APPALACHIAN MOUNTAINS JOINT VENTURE

Dear AMJV Partners,

We are pleased to present this publication on the exciting work that Appalachian Mountains Joint Venture (AMJV) partners have and are conducting to advance bird conservation for Appalachian birds during their nonbreeding season.

The AMJV mission is to restore and sustain viable populations of native birds and habitats in the Appalachian Mountains region through effective, collaborative partnerships. While many of our birds are benefiting from protection and habitat improvements on the breeding grounds, habitat loss and degradation in Central and South America is still rapidly occurring. Neotropical migratory songbirds make up the majority of priority species within the AMJV, so our partners are dedicated to understanding year-round threats and working with local communities on both the breeding and wintering grounds to achieve our mission.

Within this publication, partners have detailed research conducted to understand stopover behavior, migratory pathways, and threats, as well as conservation actions taken to protect and improve key habitats and support local partners with similar goals. From fitting geolocators to Golden-winged Warblers in Nicaragua and Pennsylvania, to researching the importance of shade coffee plantations for migratory songbirds, to creating conservation easement programs in Colombia, our diverse partnership is fully committed to ensuring that the habitat needs of our migratory birds are being met throughout their annual life cycle.

We are excited to share these stories to both highlight partners' laudable efforts and to demonstrate that investing in "wintering grounds" bird conservation efforts may not be as difficult as it first sounds. Many of the projects include a section on "Opportunities for Involvement", which describes existing needs and offers ways for new partners to participate in upcoming efforts. From supplying Rite-in-the-Rain notebooks for local field biologists, to volunteering for a week or two to plant trees or recovering birds tagged with geolocators, there are many opportunities for increased involvement.

We hope you enjoy and share these stories. We look forward to celebrating future efforts and keeping you informed about what your friends and neighbors are up to in the winter months!

Becky Keller

Science Coordinator

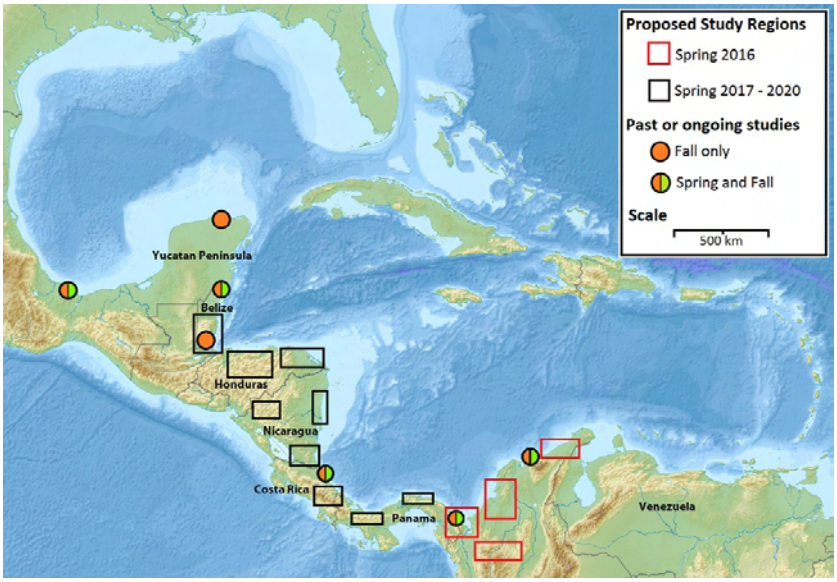
Appalachian Mountains Joint Venture

Multiple Priority Species Projects

Neotropical Flyways Project - Identifying Routes and Stopover Sites of Neotropical Migrants

Wood Thrush; Bill Hubick.

More than one billion landbirds migrate between North America and the Neotropics each year. For these long-distance travelers, migration is the riskiest period of the full annual cycle. Despite this massive movement of birds, the routes and strategies that migratory landbirds adopt within the Neotropics are almost completely unknown. For many species, the Caribbean Sea represents a significant ecological barrier to their migration. The stopover sites they use to prepare for and recover from this and other over-water crossings likely influence the success of migration and, through carryover effects, subsequent productivity and survival. Only by identifying stopover sites and habitats where birds lay down the energy reserves to fuel long-distance flights over the Caribbean Sea and Gulf of Mexico, can we understand and meet the needs of migratory birds at all stages of their life cycle. The Neotropical Flyways project will identify critical stopover regions and habitats along the Caribbean slope of Central America and the north coast of South America through intensive surveys, constant-effort mist netting, and cutting-edge radio-tracking technology. This project is focusing on species traveling the greatest distance to winter in South America, which include AMJV priority species such as Cerulean and Golden-winged Warblers, Black-billed Cuckoo, and Chimney Swift, as well as other representative eastern forest birds such as Eastern Wood-Pewee, Swainson's Thrush, Veery, and Scarlet Tanager. Professional biologists from eight countries will participate in training and field studies, contributing significantly to building regional capacity for avian research and conservation.



Past, ongoing, and proposed study sites for this research project; SELVA: Research for Conservation in the Neotropics.

Opportunities for Involvement: Salary support (through SELVA) to in-country biologists for conducting surveys and operating migration stopover stations; funding or sponsorship to expand network of Motus antennas; collaboration with existing migration-monitoring or banding operations within Central or South America.

Partners: Cornell Lab of Ornithology; SELVA: Research for Conservation in the Neotropics (Colombia); Environment and Climate Change Canada; Motus Wildlife Systems.

Contact: Ken Rosenberg (kvr2@cornell.edu), Nick Bayly (nick.bayly@selva.org.co).

AMJV Partnership Efforts on Wintering Grounds

First Ever Conservation Easement in Colombia Creates Cerulean Warbler Corridor

This habitat corridor is providing critical winter habitat for the Cerulean Warbler; ProAves.

The Colombian NGO Fundación ProAves owns and manages a network of 18 reserves totaling more than 70,000 acres throughout the country. Most of these protect habitat for at least one AMJV priority species, including the Chestnut-capped Piha Reserve, Yellow-eared Parrot Reserve, El Dorado Reserve, El Paujil Reserve, Mirabilis-Swarovski Reserve, and El Mirador Reserve. In particular, the Cerulean Warbler Corridor (including Pauxi Pauxi Reserve, Cerulean Warbler Reserve, and Niceforo's Wren Reserve) is managed for the benefit of Golden-winged Warblers, Louisiana Waterthrush, Canada Warblers, and Cerulean Warblers. ProAves, in partnership with American Bird Conservancy, developed the first ever conservation easement program in Colombia to extend the reach of conservation beyond these reserves to establish the corridor. Management actions include the promotion and incentivizing of shade coffee and bird-friendly practices, native tree reforestation, and patrols in the three reserves included in the corridor.

