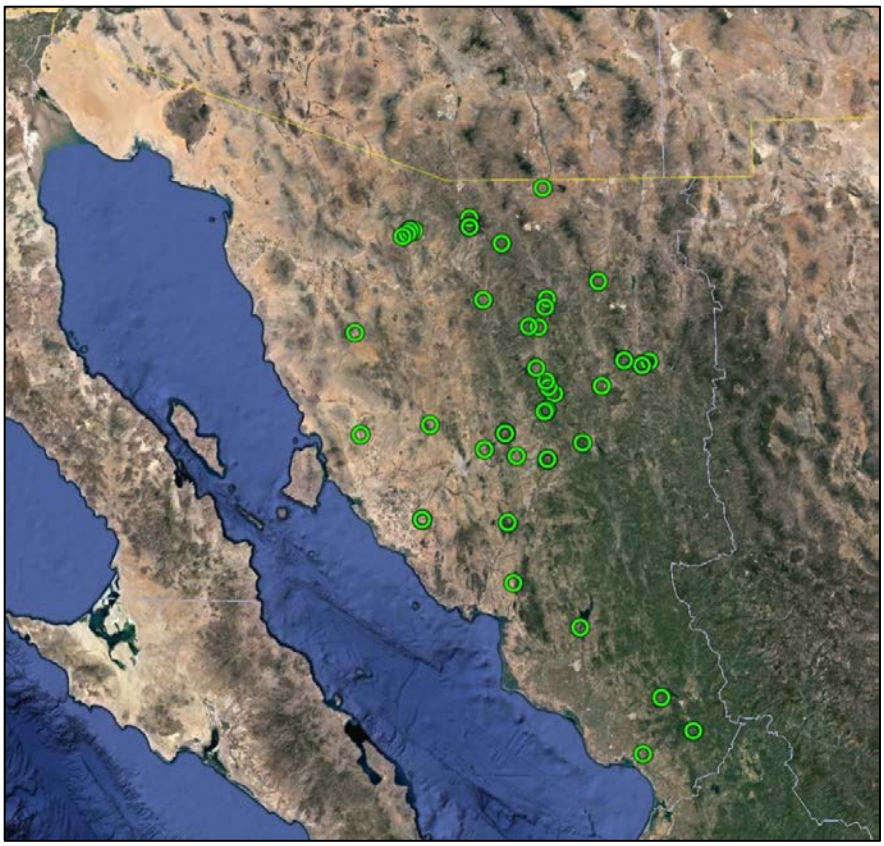


Figure 2. Locations of YBCU surveys (◎) from 2015 to 2018 in Sonora, Mexico

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Neotropical Flyway Project: 2018/2019 Season

Partners: SELVA: Investigación para la Conservación en el Neotropico, Colombia; Cornell Lab of Ornithology; Environment and Climate Change Canada; Bird Studies Canada; Parques Naturales Nacionales de Colombia; ADOPTA: Panama Rainforest, Panama; Canopy Family, Panama, Costa Rica Bird Observatories; Cerulean Warbler Conservation-CR; Las Brisas Nature Reserve; Reserva El Jaguar, Nicaragua.

States that have participated to date: Missouri and Wisconsin

States with a biological connection: All states in eastern U.S. have a significant biological connection through migratory species that use northern Colombia and Central America for critical stopovers; many western states also have connections through long-distance migrants such as Olive-sided Flycatcher. See attached list of species highlighted in this project, with specific ties to key states.

Overview: Close to 300 species of landbirds, whose combined populations represent billions of birds, migrate between the Neotropics and North America. For many species, migration is by far the greatest source of mortality during their annual cycle, such that even successive delayed arrivals or degradation at a single major stopover site can lead to significant declines, threatening the viability of populations across the Western Hemisphere.

To successfully migrate between their breeding and wintering grounds, Nearctic-Neotropical migrants typically depend on a series of (stopover) sites along the length of their migratory route, which provide critical resources such as the fuel for migratory flights, safe roosting sites, and refuges where birds can make emergency stops. Outside of North America, the funnel-shaped geography of Central America and the biogeography of northern Colombia, act as bottlenecks, concentrating millions of migratory landbirds into a tiny area (relative to their breeding grounds), magnifying the importance of Neotropical stopover sites. Further, birds migrating through this region face major barriers in the form of both the Caribbean Sea and the Gulf of Mexico, and it is likely that vital stopover regions exist where birds attain sufficient fuel to cross these barriers safely. Recent work on thrushes, vireos, and warblers on stopover in northern Colombia has shown that the energy reserves acquired there, may enable birds to not only cross the Caribbean sea but also cover up to 40% of their total migration distance – highlighting an urgent need to identify major Neotropical stopover regions and assess the needs of birds within them.

To address this urgent need, the ***Neotropical Flyways Project*** (NFP) has been operating since 2016 with the goals of (1) rapidly discover and map new stopovers sites; (2) determine habitat quality and stopover behavior at these sites; (3) develop conservation strategies at key stopover sites; and (4) train and build capacity among in-country biologists and managers to protect sites and continue long-term monitoring.

Threats: Research to date indicates that the majority of birds stopping over in northern South and Central America rely on native forests, especially pre-montane forests on Caribbean-facing slopes as

well as lowland tropical wet and dry forests. These tropical forests are under severe threat from expanding agriculture, agro-forestry, and development. Although some agro-forestry systems, such as shade coffee, provide habitat for overwintering migrants, preliminary results from this study indicate that these habitats may not support adequate fueling conditions for a number of species on migration. The almost complete lack of knowledge of migratory stopovers in this region constitutes a threat, hampering full life-cycle bird conservation.

NFP: AT A GLANCE

- Over **one billion migratory landbirds** migrate to the Neotropics from N. America.
- Despite this massive movement of birds, the routes and strategies that migratory landbirds adopt in the Neotropics are almost completely unknown.
- The Caribbean Sea represents a major **ecological barrier** to many species and quality of stopover sites on either side can influence the success of migration.
- Only by identifying **stopover sites and habitats** where birds lay down the energy reserves for migration can we identify the needs of migratory birds at all stages of their life cycle.
- The **Neotropical Flyways Project** is discovering critical stopover regions and habitats across five Central American countries and northern Colombia.
- **Intensive surveys** are used to identify previously **unknown** stopover sites.
- Constant effort **mist-netting stations,** combined with cutting-edge **radio-tracking** technology, determine how birds use stopover regions and to what degree a site contributes to the migration of each species.
- **Regional capacity for avian research** is enhanced by training professional biologists and students from six countries in research techniques for studying and monitoring migratory birds.
- The combined results will be used to develop a **conservation business plan** for stopover sites along the western Caribbean flyway.
- **Major discoveries to date:** (1) Sierra Nevada de Santa Marta, N. Colombia critical for Gray-cheeked Thrush and other migrants in spring; (2) N. Colombian dry forests critical for Yellow-billed Cuckoo in spring, and Blackpoll Warblers arriving after trans-oceanic crossing in fall; (3) major fall stopover by Cerulean Warblers in Caribbean foothills of Costa Rica; (4) global populations of most aerial insectivore species funnel through the Darien in spring and fall.

Birds: More than 50 species of landbirds regularly migrate through northern Colombia and Central America on their way to and from South American wintering grounds, and many more both winter and use Central America for stopovers. These are primarily species from eastern and boreal forests of the

U.S. and Canada, including species of high conservation concern, such as Canada Warbler, Cerulean Warbler, and Golden-winged Warbler, as well as common species central to ecosystem function, such as Red-eyed Vireo, Scarlet Tanager, and Swainson's Thrush.

What states the project connects with due to the biology of the birds: All eastern states have connections to this project due to the migration routes of many species. See Table 1 for specific species connected to representative states. A few important western migrants, such as Western Wood-Pewee, Olive-sided Flycatcher, and Yellow-billed Cuckoo are also included in this project and may be of interest to western states.

TABLE 1. Species targeted by the NFP, and their SGCN List status in selected states. All of these species migrate to South American wintering grounds and use sites within northern Colombia for stopover or as migration corridors. PIF continental status: XX = Red Watch List, XX = Yellow Watch List, XX = Common Bird in Steep Decline (2016 PIF Landbird Plan).

PIF	Species	NY	MO	LA	NC	GA	VA	TN	KY
XX	Golden-winged Warbler	X			X	X	X	X	X
XX	Common Nighthawk	X	X		X				
XX	Black-billed Cuckoo	X	X		X				
XX	Olive-sided Flycatcher	X						X	
	Tennessee Warbler	X							
	Bay-breasted Warbler	X							
XX	Cerulean Warbler	X	X		X	X	X	X	X
	Dickcissel	X	X	X	X			X	X
	Louisiana Waterthrush	X	X	X			X	X	X
XX	Canada Warbler	X			X		X		X
	Scarlet Tanager	X	X				X		
XX	Prothonotary Warbler	X	X	X			X	X	X
XX	Yellow-billed Cuckoo		X	X	X		X	X	
XX	Chimney Swift		X		X		X		
	Eastern Wood-Pewee		X		X		X	X	
	Rose-breasted Grosbeak		X		X		X		X
	Mississippi Kite		X		X			X	X
	Eastern Kingbird		X		X		X		
	Black-and-white Warbler		X				X		
	Yellow Warbler		X				X		
	Yellow-throated Vireo		X				X	X	
XX	Bank Swallow		X				X		X
	Acadian Flycatcher		X					X	
	Blackburnian Warbler								X

Project goal: The NFP has been designed to tackle enormous gaps in our knowledge of stopover regions in Central America and northern South America. This information will feed into a wealth of conservation plans that currently lack actions addressing the needs of species such as the Cerulean Warbler and Canada Warbler during their lengthy migrations through Neotropical regions. Ultimately, the goal is to prioritize and protect key habitats and sites through a conservation business plan for migration stopover sites in Central America and northern South America. This plan will guide actions aimed at ensuring that not only major stopover regions for currently threatened are safeguarded, but also for the millions of individuals that belong to common yet declining species that are essential to ecosystem functionality across the Americas.

