



EIGHTH MEETING OF THE WESTERN HEMISPHERE SHOREBIRD GROUP, 23–30 OCTOBER 2019, PANAMA CITY, PANAMA

The eighth biennial meeting of the Western Hemisphere Shorebird Group (WHSG) was held at the Hotel El Panama in Panama City, Panama, during 23–30 October 2019. The Panama City meeting welcomed 221 participants from 18 countries in the Western Hemisphere, and 9 individuals from 5 countries in Europe. There were four international plenary speakers (Rosabel Miró, David Lank, Verónica D'Amico, Cheri Gratto-Trevor), eight symposia comprising 214 oral presentations, and 30 poster presentations. In addition, there were three pre-conference workshops: Buff-Breasted Sandpiper Conservation Working Group, North American Banding Council shorebird banding, and Migratory Shorebird Project data analysis. Working group and special topic side-meetings were also hosted, including an e-Bird distribution modeling and conservation roundtable, Shorebirds and Shrimp Aquaculture Working Group, Shorebirds and Salt Working Group, steering committee meetings for the Pacific and Atlantic Shorebird Conservation Initiatives, and International Phalaropes Working Group. After the formal meeting, there was another workshop focused on the development of the Midcontinental Flyway Shorebird Conservation Strategy. Simultaneous translation (English/Spanish) at all conference events were provided by Arturo May, Efrén Esquivel, and David Clingan. The book of abstracts is available at: <http://westernshorebirdgroup.org/>. In addition to the formal program, there were excursions to see shorebirds, seabirds, and passerines at the Gamboa Rainforest Reserve, Archipelago of San Blas, and Soberania National Park, as well as cultural attractions such as the Panama Canal, the Old Quarters of Panama City, and indigenous communities. The field trips were organized by Isthmian Adventures and Panamazing.

The next meeting will be organized by Academia Nacional de Ciencias de Buenos Aires and will be located at Puerto Madryn, Argentina during 1–6 September 2021.

TRAVEL AWARDS & GENERAL MEETING SUPPORT

The Travel Award Committee provided financial and logistical support for 57 students from the Western Hemisphere and 26 professionals from Latin American countries. These awards and support for other aspects of the meeting were made possible by generous donations by the David & Lucile Packard Foundation, the U.S. Forest Service – International Programs, National Audubon Society, Manomet, Inc., Environment and Climate Change Canada, Suez, Islas Secas Foundation, Lotek Inc., Microwave Telemetry, Inc., Rite in the Rain, the Pacific and Mississippi Flyway Councils, and the Secretariat for Environmental Enforcement Matters for the United States-Panama Trade Promotion Agreement. The International Conservation Fund of Canada provided financial management assistance. The now famous Silent Auction was a huge success that helped raise \$4,482 in travel award funds for the next meeting.

EXECUTIVE COMMITTEE MEETING

Nominations for three new positions for the Executive Committee were accepted and, after a listserv survey, the following were appointed: Gianco Angelozzi as Student Representative, Kirsten Grond as US/Canada Representative, and Abril Heredia as Mexico/Central American Representative. The full Executive Committee can be found at: <http://westernshorebirdgroup.org/about-us/#committee>.

The Executive Committee decided to upgrade our website (<https://westernshorebirdgroup.org/>) to have a Spanish version. Gustavo Danemann provided the translation and Alex Low updated the site. The committee also discussed developing a 'how to host a meeting' manual and appointing a meeting liaison who could assist future organizers in hosting a meeting. Finally, the Executive Committee highlighted the need to be more proactive in commenting

Organizing Committee: Rosabel Miró (chair, Panama Audubon Society), Yenifer Díaz (Panama Audubon Society), River Gates (National Audubon Society), Rick Lanctot (U.S. Fish & Wildlife Service), Stephen Brown (Manomet), Liz Guinessey (National Audubon Society) and Eveling Tavera (Simon Fraser University).

The local committee consisted of Panama Audubon Society staff and volunteers (especially Fabiola Riva Melofiro and Ruth Pierson), with the assistance of students from the University of Panama and the Maritime University.

Scientific Committee: Stephen Brown (chair), Ana Agreda (Aves y Conservación), Juliana Almeida (SAVE Brasil), Isadora Angarita (Manomet), Fernando Angulo (CORBIDI), Luis Bala (Instituto Diversidad y Evolución Austral (IDEAus-CONICET)), Marcela Castellino (Manomet), Rob Clay (Manomet), Yenifer Díaz, Lisa (Kennedy) Docken (Trent University), Guillermo Fernández (Universidad Nacional Autónoma de México – Mazatlán), River Gates, Rick Lanctot, David Lank (Simon Fraser University), Oscar López (Panama Audubon Society), Rosabel Miró, Salvadora Morales (Manomet), Eduardo Palacios (Centro de Investigación Científica y de Educación Superior de Ensenada), Fletcher Smith (Center for Conservation Biology), Eveling Tavera, and Ronald Ydenberg (Simon Fraser University).

on environmental issues surrounding developments throughout the Western Hemisphere.

The 2023 WHSG meeting location will be organized by either Dr. David Newstead (Coastal Ben Bays & Estuaries Program) based out of Corpus Christi, Texas, USA, or Drs. Julie Paquet (Canadian Wildlife Service) and Diana Hamilton (Mount Allison University) based out Sackville, New Brunswick, Canada. The Executive Committee decided to create a more formal application document and will be soliciting additional information from these two applicants before making a final decision.

AWARDS

Many awards were presented during the banquet on the night of 27 October. Guillermo Fernández, chair of the Student Awards Committee, presented the *Best Oral Paper Award* to Luke R. Wilde from University of North Carolina for his talk 'Effects of variable predation risk on the space-use of breeding Hudsonian Godwits (*Limosa haemastica*)', and the *Best Poster Award* to Fernando A. Faria from Federal University of Rio Grande for his poster 'Trophic niche and seasonal occurrence of the South-American Painted Snipe (*Nycticryphes semicollaris*) in Brazil'. The *Runner Up Oral Paper Award* went to Jonathan Vergara-Amado from Universidad Austral de Chile for his talk 'Exploring the gut microbiota dynamics in a migratory shorebird during the non-breeding season', and the *Runner Up Poster Award* went to Sarah Hoepfner from Humboldt State University for her poster 'Remote monitoring of shorebird nests: An examination of effectiveness and applicability'. Abby Powell, Luis O. Bala, David Mizrahi, and Nathan Senner were part of the judging committee.