Partners: Fundación ProAves, American Bird Conservancy, Southern Wings, U.S. Fish and Wildlife Service.

Contact: Daniel Lebbin (dlebbin@abcbirds.org).

Science Uncovers Important Landscape for Migratory Birds in Honduras' Tropical Dry Forest

Recent surveys by Indiana University of Pennsylvania, Universidad Nacional Autónoma de Honduras, and Asociación de Investigación para el Desarrollo Ecológico y Socioeconómico (ASIDE) uncovered that the dry forests of the Agalta Valley in Honduras is likely an important landscape for migratory birds and sustaining endemic and endangered biodiversity. The Agalta Valley has at least nine plant species that are considered endemic or endangered, sustains a population of the only endemic bird in the country - the Honduran Emerald hummingbird - and new science documents at least 45 species of Neotropical migratory birds use the region for wintering grounds. The highest encounters in the Valley are Wood Thrush, Magnolia Warbler and Gray Catbird. Some of the other neotropical migrants recorded include Swainson's Thrush, Golden-winged Warbler, Louisiana Waterthrush, Hooded Warbler and others.

Further research into tropical dry forest remnants of Honduras and possibly Central America should take place to evaluate their relative importance to these migratory species during the wintering period. Though the region is rich in biodiversity, most of the suitable areas in the Agalta Valley are being cleared for cattle grazing and other agricultural purposes such as basic grains production. It is conservatively estimated that 10% of forest in the area is converted to pasture - a high rate of forest loss given the limited coverage of existing forest. Infrastructure projects, such as road improvements for the Agricultural Corridor Project pose additional threats, although they have also created the financial opportunity to fund additional research. Recent surveys are informing the need for

Honduran Emerald Hummingbird; Dorian Escoto.

immediate action to mitigate these development activities. Through close interactions with landowners and cattle producers, ASIDE is learning critical information, such as some landowners would rather sell their land for conservation purposes than participate in a Payment for Ecosystem Services (PES) program. Such information is helping ASIDE develop ideas for possible conservation strategies that could support and/or supplement a proposed PES program.

Opportunities for Involvement: Support ASIDE's conservation activities such as the maintenance of El Ciruelo Important Site for Wildlife - 86.6 hectare site designated to preserve Tropical Dry Forests and its biodiversity.

Partners: Asociación de Investigación para el Desarrollo Ecológico y Socioeconómico (ASIDE), American Bird Conservancy, Southern Wings, Indiana University of Pennsylvania (IUP), Universidad Nacional Autónoma de Honduras (UNAH).

Contact: Fabiola Rodríguez (f.rodriguez@iup.edu); Juan Francisco Vásquez (juanfranciscovasquez@hotmail.com); John Tschirky (jtschirky@abcbirds.org).

Conserving Non-breeding Habitat for Bicknell's Thrush and Other Species of Concern in the Dominican Republic

Hispaniola is one of three significant wintering or stopover habitat for dozens of Western Hemisphere migratory bird species, and millions of individual birds. The Caribbean forests of the Dominican Republic, in particular, provide wintering habitat for approximately 90% of the global population of Bicknell's Thrush (BITH). Alarmingly, across the country many of these forests are under threat from illegal logging and clearing for agriculture. The greatest obstacles to overcoming these threats are insufficient funds, trained staff, and community participation.

American Bird Conservancy staff and partners helping to protect the Sierra de Bahoruco National Park; John Tschirky.

AMJV Partnership Efforts on Wintering Grounds

Beginning in 2006, the American Bird Conservancy (ABC) and partners began assisting the Ministry of the Environment in protecting the besieged Sierra de Bahoruco National Park, a UNESCO World Heritage site and core BITH habitat, from illegal forest clearing. In response to the call to action from the International Bicknell's Thrush Conservation Group (IBTCG) in July 2010, ABC and partners expanded our on-the-ground conservation projects to additional core BITH habitat in the Dominican Republic. Currently, ABC and in-country partners are focusing on the following key BITH habitats: 1) Sierra de Bahoruco Mountain Range, specifically Sierra de Bahoruco National Park, Loma Charco Azul Biological Reserve, Miguel D. Fuerte Natural Monument; 2) Septentrional Mountain Range, specifically Loma Quita Espuela Scientific Reserve, Reserva Privada Zorzal; 3) Valle Nuevo National Park; and 4) Nalga de Maco National Park. These areas protect habitat for other migratory bird species such as the Louisiana Waterthrush, Prairie Warbler, Worm-eating Warbler and Ovenbird as well as habitat for the globally Endangered Bay-breasted Cuckoo.

Bicknell Thrush; Mike Parr.

Opportunities for Involvement: The Sociedad Ornitologica de las Hispaniola is seeking funding for habitat restoration, Bicknell's Thrush monitoring, and salary funds for a Field Supervisor to train guards.

Partners: Sociedad Ornitologica de la Hispaniola, Fundación Loma Quita Espuela, Dominican Republic Ministry of the Environment, American Bird Conservancy, U.S. Fish and Wildlife Service.

Contact: Andrew Rothman, (arothman@abcbirds.org).

Reforesting Corridor to Aid Neotropical Migrants in Nicaragua

A variety of partners are helping to support habitat restoration efforts around the El Jaguar Reserve in northern Nicaragua and in the proposed El Jaguar – Volcán de Yalí Corridor. The region houses an excellent Golden-winged Warbler wintering population as well as Wood Thrushes, Louisiana Waterthrushes, Golden-cheeked Warblers, and other high priority Neotropical migrants. All total, more than 25 Neotropical migrants winter in the area. Structured surveys are being established in the region and partners are working together to reforest 10,000 acres of land along a corridor connecting El Jaguar with Cerro de Yali, a protected area about 30 kilometers northwest of El Jaguar. Activities to reforest this corridor include creating four native tree nurseries in three communities at El Jaguar. During phase IV of the project, more than 55,000 trees were planted on 142 private properties. El Jaguar is also conducting sustainable agriculture workshops and promoting shade-grown coffee, reforesting waterways and along fence lines, and protecting remaining forest fragments.

Pine forest vista in the Volcan de Yali Corridor; Doug Gross.

