

## **Buff-breasted Sandpiper Conservation Workshop**

### **AGENDA**

**Venue:** Double Tree Hotel, Paracas, Peru (room to be determined at hotel)

**Date:** 9 November 2017

**Time:** 8:30am to 5:00pm

**Languages:** unfortunately we will not have simultaneous translation to Spanish, but a number of people attending can speak both English and Spanish, feel free to give your talk in your native language (sorry I was unable to translate the agenda in time)

**Food:** Please bring your own snack for during the breaks. We will go out to eat for lunch.

*We plan to hear about recent ecological investigations and status of the species, coordinate and promote the next round of research and conservation projects, and discuss tagging of Buff-breasted Sandpipers in the Southern Cone of South America at the end of the meeting.*

<b>Time</b>	<b>Topic</b>	<b>Speaker/Panel</b>
8:30 – 8:45	Welcome. Introductions and Overview of Meeting schedule.	Rick Lanctot
<b>Historic Perspective</b>		
8:45 – 9:00	A small pond on a long migration: the Buff-breasted Sandpiper in Oklahoma	Lew Oring
<b>Migration Tracking</b>		
9:00 – 9:30	Determining migration routes, stopover sites, and habitat selection of Buff-breasted Sandpipers	Lee Tibbitts / Rick Lanctot
<b>Habitat Modeling and Management</b>		
9:30 – 9:45	Relationships between grassland shorebird abundance and landscape characteristics in South American wintering areas	Natalia Martínez-Curci
9:45 – 10:00	Habitat Use and threats at Buff-breasted Sandpiper migration stopover sites	Arne Lesterhuis
10:00 – 10:15	Looking for synergies in grassland management to maximize shorebird use and livestock production	Joaquin Aldabe
<b>10:15-10:30</b>	<b>Break</b>	
<b>Local Conservation</b>		
10:30 – 10:45	Conservation efforts and current threats to Buff-breasted Sandpipers at Lagoa do Peixe National Park	Juliana Almeida
10:45 – 11:00	Update on the status of the Buff-breasted Sandpipers in Asunción Bay, Paraguay	Arne Lesterhuis
11:00 – 11:15	Shorebird Conservation in Bolivia, with a focus on Buff-breasted Sandpipers	Gustavo Sanchez
<b>Population Estimation and Trends</b>		
11:15 – 11:30	Estimates of population size and trends of Buff-breasted Sandpipers in wintering areas in southern Brazil	Fernando Faria
11:30 – 11:45	Density trends and habitat use of Buff-breasted Sandpipers in the Rainwater Basin, Nebraska, USA	Lindsay Brown
11:45 – 12:00	Abundance and distribution of Buff-breasted Sandpipers in the Mid-Continent of North America during spring migration	Jim Lyons
<b>12:00 -1:30</b>	<b>Lunch</b>	<b>In-house</b>

1:30 – 3:00	Identification of New Action Items Going Forward (30 min each) <ul style="list-style-type: none"> <li>- Winter priorities</li> <li>- Migration priorities</li> <li>- Breeding priorities</li> <li>- other</li> </ul>	All
<b>3:00 – 3:15</b>	<b>Break</b>	
3:15 -5:00	<b>Project discussion:</b> Buff-breasted Sandpiper winter tracking and habitat use in Argentina, Brazil, and Uruguay. <ul style="list-style-type: none"> <li>- Tag deployment</li> <li>- Habitat use determination</li> <li>- Capture and habitat field protocols</li> <li>- Future tag deployment</li> <li>- other</li> </ul>	All
<b>5:00</b>	<b>Adjourn</b>	

### **Abstracts of talks**

#### **A Small Pond on a Long Migration: the Buff-breasted Sandpiper in Oklahoma, USA (Una chara pequena y en migracion largo: Correlimos canelo en Oklahoma, USA)**

Lew Oring

In spring (1961-3) hundreds of Buff-breasted Sandpipers stopped at a 1-2 ha pond on the Norman, Oklahoma airport runway. Most were very fat and nearly all had freshly molted plumage. Most males had somewhat enlarged testes and they displayed intensely for and to females. Many fewer birds passed through Oklahoma during southward migration. Surveying numbers of buffies passing through North America is extremely difficult because length and frequency of stopovers are heavily dependent upon weather.