Specific objectives of this project are to:

1. Identify previously unknown stopover/staging sites ("Delaware Bays for songbirds")
2. Determine habitat quality and needs for key species within stopover sites
3. Determine migratory connectivity and migration strategies with tracking technologies
4. Engage and train local biologists, conservationists, and communities
5. Incorporate migration-stopover needs into full life-cycle bird conservation plans

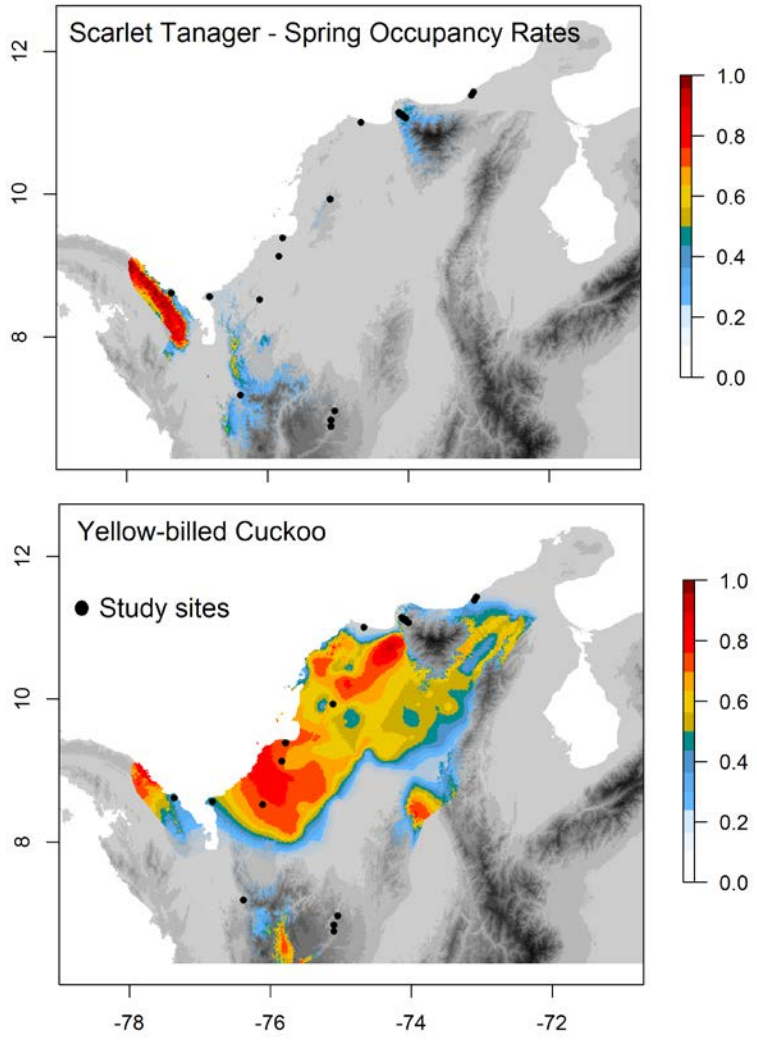
Previous Successes and history: During the initial phases of the Neotropical Flyways project in 2016-2018, with funding from Cornell Lab of Ornithology, Environment and Climate Change Canada, and SELVA, more than 10,000 transect surveys were conducted along 450 transects at 32 sites across northern Colombia, Panama, and Costa Rica. These surveys produced over 50,000 records during passive transects and migration counts during fall migration in Colombia alone, recording a total of 1.7 million birds. Surveys were designed to cover a range of elevations, climatic conditions and habitats, thereby facilitating the development of spatial predictions of stopover use at the regional level. Analysis of spring data in Colombia, for example, revealed the previously unknown importance of dry forest stopover sites for species such as Yellow-billed Cuckoo and Barn Swallow, while also highlighting the importance of pre-montane forests for species like Blackburnian Warbler, and Scarlet Tanager (see selection of maps below).

During Fall 2017 and 2018, we studied the use of coastal dry scrub on the Guajira Peninsula, NE Colombia, by Blackpoll Warblers arriving after their trans-oceanic crossing from North America. Our results revealed the critical importance of this habitat for Blackpolls to recovery muscle mass and body fat and to refuel for the remaining 1,000-km+ journey to wintering grounds in the Amazon Basin. Also in Fall 2018, surveys identified a previously unknown stopover region for Cerulean Warblers in the Caribbean foothills of Costa Rica—following up with banding and Motus tracking to document stopover behavior and habitat needs in this region is a high priority for the NFP in coming seasons.

In these initial phases, we also successfully tested and implemented a new survey protocol for migratory birds, trained 9 Colombian,6 Panamanian, and 5 Costa Rican biologists, worked alongside the National Parks authority in three national parks and carried out education activities in local schools. Other outreach activities included the organization of a migration stopover symposium and presentation of results at PIF VI in Costa Rica (Nov 2017), the publication of a review of major stopover regions in the Neotropics (PDF), at least 10 additional peer-reviewed publications, presentation of

results to three Colombian National Parks, the Colombian Ornithology Congress (Nov 2016), American Ornithological Society (April 2018), and International Ornithological Congress (August, 2018).

Predicted occupancy rates for Scarlet Tanager and Yellow-billed Cuckoo across northern Colombia reveal spring stopovers in pre-montane forests (SCTA) and in lowland tropical dry forests (YBCU).



Proposed Activities/Actions for 2019-2020: The broader Neotropical Flyways Project will focus on understanding migrant strategies and stopover use in six countries over a period of six years: Colombia, Panama, Costa Rica, Nicaragua, Honduras and Belize. In the current proposal, we are seeking funding for planned actions during 2019/2020 that will build on the activities carried out during 2016-2018. These include:

January-December 2019 – Carry out occupancy analyses for fall and spring migration through Panama, Costa Rica and Colombia to identify major stopover regions (ongoing).

March-May 2019 – Carry out spring occupancy surveys in Panama and Costa Rica during (ongoing).

August-October 2019 – Carry out mist-netting and banding of Cerulean Warblers and other migrants at Las Brisas are in Costa Rica (identified by occupancy surveys) to determine stopover behavior and use.

March-May 2020 -- Carry out occupancy surveys during spring migration at potential study sites in Nicaragua (if political situation allows), Honduras, Guatemala, and/or Belize.

March-May 2020 – Carry out mist-netting and banding at a major site (TBD) in Panama or Costa Rica to document stopover behavior and use.

Budget: (Fall 2019 and Spring 2020)

YEAR	COUNTRY	REGION	ACTIVITY	TOTAL	MATCH
2018					25,000
2019					
Spring	Costa Rica	3 regions (country-wide)	Occupancy Surveys	$4,000	$20,000
	Panama	3 regions (country-wide)	Occupancy Surveys	$5,000	$25,000
Fall	Costa Rica	Las Brisas Reserve	Mist-netting 1 site	$15,000	$15,000
	Honduras, Belize	3 regions per country	Planning and site selection	$5,000	
	CO, PA, CR	All migration data	Analysis & Dissemination	$10,000	$5,000
2020					
Spring					
	Honduras	3 regions (country-wide)	Occupancy Surveys	$20,000	
	Belize	2 regions (country-wide)	Occupancy Surveys	$15,000	
	PA/CR	1 Stopover site (TBD)	Mist-netting 1 site	$15,000	
			TOTALS	**$89,000**	**$90,000**

Note: because the project is built on modular activities in each country and region, with new modules being phased in through time, smaller amounts of funding can go towards specific components in each season. **There is an immediate need for funding for Spring migration 2020 activities.**

Matching funds: a 1 to 1 match is required. Funding has been provided by Cornell Lab of Ornithology -- $10,000 for 2018, and $15,000 is promised for 2019. The Canadian Wildlife Service has provided $33,000 for 2018/2019, Southern Wings ($18.5K from 2 states), and a private donor ($10K). Smaller contributions from SELVA, Acadia University, Guelph University and Saskatchewan University total $10,000. Equipment, namely 20 radiotransmitters, represent a further $3,500.

The Pacific Flyway Shorebird Survey: Identifying Threats and Conservation Hotspots in Northwest Mexico

Partners: Terra Peninsular, CICESE, Point Blue Conservation Science, UNAM, CIBNOR, UABCS, US Forest Service, Arizona Game and Fish Department (AGFD)

Overview: Nearctic-neotropical migratory shorebirds (Order: Charadriiformes; Family: Charadriidae, Recurvirostridae, Scolopacidae) are highly mobile animals that traverse thousands of kilometers across the Western Hemisphere bi-annually and are reliant upon a network of coastal and interior wetland ecosystems. The Pacific Coast of the Americas (Fig. 1) supports entire populations of neotropical migratory shorebird species during winter (November-February). Wetlands stretching from southern Alaska to Chile are critical for the survival of these birds; including 12 Western Hemisphere Shorebird Reserve Network sites in NW Mexico. The health of these sites is critical to supporting shorebird populations. Current research indicates populations of shorebirds are declining (Brown et al. 2001) but the causes of these changes are not well understood (Butler et al. 2004).