AMJV Partnership Efforts on Wintering Grounds

(Left to right): Wood Thrush banding at El Jaguar Reserve by Georges Duriaux Chavarria, Golden-winged Warbler Trail Bridge, Coffee nursery; Doug Gross.

Opportunities for Involvement: Phase V of this project is dedicated to expanding the geographic impact of this work by engaging new partners in additional Nicaraguan Golden-winged Warbler focal areas. In particular the Peñas Blancas and Datanli-El Diablo have been targeted. Funding is necessary to maintain our Field Technician to continue to conduct outreach with landowners, manage relationships with tree nurseries, conduct education programs and audit reforestation and protection efforts on private lands. Additional support is needed for reforestation support, education programing, transport, fencing and monitoring in Peñas Blancas and El Jaguar.

Partners: Pennsylvania Game Commission, Association of Fish and Wildlife Agencies Southern Wings Project, American Bird Conservancy, Audubon North Carolina, Bridges to Communities, Indiana University of Pennsylvania.

Contact: Doug Gross (dogross@state.pa.us); Andrew Rothman (arothman@abcbirds.org).

Abra Patricia Reserve of Northern Peru a Global Hotspot for Bird Biodiversity

Abra Patricia-Alto Nieva Private Conservation Area and Conservation Concession (or “Abra Patricia Reserve”) is located in the Peruvian Yungas along the eastern slope of the Andes in northern Peru. It is among one of the world’s hotspots for bird biodiversity and these forests provide critical wintering habitat for AMJV priority species including the Cerulean and Canada Warbler. To protect this area from agricultural expansion and resource extraction, Ecosistemas Andinos (ECOAN) with support from American Bird Conservancy established Abra Patricia Reserve in 2005. This Reserve now protects more than 25,000 acres and is a crucial stopover site for migratory birds. ECOAN is now working in the buffer zones and in the adjoining Alto Mayo Protected Forest to plant native trees and create conservation concessions on private lands. Since 2006, ECOAN has planted more than 1,000,000 native trees and shade coffee plants throughout the region. The group is seeking support to continue the private lands reforestation and shade coffee program, and to maintain patrols on Abra Patricia Reserve. Other priority migrants benefiting from these activities include Blackburnian Warbler, Olive-sided Flycatcher, Swainson’s Thrush, and Summer Tanager.

AMJV Partnership Efforts on Wintering Grounds

Opportunities for Involvement: The planting of native shade trees and implementation of shade coffee production system in the buffer zone of Abra Patricia Reserve remains a top priority for ECOAN. Guard and reforestation coordinator salary, along with funds for tree nursery establishment, maintenance, and supplies are a top priority.

Partners: Ecosistemas Andinos (ECOAN), American Bird Conservancy, Conservation International- Peru, U.S. Fish and Wildlife Service.

Contact: Daniel Lebbin (dlebbin@abcbirds.org).

Abra Patricia Reserve; Daniel Lebbin.

Unique Transitional Ecosystem of Guatemala's Caribbean Coast Critical for Non-breeding and Stopover Habitat for more than 150 Species of Neotropical Migrants

The coastal Caribbean region of Guatemala lies between Belize and Honduras, in the province of Izabal. This region includes a number of 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. Exposed to moisture-laden Caribbean trade winds, the region supports a unique transitional ecosystem from the shoreline to wet rainforests and pine-oak forests on south-facing rain-shadow slopes. This unique combination of topographical and climatic conditions creates important stopover and wintering habitat for at least 153 species of Neotropical migrants. Here Wood Thrush, Kentucky Warbler, Worm-eating Warbler, Black-throated Green Warbler, Golden-winged Warbler, Louisiana Waterthrush and Painted Bunting are present in large numbers during the winter. Cerulean Warbler and Canada Warbler use the sites as important stop-over habitat. Together sites such as Tapon Creek Reserve, Sierra Caral Reserve, and Cerro San Gil Reserve total more than 9,000 acres. FUNDAECO, a Guatemalan organization, 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.

Cerulean Warbler; ProAves.

Opportunities for Involvement: A core concept within the next phase of our work is the development of Biocenters (BioCentros) which are properties that will act as training grounds for communities to learn about production methods of products that can be produced in a more environmentally sound way. These areas will have test pilot production areas where adjustments to production management can be studied, providing living classrooms to experiment in, improve methods and educate local producers. Partners can assist with funding for the acquisition of the land for Biocenters, initial restoration efforts, and workshops with community members.

AMJV Partnership Efforts on Wintering Grounds

Partners: FUNDAECO, American Bird Conservancy, Southern Wings, U.S. Fish and Wildlife Service North American Migratory Bird Conservation Act.

Contact: Andrew Rothman, (arothman@abcbirds.org).

Ecuadorian Network of Reserves Protecting Land of Critical Importance for Country's Endangered Birds and Biodiversity

The subtropical humid forests of eastern Ecuador are a vital wintering area for Cerulean Warblers and many other priority migrants including Canada Warblers. Many of the critical areas and habitats these migrants depend on are directly threatened by agricultural expansion, fires, and illegal resource extraction. Fundación Jocotoco, an Ecuadorian non-governmental organization established in 1998 to protect land of critical importance for the conservation of Ecuador's endangered birds and associated biodiversity, is directly addressing this need by protecting habitat through their network of ten reserves across Ecuador. Three of their reserves (Rio Canandé, Tapichalaca, and Narupa) protect significant wintering habitat (more than 7,100 acres) for Cerulean and Canada Warblers. Fundacion Jocotoco actively protects this habitat through guard patrols, community outreach, and monitoring. Other priority migrants protected by these reserves include Western and Eastern Wood-Peewees, Swainson's Thrush, and Blackburnian Warbler.

Opportunities for Involvement: Fundacion Jocotoco is currently seeking funding to acquire additional properties to increase the size of these reserves. They are also seeking support for increasing tree cover across productive landscapes for the benefit of migratory species. In particular, this project seeks to implement bird-friendly best-practices across 15% of the coffee farm matrix surrounding Tapichalaca Reserve in Ecuador. Specific activities include: plant at least 4,000 native trees in shade coffee systems, monitor the response of migratory birds to restoration and the implementation of shade coffee, and conduct outreach with coffee cooperative members on bird-friendly production methods.

Partners: Fundación Jocotoco, American Bird Conservancy, Southern Wings, U.S. Fish and Wildlife Service.

Contact: Daniel Lebbin (dlebbin@abcbirds.org).

Birding in Ecuadorian reserve; Mike Parr.