Loyda Sánchez, former President of the Panama Audubon Society Board of Directors, presented Dr. Francisco Delgado with the *Panama Audubon Award*. Dr. Delgado co-authored the 'Atlas of Nearctic Shorebirds and other Waterbirds on the Coast of Panama' which highlighted the importance of the Bay of Panama as a southbound stopover site and wintering area for shorebirds and led to it receiving international and local designation, including being a Ramsar Site, a Site of Hemispheric Importance within the Western Hemisphere Shorebird Reserve Network (WHSRN), and a Wildlife Refuge within the National System of Protected Areas of the Republic of Panama.

Rob Clay of Manomet, Inc. presented the 2019 *Pablo Canevari Award* to Ben Haase, the curator of the Museo de Ballenas in Salinas, Ecuador. Ben is a naturalist-guide who has carried out long-term studies on the presence, migration, and behavior of shorebirds on the Ecuadorian coast, conducting 500 censuses covering two and a half million birds. His surveys resulted in the nomination of the Piscinas Artificiales de Ecuasal as a Western Hemisphere Site of Regional Importance in 2007 due to the large number of Wilson's Phalaropes *Phalaropus tricolor*. The many training courses he has organized and the publication of his book 'Marine Birds of Continental Ecuador' resulted in the training of hundreds of people. More information



Loyda Sánchez presents Dr. Francisco Delgado with the Panama Audubon Award (photo: Panama Audubon Society).



Rob Clay presents Ben Haase with the 2019 Pablo Canevari Award (photo: Patricia Falk).

can be found at: <https://whsrn.org/ben-haase-of-ecuador-wins-the-2019-pablo-canevari-award/>

For the second time, two biennial awards were presented to honor Allan Baker and Lewis Oring (<http://westernshorebirdgroup.org/awards/>). Amazing hand-painted plates created by Rocío Landivar were given to each winner, along with 1,000 USD. The *Allan Baker Lifetime Achievement Award for Shorebird Conservation* was given to Stan Senner, Vice President for Bird Conservation–Pacific Flyway, National Audubon Society, USA. For the past 40 years, Stan has contributed his considerable expertise in avian ecology, environmental policy, and strategic conservation by leading flyway-wide initiatives to protect shorebird populations. He is currently working with hundreds of conservationists, wildlife and land managers, and policy experts, and has



Patricia González presents Stan Senner with the 2019 Allan Baker Lifetime Achievement Award for Shorebird Conservation (photo: Panama Audubon Society).



Lewis Oring with Roberto Carmona, recipient of the 2019 Lewis Oring Lifetime Achievement Award for Shorebird Science (photo: Gustavo Danemann).

achieved notable conservation successes for shorebirds in five global flyways. He has led many other conservation and governmental organizations, authored over 34 technical publications including 17 peer-reviewed papers, *Birds of North America* species accounts, popular birding articles, conference symposia, and book chapters.

Finally, the *Lewis W. Oring Lifetime Achievement Award for Shorebird Research* was presented to Dr. Roberto Carmona, Professor, Universidad Autónoma de Baja California Sur, Mexico. Roberto Carmona has dedicated his entire professional career to the study and conservation of shorebirds and their habitat in northwestern Mexico. His projects include a shorebird research program of the Ojo de Liebre Lagoon complex and the Guerrero Negro salt

mine; study and conservation of *roselaari* Red Knots and Dunlin during spring migration through the Upper Gulf of California and their relationship with spawning fish; and the exploration of wintering areas and reproduction of shorebirds in the states of Sonora and Sinaloa. He has advised 35 theses on shorebirds, published 75 scientific articles and book chapters, and helped designate six wetlands in northwestern Mexico (with two more in progress) as WHSRN sites.

SYMPOSIA

Innovative approaches to disturbance management

Organized by Monica Iglecia, Abby Sterling, and Diego Luna

This symposium provided a transdisciplinary and international context for the negative impacts of disturbance on shorebirds, and strategies for managing such threats. Disturbance is a pressing threat to shorebirds across the Western Hemisphere that will require innovative solutions to address. Innovation was defined as a novel, proactive or reactive solution that increases the effectiveness, efficiency, or sustainability compared to existing solutions. Areas for innovation include organizational processes like fundraising and governance but also conservation actions like monitoring, outreach, management practices, and partnerships. The symposium aimed to: 1) review current knowledge of the social drivers and biological impacts of disturbance; 2) understand the range of disturbance-related threats observed; and 3) generate ideas to reduce disturbance.

Presentations provided examples of ecological and social science strategies to reduce the negative impacts of human disturbance across the Americas, providing background information followed up with case studies. Kelsi Hunt of Virginia Polytechnic Institute and State University, presented the effects of disturbance on the distribution and behavior of shorebirds in eight states along the US Atlantic Flyway across seasons. Bird behavior was impacted and birds were less abundant at sites with high densities of people and dogs, and effects varied by species. Further research examined how birds responded to the stress of highly disturbed areas by examining telomere length. Dr. Ashley Dayer of Virginia Polytechnic Institute and State University shared how social science can be applied to change people's behaviors to improve habitat conservation. Her research involved surveying dog walkers in Maine, New York, and South Carolina to better understand how people make decisions about leashing dogs on beaches. This information can be used in community-based social marketing to change behaviors, set new norms, and guide educational messaging.

Three case studies highlighted innovative approaches to reducing human disturbance. Patricia González of Fundación Inalafquen presented her work with a community in Río Negro, Argentina to manage disturbance caused by kitesurfing through collaboration and communication. Laura Bartlett of Bird Studies Canada presented about the Space to Roost program, a community-based approach

to protect high tide roost sites in the Bay of Fundy, Canada. Finally, Jonathan Vargas of Terra Peninsular talked about protecting beach nesting birds in Bahía Todos Santos, Mexico with shorebird festivals, nest enclosures, and feral dog removal.