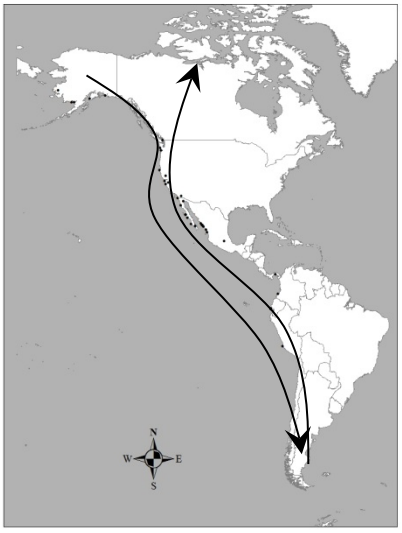


Figure 1. The Western Hemisphere with stylized migration route of shorebirds along the Pacific Coast of the Americas and important wetland sites as designated by the Western Hemisphere Shorebird Reserve Network.

The lack of broad-scale coordinated monitoring for Pacific Flyway shorebirds has limited our ability to effectively manage their populations particularly in light of the predictions of climate change, which will likely alter habitat conditions (e.g. sea-level rise, reduced wetlands due to drought). In 2011, in collaboration with the Copper River International Migratory Bird Initiative (CRIMBI) and >100 individual and organizational partners throughout the Pacific Flyway, we initiated the Pacific Flyway Shorebird Survey and then the Migratory Shorebird Project to fill gaps in Pacific Flyway population status and trends and then to assess hypothesized threats to shorebirds and identify priority conservation locations, respectively. Specifically, the objectives of the Pacific Flyway Shorebird Survey and then the Migratory Shorebird Project are to: (1) quantify spatial and temporal trends in distribution and abundance of shorebirds and other waterbirds both at the individual site level and across their wintering ranges; (2) provide science-based guidance for managers to inform actions and measure the response; (3) develop an "iterative learning" analytical framework to critically evaluate specific hypotheses about the factors influencing population changes and to identify priority wetlands; and (4) educate individuals, communities, and governments about the importance of their wetland resources and their connectivity with people, via shorebirds, throughout the Americas. These programs now collect standardized bird and habitat condition data on over 2.5 million non-breeding waterbirds from 11 countries annually.

Threats: The primary threats to shorebirds in the Pacific Flyway include 1) changes in habitat availability; 2) exposure to contaminants and pollutants; 3) human disturbance; 4) climate change; and 5) increasing predator populations. Human disturbance is thought to particularly be a problem in beach habitats

(important for populations of Snowy Plover and Red Knot) which get a lot of use by humans compared to intertidal mudflats and rocky areas.

Birds: Shorebirds (Families: Charadriidae, Haematopodidae, Recurvirostridae, Scolopacidae); Waterfowl (Black Brant and ducks); Raptors; and Waterbirds (terns, egrets, etc).

Of the shorebirds, eight species' populations are counted each year in Mexico that are listed in State Wildlife Action Plans for Pacific Flyway States including: Marbled Godwit (2 plans), Western Snowy Plover (5 plans), Red Knot (1 plan), Black-necked Stilt (2 plans), Long-billed Curlew (5 plans), American Avocet (3 plans), Long-billed Dowitcher (1 plan), and Western Sandpiper (2 plans).

Further the wetland habitats and sites used by shorebirds during the non-breeding season and monitored a part of this program are important for other migratory waterbirds in particular Black Brant in Northwest Mexico; all 13 sites of importance for wintering Black Brant in NW Mexico are surveyed each year and Brant as well as other waterfowl are counted as part of the PFSS.

Project goal: The general goal is to improve the efficiency of conservation and management for coastal wetlands, shorebirds, waterbirds and waterfowl in Mexico through the integration of data and prioritization in decision-making. This will be achieved by conducting the following actions.

1. Complete annual non-breeding bird surveys at 21 sites across Mexico (Fig. 2) and compiling these survey data in to the Pacific Flyway Shorebird Survey node of the Avian Knowledge Network. Data collected in the field includes the number birds (shorebirds, waterbirds and waterfowl), measures of bird disturbance, and assessment of habitat condition. The number of avian predators of shorebirds and other waterbirds (raptors) are also recorded.

2. Expand our survey efforts on sandy beach to improve sampling for Snowy Plover, Red Knot, Willet, and Sanderling and be better able to understand human impacts which are centered on beaches.

3. Integrate these survey data from new and existing sites along with spatial data on the distribution of shorebird habitat across Mexico into models to assess what are the drivers of shorebird distribution and abundance and the importance of different threats. Distribution models developed with these data for Pacific Flyway State Wildlife Action Plan focal species will be used to highlight priority areas for non-breeding shorebird conservation.

Southern Wings Successes in 2018:

- Nonbreeding Shorebirds Monitoring: During January-February of 2018 we completed the annual non-breeding midwinter shorebird surveys at 21 sites across northwest Mexico (Fig. 2). These sites included 243 sampling units that are surveyed by about 50 volunteers in northwest Mexico.

- Database: In March-April 2018 we entered these survey data into the project's online data entry portal hosted by CADC (California Avian Data Center), which is a node of the Avian Knowledge

Network. Data includes the number of shorebirds, waterbirds and waterfowl, measures of human disturbance and raptors, and assessment of habitat condition.

- Pacific Brant Surveys: We provided a technical report on Brant surveys in Mexico to the The Pacific Flyway Study Committee for their annual meeting on February 27-March 3, 2018. Report attached.

- Snowy Plover Nonbreeding Surveys: During January 2018 we coordinated with the Snowy Plover midwinter window survey along the Pacific coast of United States to conduct Nonbreeding Snowy Plovers surveys in five sites in northwest Mexico (Estero de Punta Banda, San Quintin, Laguna Atotonilco, Marismas Nacionales and Ceuta). Through March 2018 we have conducted one nonbreeding survey at each site (and two surveys at Estero de Punta Banda). In May-June 2018 we will be able to conduct breeding surveys in all five sites, thanks to this PFSS support.

- Nonbreeding Waterbird Monitoring: During January-February we completed non-breeding waterbird surveys of roosting birds at 10 sites located in Sinaloa, Sonora, Oaxaca and the Baja California peninsula.

- Training: On early March 2018 we provided training to a group of interns of Environment for the Americas on identification and monitoring shorebirds. These interns will implement shorebird monitoring surveys at protected areas in the US.

- Expanding Shorebird Surveys: To improve sampling for Sanderling and Snowy Plovers and be better able to understand human impacts, which are centered on beaches, we increased (by 70) the number of sampling units with sandy beaches.

- Outreach Talk: On 2nd February 2018 we celebrated the World Wetlands Day by guiding bird-watching walks at Estero de San José del Cabo, Baja California Sur. And we gave a talk about the importance of Ramsar sites for migratory waterbirds to college students.

- Conference: During the 45th Annual Meeting of the Pacific Seabird Group we presented a paper on the current status of the California Least Tern in the Baja California peninsula.

- Bird Festival: From 6 through 10 March, 2018 Terra Peninsular conducted several activities to celebrate the 2nd Bird Festival of Bahía Todos Santos in Ensenada, Baja California.

- Snowy Plover Breeding Survey: During May 2018 we coordinated with the Snowy Plover breeding window survey along the Pacific coast of United States to conduct Breeding Snowy Plovers surveys in five sites in northwest Mexico (Estero de Punta Banda, San Quintin, Laguna Atotonilco, Marismas Nacionales and Ceuta).

- Outreach Event: We team up with other organizations to celebrate World Environment Day (June 5th) and conducted an event called "The beach belongs to everyone". See more information at: http://terrapeninsular.org/crean-alianza-para-proteger-a-las-aves-playeras-en-ensenada/

- Nonbreeding Monitoring: During May 2018 we completed non-breeding bird surveys at Estero de Punta Banda, Baja California.

- Database: In June 2018 we completed entered shorebird survey data into the database CADC (California Avian Data Center) for the eight sites of the Baja California peninsula. Data includes the number of shorebirds, waterbirds and waterfowl, measures of human disturbance and raptors, and assessment of habitat condition.

- Breeding Monitoring: During May and June 2018, breeding Western Snowy Plovers were monitored in six sites of northwest Mexico (Estero de Punta Banda and Bahía San Quintin, Baja California; Ensenada de La Paz, Baja California Sur; Laguna Atotonilco, Jalisco; Bahía Ceuta, Sinaloa; and Marismas Nacionales, Nayarit). Wilson´s Plover has been monitored monthly in Ensenada de La Paz since March 2018.

- Training: In May 2018, our two students Brenda Guzmán and Abril Heredia worked for a week with a team of other biologists from Washington Department of Fish and Wildlife (led by Joe Buchanan) to conduct capture and marking of Red Knots in Grays Harbor, WA.

- Training: On May 12th, 2018 we had a one-day workshop on disturbance, in Ensenada with CONANP staff and volunteers from Golfo de Santa Clara, Sonora. We developed a protocol to monitoring disturbance on waterbirds, and an index of disturbance. This protocol will be used by CONANP to conduct actions to mitigate human disturbance affecting migratory shorebirds in the Colorado River Delta.

- Report on disturbance: In this report we analyzed human disturbance in the sandy beach of Golfo de Santa Clara, a hemispheric WHSRN site, located in the Colorado River Delta. The site is very important for Red Knots Spring migration in March through May, when they feed on grunion eggs at this site and overlap with Eastern vacation and other holidays that provoke a lot of disturbance to migrating shorebirds.

- Monitoring: In coordination with CDFG (Hans Sin) during June 2018 we conducted a range-wide survey of the endangered California Least Tern colonies along the Pacific coast of the Baja California peninsula.

Specific Activities planned for 2019: Terra Peninsular and partners will implement the following conservation actions.