AMJV Partnership Efforts on Wintering Grounds

Sierra de Bahoruco Monitoring Program in the Dominican Republic

There are few long-term monitoring programs in the tropics and only one other in the vitally important Caribbean region (in Puerto Rico). Bird populations in the Sierra de Bahoruco were monitored from 1996-2004, and again from 2014-present, using a constant effort mist-netting approach. Key habitats monitored include low elevation thorn scrub, mid-elevation dry forest, and endemic pine forest. Monitoring took place in mid-winter when overwintering Neotropical migrants are present, including such species as Palm Warbler, Prairie Warbler, Black-and-white Warbler, Black-throated Blue Warbler, American Redstart, and Ovenbird. In addition, numerous species of permanent residents were monitored. Our goal is to contribute to a better understanding of population changes, especially in light of the dramatic decline in capture rates of Neotropical migrants and other species recorded in Puerto Rico, and the ongoing destruction of native habitats in regions of the Sierra de Bahoruco.

Steven Latta and collaborators from Grupo Acción Ecológica placing mist nets for long term monitoring project; Brian Trevelline.

Partners: The National Aviary, Grupo Acción Ecológica.

Contact: Steven Latta (steven.latta@aviary.org).

Migratory Bird Research and Monitoring at Cockscomb Basin Wildlife Sanctuary, Belize

Team from University of Massachusetts, Belize Audubon and National Audubon supporting Migratory Bird Research in Cockscomb Basin Wildlife Sanctuary, Belize; Matt Jeffery

Conservationists are increasingly concerned about declines in some Neotropical migratory bird populations, which are attributed in part to habitat conditions and resource availability on tropical wintering grounds. Belize Audubon Society has undertaken an ambitious research and monitoring program in collaboration with National Audubon, the University of Massachusetts, and the U.S. Forest Service directed at gauging the health of resident and migratory birds on the protected areas that they manage starting with the 128,000-acre Cockscomb Basin Wildlife Sanctuary.

This effort consisted of an intensive three-year survey of the core areas within the reserve with point counts and constant effort mist-netting during 2014, 2015 and 2016. Point counts included playback of Golden-winged Warbler songs and calls following the protocol developed by the Golden-winged Warbler working group, as well as playback of Wood Thrush songs and calls developed during a similar project by our team in Honduras. Golden-winged Warblers were nearly absent at Cockscomb, Wood Thrushes were the most abundant species. Researchers captured 361 wood thrushes during the three years of the study. Capture rates varied between years, with decline in captures of 20% - 100% between 2014 and 2015,

with declines most pronounced at drier sites. Wood thrush captures recovered in 2016, but numbers continued to be lowest at drier sites. High levels of variation in captures coupled with low recapture and re-sighting rates suggest Wood Thrushes at Cockscomb are moving widely during the non-breeding season. Furthermore, the association between recaptures and moisture reinforces previous studies highlighting the importance of conserving mesic habitats for wintering wood thrushes, as well as the bird's potential vulnerability to climate change.

The results of this study will help develop tools to help with the management of sites across Belize that are important for a number of priority species.

Partners: National Audubon Society, Belize Audubon Society, University of Belize, University of Massachusetts, US Forest Service.

Contact: Matt Jeffery (mjeffery@Audubon.org).

Single-Species Projects

Geolocator Research on Golden-winged Warblers in Nicaragua

Geolocator attached to Golden-winged Warbler; Curtis Smalling.

Dr. Jeff Larkin of Indiana University of Pennsylvania, Curtis Smalling of Audubon North Carolina, and Dr. Amber Roth of University of Maine are working with partners Lili and Georges Duriaux Chavarria at El Jaguar, their private reserve and coffee plantation. The researchers are conducting Golden-winged Warbler research on species occurrence, habitat use, and response to forest restoration/enhancement. This team also collaborated with Dr. Henry Streby of the University of Toledo to purchase and attach the newest generation of geolocators to 22 Golden-winged Warbler males at El Jaguar during the winter of 2015. Additionally, John Gerwin with the North Carolina Museum of Natural Sciences and Sharna Tolfree of Audubon North Carolina placed an additional five geolocators on Warblers at Finca Esperanza Verde near San Ramon, Nicaragua. The goal of all this work was to identify migration routes and breeding season locations of Golden-wings that winter in El Jaguar and Finca Esperanza Verde. In the winter of 2015-16, a total of six geolocators were recovered at El Jaguar and one at Finca Esperanza Verde and analyses revealed that these birds migrated to northern Minnesota, northern Wisconsin, and adjacent southwestern Ontario.

Partners: Indiana University at Pennsylvania, American Bird Conservancy, Audubon North Carolina, Michigan Tech University, University of California-Berkeley, and North Carolina Museum of Natural Sciences.

Contact: Curtis Smalling (csmalling@audubon.org); Jeff Larkin, (larkin@iup.edu).

Migratory Connectivity of Golden-winged Warblers in Central America

Moises Siles, guide and field assistant at El Jaguar Reserve, holds a Blue-winged Warbler; Curtis Smalling.

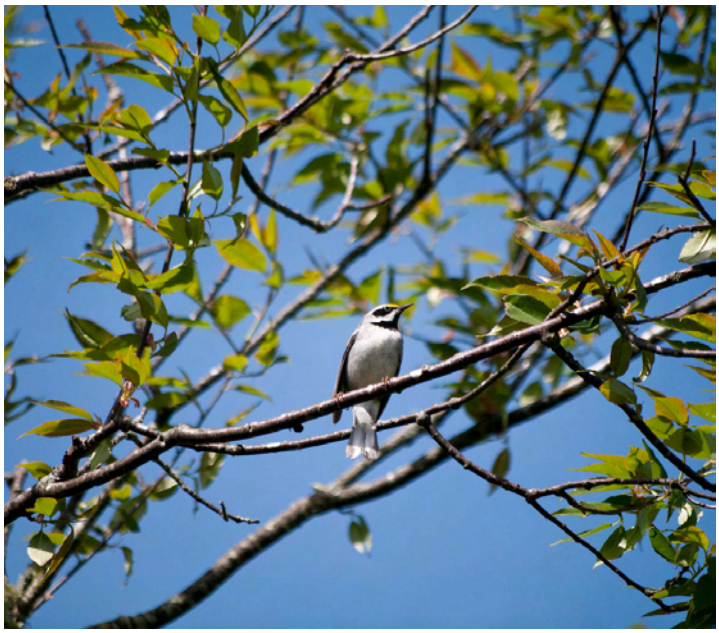
Geolocator technology is helping to link the breeding and wintering grounds of two declining Nearctic-Neotropical migratory species, the Golden-winged Warbler and the Blue-winged Warbler. Establishing these linkages will allow us to investigate the extent to which land use change on the wintering grounds and/or migratory strategy are linked to population declines in both species. During the winter of 2015-2016, our partnership deployed 168 geolocators on Golden-winged Warblers and Blue-winged Warblers from Mexico to Panama to identify migratory pathways, stopover sites, and the breeding grounds of individuals wintering in high priority landscapes in Central America. Ultimately, this collaborative effort will link conservation efforts on the wintering and breeding grounds.