There was an interactive poster asking four questions with the following results:

Where do you work and what is your biggest disturbance issue? Respondents listed examples of disturbance in 14 countries. The most frequent disturbance types were loose dogs and cats (15), people and related recreation, tourism, and foot traffic (7), and vehicles on beaches (7). Predator expansion (3), development and habitat loss (3), improper waste disposal (2), fireworks (2), agricultural expansion (2), kayaking/windsurfing (2), hunting (2), and natural gas drilling (1) were also listed.

What are the most pressing challenges, limitations, and needs for dealing with disturbance? Lack of interest (3), lack of enforcement (3), lack of budget (2), fencing (1), nest stewards (1), vehicles (1), agricultural chemicals (1), lack of processes for participation (1), changing vegetation and sedimentation (1) were reported.

What are some innovative ways that you have seen for managing disturbance? Common responses included approaches that involved: 1) signs created by youths, youth-led outreach, or involved schools and parents; 2) community participation through presentations, training and education, volunteers at sites, cooperative agreements, and programs where citizens can report disturbances via social media; 3) closing critical areas; and 4) sharing information through songs and videos on traditional and social media.

In a no limits world, what would you do to try to reduce disturbance? The most frequently suggested strategy was the creation of seasonal or permanent closures (18), followed by stewards or patrols (10), media campaigns (7), providing alternative areas for human and pet recreation (5), sterilizing and/or controlling feral dogs and cats (4), creating shorebird-specific zones (4), training kids to be messengers to the public (3), banning vehicles from beaches (3), studying predator movements (2), and having government and policy level support (2).

Some particularly innovative suggestions included: 1) invest in marketing to appeal to people who might not ever care about wildlife, and related ideas to play advertisements in movie theaters and through social media influencers that make bird-friendly activities cool, or develop a fun and catchy tune or slogan to be played year round on television and radio; and 2) develop a whistle that attracts all dogs to you and away from birds.

The symposium concluded with a group brainstorm session to build a list of innovative, 'out-of-the-box' options to reduce disturbance. A key take-away was that even when given the opportunity to think outside of normal limitations to conservation work, it was difficult to come up with new ideas. It was suggested, that it would benefit the conservation community to reach beyond our own networks to incorporate voices and

thinking from other disciplines and fields to help us identify alternative strategies.

More information about efforts to address disturbance will be available at the Shorebird Forum (www.shorebirdforum.org). Please contribute to the conversations at that site.

Snowy Plovers: integrating behavior, ecology, and conservation

Organized by Luke Eberhart-Phillips and Clemens Küpper

The Snowy Plover is a threatened shorebird that has been studied for many decades throughout North and Central America. Many populations across the species' range are intensively monitored, and a significant proportion of these rely on active management to maintain population viability. Apart from being a public icon of shorebird conservation, Snowy Plovers have also increasingly captured the spotlight for their intriguing ecology and life-history. Their unusual biology features highly dispersive polyandry and male-biased uniparental care. Despite excellent local studies, many aspects about basic Snowy Plover biology remain unknown, hampering the development of improved conservation.

Our symposium brought together Snowy Plovers researchers to discuss range-wide challenges, share exciting findings, and bridge knowledge gaps. In total, the symposium featured eleven speakers representing Snowy Plover research: 1) Environmental change, natural history and long-term trends of threatened Western Snowy Plover populations in California, Gabriela Iburguchi, San Diego Zoo Global; 2) Population trend of the Snowy Plover in southwest Ecuador, Ben Haase, Museo de Ballenas; 3) Average and extreme weather conditions affect annual survival in Western Snowy Plovers, Lynne Stenzel, Point Blue Conservation Science; 4) Individual variation in dispersal and migration strategies of Snowy Plovers, Luke Eberhart-Phillips, Max Planck Institute for Ornithology; 5) Status and distribution of Snowy Plovers in Mississippi, Abby Darrah, Audubon; 6) Snowy Plover nesting success at the central and lower Texas coasts, Kristen Vale, American Bird Conservancy; 7) New site proposal for WHSRN in Venezuela based on Snowy Plovers: Salina de San Pedro, Isla de Coche, Gianco Angelozzi-Blanco, Universidad de Oriente; 8) Nest initiation and flooding in response to season and semi-lunar spring tides in a ground-nesting shorebird, Martin Bulla, Max Planck Institute for Ornithology; 9) Desertion as last resort? What can the time of leaving the family tell us about Snowy Plovers, Krisztina Kupán, Max Planck Institute for Ornithology; 10) Allelic diversity and selection at the Major Histocompatibility Complex class I and class II in the Snowy Plover, a threatened shorebird, Medardo Cruz-López, Universidad Nacional Autónoma de México; 11) Well stirred, not shaken: Snowy Plover genetics and conservation, Clemens Küpper, Max Planck Institute for Ornithology.

In summary, annual monitoring efforts have resulted in thousands of color-banded Snowy Plovers across extensive

latitudinal and longitudinal gradients – a largely untapped resource for range-wide investigations. Furthermore, recent technological advances in conservation genomics and movement ecology have the potential to offer valuable insights into population connectivity and source-sink dynamics. However, it is clear that there is a continued need for active management of coastal populations being impacted by human disturbance, invasive species, and predation.

At this time, valuable progress could be achieved by kindling a Pan-American network of Snowy Plover researchers and conservationists. Encouragingly, our symposium has already fostered several collaborative research and conservation projects of this charismatic shorebird.

Creating wings for new actors: Tools to involve communities in conservation

Organized by Laura Chamberlin and Mirta Carbajal

Threats to shorebirds are often addressed and resolved directly by landowners and land managers, but often the participation of communities is key. Traditional environmental education is a critical way to build conservation values within communities and drive an environmental ethic, but creative and innovative programs may also be needed. This symposium shared experiences and provided guidance on the development of projects.