- Work on a collaborative project with several partners, including a local hunting organization to strengthen conservation and management of a designated wildlife conservation unit (UMA) in the San Quintin Bay area:
    - Monitor wintering population of Pacific Brant and work to maintain/enhance habitat.
    - Assist in the voluntary designation of hunting and non-hunting units within the UMA.
    - Improve capture of harvest information (sex and age) of hunted Pacific Brant.
    - Conduct outreach on sustainable and responsible hunting practices.
    - Promote birding and wildlife photography tours.
    - Implement a beach cleanup campaign.
- Conduct outreach and education activities at two sites (Bahía San Quintín and Estero de Punta Banda, Baja California) to mitigate the effects of human disturbance on breeding Snowy plover and California Least Tern, and migrating shorebirds, especially Snowy Plover, Red knots and Sanderlings. Collaborate in the 5th Bird Festival of Bahía San Quintín, Baja California, featuring Pacific Brant conservation.
- Conduct annual non-breeding bird surveys of 21 wetland sites across NW Mexico (Fig. 2), using defined protocol and compiling these survey data into the California Avian Data Center (CADC), node of the Avian Knowledge Network (AKN). Data collected in the field includes the number of birds (shorebirds, waterbirds and waterfowl), measures of bird disturbance, and assessment of habitat condition. The number of avian predators (raptors) of shorebirds and other waterbirds are also recorded.

Budget: Contributions of $5,000 to $10,000 each will significantly advance implementation of these shorebird/waterbirds/waterfowl conservation actions.

Need		SW Contribution	Need
Southern Wings (SW) Request	20,000.00		15,000.00
Budgeted			
Arizona Game and Fish Dept.		5,000.00	
US Forest Service International Program	25,000.00		
In-kind (CICESE, GANO, Terra Peninsular)	15,000.00		

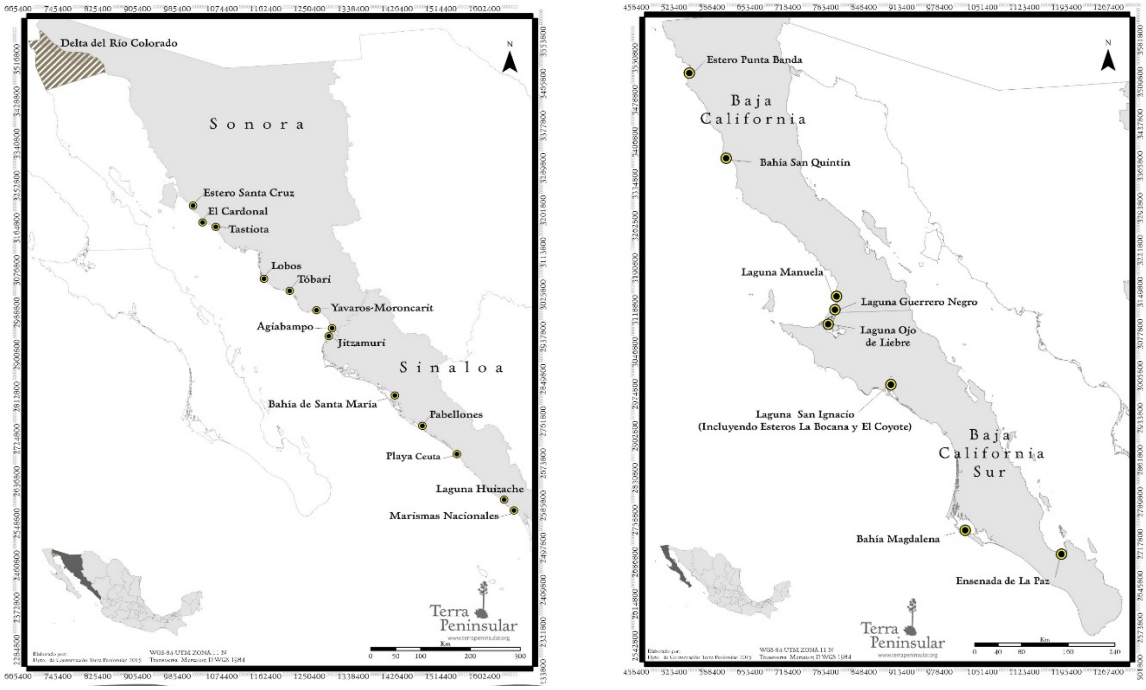


Figure 2. Location of 21 coastal wetland sites which are part of the Pacific Flyway Shorebird Survey in Northwest Mexico; AGFD supported work in some of these sites in 2018.

Restoration of Migratory Bird Habitat in Ecuador

Partners: Fundación Jocotoco, and American Bird Conservancy (ABC)

States that have participated to date: Missouri and Indiana

Overview: Ecuador provides wintering habitat to 105 species of neotropical migratory birds, many of them included in the U.S. Fish and Wildlife Service Species of Conservation Concern List. Ecuador has the highest deforestation rates in South America over the last 50 years. Annual loss of forests ranges from 148,000 to 495,000 acres resulting from increasing human land use. Forest loss is highest in the Andes and the Chocó, prompting Fundación Jocotoco to establish bird reserves here and elsewhere throughout the country where habitat protection is needed the most.

On the eastern slope of the Andes in southern Ecuador Fundación Jocotoco owns and manages the 7,410-acre Tapichalaca Reserve. The Reserve's buffer zone is a matrix of coffee farms that covers 830 acres. The farmers belong to a coffee cooperative, APECAP (Asociación de Productores Ecologicos de Altura de Palanda), who have started to work with Fundación Jocotoco on the implementation of organic and bird-friendly practices on their farms. This presents a unique opportunity to increase tree cover through the implementation of shade coffee, as many of the farmers see the value of bird-friendly coffee for niche markets and are receptive to bird-friendly practices. It will also help ABC develop a BirdScape in this region. The Tapichalaca reserve and the APECAP coffee growing region are within the 1100- 1800m altitudinal range where Canada Warblers are the most abundant migratory species. Other migrants include Cerulean Warbler, Swainson's Thrush, Blackburnian Warbler, Blackpoll Warbler, Western-Wood Pewee, Black-billed Cuckoo, Summer Tanager and Olive-sided Flycatcher.

The Ecuadorian Chocó, located in northwest Ecuador, is one of the last remnants of the Tumbes-Chocó-Magdalena Global Biodiversity Hotspot which is characterized by high species endemism and accelerated habitat loss. It is known that only 2% of the original forest in the area remains. The Chocó rainforest is important to numerous wintering migratory birds including Olive-sided Flycatcher, Cerulean Warbler, Acadian Flycatcher, Western Wood-pewee and Swainson's Thrush. The area is also important for threatened resident bird species such as the Great Green Macaw and the Banded-ground Cuckoo. In this region, ABC has established the Choco-Canandé BirdScape, which encompasses the 3,211-acre Río Canandé Reserve, owned and managed by Fundación Jocotoco.

The Choco-Canandé BirdScape includes a matrix of different land uses such as cacao plantations, oil palm plantations, monocultures (e.g., rice, pepper, plantain, cassava, etc.), pastures, abandoned land, and patches of primary forest. Even though the abandoned land is slowly undergoing a process of natural regeneration, often, this process benefits from reforestation with native trees. Most people living in the area arrived nearly 40 years ago migrating from other provinces. Hence, their agricultural practices and grazing techniques are poorly matched for the local conditions. This exacerbates the impact of agricultural practices or promotes access to local invasive industries (e.g., palm oil). The Esmeraldas province, where the Ecuadorian Chocó is located, is one of the poorest provinces in the country.

Here we aim to turn existing monocultures, pastures and abandoned land into silvopastures and agroforestry systems in eight communities. By introducing trees in pastures, farmers will provide shade and diet supplements to the cattle while protecting the soil from erosion and providing additional habitat and corridors to neotropical

migratory birds. By adding trees to their existing monocultures, farmers will generate extra revenues which have the potential to prevent further deforestation.

Threats: Forests in Ecuador, especially in the Chocó, are rapidly disappearing due to local timber extraction and agricultural expansion (mostly oil palm). Land use change is an on-going process accelerated by poverty and the lack of alternative income opportunities for the communities. From 2001 to 2017, the Chocó lost 883,352 acres of forests. This area is likely to keep increasing given the construction of new roads and bridges to cross rivers that currently can only be crossed by boat.

Birds: Species that will benefit include Canada Warbler, Olive-sided Flycatcher, Blackburnian Warbler, Cerulean Warbler, Black-and-white Warbler, Swainson's Thrush, Summer Tanager, Western Wood-Pewee, Southern Rough-winged Swallow, Acadian Flycatcher, and Broad-winged hawk.

Previous Southern Wings Successes: We initiated work with the APECAP coffee growers and plant 10,000 native trees on 160 coffee plantations to restore migratory bird habitat. We also implemented a migratory bird monitoring program with more than 40 APECAP members. Currently 15 members are performing monthly bird monitoring at their coffee farms. In addition, funding supported Fundación Jocotoco in the reforestation of 42 acres with 9,150 native trees in the Tapichalaca reserve.

Project goal: The goal of this project is to slow the rate of deforestation and work with landowners to improve land use practices and create better habitat connectivity in the buffer zones of existing protected areas in two BirdScapes in Ecuador.

Project Activities:
In the Chocó-Canandé BirdScape, we will:

- socialize and introduce the project through workshops with community members,
- identify key areas for reforestation in and around the Río Canandé and another protected area called the Tesoro Escondido Reserve. Our goal is to identify at least 8 communities and establish a nursery in each one,
- establish eight nurseries to produce a total of 30,000+ seedlings, and
- conduct reforestation of abandoned pastures, common areas, and cacao monocultures.