AMJV Partnership Efforts on Wintering Grounds

Partners: Cornell Lab of Ornithology, American Bird Conservancy, Indiana University of Pennsylvania, U.S. Forest Service, University of Massachusetts, Audubon North Carolina, University of Georgia, Conservacion Panama, North Carolina Museum of Natural Sciences, University of Maine, and U.S. Fish and Wildlife Service.

Contact: Ruth Bennett (reb349@cornell.edu); Amanda Rodewald (arodewald@cornell.edu); Jeff Larkin (larkin@iup.edu).

Sexual Segregation of Golden-winged Warblers during the Non-breeding Period



Golden-winged Warbler; American Bird Conservancy.

Identifying factors that limit migratory passerine populations can be especially challenging when considering that many species demonstrate habitat segregation by age and sex. This project documents differences in distribution and habitat associations of male and female Golden-winged Warblers across their entire winter range using point-count surveys and behavioral observations. In addition to discovering the mechanisms behind wintering grounds sexual segregation, this study will reveal the quality of male and female habitat and help focus conservation efforts on the highest quality habitat.

Partners: Cornell Lab of Ornithology, U.S. Fish and Wildlife Service.

Contact: Ruth Bennett (reb349@cornell.edu); Amanda Rodewald (arodewald@cornell.edu).

Collaborative International Working Group Monitoring Wood Thrush

Audubon North Carolina and several other partners, including ProNatura in Mexico, have launched a Wood Thrush working group to monitor the species on its wintering grounds. Audubon NC supported two Nicaraguan researchers' participation in the first training workshop where they were trained to use data loggers and field techniques needed for the monitoring protocol developed by the working group. Audubon also provided financial support to attach geolocators to 70 Wood Thrush for recovery.

Partners: Audubon North Carolina, ProNatura.

Contact: Curtis Smalling (csmalling@audubon.org).

Geolocator attached to Wood Thrush; David Shuford.

AMJV Partnership Efforts on Wintering Grounds

International Wood Thrush Conservation Alliance

The International Wood Thrush Conservation Alliance (Alliance), a consortium of scientists and conservation biologists from academic institutions, agencies, and non-profits in Central and North America, is working to ensure the long-term viability of Wood Thrush populations and the habitats on which they depend through science-based, full life cycle conservation planning, management, and education.

Presently there are three active Technical Committees conducting work to meet the Alliance's mission. One, the Wintering Grounds Conservation Committee, is specifically working on wintering ground issues. This committee is using existing and new science to develop Wood Thrush wintering season conservation strategies for implementation at all spatial scales. The group works closely with the Science Technical Committee to identify science gaps and design research to fill them and considers issues associated with migration, such as pathways, stopover ecology, and geographical and biological linkages to the breeding grounds. The group also focuses on the need for monitoring during the winter period, considers winter threats, and addresses unique conservation challenges associated with working in Latin America.

Opportunities for Involvement: Engaging with the Wintering Grounds Conservation Committee of the Wood Thrush Alliance. See www.woodthrushalliance.org and join our Facebook group.

Partners: International Wood Thrush Conservation Alliance, Appalachian Mountains Joint Venture, Cornell Lab of Ornithology.

Contact: Ron Rohrbaugh (rwr8@cornell.edu); Becky Keller (bkeller@abcbirds.org).

Members of the International Wood Thrush Conservation Alliance.

AMJV Partnership Efforts on Wintering Grounds

Population Regulation of Neotropical Migratory Birds

Field crew searching for Louisiana Waterthrush in the Dominican Republic; Danilo Mejía.

This project focuses on the Louisiana Waterthrush as a model Neotropical migratory bird. On the wintering grounds in the Dominican Republic, we are identifying landscape-level factors, territory characteristics, and specific stream quality measures associated with overwinter survival and annual return rates. We are assessing diet and the impact of diet on waterthrush conditions using behavioral observations and DNA fingerprinting techniques. Data from the overwintering period is combined with breeding ground data in order to identify similar landscape-level factors, characteristics of waterthrush territories, and specific stream quality measures associated with reproductive success and survival. Finally, we are investigating survival of waterthrush fledglings through radio telemetry, a critically important period in the life of any songbird, and one for which few data are available for any species.

Data are now being used to build a full-annual cycle population model using vital rates to predict summer versus winter population limitations. The expectation is that the relationships between population limitation and vital rates can be used to predict during which season a population is most likely to be limited.

Partners: The National Aviary, Grupo Acción Ecológica.

Contact: Steven Latta (steven.latta@aviary.org).

Human Dimension Projects

Social and Environmental Outcomes of Specialty Coffee Value Chains in Colombia

Many small landholding farmers depend upon global coffee value chains and are being impacted by recent changes in the international coffee market. In the past, coffee markets were highly regulated by governments (e.g. export quotas), and coffee was marketed primarily as a commodity with little product differentiation. Today, governments have little influence on competitive global markets, and coffee is increasingly differentiated as the demand for specialty coffees rise. As a result, innovative business models and certification schemes have been established to profitably integrate small landholder growers into global specialty coffee chains while protecting ecosystems and landscapes. In spite of the rising popularity of specialty coffee, little is known about the impact on the livelihoods of small landholders and the environment. Our interdisciplinary team is assessing impacts of participation in value chains by communities in Cauca and Antioquia, Colombia on several key socioecological indicators, including bird communities and several priority migrants (e.g., Cerulean Warbler, Canada Warbler). Fieldwork was conducted in 2014 and 2016, and we are in the process of analyzing data.

Shade-grown and bird-friendly coffee beans; Amanda Rodewald.

Opportunities for Involvement: Collaborate by developing complementary projects or by analyzing our data to answer different questions. Provide funding to track impacts over time.

Partners: Cornell University, Cornell Lab of Ornithology, Atkinson Center for a Sustainable Future, University of the Andes, Bogota; local coffee cooperatives.

