

Cesar Estien

University of Michigan – 2020 EEB Preview Statement

I am pursuing a career as a research scientist in the field of conservation biology. I want to work in the government conducting conservation related research while collaborating with local K-12 educators to create STEM education materials in areas where it's underfunded. To achieve this goal, I am pursuing graduate degrees in Ecology and Evolutionary Biology. My research interests are in global change biology with a focus in urbanization. As a graduate student, I will use an integrative approach that combines behavioral observations, citizen science, and genomic techniques to investigate how individuals adapt to the stress of urban environments. I have worked in various research positions which have provided me with the conceptual framework and tools necessary to address fundamental questions. As a research technician for a Ph.D. candidate, I helped process data associated with her research investigating variation in cooperative behavior. I was responsible for analyzing complex videos on the parental care and fledging behavior of wild birds, which the Ph.D. candidate used to assess how a juvenile's behavior affected dispersal and future cooperation, and I learned how an individual's natal conditions and body condition influence its adult phenotype. After learning about the influence of proximate mechanisms on an individual's phenotype, I had a strong interest in learning about ultimate mechanisms. I wanted to learn how incorporating population genetics with lab experiments could be used to explain observations in the wild populations. To do this, I began working with a Ph.D. candidate investigating the forces influencing mating systems in *Ascidians* (sea squirts). Using microsatellites, we calculated the relatedness between colonies and conducted preference experiments to determine why colonies gravitated towards a particular substrate. I also designed and implemented an independent research project investigating the influence of microplastics on fertilization success and sperm availability in purple sea urchins. I am passionate about understanding anthropogenic influences on fauna and through this research opportunity I could investigate allowed how organisms perform under environmental stressors and anthropogenic pollutants and develop research questions that contribute to conservation efforts. Through this experience, I also developed critical skills in science communication and troubleshooting research setbacks. I established a chapter of Ecological Society of America (ESA) that focuses on increasing diversity within ecology and was invited to create and speak at outreach and inclusion events. These experiences have solidified my passion for increasing diversity in STEM through my research and as an educator and science communicator. As a graduate student, I will (1) work with individuals across communities (i.e., wildlife managers, ecologists, sociologists) to address how fauna are adapting to urban spaces and how this may vary along a socioeconomic gradient, (2) incorporate citizen science to engage the public in meaningful scholarship and serve as a resource for wildlife managers, and (3) develop outreach programs alongside K-12 educators and researchers to enable and encourage underrepresented groups in the community to pursue their interests in the natural world.