In southern Ecuador, at Tapichalaca Reserve and its buffer zone, we will:

- map APECAP coffee farms that have remaining forest patches to better inform the development of the BirdScape,
- work with APECAP community members to establish a conservation agreement for the long-term commitment to migratory bird conservation,
- maintain the 42-acre reforestation plot in Tapichalaca Reserve, and
- improve bird monitoring capacity in the buffer zone, to measure effectiveness of our project in creating high quality migratory bird habitat.

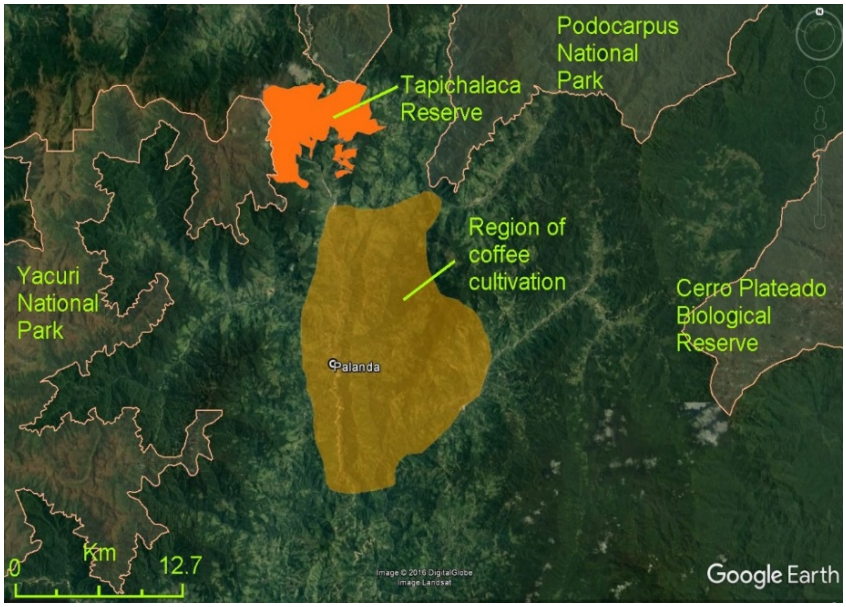
Budget: The total budget request is $68,100. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Matching Funds: ABC and Fundación Jocotoco have secured multiple grants for work in Canandé, including funding from Synchronicity Earth and private donors. Fundación Jocotoco and local farmers will provide in-kind investment into this project including providing the tools, land, expertise, and workforce to plant tree seedlings.

Maps:

Location of project area in NW Ecuador, Esmeraldas Province.

In southern Ecuador:



Improving Migratory Bird Habitat on Coffee Farms in Colombia

Partners: Coffee Producer Ecological Foundation (FEC), National Institute for Coffee Research (Cenicafé), Vivo Cuenca, and American Bird Conservancy (ABC)

States that have participated to date: Missouri and Indiana.

Overview: Colombia is an integral part of the lifecycle of more than 170 migratory species. ABC has been working in Colombia for more than 15 years to support the creation and management of bird reserves and ecological easements; develop and promote bird tourism opportunities; restore degraded lands; and promote bird-friendly agriculture. ABC has identified BirdScapes in Colombia. BirdScapes are large landscapes targeted for conservation action for migratory birds of conservation concern. One of these BirdScapes is located in the Central Andes, called the Cauca BirdScape, and encompasses much of the Caldas Department, one of the highest coffee producing regions in the country. Approximately 216,000 hectares (of the department's 788,800 hectares) is used to grow coffee.

In Caldas, Cenicafé and the FEC, together with local NGOs, governments, and international agencies, have achieved success in restoring watersheds, implementing best management practices for coffee growing and processing, and conducting outreach to involve the communities in conservation. In this project, we aim to build off that success and expand into new parts of this BirdScape.

Threats: The Colombian Andes have some of the highest rates of deforestation in Latin America; a significant amount of this loss is due to agriculture. In Colombia, it is estimated that 87% of neotropical migratory birds occur in agroecosystems and more than 70 species have been registered in coffee systems. It is imperative that we target these landscapes in our migratory bird conservation strategy.

Birds: Seventy-four migrant bird species have been registered in Caldas, including Golden-winged, Cerulean, Canada, Black-and-White, Tennessee, Blackburnian, Yellow and Blackpoll Warblers; Broad-winged Hawk; Yellow-billed Cuckoo; Acadian and Olive-sided Flycatchers; Eastern Wood Pewee; Summer Tanager; Rose-breasted Grosbeak; Northern Waterthrush; Spotted Sandpiper; Red-eyed Vireo; and Swainson's Thrush.

Project goals: The project goal is to improve habitat quality and connectivity for migratory birds in the coffee growing area of the Caldas department. One of the ways we will advance this goal is through education and outreach, specifically with farmers, regarding bird friendly production practices that are better for the long-term health of the local watersheds, plus have the potential for improving the financial sustainability of their business.

Previous Southern Wings Success: Previously with Southern Wings funding, ABC worked in the Eastern Andes, specifically the Cerulean Warbler Corridor. Here ABC and ProAves engaged cacao and coffee producers in the buffer zones of two ProAves reserves, Cerulean Warbler and Pauxi Pauxi. Southern Wings funds contributed to the creation of this habitat corridor through the planting of more than 500,000 saplings on 2,835 acres across 200 private farms. A total of 18 ecological easements were also

established by ProAves, as a measure to reduce deforestation. More than 5,000 people throughout the corridor received information about birds and biodiversity through radio programs, International Migratory Bird Day events and activities, training workshops on reforestation and sustainable coffee, and through the distribution of education materials.

Project Activities: ABC is focusing on the Central Andes in Colombia and with our partners will do the following:

1. Establish two nurseries and plant 100,000 native trees in riparian zones (to protect important water sources), for living fences, in shade coffee systems and pasturelands (silvipasture), and in other strategic areas (mini-corridors) to increase forest coverage with native tree species.

2. Gather socio-economic information (e.g., coffee production data, market factors that impact yields) from producers in the Río Claro watershed to expand the project into this region.

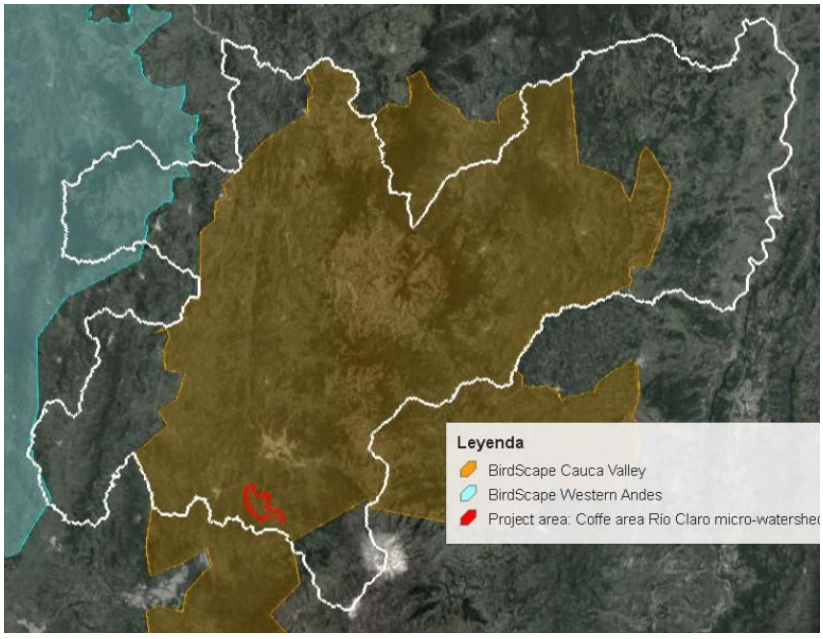
3. Facilitate at least 15 workshops to increase awareness of water contamination from pesticides and fertilizers, the impact of forest loss on the watershed and longterm availability of water, the importance of birds in the ecosystem, and sustainable production practices.

4. Begin implementation of sustainable production practices on at least 500 ha in Río Claro.

Budget: The total budget request is $157,125. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Matching Funds: Cenicafe and FEC have available matching funds for related activities in the Río Claro micro-watershed and other areas in the Caldas coffee zone. Local communities provide in-kind match by taking care of nurseries and planting trees.

Map: Cauca BirdScape (in brown); Rio Claro project area (in red); Caldas department (white polygon).



Protection of Migratory Bird Habitat in the Northern Venezuelan Coastal Mountain BirdScape

Partners: Provita and American Bird Conservancy (ABC)

States that have participated to date: Tennessee has supported Golden-winged Warbler searches in the region.

Overview: The focal area of our project is a corridor of privately-owned farms between two national parks in northern Venezuela, Henri Pettier and Macarao National Parks, both of which are recognized as crucial transitory or winter breeding habitat for more than 70 species of migratory birds, Olive-sided Flycatcher, Cerulean Warbler, Northern Waterthrush, Blackpoll, Connecticut Warbler, and Tennessee Warbler. This region also supports threatened resident bird species such as the Red Siskin. ABC created its first BirdScape here, called the Northern Venezuelan Coastal Mountain BirdScape, with the goal of protecting and restoring key stopover and wintering migratory bird habitat.

In this region, we are first focusing on the Piedra de Cachimbo community, and so far we have been successful in planting more than 20,000 native trees and coffee bushes (shade grown varieties) to convert nearly 500 acres (200 ha) of sun crop coffee to shade grown coffee. Already, we have a growing contact list of close to 50 farmers who are eager to participate, and funding is needed over the next two years so that we can convert an additional 500 acres of plantations from sun to shade, as well as work to restore tree cover across 150 acres of deforested lands. Funding is also needed to conduct capacity building workshops for community members on the benefits of shade grown coffee and more sustainable methods of production (e.g., more organic fertilizer).