An introductory presentation reviewed a step-by-step process to integrate community engagement activities into conservation actions focusing on volunteer programs, education, advocacy, or social marketing. The remaining presentations shared their experiences of setting objectives and indicators, planning, managing volunteers, fundraising, coordinating a participatory process, lessons learned, and results: 1) Introduction to community engagement for shorebird conservation, Laura Chamberlin, WHSRN; 2) Involving the community in the conservation of Asuncion Bay, a key stopover for migratory birds in Paraguay, Belén Achon (presented by Lorena Sforza, Guyra Paraguay); 3) How do we develop the tools that inspire and engage the community in the conservation of San Antonio Bay? Lic. Mirta Carbajal, Fundación Inalafquen; 4) Pride campaigns and bird fairs as tools for engaging communities in the conservation of shorebirds, Claudio Delgado, Fundación Conservación Marina; 5) Governance in a World Heritage Site, Soledad Díaz Overjero, ANP – Chubut; 6) Collective construction of a school curriculum to learn about shorebirds and about the territory, Patricia Falk-Fernandez, Calidris; 7) Projects to share scientific information about wetlands and shorebirds of Magallanes region, Chile, Jessica Paredes Soto, Centro Bahía Lomas; 8) Tools used to set a festival in the Eten Wetlands, Lambayeque, northern coast of Peru; Fabiola Riva Melofiro, Corbidi; 9) The Bird Route; Camilla Schilling; 10) Pilot projects of Marea Verde Association to improve solid waste management in coastal Panama, Sandra Waternberg, Marea Verde Association; 11) Muralism as a strategy for the integration of communities in the conservation of birds in Coche Island, Venezuela, Josmar Marquez, Ave Zona.

Presentations shared real tools and promoted easy replication at other sites. An open discussion focused on opportunities to stay more connected, especially to share resources and assist partners with new projects. Presentations were shared on the Shorebird Forum (www.shorebirdforum.org), in the Community Engagement and Shorebird Festivals forums, to enable further discussion. It was noted that the increasing interest in community engagement activities during recent WHSG Meetings highlights the importance of working with communities to promote conservation.

Implementing Key Strategies from the Shorebird Conservation Flyway Initiatives

Organized by Brad Andres, Isadora Angarita-Martinez, Rob Clay, River Gates, and Catherine Hickey

Effective actions to conserve shorebirds and their habitats require coordinated flyway-scale conservation initiatives. The AFSI and PSCI Initiative were developed to assemble and synthesize current knowledge to create a comprehensive approach to address the most pressing conservation needs of shorebirds along the coasts of the Americas. While shorebird conservation is our primary goal, we also developed actions to address multiple benefits, including improving the wellbeing of the human communities that interact with shorebirds. Each initiative identified a set of key strategies to maintain and restore shorebird populations across the hemisphere.

The symposium's goals were to: 1) build knowledge among science and conservation practitioners by highlighting a diversity of successful conservation programs and projects that implement the respective initiatives' strategies; 2) demonstrate how research and conservation programs collaborate to achieve shared goals; 3) illustrate how shorebird conservation projects can tie into larger conservation initiatives; and 4) discuss barriers and risks to success. The presentations were organized by the key strategies to: 1) manage and conserve existing habitats; 2) cultivate and empower conservation constituencies; 3) create conservation initiatives with natural resources industries; 4) strengthen compliance and enforcement; 5) develop environmental and wildlife protection policies; 6) provide future shorebird habitats; and 7) increase institutional knowledge and capacity.

Additionally, there was a panel discussion, moderated by Isadora Angarita, with the following themes: 1) Larger frameworks, Diego Luna, WHSRN, focused on reiterating the existence of national shorebird plans and how they are a pathway to larger-scale initiatives and funding opportunities, including engaging with the Convention on Migratory Species; 2) Scaling up, by Rob Clay, focused on how we most effectively scale up projects and programs to increase their conservation impact; and 3) Adaptive learning, Juliana Almeida, SAVE Brasil, focused on applying lessons learned from the presentations and audience.

The presentations were: 1) Improving management for shorebirds in and around Paracas National Reserve, Perú, Fernando Ángulo, CORBIDI; 2) Finding avenues for the

implementation of improved coastal sediment management techniques to benefit shorebirds, Brad Winn, Manomet; 3) Empower sustainable community management of mangrove habitat for shorebirds and other Natural Resources Linked to Livelihoods, Patricia Falk, Asociación Calidris; 4) Cultivate and empower ancestral users to protect critical shorebird habitat in the Jambelí Channel, Ana Agreda, Aves y Conservación; 5) Community engagement and stewardship to reduce disturbance of shorebirds, Walker Golder, Audubon North Carolina; 6) Environmental education as a tool for shorebird conservation in Panama, Yenifer Díaz, Audubon Society of Panama; 7) Opportunities and challenges for shorebird-friendly shrimp farming in the Gulf of Fonseca, Central America, Salvadora Morales, WHSRN; 8) Guidelines for assessment and monitoring of wind farm impacts on birds in Southern Brazil, Glayson Bencke, Zoobotanical Foundation of Rio Grande do Sul; 9) Approaches for setting regulations to achieve sustainable shorebird harvest in the Atlantic Americas Flyway, Brad Andres, USFWS; 10) Integrating shorebird data into national and international policy initiatives to support conservation, Rob Clay, WHSRN; 11) Flooding to flyway: strategies for tracking and assessing impact of changing shorebird habitats, Matt Reiter, Point Blue Conservation Science; 12) Multiple-benefit conservation of shorebirds in the highly-managed landscape of California's Central Valley, Kristin Sesser, Point Blue Conservation Science; 13) Migratory Shorebird Project: increasing capacity for shorebird conservation through monitoring and application of data, Diana Eusse, Asociación Calidris; 14) Bay of Fundy conservation partnership, Garry Donaldson, Environment and Climate Change Canada.

The importance of working with and building trust within communities to create support for shorebird conservation was a major theme within both the presentations and the discussion. Presenters gave valuable examples of engaging and building trust within communities surrounding important shorebird areas, using shorebirds to improve the quality of life, and scaling up from the community-level to regional and flyway scales.