#### **Determining Migration Routes, Stopover Sites, and Habitat Selection of Buff-breasted Sandpipers**

Lee Tibbitts and Rick Lanctot

Concerns about apparent declines in the population of Buff-breasted Sandpipers prompted its categorization as “Near Threatened” by IUCN; the species is of conservation concern throughout its distribution. To uncover factors contributing to decline, we determined migration pathways and habitat use of this Neotropical migrant, which breeds in Arctic North America and spends the nonbreeding season in southeast South America. We captured birds in coastal Texas during northbound (April 2016 and 2017) and southbound (August 2016) migrations, and breeding birds in northern Alaska (June 2017). Birds were tagged with either 4 g GPS/Argos Pinpoint ( $n=48$ ) or 2 g Argos satellite ( $n=10$ ) transmitters; most tags provided full or partial data (up to 30 locations for GPS tags, and up to 5 months of continuous data for Argos tags). Northbound birds departed Texas in mid-April, traversed 2,500 km along a narrow corridor through Great Plains states, before stopping at pre-breeding locales in southern Saskatchewan in late May. Birds then continued north for an additional 1,800–3,200 km in early June, and arrived on breeding sites in Nunavut ( $n=13$  birds), Northwest Territories ( $n=2$ ), and Alaska ( $n=1$ ). Southbound birds left Texas in late August, stopped in Colombia, Peru, Bolivia and/or Paraguay in September and

October before heading to The Pampas in Uruguay, Brazil, and Argentina. We present analyses of habitat use and describe future efforts to map the entire migration route of this species, with goals to delineate stopover site use and turnover (needed for population estimates and trends), and factors limiting population size.

### **Relationships between grassland shorebirds abundance and landscape characteristics in South American wintering areas. (Project in progress)**

Natalia S. Martínez-Curci and Juan P. Isacch

Most of our knowledge about requirements of grassland shorebirds in wintering areas comes from studies that evaluated the response of shorebird abundance to patch-level characteristics of habitat. However, the relative influence of landscape variables is poorly understood. We know that American Golden-Plovers (*Pluvialis dominica*) and Buff-breasted Sandpipers (*Calidris subruficollis*) depend on short grassland. However, many of the areas with seemingly adequate habitat are not used. Although it is possible to identify different types of vegetation, the main constraint for landscape-scale studies had been the difficulty to differentiate tall and short pastures using satellite imagery. We will evaluate the influence of landscape variables in the patterns of abundance and distribution of grassland shorebirds and use this information to construct habitat suitability maps. To overcome the difficulty of not being able to differentiate between short and tall grasslands using remote sensing, we are going to use the normalized difference vegetation index (NDVI) from the MODIS project to estimate forage above-ground net primary production (ANPP). It is known that different pasture types show different patterns of annual variation in the ANPP. The ANPP is determined by vegetation structure and its capability of fixing carbon, and has a considerable annual variability. Different pasture types show different patterns of annual variation; and within the same pasture type, the ANPP usually decreases with grazing because it modifies vegetation structure and leaf area. It is also known that grazing strategy affects shorebirds abundance. Abundance is greater in paddocks with continuous grazing (in which cattle is maintained through the year) than in those with rotational grazing (in which cattle is rotated several times among different paddocks throughout the year), while there are no shorebirds under winter grazing (in which grazing occurred only during austral autumn and winter). Our first specific goal is to integrate this knowledge to evaluate the relationship between shorebirds abundance and the annual variations of ANPP associated to different grazing strategies. Our second specific goal is to model shorebirds abundance and distribution as a function of landscape-scale variables, including the metrics of the ANPP obtained from the specific objective 1. Finally, our third specific goal is to construct habitat suitability maps that allow extrapolating density estimates over the study area. If we find significant associations between landscape variables and shorebirds abundance, this methodology could be replicated in Brazil and Uruguay to obtain habitat suitability maps that allows for more precise population estimates. Also, time series analysis can be developed to evaluate the relationship between inter-annual variations in the ANPP and shorebirds abundance. The stability of grazing strategy and therefore of the ANPP in a given ranch might explain shorebirds site fidelity.