Threats: Deforestation is very prevalent in northern Venezuela, most commonly to clear land for the production of coffee grown in the full sun. In 2006 shade coffee plantations ceased to be economically viable in Venezuela, due to accelerating inflation and a regulated coffee price by the government that did not keep pace. As a result, coffee, as it had been traditionally grown and sold, was no longer a viable source of income for farmers. To compensate, farmers have turned to unregulated sun crops, which can yield a higher volume. Field visits have confirmed that coffee plantations, many over 100 years old, have been cut down to make way for sun coffee. Continued inflation has further escalated pressure on farmers to clear remaining shade coffee plantations, increasing the threat of habitat loss.

At the same time the shade coffee crops are being cutting down, demand has remained strong; roasters are eager to buy any and all coffee that is available. Fortunately, coffee that can be classified as a "specialty" product, which includes organic and Bird Friendly® certification (BF), is exempt from price control and can be exported, opening the door for conservation measures.

Interestingly, farmers in the region have already been using organic production techniques, as they lack capital for the chemical inputs required by more intensive farming. Therefore, while eco-friendly farming and certification may be reaching saturation in some areas of Latin America as conservation tools, they are perfectly suited to the unique circumstances of present-day Venezuela.

Birds: More than 70 migratory bird species have been found in the Venezuelan Northern Coast. Of special interest are the Golden-winged Warbler, Olive-sided Flycatcher, and Tennessee Warbler. Other migratory bird species found in Piedra de Cachimbo include Black-and-white Warbler, Northern Waterthrush, Summer Tanager, Cerulean Warbler, Blackburnian Warbler, American Redstar, Blackpoll Warbler, and Broad-winged hawk.

Project goals: Thel goal of this project is to slow the rate of deforestation in northern Venezuela and restore degraded lands by reintroducing agroforestry systems and encouraging native tree planting. Over the next year we aim to restore 200 acres of land in the BirdScape and create a buffer zone between the remaining primary forest and sun-crop agriculture. This project would also contribute to creating a corridor between the Henri Pittier and Macarao National Parks.

Project Activities: ABC and Provita will integrate five new farmers to our reforestation program. Provita will help farmers establish at least one tree nursery and provide technical guidance in establishing shade-grown crops in previously deforested lands and improving farming practices. These agroforestry systems would include coffee, banana or avocado trees as well as a mix of native trees. This reforestation will increase the available tree cover for migratory birds that use this area as wintering ground or as a stopover before crossing the Caribbean.

Provita will conduct two workshops for farmers on the topics of Bird-Friendly farming practices and how to advance toward Bird-Friendly coffee certification, establishing a tree nursery and reforestation practices, and the BirdScape concept and the value of birds in the ecosystem.

All these activities will be supported by technical advice and field visits. Provita's field personnel has the technical expertise and networks to access farmers in the area. Provita will also continue monitoring of migratory birds using protocols established by SELVA, an ABC partner in Colombia. We will continue to monitor for GWWA and CERW, two species of priority conservation concern.

Budget: The total budget request is $25,400. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

Matching Funds: American Bird Conservancy and Provita have secured funding from NMBCA, Smithsonian Institute, IUCN, and the British Embassy in Caracas. Local farmers will provide in-kind investment into this project including providing the land, tools, and workforce to plant tree seedlings.

Map – Northern Venezuela Coastal Mountains BirdScape including the location of Piedra de Cachimbo (yellow tack) west of Caracas, Venezuela.

Conserving Bicknell's Thrush Habitat in the Dominican Republic

Partners: American Bird Conservancy (ABC), SOH Conservation (SOH), Fundación Loma Quita Espuela (FLQE)

States that have participated to date: NEAFWA

Birds: Bicknell's Thrush, Prairie Warbler, Black-throated Blue Warbler, Cape May Warbler, Pine Warbler

Overview: Bicknell's Thrush (*Catharus bicknelli*) is a range-restricted passerine wintering in the Greater Antilles, with the great majority of the population occurring in the Dominican Republic (DR). Their preferred habitat in the DR is mesic to wet broadleaf montane forests. Unfortunately, montane forests have been identified as one of the most endangered habitats on Hispaniola with very little native forest cover left. The global population size is estimated to be between 95,000 and 126,000 individuals, and is globally classified as Vulnerable by IUCN.

ABC is a participating partner in the International Bicknell's Thrush Conservation Group (IBTCG). The IBTCG has a goal of increasing the population of Bicknell's Thrush (BITH) by 25% by 2060, stopping all loss of wet broadleaf forest, and restoring at least 50% of the habitat lost between 2010 and 2015 to be useable by BITH in the next 30 years. The use of regenerating secondary forests (22% of occupied sites) by BITH in the DR may indicate winter habitat flexibility, which is encouraging. To help advance these goals in the DR, ABC is partnering with SOH, FLQE, and the Dominican Ministry of the Environment (MARENA) to target strategic conservation action in two key regions of the Dominican Republic: the Septentrional and Bahuroco BirdScapes.

ABC launched our BirdScape Initiative in 2017. We define BirdScapes as being the highest priority landscapes for migratory bird habitat protection and restoration. They typically cover 150,000 to 2.5 million acres; large enough to have an impact on population size, but small enough to facilitate measurable results. Each one is unique, shaped by local and regional conditions. But some elements are common to nearly all BirdScapes, such as having "working landscapes" within their boundaries and the need to engage communities, land managers, and landowners in habitat protection, restoration and the implementation of improved production practices.

The Septentrional BirdScape is located in northern DR, and encompasses the Loma Quita Espuela Scientific Reserve (LQESR) (9,247 ha), Guaconejo Scientific Reserve (2,329 ha), La Salcedoa Scientific Reserve (4,120 ha) and Monumento Natural Pico Diego de Ocampo (2,557 ha). It also includes key coffee and cacao growing regions for the country. The Bahoruco BirdScape is located in southwestern DR, and encompasses Sierra de Bahoruco National Park (SBNP) (51,200 Ha), Loma Charco Azul Biological Reserve (LCABR) (17,411 Ha) and Miguel D. Fuerte Natural Monument (MDFNM) (3,350 Ha). Both of these BirdScapes are important for Bicknell's Thrush based on habitat models developed by Vermont Center for Ecostudies (VCE).

Our main strategy in these BirdScapes is to build the capacity of local conservation groups and MARENA to better manage and protect the protected areas mentioned above. We are also beginning to engage landowners and communities in habitat improvement for BITH and other migratory birds in the buffer zones of these protected areas. We look to improve land use practices through promotion of sustainable agriculture and agroforestry, which can provide benefits for producers as well as migratory birds and reduce the advancement of agricultural frontier Interestingly, BITH have shown sexual segregation on the wintering grounds with females being found in greater ratios to males in lower, drier conditions, found in the Septentrional BirdScape. Maintaining habitat here could be criticial to supporting female body condition necessary for reproductive success back on the breeding grounds. ABC has been working in the DR to advance BITH habitat conservation since 2006; much of our work and success has been due to the support of the NMBCA program of the U.S. Fish and Wildlife Service. Some of the highlights include helping establish LCABR as a national protected area; improving management of SBNP and LCABR and demonstrably decreasing illegal activity by increasing park personnel, adding or improving six park guard stations across four reserves, and providing vehicles, fuel, and other equipment necessary for protected area patrolling and fire control; and facilitating the reforestation and restoration of over 75 ha.

Threats: The main threat to BITH is habitat loss and habitat degradation. Illegal logging, clearing for agriculture, and fire are all major factors. The greatest obstacles to overcoming these threats include limited funding and staff to adequately manage protected areas, and socio-economic conditions that perpetuate illegal resource extraction, as few livelihood opportunities exist in many places. For example, in the once bountiful coffee-growing region around MDFNM, farms have been devastated by the “roya” fungus, which causes coffee rust. Without the income from their crops, farmers are changing to production activities that will negatively impact bird habitat. This is one of the threats we aim to address in this phase of the project. Another significant obstacle is that the environmental ministry, MARENA, continues to be one of the least funded ministries in the government. As such, limited resources are available to protected area management which makes BITH habitat extremely vulnerable.

Project goal: Our project seeks to support the long-term goals of the IBTCG in and around at least four protected areas in the Septentrional and Bahoruco BirdScapes: LQESR, SBNP, LCABR, and MDFNM. Our long-term goal is to stop all loss of key wintering habitat, and to restore at least 50% of the habitat lost between 2010 and 2015 in these protected areas to be useable by BITH in the next 30 years. We will do this by focusing on habitat protection, habitat restoration, and engaging landowners, farmers, and other local stakeholder groups in conservation planning and activities.

Activities: ABC will continue to advance conservation in the Septentrional and Bahoruco BirdScapes. In particular, we are seeking funding for the following activities.

1. Support the acquisition of 300 ha to expand the Miguel Domingo Fuerte National Monument. The initial acquisition of 7.5 ha is underway. Additional land tenure research and title establishment are needed to advance property acquisition.

2. Establish two tree nurseries (one in each BirdScape) to produce at least 42,000 native trees and coffee and cacao plants for habitat restoration and reforest at least 75 ha in core BITH wintering habitat areas in each BirdScape (total of 150 ha).

3. Conduct at least five workshops for civil society organizations, coffee and cacao farmers, and other community stakeholders. Workshops will focus on sustainable production methods (organic and shade-grown principles), and the importance of migratory bird conservation and natural resource protection.