Participants generated recommendations for increasing community engagement: 1) develop a clear vision, mission, and strategy prior to engagement; 2) understand how benefits to shorebirds translate to human society; 3) identify and cultivate the most influential partners within the community, 4) strengthen communication to sustain relationships through time; and 5) create opportunities to engage a wide cross-section of society.

Scaling up requires: a functional network of partners regionally, nationally, and internationally to use resources more effectively; supporting national initiatives and international agreements to increase capacity and invest in human capital; and developing monitoring and evaluation methods that meet established standards to increase participation and enable larger-scale analyses.

Three general recommendations emerged: 1) design a framework for increasing the efficiency of communication among local, national and international scales; 2) determine

how to increase the sustainability of projects and programs in the face of fluctuating funding, political change and social unrest and transition of key staff or influential partners; and 3) increase knowledge and awareness of social, economic, and cultural factors to more effectively engage communities, stakeholders, politicians and other actors in the conservation of shorebirds and their habitats.

Assessing the status of shorebirds breeding in Latin America and the Caribbean

Organized by Arne Lesterhuis and Rob Clay

Of the 79 shorebird species that regularly occur in Latin America and the Caribbean, 35 have breeding populations there. Although many of these species have relatively small populations and restricted distributions, limited attention has been paid to their conservation status (though six species are considered Near Threatened at a global level). The results of a preliminary status assessment of South American breeding shorebirds, conducted following the methodology of the *National Shorebird Conservation Assessment* (Brown *et al.* 2000), were presented at the 4th WHSG meeting in Vancouver, Canada, in 2011. In 2013, at the 5th WHSG meeting in Santa Marta, Colombia, a workshop was held to review these preliminary results. Here, workshop participants highlighted the lack of population estimates as a significant impediment to completing a status assessment. Since then, Lesterhuis and Clay have generated population estimates for all breeding species and subspecies, by using data available through eBird and from recent survey efforts (e.g. Coastal Shorebird Survey, International Shorebird Survey, Migratory Shorebird Project, Neotropical, Central American, and Caribbean waterbird censuses).

Given these new draft population estimates, a workshop was held to review an updated preliminary status assessment of the 35 shorebird species breeding in Latin American and the Caribbean. About 40 participants from at least 10 countries attended the workshop, representing governmental organizations, NGOs, and universities. The workshop started with presentations on related topics. Although in general information on breeding species is still scarce, an increased interest in shorebirds at the national level (in part stimulated by training workshops) is resulting in filling knowledge gaps, especially in regard to species distributions.

The revised status assessment was conducted following the methodology of Brown *et al.* (2000), but updated based on the recent assessment of Canadian shorebirds of conservation concern (Hope *et al.* 2019 *Wader Study* 126: 88–100). Variables considered included population trend, relative abundance (population size), threats during breeding and non-breeding, and breeding and non-breeding distribution. The potential impact of climate change to species was not considered; in discussion, workshop participants considered it important to include in future assessments, but the methodology will need to be adapted to better represent the issues related to climate change in the region.

The status assessment resulted in two species being considered Highly Imperiled, six of High Concern, 17 of Moderate Concern, five of Low Concern, and five of Least Concern. These results are similar to those from the previous workshop, although a few more species were previously considered of High Concern. This reflects increased knowledge rather than a genuine improvement in the conservation status of any species.

Workshop participants considered the draft population estimates to be a good first step, but there is a need for review at the national level to incorporate information not available through international censuses or eBird, in addition to local expert opinion. It was proposed that participants take advantage of national conferences to organize workshops to review the estimates. Consequently, by the next WHSG meeting, estimates for all species should be revised and agreed upon and will then be published.

World Migratory Bird Day – Protect Birds: Be the solution to plastic pollution in the Americas

Organized by Miguel Matta and Susan Bonfield

World Migratory Bird Day (WMBD) is a global celebration that blends conservation messages, activities for youth and adults, with more than 700 global events every year. In 2019, the theme of WMBD was the impacts of plastic pollution to migratory birds and challenged participants to join plastic cleanups and reduce plastic use. More than 850 global community-based activities, education programs, and festivals occurred through the year. Session participants learned about successful experiences and presentations from different regions, discussed how to make a practical field trip, and drafted a regional action plan. Training about plastic cleanups and restoration of habitats was provided, as were sufficient educational materials to carry out a WMBD celebration. Environment for the Americas provides the framework for events, promotional and educational materials and direct training in multiple languages, with our partners, the Convention on Migratory Species and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds.

The integration of sectors and disciplines for effective coastal conservation: status and opportunities in Latin America

Organized by Osvel Hinojosa-Huerta and Viviana Ruiz-Gutierrez

Coastal ecosystems are under increasing pressure along the Pacific coast of the Americas, causing detrimental effects on populations of migratory shorebirds and valuable ecosystem services for coastal communities. One of the key elements required to target these challenges is the implementation of evidence-based solutions that integrate multiple sectors (private, governmental, NGOs, academia, etc.) and disciplines (science, conservation, engineering, landscape architecture, etc.). There is a strong need to integrate scientific knowledge and conservation values into formal coastal planning and design process. Similarly, conservation targets need to integrate future scenarios of

climate risk assessments and adaptation guidelines. In this symposium, we explored the current status of such initiatives across spatial scales and sectoral perspectives. We presented case studies of solutions that integrate these sectors and perspectives, followed by a discussion of future opportunities for actions to foster cross-sectoral collaborations. Finally, we summarized opportunities and approaches for strengthening the implementation of a network of solutions along the Pacific Americas Flyway.