## **Habitat Use and Threats at Buff-breasted Sandpiper migration stopover sites**

Lesterhuis, A.J., Clay, R.P., Cifuentes-Sarmiento, Y., Eusse, D., Ruiz Guerra, C., and T. Camacho

In 2016, the Canadian Wildlife Service (CWS) and partners deployed Argos Pinpoint GPS trackers on Buff-breasted Sandpipers *Calidris subruficollis* to identify locations and obtain habitat information on migratory stopover sites. Tags were programmed to collect 30 GPS-quality locations at daily or multi-day intervals as birds migrated south. Through the WHSRN Executive Office, CWS then supported local partners to identify and provide specific information on the locations (i.e. habitat conditions and characteristics, and existing or potential threats) used by the tagged Buff-breasted Sandpipers. This was undertaken through field visits and remote data analysis (of Landsat satellite images). Partial data were received from 7 of 12 southbound birds in November 2016 involving a total 73 locations that pertain to birds at migration stopover sites. Of these 73 locations, 25 were the USA and Mexico (outside of the scope of the study), and one location was over the Pacific Ocean between Panama and Colombia, presumably representing a bird in flight. Of the remaining 47 locations, 23 were in Bolivia, 10 in Colombia, 6 in Brazil, and 2 each in Argentina, Paraguay, Peru and Venezuela. Field visits were successfully made to 5 localities in Colombia and to 9 localities in Bolivia. Satellite images were available for dates within 20 days of the birds being recorded at the location for all but one location. Field surveys and satellite analysis combined, a total of 15 different land-cover classes were identified of which the primary ones were natural and managed herbaceous vegetation (grasslands), both flooding and dry; agricultural fields; and wetlands. One location in Peru (over closed-canopy forest) presumably referred to a bird in flight. Satellite images showed potential threats in the surrounding areas to be urban expansion and habitat clearance. Ground surveys identified agricultural expansion to be a major potential threat, though given the use of rice and soy fields by birds on migration, further research is required to assay how significant a threat this represents.

## **Looking for synergies in grassland management to maximize shorebird use and livestock production.**

Joaquin Aldabe, Rick Lanctot, and Pablo Inchausti

Buff-breasted Sandpiper (BBSA) and American Golden Plover (AMGP) are insectivorous long distance migrants of international conservation concern that breed in the arctic and overwinter in Southern Cone coastal grasslands. Short grass height has been shown to be an important ecological requirement for both species, but little is known about the effects of other potentially relevant variables. We analyzed how forest cover, improved grasslands (i.e., overseeding exotic legumes coupled with phosphorus fertilization), arthropod biomass availability and grass height are related to BBSA and AMGP habitat use. Forest cover was negatively related to the abundance of both shorebird species, possibly because vertical structures may make it difficult for birds to detect avian predators. Grass height was also negatively related to BBSA and AMGP abundances. We did not detect an effect of improving grasslands on shorebird abundance. Arthropod biomass was not related to BBSA and AMGP abundances in short grasslands, suggesting that other ecological variables not considered here are causing birds to use these

areas. Increasing grass height was related to increasing arthropod biomass, confirming the use of short grass areas was not related to food availability. Possibly the easy detection of prey and/or predators in short grass and low forest covers is influencing the habitat use of both shorebird species on their wintering areas. Based on these results, as well as cattle production principles, we present specific management recommendations that provide synergies between the conservation of grassland shorebirds with production interests.