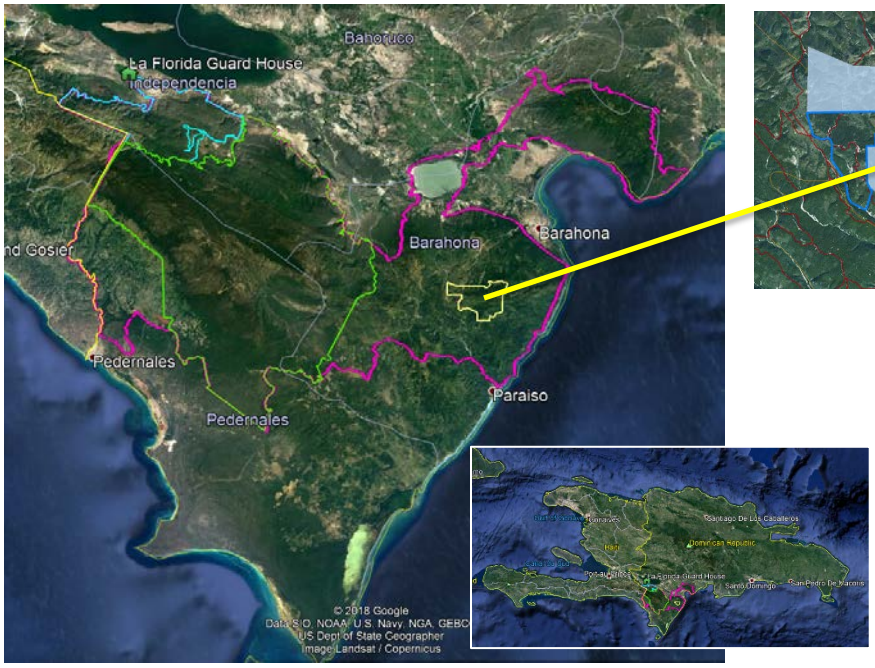
4. Improve the management, maintenance, protection, and law enforcement capacity of SBNP, LCABR, MDFNM, and LQESR by ensuring sufficient guard and manager capacity.

Budget: The total budget request is $108,500. Smaller amounts of money can support specific activities. For more detailed budget information please contact Deb Hahn (dhahn@fishwildlife.org).

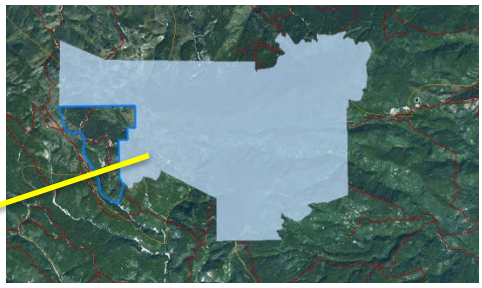
Matching funds: Matching funds will be provided by ABC, SOH, FLQE and MARENA. Over $200,000 in matching funds have been obtained.

Maps:

Bahoruco BirdScape

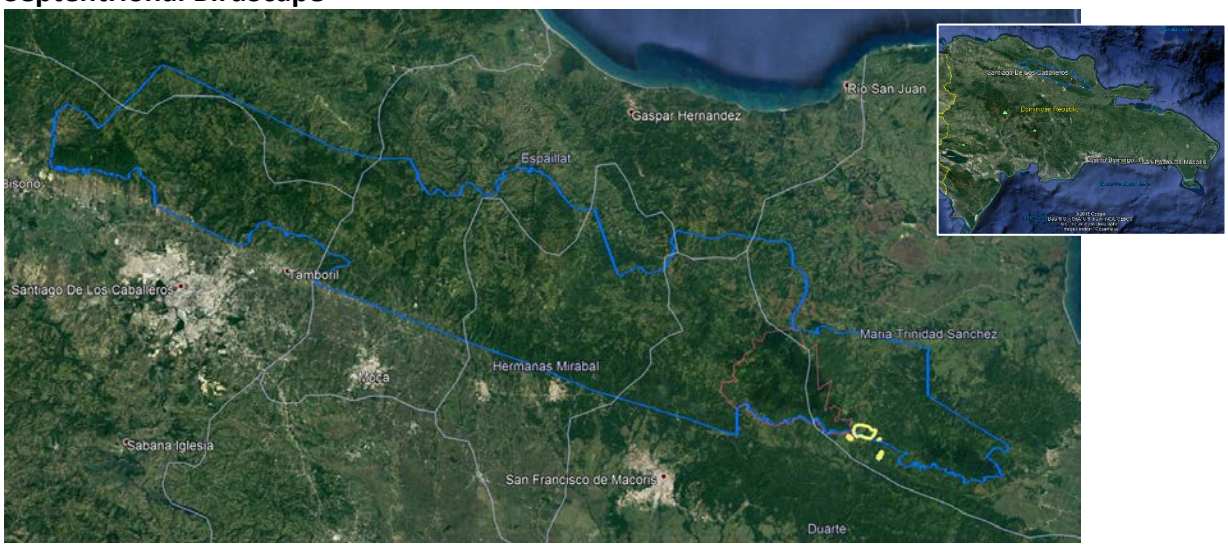


Location of new private reserve outside MDFNM



Above: Bahoruco BirdScape in pink outline depicts the BirdScape boundary, encompassing the Sierra de Bahoruco National Park (in green), the Loma Charco Azul Biologicial Reserve (in blue), and the Miguel D. Fuerte Natural Monument (in yellow).

Septentrional BirdScape



Above: the Septentrional BirdScape (in blue), encompassing the Loma Quita Espuela Scientific Reserve (in red) and potential sites for reforestation (in yellow) in this proposal.

Conserving Wetlands in the Upper Pacific Coast of Mexico

Partners: Ducks Unlimited de México (DUMAC) and the University of Guadalajara

States that have participated to date: None

Overview: The mainland west coast of Mexico contains several important areas for waterfowl (Figure 1). These habitats consist of tidal estuaries connected with brackish water marshes and inland fresh water wetlands and reservoirs. Fresh water streams and irrigation water empty into tidal lagoons and create flats, tidal pools, mangrove swamps and emergent vegetation dominated by cattail, bulrush, wigeongrass, muskgrass and algae.

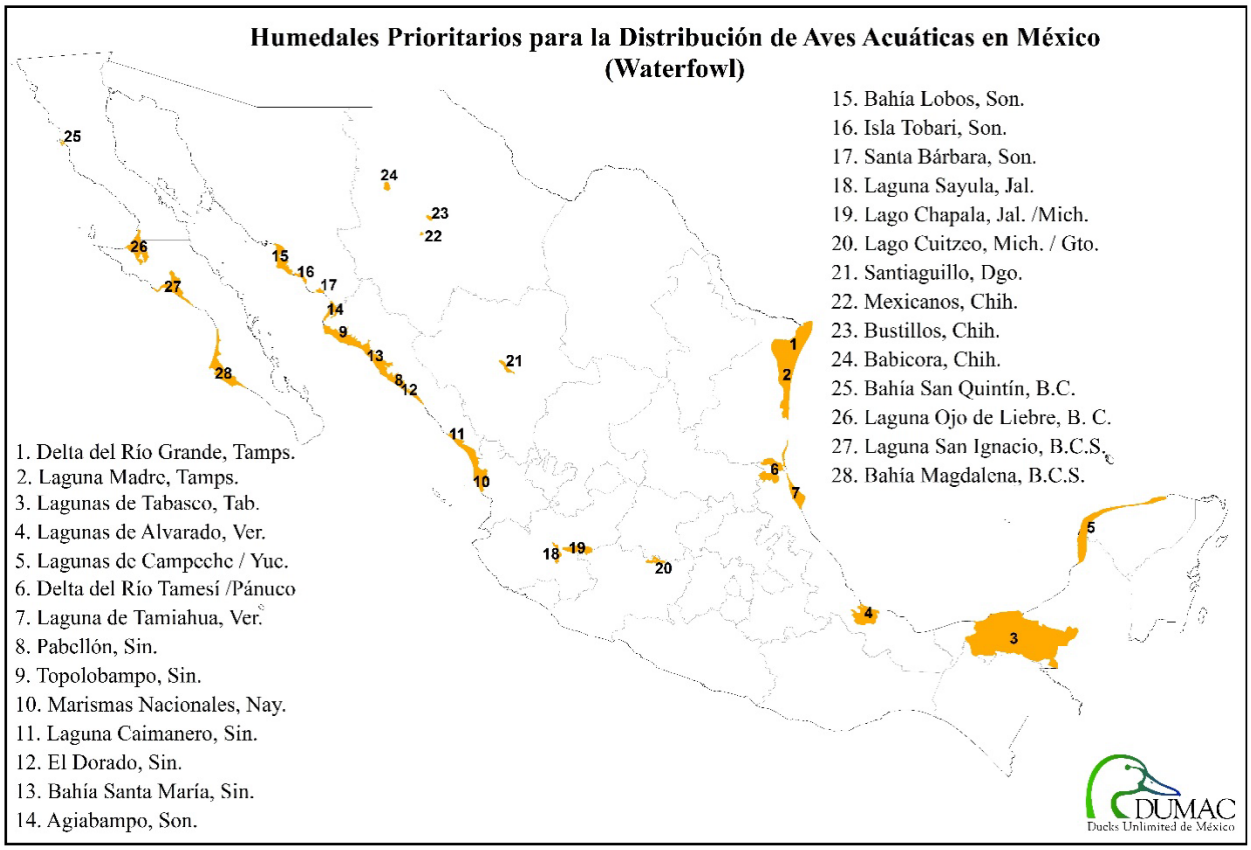


Figure 1. Priority Wetlands for the distribution of aquatic birds (Waterfowl) in Mexico.

The coastal and interior wetlands in the state of Sinaloa support 22.5% of the migratory waterfowl that winter in Mexico. The states of Sonora and Nayarit held 6.1% and 4.5%, respectively. Sonora encompasses 1,200 km and more than 190,000 ha of coastal wetlands; Sinaloa 656 km with 453,200 ha of wetlands, and, Nayarit has more than 268 km where Marismas Nacionales encompass 200,000 ha.