SYMPOSIUM & WORKSHOP

Development of a flyway-scale shorebird conservation initiative for the Midcontinent Americas

Organized by Brad Andres, Isadora Angarita-Martínez, Kelli Stone, David Newstead, and Rob Clay

The interior regions of North and South America provide critical breeding, migration stopover and nonbreeding habitat for numerous resident and migratory shorebird species, of which many are declining and are of conservation concern. Habitats in the Midcontinent Americas Flyway are experiencing a suite of ecosystem stresses, which will intensify with climate-related changes. Shorebirds dependent upon this geography are impacted by disturbance, habitat loss and modification and direct mortality. Additionally, agencies, non-government organizations and funders are seeking guidance on the priority actions and outcomes needed to best maintain and recover shorebird populations. Despite these clear biological and conservation needs, a comprehensive, full annual cycle strategic framework for shorebird conservation, similar to the Atlantic Flyway Shorebird Initiative (AFSI) and the Pacific Shorebird Conservation Initiative (PSCI), is lacking.

Conversations among shorebird biologists and conservation practitioners from across the Midcontinent Americas regarding this conservation gap led to the development of a flyway-scale initiative to strengthen and align existing efforts and facilitate collaboration. Complementing the AFSI and PSCI, a Midcontinent initiative will link to global efforts and national plans. A symposium and workshop were held at the WHSG meeting to introduce and launch the initiative, get feedback from partners, and begin to develop a strategic conservation framework.

During the symposium, talks were presented to illustrate the biological and conservation needs for a Midcontinent Shorebird Conservation Initiative (MSCI): 1) Shorebird use of the Midcontinent Region of North America, Brad Andres, USFWS; 2) South American-breeding shorebirds in the Midcontinent Region of South America, Rob Clay, WHSRN; 3) Use of the Midcontinent Region of South America by North American shorebird migrants, Arne Lesterhuis, WHSRN; 4) Management and conservation of key stopover sites along the Midcontinental Flyway in North America, Robert Penner, The Nature Conservancy; 5) Working with landowners in the Southern Cone for shorebird conservation: influencing the management of grazing and pasture restoration, Joaquín Aldabe, Universidad

de la República, Uruguay; and 6) Suggested approach for a Midcontinent Americas shorebird conservation strategy: filling the gap, by the organizers. This presentation suggested relying upon a network of engaged shorebird conservation practitioners throughout the flyway, and the use of the Open Standards for the Practice of Conservation to develop a strategic framework. The timeline, suggested funding sources, and next steps were also presented.

The final session of the symposium was a moderated discussion among the ~40 participants. The feedback was supportive, with participants providing evidence of the need for a strategic framework, and stressing what species, geographies and issues should be included.

Afterwards, a workshop with 30 shorebird specialists, researchers and conservationists from across the midcontinent Americas was held to determine the geographical coverage, conservation targets (focal species), and priority threats for the MSCSI. We established the process to develop the Midcontinent Strategic Framework, defined the governance and discussed potential funding sources. We also identified key stakeholders and how to engage them.

The MSCSI in North America includes four focal regions based on the administrative flyways in North America, and combinations of Bird Conservation Regions: Arctic and Boreal, Mississippi Valley, Great Plains, and Western Gulf of Mexico. For South America, the MSCSI includes regions and habitats not influenced by the tide along the northern and eastern coasts. Seven focal geographies were identified, including: Northern Andes; Orinoco Llanos and Llanos de Mojós/Beni Savanna; Amazonian-Orinoco Lowlands; Central/Southern Andes; Gran Chaco/Pantanal in Bolivia, Paraguay, Argentina and Brazil; Pampas in Brazil, Uruguay and Argentina; and Patagonia Steppe in Argentina and Chile.

Twenty-five shorebirds were identified for the MSCSI: seven North American migrants and residents, nine South American migrants and residents, and nine transcontinental migrants. They were selected using similar criteria to those used in the AFSI and PSCI (i.e., endemic to the flyway, representative of the diversity of shorebirds in the flyway, relative to other conservation planning efforts, viable, feasibly restorable, occur in manageable numbers, and of high conservation concern).

Using the draft list of focal species, North and South American breakout groups worked through the Open Standards for the Practice of Conservation's lexicon to identify a preliminary list of threats. Regional workshops will refine the threat analysis and develop strategies and actions pertinent to the specific focal area.

There will be sub-committees for North and South America, each with 8–10 members representing focal areas and a variety of agencies and organizations, to assist with workshops and provide technical advice and expertise. Each sub-committee has a coordinator (K. Stone and I. Angarita-Martínez). A Hemispheric Steering Committee of 4–6 people will provide oversight to ensure consistency and communication and provide a

hemispheric perspective. We anticipate a two-year time-frame to develop the strategic framework. The next steps are to secure funding to support workshops, and to plan and implement them.

This workshop was possible thanks to the generous contribution of the U.S. Fish and Wildlife Service, the Conservation of Arctic Flora and Fauna through the Arctic Migratory Bird Initiative, Manomet, Inc., and the Western Hemisphere Shorebird Reserve Network.

WORKSHOPS & INFORMAL SIDE MEETINGS

Governance and transparency as tools for the conservation of migratory species

Organized by Rosabel Miró and Bethzaida Carranza

The Secretariat for Environmental Enforcement Matters (for the United States-Panama Trade Promotion Agreement) and the Audubon Society of Panama organized a panel discussion as the opening event for the meeting. The main objective was to disseminate information from the Secretariats for the Application of Environmental Legislation, created within the Free Trade Agreements with the United States, among environmental professionals, members of NGOs, government institutions, and those interested in habitat conservation for migratory species, especially shorebirds. A total of 203 people attended the panel discussions and the welcome reception.

There were two panels, the first of which discussed the tools available to the public to strengthen governance structures and promote transparency in management and for decision-making. Patricia Pérez, Governance, Voice and Democracy Officer of the United Nations Development Program (UNDP) was moderator and Diego Luna Quevedo, a conservation specialist for WHSRN, also participated as a panelist. The second panel discussed community, legal and research experiences in the protected Area Wildlife Refuge, Ramsar Site Bay of Panama Wetlands. It focused on how strengthening existing governance can continue to support site conservation.

Buff-Breasted Sandpiper Conservation Working Group

Organized by Rick Lanctot

The Buff-breasted Sandpiper Conservation Working Group meeting was held on 23 October 2019. It was the fourth meeting of this group and by far the largest, with 36 people participating (see photo). The meeting consisted of a series of talks followed by a discussion of Manomet's efforts to update the 2010 conservation plan and a review of Canada's newly developed management plan.