### **Conservation efforts and current threats to Buff-breasted Sandpipers at Lagoa do Peixe National Park.**

Juliana Almeida

Lagoa do Peixe National Park, Brazil, hosts approximately 10% of all rufa Red Knot and Buff-breasted Sandpiper. The region's importance has been recognized through its designation as a Federal National Park, a WHSRN Site of International Importance, an IBA, and a Ramsar Site. Yet, despite these recognitions, the Park still faces several challenges that hinder shorebird habitat conservation. Some of the challenges include i) a history of conflict between the park and community; ii) land ownership; iii) resource use, iv) isolation from the shorebird community; v) lack of staff and capacity. To change this scenario, SAVE Brasil has been leading collaborative approaches to address some issues and strengthen the Park's capacity to promote shorebird habitat conservation along the coast and inland. In February 2016, we co-hosted with Manomet a Shorebird Ecology, Conservation, and Habitat Management Workshop at the Park. The workshop helped the Park Manager prioritize actions and include coastline protection in park planning. It also showed staff how cattle ranching is used as a management tool for Buff-breasted Sandpiper habitat, and provided a venue to exchange experiences with managers of two other very important wintering sites for the species. Since hosting the workshop, we continue to work towards habitat conservation in the Park by supporting the Manager to achieve good governance of the site, and searching for an appropriate legal route to maintain cattle in areas important for Buff-breasted Sandpipers. In this symposium, we intend to share lessons learned, looking for advice on the many challenges we still face.

### **Update on the status of the Buff-breasted Sandpiper in Asunción Bay**

Arne J. Lesterhuis, **Guyra Paraguay**

Asunción Bay used to be a site of great significance for the globally Near Threatened Buff-breasted Sandpiper *Calidris subruficollis*. Regular monitoring of shorebirds by Guyra Paraguay from 2000 onwards revealed single-day counts of over 1% of the global population of the species, and a minimum estimate of 3% of the population using the area during southward migration. Furthermore, if turnover rates are taken into consideration, the bay probably supported a significantly higher proportion of the population. Limited banding studies suggested that while adult turnover rates were quite high, the bay may have been especially important as a longer-duration stopover site for juveniles. As a result of its importance for Buff-breasted Sandpiper, Asunción Bay was declared as an Important Bird and Biodiversity Area (IBA) in 2005, and as a Western Hemisphere Shorebird Reserve Network (WHSRN) site of Regional Importance in 2008. In 2010, the development of a bay-side road (Costanera) destroyed about

70% of the shorebird habitat in the bay due to dredging to build an embankment. Since then, there had been a significant decrease in shorebird numbers, and in particular of Buff-breasted Sandpiper, whose habitat was most affected by the dredging. Since 2013, Guyra Paraguay has been working to restore parts of the bay with funds from the Neotropical Migratory Bird Conservation Act. Activities have included beach cleaning, removing invasive vegetation and trying to create shallow ponds of water. A current project in collaboration with the Ministry of Public Works seeks to expand these activities and restore some of the dredged areas through infilling.

## **Shorebird Conservation in Bolivia, with a focus on Buff-breasted Sandpipers**

Gustavo Sanchez

We will describe our desire to develop a shorebird program in Bolivia, with a focus on Buff-breasted Sandpipers. This program will include environmental education, identification of key sites, monitoring, and banding. Our initial efforts will focus on education and recognizing important sites. This new effort has sprung from our past 5 years of work on Buff-breasted Sandpipers, which I will describe briefly.