Adjacent to the west coast lies 1.2 million ha of irrigated agriculture in the state of Sinaloa (including Los Mochis, Guasave, Guamuchil and the Culiacan agricultural valleys) and approximately 456,000 ha in the state of Sonora (including the Yaqui and Mayo valleys). These upland areas were converted to intensive agriculture during the last 30 to 40 years resulting in major changes to the wetlands. They have become

less saline and subjected to discharges of agricultural pesticides and fertilizers along the in-shore areas. As a result they are more densely covered by cattails that thrive under the new environmental conditions. The cattails cause major changes to the structure of the habitat and the use of the wetlands by waterfowl and other water birds. For some species the habitat is much degraded while, for others, it has been greatly enhanced. The cattails probably also provide an important positive function by serving as biological filters of the heavy nutrient loads from agriculture and urban run-off.

Threats: The most significant new threat along the 2,124 km of littoral habitat that exists in the three states is the unregulated growth of the shrimp-farming industry. In Sinaloa for example, 227 shrimp farms have modified 21,357 ha of intertidal and mangrove swamps. An additional 200,000 ha are target for shrimp farm development (Dir. Pesca, Gob. del Estado de Sinaloa 1999). We have observed considerable habitat loss following the construction of 11,000 ha of shrimp farms in the Chiricahueto area and on Pabellon Bay. The shrimp farm industry has not grown as much in Sonora (5,252 ha) and Nayarit (1,217 ha) but it is clearly a major threat for the future as communities and speculators attempt to develop economic opportunities in these areas that were once considered to be wastelands (Carrera and de la Fuente 1995). The damage by the shrimp industry is caused by the direct destruction of mangrove swamp habitat and, more importantly, by the major disruption of the natural hydrological patterns that sustain the whole ecosystem. The hydrological modifications affect both the salinity of the wetlands and the availability of water needed to simply sustain them.

Much of the irrigated farmland supported rice production after it was developed. Rice is very beneficial to waterfowl. However, between 1981 and 2004, the former 65,000 ha of rice production in the state of Sinaloa was eliminated. Agricultural subsidies to producers in wealthier countries have eliminated the economic viability of rice production in Mexico. The loss of rice acreage is correlated with a drop in use of the region by northern pintail from 880,000 birds in 1989, to 228,000 in 1990 and to just a few thousand since 2000. The economics of production of several other crops has also resulted in them being eliminated or severely reduced in acreage. As a result many acres of farmland now produce crops that are only for domestic uses. Nevertheless, the irrigation systems are still viable, so fresh water and agricultural chemicals continue to be introduced to the coastal marshes.

Wetlands along the Pacific coastal zone are suffering threats not only from the shrimp farm industry and agricultural activities, but also from road infrastructure that modifies the natural hydrology, affecting the hydroperiod of the coastal wetlands, which has caused the destruction of important coastal areas, resulting in a reduction of habitat available for migratory waterfowl. Due to this situation, it is essential that in addition to conservation projects aimed at maintaining the values and functions of these habitats, we consider the restoration or enhancement of those intertidal zones whose hydrology has been modified by road infrastructure. These restoration projects will help us recover natural hydrology patterns to motivate the creation of high quality habitats that can be used by migratory and resident waterfowl species.

Proposed Strategies: We propose to develop a series of restoration projects to restore the natural hydrology of areas that have been affected by the construction of roads that modify the flow of water.

There are roads crossing important coastal wetland areas whose infrastructure needs to be modified to allow the recovery of the natural flow that used to run through these areas- the natural flows served to create important areas for use by migratory waterfowl and resident species. Working to modify road infrastructure to improve water flows will be part of our conservation approach, by investing funds on such works, as they become available.

We will look into the possibility of developing a series of Moist Soil Management Units on agricultural fields with rice, to produce a double benefit. The first will be the benefit of the first crop harvest for the local farmers and the second will be growth for wildlife. The establishment of alternative habitats through the creation or enhancement of these natural depressions that used to be part of the intertidal coastal area that were turned into AG areas, adjacent to the natural coastal lagoons that nowadays are out of use, could serve as traditional management units with the potential for the creation of high quality habitat for used by migratory and resident waterfowl species. These created habitats serve to replace those natural habitats damaged by the expansion of agriculture and shrimp farms.

These natural depressions represent an important alternative habitat for migratory and resident waterfowl species; especially since there's already significant infrastructure in these areas, with drainage channels that can be used to flood areas. Thus, with minimal infrastructure investments, these projects could provide significant benefits to many bird species.

Project Location: Moroncarit Lagoon area in the state of Sonora (Figure 2).

Birds: This is an area that has been recognized for its importance for the distribution of migratory and resident waterfowl species. This lagoon complex is included in the Mexican Plan for the Conservation, Management and Rational Use of Waterfowl and their Habitats, the Mexican Plan for the Conservation of Shorebirds and their Habitats and is also designated as an IBA (Important Bird Area) of Mexico. At an international level, the area is included in the list of new updated NAWMP sites within the Pacific Coast region. The area is also designated as a Ramsar site, where "each year over 50,000 individuals of shorebirds visit the marshes, mud flats and mangroves of the Moroncarit lagoon, and it is also an important wintering site for 47,000 ducks, geese and other waterfowl." The lagoon area represents an historical wintering habitat of migratory waterfowl species such as the blue-winged teal (*Anas discors*), pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), lesser scaup (*Aythya affinis*), and american wigeon (*Anas americana*). It also qualifies as a Regional Site within the Western Hemispheric Shorebird Reserve Network for the large numbers of shorebirds that winter there each year, such as *Numenius americanus, Himantopus mexicanus, Calidris alba, Calidris mauri, Limnodromus griseus, Limosa fedoa, Numenius phaeopus, Haematopus palliatus* and *Arenaria interpres.*

Project Activities proposed for 2019: The main objective is to enhance 61 ha (150.73 acres) of wetland adjacent to the Moroncarit lagoon.

5. Design a wetland management plan and construct a series of culverts along a road, which will allow the diversion of water from a drainage channel, to flood 150.73 acres of an intertidal area that will help enhance it for the use of migratory birds.

6. Sign a long-term conservation agreement with the local Ejido (communal landowner) to guarantee the conservation of the area.

These projects are feasible especially along the coast of the states of Sonora, Sinaloa and Nayarit, where the impact from shrimp farms along the coastal wetland ecosystem has been significant. These restoration projects would mitigate habitat loss and replace it with compensatory management units for the use of migratory and resident waterfowl species.

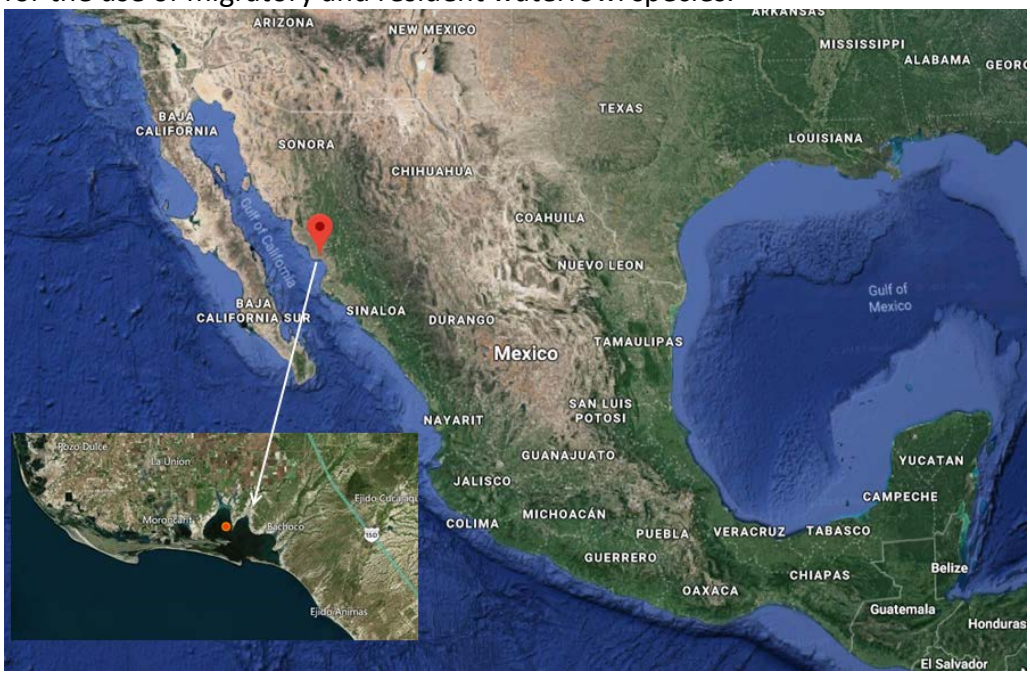


Figure 2. General location of the Moroncarit Lagoon complex in the state of Sonora, Mexico.

BUDGET: SWP funds can support specific activities for 2019 with 27,500 to 5,000 per task:

Tasks	Total Cost	SWP Request	DUMAC	University of Guadalajara
Restoration of the intertidal flat area at Moroncarit Lagoon	55,715	27,500	28,215	
Establishment of MSMU in Sonora	49,180	17,500	31,680	
Implement the "Teaching the Teachers" environmental education program	16,490	5,000	6,490	5,000
TOTAL	**121,385**	**50,000**	**66,385**	**5,000**
Southern Wings Request Total		**50,000**		
MATCH				
DUMAC			66,385	
University of Guadalajara				5,000
TOTAL MATCH				**71,385**

*budget by category are estimates, adjustments may be made by category to maximize efficiency and progress on over-all project goals.