Rick Lanctot and Lee Tibbitts gave the first presentation about a full-cycle migration tracking study designed to uncover areas of use and factors in those areas that may be contributing to the species' decline. Birds equipped with 94 GPS-Argos and 22 PTT-Argos tags from sites in northern Alaska, southern Texas and three countries in southern South America were tracked between 2016 and



Participants at the 4th Buff-breasted Sandpiper Workshop (photo: Fernando Faria).

2018. The results showed how Buff-breasted Sandpipers migrate in a figure-8 pattern. Additional details on major stopover sites and timing of migration were provided.

Jim Lyons spoke about monitoring Buff-breasted Sandpipers during northbound migration through the Flint Hills ecoregion of eastern Kansas and northeastern Oklahoma, and the Western Gulf Coastal Plain ecoregion of Texas and Louisiana. In the Flint Hills ecoregion, nearly 7,000 km of roads were surveyed in 2014 and 2015; extrapolation of population densities indicated 12,782 to 20,727 birds were present. Buff-breasted Sandpipers were more common in the southern portion of the Flint Hills ecoregion in areas with a high proportion of native grass and little development (much of which was recently burned). In the Western Gulf Coastal Plain ecoregion, point count surveys were conducted at 372 (x4), 528 (x1), and 304 (x4) points from 2016 to 2018, respectively, using two different survey sampling designs. Preliminary analyses indicated birds concentrated in the central coast, and that peak migration periods vary from 23 April to 10 May. There will be an estimate of population size using bird-days and length-of-stay to adjust for turnover.

Kelli Stone discussed how these same coastal surveys in Texas and Louisiana were used to investigate habitat selection by staging Buff-breasted Sandpipers. She helped organize observers (14, 24, 38 and 24 in 2016–2019, respectively) from federal and state agencies, NGOs, universities, and other citizen scientists (e.g., Texas Master Naturalists) that worked together to conduct these surveys. Initial analysis indicated birds preferentially used turf farms, grasslands, and rice fields (as expected) but, surprisingly, also soy and cotton fields to a lesser extent.

Joaquin Aldabe described habitat selection of wintering Buff-breasted Sandpipers in Eastern Uruguay using satellite tags. Tagged birds moved during the late winter (February–early March) from coastal sites to interior regions of Uruguay, Brazil and Argentina. By comparing ground characteristics from six tagged birds and random points,

he demonstrated that the probability of detecting Buff-breasted Sandpipers increased with shorter grass height and flatter ground, but there was no effect from having forest nearby (in contrast to his previous publication). Finally, he showed that birds used dry grasslands, as well as both natural grasslands and artificial prairies.

Gabriel Castresana spoke about habitat use of Buff-breasted Sandpipers wintering in Samborombon Bay, Argentina. Using satellite tag information (bi-daily observations at 07:00 hrs), he showed how individual birds wintered in very small (2 ha) grazed, but humid, pastures during December–early March, sometimes moving 400 m or less before settling into a new area. He also showed that birds use the nearby intertidal mudflats at night to roost, perhaps to avoid predators. More detailed tracking is needed to fully understand habitat use.

Robert Penner described the management of landscapes for grassland obligate shorebirds migrating northward through Kansas and Oklahoma. He said that ranchers routinely use intensive early stocking (as opposed to season-long stocking), combined with annual spring burns, to increase weight gains in cattle. This decreases residual nesting vegetation needed by grassland birds. The Nature Conservancy is proposing an approach called patch-burn grazing that would provide a mosaic of vegetation heights that would benefit a variety of grassland birds, allowing sensitive forbs time to rejuvenate between burns, as well as providing greater fuel load conditions that lead to hotter fires to control woody vegetation. Patch-burn grazing also controls noxious weeds, especially when burning in the fall, which may also be attractive to Buff-breasted Sandpipers migrating south.

Tjalle Boorsma talked about the work that Asociación Armonía (NGO) is doing to protect critical stopover habitat for grassland shorebirds in the Barba Azul Nature Reserve in the Beni Savanna of Bolivia. Tjalle noted that most Buff-breasted Sandpipers equipped with satellite transmitters (see above) stopped in the Beni Savanna during southward

migration. Daily counts of the species have been conducted during September 2014–2019, with a single maximum daily count of 1,460 birds in 2016. This led to the Barba Azul Nature Reserve being recognized as a WHSRN site in 2015. Armonía is managing the reserve to attract shorebirds through cattle management and selective burning, while at the same time operating a conservation and eco-tourism business. However, the Beni Savanna grasslands may be at risk of agricultural development due to government incentives.

Carlos Ruiz-Guerra and Yanira Cifuentes-Sarmiento discussed the potential for a new WHSRN site in the Llanos of Colombia and Venezuela. The Llanos includes large areas of wetlands and a heterogeneous savanna ecosystem that is being degraded by intensive cattle ranching and expansion of agriculture. Surveys in the Llanos by Asociación Calidris members indicated this site is important for shorebirds, including Buff-breasted Sandpipers. Through extensive interactions with local families and communities, 'Calidris' is promoting the nomination of two WHSRN sites, one of which would benefit Buff-breasted Sandpipers.

Sandra Giner discussed the current state of knowledge of the Buff-breasted Sandpiper in Venezuela. Using museum specimens, eBird sightings, published literature, and consultations with birdwatchers, Sandra confirmed the importance of the Llanos and to a lesser extent Amazonas to Buff-breasted Sandpipers during northward migration. Fewer observations occurred during southward migration, and most were along the coast.

Juliana Almeida spoke about the conservation efforts and current threats facing Buff-breasted Sandpipers at Lagoa do Peixe National Park in Brazil – an area that hosts *ca.* 10% of the species. The park has experienced conflicts with the community as well as land ownership and resource use disputes and, since 2017, has faced the threat of losing all of its protective status. SAVE Brasil and others hosted several workshops that resulted in an action plan to strengthen the park and the creation of a coalition of supporters to support the park's existence and conduct projects.

