During the summer of 2013 I had the incredible opportunity to travel to Honduras and study mangroves and their various ecosystem services. I worked as a technician for the Sustainable Wetlands Adaptation and Mitigation Project (SWAMP), a global initiative funded by a grant to the Center for International Forestry Research from the United States Agency for International Development. In addition to working for the SWAMP project, I conducted field research for my Honors thesis project concerning the role waterbirds play in mangrove nutrient cycling. My participation in this field work and research was funded by the E.R. Jackman Internship Support Program, the CAS Global Experiences Fund and the Oregon State University Honors College. I am extremely grateful to all of the above organizations for their generous support.

The primary objective of this sampling trip was to assess mangrove ecosystem carbon stocks (how much carbon each forest contains) across three coastal zones of Honduras. These zones included the Golf of Fonseca (Pacific coast), the area of Tela (Caribbean coast) and the Bay Islands. We measured forest carbon stocks, structure, and composition at 24 sites across these zones, making the Honduras data set the project’s largest within the Americas. The work was designed to train local natural resource personnel in the implementation of the sampling protocol. We trained a total of five teams, totaling over 45 natural resource professionals from governmental agencies, NGOs, and universities. The data generated from this field work is intended to improve our understanding of mangroves as a global source/sink of greenhouse gases. As such, information gained from this project will contribute to improved decision making at local and national levels, as well as allow Honduras to participate in policy dialogue concerning climate change mitigation strategies and adaptation of tropical wetlands to climate change.

My Honors thesis research concerns the impact of waterbirds on mangrove ecosystems and their nutrient cycles. Waterbirds (cormorants, ibises, herons, etc.) have a profound impact on many terrestrial ecosystems. By foraging fish in the marine environment and depositing large volumes of guano at their terrestrial roost sites, waterbirds act as an important nutrient vector in
many systems. Despite circumstantial evidence for its occurrence, this phenomenon is poorly studied in mangrove forests.

My study sites consisted of a small (approx. 2 ha) mangrove island that hosted a large colony of waterbirds, and an adjacent mainland site that did not have a bird colony. At each site, I installed one square meter plastic sheets under the tree canopy to collect bird guano. The plastic sheets were retrieved after four days, so that deposited guano may be weighed and analyzed for nutrient content. I additionally collected soil and leaf samples for nitrogen and phosphorous analysis. SWAMP protocol was implemented at both sites to measure mangrove structure, composition, and carbon stocks. The samples are currently being processed and will be analyzed at the OSU Central Analytical Laboratory. Once the samples are analyzed, I will be able to determine the rate of avian nutrient inputs to the system, and whether those nutrients are deposited in the soil and utilized by mangroves. The results will further our understanding of mangrove productivity and may have important implications for commercial fisheries that utilize mangrove habitat.

I wish to express my gratitude to the ER Jackman Foundation, the CAS Global Experience Fund and the OSU Honors College for supporting this experience which otherwise would not have been possible. Through my participation in this project, I learned many new field skills, had the opportunity to network with dozens of Honduran professionals, and am on my way to writing my first peer-reviewed paper. The skills and knowledge I gained will be invaluable as I pursue my graduate education and a future career in natural resource research and management.