

Report for Audubon Society of Missouri Graduate Research Scholarship

Landscape effects on individual-decision making and fitness in mid-continent migratory shorebirds

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Introduction: This report will describe the progress made in my project studying the effects of individual decision-making and carry-over effects on fitness in shorebirds, supported by funding from the Audubon Society of Missouri scholarship from 2019. My project is focused on three species with contrasting migration strategies: the American avocet (*Recurvirostra Americana*), black-bellied plover (*Pluvialis squatarola*), and Hudsonian godwit (*Limosa haemastica*), which are short-, medium-, and long-distance migrants, respectively. My objective is to quantify effects of individual decisions related to landscape characteristics, timing of migration, and stopover behavior on survival and productivity in three mid-continent shorebird species with contrasting migration strategies and life histories to inform community-level wetland conservation and management efforts. This winter, our team has been capturing American avocets and black-bellied plovers in Louisiana and Texas, and Hudsonian godwits in Chile. I used funding from the Audubon Society of Missouri Scholarship to rent a field vehicle and pay for fuel for work in Louisiana, and a smaller portion of it toward travel back from Chile. I plan to continue collecting data through 2021, and will be finishing my PhD and publishing the results in 2022.

Louisiana (January-February 2020): Thanks to the Audubon Society of Missouri Scholarship, I was able to rent a field vehicle long enough to spend about 7 weeks at Rockefeller Wildlife Refuge in Louisiana leading our efforts to catch American avocets and black-bellied plovers there. I left the first week of January and returned to Missouri the last week of February. This was more time than I was able to spend in 2019, and that allowed me to catch more birds than I did last year. I assembled a team of Louisiana Department of Wildlife & Fisheries (LDWF) staff to help with American avocet capture efforts and a team of fellow graduate students and colleagues from the University of Missouri (MU), University of New Hampshire (UNH), and Texas A&M – Kingsville (TAMUK) to help with black-bellied plover capture. Because I was able to pay for my own travel with ASM Scholarship funding, I was able to use different funding to pay for other students to travel to Louisiana who volunteered to be field assistants. Having help from other students benefited my project because I was able to have the personnel I needed to get the work done, and was also a great opportunity to teach others about rocket netting shorebirds and learn from their experiences in other systems. In Louisiana, I deployed tracking devices on 20 birds, and captured about 60 total. I plan to go back next year to put out 20 more tracking devices, 10 on American avocets and 10 on black-bellied plovers.

Chile (March 2020): I also used Audubon Society of Missouri funding for part of my travel to Chile. We have been working with faculty and graduate students from the Universidad Austral de Chile (UACH) and University of South Carolina (UofSC) who have ongoing projects focused on Hudsonian godwits, and we are sharing tracking devices and data with them. I was only in Chile for less than one week due to our fieldwork being cut short by the COVID-19 pandemic, but we were able to catch a few birds during that time. I put 2 tracking devices on birds myself to add to several more deployed by collaborators on Hudsonian godwits in January. There are still more tracking devices left that I need to put on Hudsonian godwits, so I will try to get back to Chile in the next field season. Even though I was not able to spend much time in Chile, being there to help and meeting our collaborators was very valuable.

Texas (January-April 2020): Currently, colleagues from TAMUK are catching American avocets and black-bellied plovers at Laguna Madre in Texas. They aim to put out about 25 tracking devices there before the start of spring migration. With this, our team will have over 50 tracking devices out for the project so far.

Summary: This field season went well, even though some things were cut short by COVID-19. I was able to catch a good number of birds, improve techniques, and work with and learn from different groups of people. So far, most tracking devices I have put out on birds seem to be working fine. Bird movements have still been limited to their wintering areas (see example below), but I expect that migration will pick up for them mid-May. As the data come in throughout the spring, summer and fall, I plan to process it and begin working on my analyses to meet project objectives and eventually publish results.

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Black-bellied plover, Louisiana



American avocet, Louisiana



Hudsonian godwits, Chile



American avocet movement, Louisiana