Contact: Amanda Rodewald (arodewald@cornell.edu).

Market-based Mechanisms and Incentives for Sustainability in Working Landscapes of Latin America

The most pressing global challenges relate directly or indirectly to environmental degradation. As the environment declines, human communities are vulnerable to disasters, climate change, social unrest, and emerging diseases, with the rural poor bearing the brunt of negative outcomes. We are challenged to identify creative ways to sustain biodiversity, protect ecosystem services, and support human well-being within “working landscapes” where poverty and biodiversity converge. A growing number of programs and incentives aim to address these challenges, but their viability often remains aspirational and untested in the market. Our project focuses on Nicaragua, which has pledged to restore 2.8 million hectares of forest as part of the Bonn Challenge to restore 150 million hectares of land worldwide and the World Resources Institute’s 20x20 initiative to restore 20 million hectares of land in Latin America. We will (1) identify the most ecologically-important landscapes using birds as indicators of biodiversity (2) evaluate which incentives and mechanisms for forest restoration are being applied to these landscapes, (3) conduct market analyses to assess the profitability and competitiveness potential for agroforestry and sustainable

AMJV Partnership Efforts on Wintering Grounds

Researchers are studying how working landscapes - like this one near Jardin, Colombia - can be managed to support migratory birds and livelihoods within local communities; Amanda Rodewald.

forestry enterprises and (4) develop a portfolio of viable incentive programs and financial mechanisms for landscapes with the greatest need and opportunity for forest conservation and restoration. Results are intended to improve the effectiveness of forest conservation and restoration programs throughout Latin America and the world.

Opportunities for Involvement: Help link potential restoration projects to private sector funders.

Partners: Cornell University, Cornell Lab of Ornithology, Atkinson Center for a Sustainable Future, ECOM, Rainforest Alliance.

Contact: Amanda Rodewald (arodewald@cornell.edu).

Shade Coffee Plantations Critically Important for Migratory Songbirds in Venezuela

Five years of research in Venezuelan shade coffee support the importance of agroforestry systems for wintering migratory songbirds such as the Cerulean Warbler. Researchers at Ohio State University found Cerulean Warblers were 3–14x more abundant in shade coffee where survival and condition were high (Bakermans et al. 2009). Commonly planted shading trees, such as Inga, were preferred by migrants for foraging, especially foliage-gleaning migrants such as the Cerulean Warbler (Bakermans et al. 2012, Newell et al. 2014a). In addition, maintaining large trees and understory in shade coffee helped to support a variety of canopy and ground foraging migrants (Bakermans et al. 2012). In 2009-10 during an El Niño year which caused drought in Venezuela, researchers observed changes in migrant foraging behavior. Although large prey such as caterpillars may be most important during the breeding season (Newell et al. 2014b), Cerulean and Blackburnian Warblers wintering in shade coffee increased foraging effort but captured fewer large prey compared to the previous year (Newell et al. 2014b). These observations highlight the need for further study into the effects of climate change on migratory songbirds.

Partners: The Ohio State University, The Nature Conservancy, U.S. Fish and Wildlife Service.

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AMJV Partnership Efforts on Wintering Grounds

Louisiana Waterthrush, Water Quality, and Human Health

Previous studies of overwintering Louisiana Waterthrush by Latta (The National Aviary) and collaborators have shown that the waterthrush is dependent on clean water in high quality riparian systems. In the Dominican Republic, clean water is vitally important for human communities and human health. This is especially important given the recent reintroduction of cholera to the island. Using the Louisiana Waterthrush as a model species, we have been developing educational materials and programs to talk about the importance of clean water to the waterthrush, other wildlife, and human communities.

Children attending the Campamento Barrancolí during the stream cleanup program; Danilo Mejía.

One such initiative is the *Campamento Barrancolí*, an environmental education program of the Grupo Acción Ecológico (GAE) and the National Aviary for children ages 6-13 in rural communities in the outskirts of San Francisco, Dominican Republic. The main objectives of this summer camp are to create a sense of responsibility for the health of the environment and to promote awareness regarding wildlife and environmental issues. Although resident and migratory birds are used as flagship taxa throughout the summer camp, our activities target a broad range of local issues including waste management, water pollution, and hunting. Each year camps reach over 120 students, and combine traditional games with recycled art, eco-drama presentations, interactive lectures, and hands-on nature workshops. Groups prepare skits about birds for a community-wide talent show, and a workshop on songs and calls of birds during which many kids are quick to supply their own knowledge of local bird songs! A nest searching contest tackles the issues of bird-keeping, egg-harvesting, and the illegal pet trade.

Opportunities for Involvement: We seek funding to expand our reach in presenting these educational programs in a wider geographic area.

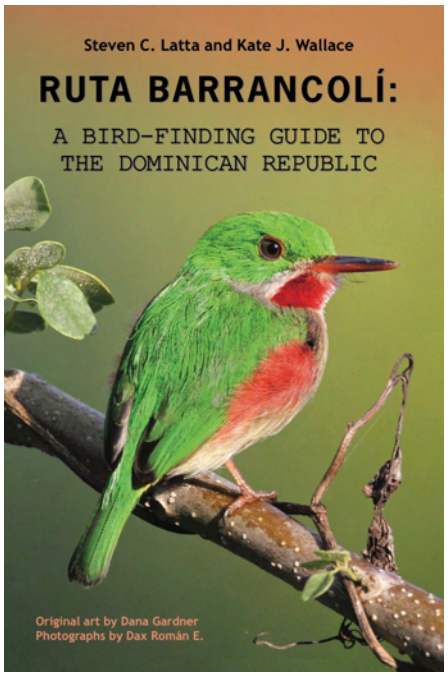
Partners: The National Aviary, Grupo Acción Ecológica.

Contact: Steven Latta (steven.latta@aviary.org).

Promoting the Dominican Birding Trail

Hispaniola supports 31 endemic species and more than 35 overwintering Neotropical migratory bird species, with some of these wintering primarily or even exclusively in the region. In the face of extreme habitat destruction in the Dominican Republic and Haiti, there is a recognized need to increase the appreciation for birds and other wildlife to help build a conservation ethic that will support local and national conservation efforts. In 2012, Steven Latta and K.J. Wallace wrote and published a guide for the Sendero Barrancolí Dominican Birding Trail titled *Ruta Barrancolí: A bird-finding guide to the Dominican Republic*. We also translated the guide to Spanish and made it available through the web for any user. The Sendero Barrancolí has since been included as the Dominican leg of the Caribbean Birding Trail by BirdsCaribbean.