Walter Cejas presented data on the presence of Buff-breasted Sandpipers in Córdoba, Argentina. He noted groups of 5, 13, 125 and 400 individuals southeast of Córdoba as well as eBird observations near Laguna Mar Chiquita. This region of Argentina appears to serve as an alternative wintering site for the species, with some of the birds equipped with tags using it during the latter part of winter.

Following the completion of scheduled talks, Arne Lesterhuis, Rob Clay, and Marc-André Cyr discussed the revision of the 2010 Buff-breasted Sandpiper Conservation plan and the development of Canada's new management plan for the species. Rob noted that this species is of special interest because many of WHSRN sites were nominated based on its numbers. He also advocated considering this species as a 'working lands' bird as it

allows conservation to be expanded to other species. Participants pointed out: 1) the problems with invasive species in Uruguay and all-terrain vehicles in Colombia; 2) the need for best management practices to allow sustainable ranching and the value of having agronomists involved in our studies; and 3) the importance of promoting human well-being when promoting species conservation. Also mentioned were the need for: 1) site-specific management actions, even at the farm level; 2) more detailed habitat studies to truly understand the species' needs during all phases of their cycle; 3) more knowledge of the species in Russia; and 4) more information on post-breeding sites in northern Canada. Questions remain about whether the species uses agricultural areas because grasslands are limited and whether agricultural use harms the species (e.g., the role of no till, exposure to pesticides). Participants also discussed the potential impacts of wind farms (e.g., direct mortality and displacement of birds) and sea level rise. Potential future collaborations included conducting age-ratio counts over a large number of sites to assess productivity, an intensive monitoring study in the Llanos of Colombia and Venezuela during northward migration, connecting festivals along the species flyway, and intensive habitat study in the Texas Coastal Plain during both north and southward migration.

North American Banding Council shorebird banding workshop

Organized by Cheri Gratto-Trevor

The fourth North American Banding Council (NABC) shorebird bander training and certification workshop was held on 23 October. NABC's mission is to promote sound and ethical banding principles and techniques. This classwork-only session was chaired by Julie Paquet and involved topics such as: scientific and ethical standards; training and certifications; banders code of ethics, and human health and safety considerations (Jen Rock); shorebird nonbreeding capture including working as a team, reducing risk of injury and capture myopathy, and the use of audio lures (Patricia González); visual and electronic markers including coded flags, geolocators, satellite transmitters, nanotags, and their attachment methods (Julie Paquet); feather and blood collection, including use, collection methods, and storage (David Mizrahi); and the Pan American Shorebird Program and the importance of shorebird marking coordination (Willow English). During breakout exercises, participants were invited to share, demonstrate and practice some techniques and skills, including use of different band and flag types, correct band placement and application, and band corrections and removal. Including presenters, 16 people attended the workshop. Six participants wrote the NABC shorebird certification exam, and will qualify for certification at the assistant, bander or trainer level once they have met all certification criteria in terms of practical experience for their level, and applied for certification.



Participants and instructors from the Migratory Shorebird Project data analysis workshop.

Migratory Shorebird Project data analysis workshop

Organized by Matt Reiter, Diana Eusse, and Yenifer Díaz

A 1.5-day workshop was held to teach Migratory Shorebird Project (MSP) partners how to work with MSP data to ask some basic questions. There were 17 participants representing 9 countries and teachers from Point Blue Conservation Science and Asociación Calidris. Our objectives were to: 1) understand MSP data types; 2) review statistical approaches for analyzing MSP data; 3) match statistical approach to question to be addressed and analysis to be conducted; and 4) complete initial analyses of data. We used a common data set type to facilitate our initial exploration of the data using R. Participants learned about the general structure of the MSP dataset and what type of analyses they are suited for. Participants from different countries were able to look at their own data and begin the data analysis process to assess their questions of interest at their site. We will be hosting follow-up webinars to continue this training process.

Migratory Shorebird Project partner meeting

Organized by Matt Reiter, Diana Eusse, and Yenifer Díaz

This meeting brought together MSP partners to: 1) review current state of MSP; 2) assess opportunities for MSP as a climate-smart conservation science network; 3) understand recent approaches for considering ecosystem services/multiple benefits across the MSP network; 4) learn about stakeholder surveys and contribute ideas for broadening the impact of MSP data; 5) provide feedback on communication tools required and who and what we want to communicate; and 6) be together! A total of 27 people attended, representing 18 organizations and agencies. We received a lot of valuable feedback during the meeting on how we can leverage the MSP network beyond shorebirds to be a climate-smart conservation network.

International Phalarope Working Group side meeting

Organized by Ryan Carle and Marcela Castellino

The International Phalarope Working Group held a short side meeting. This was a follow-up to a two-day inaugural meeting of this group at Mono Lake, USA, in June 2019. The goal of the working group is to bring together those interested in advancing phalarope research and conservation in the Americas to share information and foster collaboration. The side meeting in Panama was an opportunity to spread awareness of the group, bring in more members, and give updates. At the meeting, Ryan Carle and Marcela Castellino gave an overview of what is known about the current conservation status of the three *Phalaropus* species, as well as the activities of the phalarope working group to date, including surveys at North American Salt Lake staging grounds during 2019 and a planned survey across South America in early 2020. Attendees shared updates on phalarope research; topics included satellite tracking Red Phalaropes nesting in the Arctic (Rick Lanctot, Willow English), plans for installing MOTUS towers at key phalarope sites for tracking studies (Margaret Rubega), and phalarope numbers and status in Ecuador (Ben Haase, Ana Agreda), Venezuela (Lermith Torres), and Bolivia (Dennis Comacho Rojas). A charter document officially creating the International Phalarope Working Group was distributed for signature. This group is planning to meet again at the 2021 WHSG conference. Those interested in the group are invited to join by contacting organizers Marcela Castellino (mcastellino@manomet.org) and Ryan Carle (ryan@oikonos.org).

Rosabel R. Miró, Yenifer L. Díaz, H. River Gates, Stephen Brown, and Richard B. Lanctot