## **Estimates of population size and trends of Buff-breasted sandpiper (*Calidris subruficollis*) in wintering areas in southern Brazil**

Fernando A. Faria, James E. Lyons, Glayson A. Bencke, Leandro Bugoni, Juliana B Almeida, Maycon S. S. Gonçalves, and Rafael A. Dias

The Buff-breasted sandpiper (*Calidris subruficollis*) is a medium-sized shorebird that breeds in the Arctic and migrates to southeastern South America, with highest densities in the wintering range usually found in southern Brazil. Population trends and sizes, and information on habitat used, are key for conservation and management of the species. Our objective was to estimate trend and density of birds wintering in the most important areas in Brazil, while accounting for effects of environmental variables, such as vegetation height. Using distance sampling methods, we surveyed 19 1-km long transects in four areas in southern Brazil in December/January from 2008-2009 to 2015-2016. We also measured height of vegetation and soil moisture to characterize habitat within transects. We used a hierarchical distance sampling model in which population size on transects was modeled as a function of geographic area and vegetation height. The estimated annual population varied from 1,415 to 2,718 birds during the 7-year period. Sites with highest bird density were Torotama and Lagoa do Peixe in all years. We observed a population increase, with peak during the last sampled year. Although this increase suggests an increase in population size, it might be an effect of change in habitat availability in wetter years, caused by a reduction in available wintering areas due to flooding. This scenario would cause birds to concentrate in fewer places, including the areas surveyed. If this hypothesis is correct, it increases the importance of these sites for conservation of Buff-breasted sandpiper.

## **Density trends and habitat use of Buff-breasted Sandpipers in the Rainwater Basin, Nebraska. USA.**

L.A. Brown, John McCarty, Joel Jorgensen, and L. LaReesa Wolfenbarger

Buff-breasted Sandpipers are prioritized as a Tier I species in Nebraska, a status which recognizes a species of conservation concern locally as well as globally. A large proportion of the Buff-breasted Sandpiper population uses the Rainwater Basin, in Nebraska during their migration (Jorgensen 2007, Jorgensen et al. 2008). In Nebraska, we have monitored Buff-breasted Sandpipers during spring migration in 2004, 2005, 2012-2014, 2016 and 2017. This long-term dataset can provide valuable information on the population trend of Buff-Breasted Sandpipers. To ensure the continuation of this monitoring, it is critical to establish a statistically sound, efficient monitoring scheme. This project established a more efficient survey protocol by selecting approximately half of the previous survey points in the Rainwater Basin. New density estimates were calculated and trends were similar to previous trends in the Rainwater Basin. To identify potentially important areas throughout the landscape, we evaluated Buff-breasted Sandpipers current distribution along with landscape features they consistently occupy in the Rainwater Basin and created a predictive map using Maxent. The predictive model indicated moderate performance (AUC = 0.757). We also validated the model using past years present/absent data.

## **Abundance and Distribution of Buff-breasted Sandpipers in the Mid-Continent of North America during Spring Migration**

J.E. Lyons, B.A. Andres, R.L. Penner, K. Stone, and L. Wolfenbarger

In the Mid-Continent of North America, Buff-breasted Sandpipers rely on tall-grass prairie and other grasslands during migration stopovers. Many birds stopover in the Western Gulf Coastal Plain ecoregion after crossing the Gulf of Mexico during spring migration. Continuing north, many birds also stopover in the Flint Hills ecoregion of eastern Kansas and northeastern Oklahoma. With nearly 2.8 million ha, the Flint Hills ecoregion includes approximately three quarters of the remaining tall-grass prairie in North America. We conducted population and habitat assessments of Buff-breasted Sandpipers in Kansas and Oklahoma (Flint Hills ecoregion) in 2014 and 2015. In a separate study, we also conducted surveys to assess populations in Texas and Louisiana (Western Gulf Coastal Plain ecoregion) in 2016 and 2017. Our results suggest that approximately 14,300 birds stop in the Flint Hills ecoregion during spring migration and that birds are concentrated in the southern parts of the region. Our results from Texas and Louisiana document the extensive use of commercial turf (grass) agriculture, areas that may have once been shortgrass prairie. Surveys in the Western Gulf Coastal Plain are on-going and these surveys, combined with studies in the Flint Hills, provide important information about abundance and distribution that will be useful for conservation planning.