AMJV Partnership Efforts on Wintering Grounds



Our goal now is to work with locally-based groups near the 44 Sendero Barrancolí sites to better protect and promote the sites, and to publicize the Sendero Barrancolí nationally and internationally. This project will create signs to identify Sendero Barrancolí sites, fund placement of the signs, and fund the creation, printing, and distribution of brochures to promote the route. We will also coordinate a media campaign, including news releases, interviews, and advertisements. This project seeks to increase birdwatching opportunities and bolster the economic impact of birdwatching and ecotourism. By combining public outreach to enhance birdwatching and conservation, we will also: 1) promote locally-based economic development; 2) increase support for protection of sites for birds, wildlife, and ecosystem services; 3) support the development of a conservation ethic in the Dominican Republic; and 4) continue to build support for additional conservation measures, including funding for parks and enforcement.

Partners: The National Aviary, Grupo Acción Ecológica, BirdsCaribbean.

Contact: Steven Latta (steven.latta@aviary.org).

The Bird-Friendly Cacao Initiative

The Dominican Republic is the world's largest producer of organic cacao. Dominican cacao is grown under shade by around 40,000 producers, occupying 9.6 percent of land cover. As in much of Latin America, shade-grown and wildlife-friendly coffee farming has been promoted for the conservation of Neotropical migratory birds and threatened endemics, and market-oriented coffee certification systems have emerged, with the benefits of eco-labels well-documented for coffee agroforests. Cacao farms are capable of supporting a high level of biodiversity too. Yet questions remain around the impact of cacao management practices on birds, as well as the quantification of the value of cacao agroforestry landscapes to birds. In particular, few studies have provided management recommendations for the extensive cacao plantations of the insular Caribbean where bird-friendly management guidelines do not exist.

Surveying birds in cacao plantations; Marisabel Paulino.

AMJV Partnership Efforts on Wintering Grounds

Based on studies by the National Aviary's Research Associate, Andrea Thomen, we launched our Bird-Friendly Cacao Initiative in 2015. This initiative summarized the state of knowledge regarding cacao agroforestry landscapes as avian habitat, and identified research required to further promote cacao for bird conservation. Importantly, this effort assessed farmer attitudes and behavior towards within-farm fauna and wildlife-friendly management practices, and determined farmer behavioral attitudes regarding bird-friendly agroforestry practices. Our survey found cacao agroforestry benefits a wide variety of endemic birds and over-wintering Neotropical migrants, but cacao technicians and community educators need to encourage shade diversification in cacao plantations, and the restoration of native shrub cover in riparian areas.

In 2015, we also worked with Dominican collaborators in initial outreach and education efforts to promote avian conservation in cacao agroforestry landscapes. We presented a Technician Environmental Education Workshop to staff from FUPAROCA - a non-profit organization representing 4,000 cacao growers with certified agronomists responsible for certifying organic cacao production. FUPAROCA also provides technical advice to growers, and supervises and enforces rules related to organic certification. We made similar presentations to managers of the Quita Espuela National Park and the Reserva Zorzal, which is focused on providing critical habitat, including cacao agroforestry landscapes, for the threatened Bicknell's Thrush.

New work will focus activities in two distinct cacao-growing regions in the Dominican Republic where avian conservation is of the highest priority. This includes: (a) research to determine the value of cacao landscapes and birds as providers of ecosystem services; (b) education of growers and organic certification technicians in how to improve cacao agroforests for birds; and (c) engagement with school and community groups in the importance of cacao landscapes for birds.

Opportunities for Involvement: We seek funding to expand this research and certification program throughout the cacao growing region.

Partners: The National Aviary, Grupo Acción Ecológica. Received in-kind support from BirdsCaribbean, Consorcio Ambiental Dominicano, Fundación Loma Quita Espuela, and Rizek Cacao.

Contact: Steven Latta (steven.latta@aviary.org).

Birds Means Business: Economic Development to Promote Conservation of Birds and Habitats in the Caribbean and Latin America

In developing countries around the world, a lack of economic opportunities often drives people to engage in activities that degrade natural resources. Unsustainable timber extraction, poaching, and land clearing for agriculture diminish the long-term value of these ecosystems for biodiversity— and for the local people who rely on them for resources and ecosystem services. Ecotourism is an economic alternative that can raise incomes in communities living close to biodiversity-rich areas, while conserving natural capital. Among the fastest-growing segments of ecotourists are bird watchers, who tend to have a light footprint on ecosystems, and willing to step outside the tourism mainstream to see migratory and exotic birds.

Amanda Tillett - Belize Audubon Society Warden and newly trained Bird Guide; Camilla Cerea.

AMJV Partnership Efforts on Wintering Grounds

Everilda Ruchan was born near Guatemala's Pacific Coast and was raised on a farm where her parents worked. She was forced to drop out of school after second grade to help her parents. Everilda graduated from the Advanced Bird Guide Course with the highest test score; Asociacion Vivamos Major.

In 2014, the National Audubon Society's International Alliances Program partnered with the Inter-American Development Bank's Multilateral Investment Fund to develop a pilot project designed to promote bird-based tourism in Latin America and the Caribbean. The goal was to support entrepreneurs in the bird tourism sector in Belize, Paraguay, the Bahamas, and two regions of Guatemala. The target areas include some of the most threatened ecosystems in the region, many of which host migrating species from the eastern United States. Working with local tourism authorities and other experts, Audubon developed a two-tier bird-guide training curriculum that was tailored to local cultures, languages, and other circumstances. The training focused on bird identification, important regional conservation issues, biology, and bird migration patterns and habitat needs. It also covered basic instruction on setting up and running a business, marketing that business to potential clients, and ethical guiding practices once in the field. A total of 175 men and 101 women attended the basic guide training, while 63 men and 12 women completed advanced training.

This comprehensive approach has been adopted by the governments of Belize, Guatemala, and The Bahamas as the official curricula and guidelines for bird guides operating in those countries. It has created a network of community-based birding destinations that offer skilled local birding guides, high-quality park interpretation and lodging, food services, and related goods and services tailored to the birding market.

Opportunities for Involvement: Take a trip to any of these countries, visit the sites that the project focused and hire Audubon trained guides – or join a trip through Audubon's partnership with Holbrook Travel' Fly Expeditions or Rockjumper. Website: http://www.audubon.org/conservation/international/ecotourism.

Partners: National Audubon Society, Inter-American Development Bank, Belize Audubon Society, Wildlife Conservation Society, Vivamos Mejor, Bahamas National Trust, Guyra Paraguay, Belize Tourism Board, Bahamas Ministry of Tourism, INGUAT.

Contact: Matt Jeffery (mjeffery@audubon.org).

Projects on U.S. Wintering Grounds

Working Group Advances Shrike Conservation, Builds Partnerships

The Loggerhead Shrike Working Group was established in 2013 in response to the need for international collaboration on Loggerhead Shrike (LOSH) conservation in eastern North America. In eastern Canada, a remnant population of LOSH is listed as federally Endangered and confined to the province of Ontario. This population is believed to be limited by factors at work on its wintering grounds in the eastern U.S. At the same time, declines in both the breeding and wintering populations of LOSH in the U.S. have resulted in the species' near-absence from many northern states, with West Virginia and the Appalachian portion of Virginia representing the northern stronghold for the species. Although more abundant in many southeastern states, LOSH is nonetheless experiencing substantial declines across much of its eastern range.

Shrike banding; Sergio Harding.

The Working Group is advancing shrike conservation by building partnerships among government agencies, academics and NGOs and pursuing conservation priorities under the soon-to-be-finalized 'Loggerhead Shrike Conservation Action Plan'. Among these is a multi-state banding project designed to improve understanding of shrike genetics, and of connectivity between breeding and wintering populations to ultimately identify limiting factors. Standardized protocols for shrike occupancy surveys are currently in development. Predictive occupancy/distribution models have recently been developed for the southeast U.S. and for Ontario. The group has been meeting annually since 2014 in conjunction with the Southeast Partners in Flight conference.

Opportunities for Involvement: Participation is open to government agencies, non-governmental and other professional organizations, and universities with interest in/experience with shrikes.

Prime shrike habitat in Virginia; Sergio Harding.

Partners: African Lion Safari, Arkansas State University, Conservation Centers for Species Survival, Canadian Wildlife Service, Environment Canada - Ontario Region, Gulf Coast Bird Observatory, Indiana Division of Fish & Wildlife, Kentucky Department of Fish and Wildlife Resources, Louisiana Department of Wildlife and Fisheries, Midewin National Tallgrass Prairie, North Carolina Wildlife Resources Commission, Queen's University, South Carolina Department of Natural Resources, Smithsonian Conservation Biology Institute, Tennessee Wildlife Resources Agency, US Forest Service's George Washington/Jefferson National Forests, Virginia Department of Game and Inland Fisheries, West Virginia University, Wildlife Preservation Canada.

Contact: Sergio Harding (sergio.harding@dgif.virginia.gov).

Lessons Learned

Audubon North Carolina: What we have found to be most important in doing this work is simply developing the international relationships and creating initial capacity. Be as inclusive as can be. Don't let the lack of a huge pot of money be a reason to not start doing things.

American Bird Conservancy: One issue that ABC hears again and again from our partners is that they need help in ensuring their conservation successes are sustainable over the long-term. To this end, we are working to measurably increase our Latin American partners' long-term sustainability through improving operating systems, implementing standard business practices, and developing financial self-sufficiency through fundraising training and diversifying income sources. Together with the March Conservation Fund, ABC instituted the Latin American Reserve Stewardship Initiative to provide funding and technical assistance to partners to achieve these goals. We help partners identify the biggest bottlenecks (training, staffing, unrestricted support), the best opportunities to generate income or expand on existing sources of income, and the needs to strengthen individual reserve management and infrastructure. We found that what really works is one-on-one time between ABC conservation, development, finance staff and partners, often in their offices or at the reserves, to provide technical support and training tailored to each of their organization's needs.

Indiana University of Pennsylvania: We learned that by including local members of the communities we are working in, such as academia and biology professionals, we earned respect and trust from private landowners. Our committed presence during the study period was an opportunity for sharing knowledge that is gathered on site as a platform for outreach between us and community members. The collaboration among different partners, particularly the national university, created an opportunity for future biology and conservation professionals to grow academically and gain experience. We also have become immersed in a Tropical Dry Forest community. We were able to not only observe the seasonal changes that drives biodiversity dynamics but also see the day to day activities of people's livelihood and the influences that it has on the land. Projects that favor longer execution periods in situ can obtain insights on conservation actions and how they fit in the social context.

Top: Sociedad Ornitologica de las Hispaniola staff, SOH. Bottom (left to right): American and Nicaraguan partners consult at El Jaguar Reserve, Doug Gross; Reforestation activities in Colombia, ProAves; VIII Festival del Paujil which seeks to increase interest in Colombia for birds and conservation, ProAves.

Funding Opportunities

Southern Wings Program: Southern Wings is a partnership of state agencies with the common vision of providing a funding mechanism for conservation projects in Mexico, Central America, South America and the Caribbean to support priority birds throughout their annual cycle and protect the state wildlife agencies investments. From 2009 - 2015, state agencies and their in-state partners have contributed over $870,000 and $550,000 in-kind. This money leveraged greater than a 1:1 match. The Program is solidly based on the biological connection between migratory birds that occur in the states and also spend part of their annual cycle on Mexico, Central America, South America and the Caribbean wintering grounds. It allows for relatively easy and seamless financial participation by interested states. It requires progress and accomplishment reports to the states.

Contact: Deb Hahn (dhann@fishwildlife.org).

Neotropical Migratory Bird Conservation Act Grant: The Neotropical Migratory Bird Conservation Act (NMBCA) addresses migratory bird population needs on a continental scale and conserves birds throughout their life cycles. The projects that these grants support in other countries foster security, generate goodwill, and improve foreign relations, while sustaining healthy bird populations. Since 2002, the Neotropical Migratory Bird Conservation Act has provided more than $50.1 million in grants to support 451 projects in 36 countries. Partners have contributed an additional $190.6 million, affecting 3.7 million acres of habitat. The networks that have developed as a result of NMBCA funding have evolved into powerful conservation alliances. The NMBCA program provides matching grants to Neotropical migratory bird conservation projects throughout the Western Hemisphere, with at least 75 percent of funding going to projects outside the United States. The competitive grants require that grant requests be matched by partner contributions at no less than a 3-to-1 ratio. The overall purpose of the Neotropical Migratory Bird Conservation Act is to provide financial support and foster international cooperation for initiatives that will perpetuate healthy bird populations.

Contact: Guy Foulks or Andrea Grosse (neotropical@fws.gov).