Continuing fellowship application

**Statement of Purpose (4000 characters)**

“Please provide an essay addressing the following points:

-Academic status and objectives

-Research interests and accomplishments

-Plans for the fellowship period

This essay should also address how fellowship funding will enhance your work and overall career goals.”

Currently ~6000 characters

I am a fourth year PhD student studying the combined effects of habitat conversion and climate change on biodiversity. I hope to become a leader in conservation science, either as a university faculty member or as a lead scientist at an international NGO, creating knowledge that will safeguard biodiversity and empower rural and indigenous people. My early research experiences as a new graduate of Cornell University inspired my ambitions. For a year, I climbed emergent rainforest trees in West Kalimantan (Indonesian Borneo) to collect samples of orangutan food and developed an independent research project to understand why orangutans choose to eat tough epiphytes. Though I contributed to conservation by presenting my work at the American Society of Primatologists conference in 2016, my contribution felt incomplete. I walked by active fires and waded through ash to get to my field site, saw rainforest wood piled up outside of the house of a local logger, and witnessed the corruption and indifference of local natural resource management officials. Clearly, I could not understand natural systems, let alone develop strategies for protecting them, by studying pristine ecosystems alone. I needed to understand their interplay with human-dominated ecosystems to understand the dynamics of the Anthropocene.

I thus decided to collaborate with local NGOs to conduct research that would more directly focus on interactions between people and nature in tropical forests. To do so, I won a Fulbright Student Research grant to co-design a study with an Indonesian NGO to investigate the impacts of the wild bird trade. First, using inventories of shops selling wild birds, I documented 25,298 individuals of 153 species for sale in 201 shops and concluded that these shops constituted only a fraction of the trade (Rentschlar ***et al*.** 2018, *Trop. Con. Sci.*). Simultaneously, I designed and executed an independent study that sought to unravel the interactive effects of forest loss and the wild bird trade on bird distributions. I led a team of 3 local field assistants to conduct 575 bird surveys across 115 remote tropical forest sites. My findings that commercially valuable birds lived disproportionately far from roads compared to their non-valuable counterparts directly supported the NGO’s efforts to facilitate conservation agreements among small communities surrounding the nature reserve where I worked (Lauck *et al*. in prep). Finally, during the first year of my graduate education, I worked with an NGO and the Costa Rican government to help develop research focused on tourism, infrastructure development and biodiversity (Echeverri *et al*. 2022, *PNAS*). The results of this research will help the government create new policies to incentivize sustainable tourism.

My current research is designed to suggest concrete conservation interventions that could help maintain biodiversity in agriculture in the US. Many forms of habitat conversion remove insulating tree canopies or other complex microhabitats, thereby exposing organisms to warmer maximum and/or cooler minimum temperatures. Thus, as temperatures warm, climate change may cause cities and farms to become even less hospitable, undermining efforts to safeguard biodiversity in human-dominated landscapes. I led a research team that analyzed a continental-scale dataset of 152,863 nesting attempts by 58 bird species across 23 years (1998-2020) and 37,869 sites to explore the interactive effects of land cover and climate change on the nest success of birds across the conterminous US. We found that anomalously hot temperatures disproportionately reduced nesting success in agriculture but not in forests, indicating that tree cover may increase birds’ resilience to climate change (**Lauck** *et al.* in review, *Science*). We also found that species of conservation concern are disproportionately affected and forecasting over projected climate change predicted even lower nesting success in the future with more extreme climate change.

I hypothesized that the two main mechanisms underlying this effect are a reduction in food provided to nestlings and physiological stress caused by hyperthermia. Understanding which mechanism predominates in which land covers would suggest concrete conservation interventions. For example, if the direct effects of heat are more important than food-mediated effects, nest boxes could be modified to reduce their internal temperature. If food-mediated effects predominate, then maintaining patches of non-crop habitats in working landscapes to support food resources may be more effective. Retaining birds in agricultural areas will maintain the ecosystem services that they provide to people, such as pest control and aesthetics. With this goal in mind, I partnered with farmers and other landowners in California’s Central Valley to build a network of about 150 nest boxes and gathered a research team including both undergraduate and graduate students. For two years March to August, we have measured nestling growth and survival, collected blood samples to quantify physiological stress, monitored temperature inside and outside nest boxes, and used motion-activated Raspberry Pi-based cameras to measure how often parents bring food to their offspring.

Because my independently developed project has diverged from my lab’s previous directions, I have funded it through grants totaling $xxx, collaborations with other researchers and working as a teaching assistant seven times. While I have enjoyed teaching, I have taught enough to prepare me for future responsibilities as a member of a university faculty. I would like focus exclusively on my research for my final year of graduate school. In addition, I would be glad to be able to put more time and effort into mentoring the undergraduate students who assist me with my research. Fellowship funding would allow me to re-allocate time spent teaching towards research and mentoring activities, allowing me to efficiently prepare for a career as a research scientist.

**Personal History and Diversity Statement (4000 characters)**

“Please explain how your personal background and/or present circumstances informs your graduate education and research. You may include any educational, familial, cultural, economic, or social experiences, challenges, community service, outreach activities, residency and citizenship, first-generation college status, or opportunities relevant to your academic journey; how your life experiences contribute to the social, intellectual, or cultural diversity within our campus community and your chosen field; or how you serve educationally underrepresented and underserved segments of society with your graduate education.”

Currently ~5300 characters

I am grateful for the opportunities I have received to grow beyond my origins. I am non-binary and grew up in a rural area without representation. After relocating to California for graduate school, I have finally recognized and begun to express my gender identity. I could have spent my life in an identity that felt suffocating, in a place that did not accept my full humanity, simply because I faced financial barriers. I would not have been able to attend university without the full scholarship I received from Cornell University. I felt my socioeconomic class keenly there. But after university, I won a Fulbright to conduct an independent research project in Indonesia. I learned to speak Indonesian and spent hours in conservation with our local guides, and in the process, learned how privileged I was, despite the challenges my upbringing posed.

My experiences with financial insecurity and gender identity, coupled with my experiences abroad, have forged my determination to use my privilege for positive change. I pursue this ambition in three main ways. Firstly, I seek to produce actionable science. I have co-developed research abroad with NGOs in service of their community-driven research programs, and my current research program is focused on conservation science applicable to farms across the US. Secondly, I mentor and collaborate with folks that have been historically excluded from academia, both abroad and in the US. Finally, I am involved as a leader in efforts to build a more just and inclusive community at UC Davis.

I first co-developed a research project with an NGO when I won a Fulbright Student Research grant to investigate the impacts of the wild bird trade in Indonesia. First, using inventories of shops selling wild birds, I documented 25,298 individuals of 153 species for sale in 201 shops and concluded that these shops constituted only a fraction of the trade (Rentschlar ***et al*.** 2018, *Trop. Con. Sci.*). Simultaneously, I designed and executed an independent study that sought to unravel the interactive effects of forest loss and the wild bird trade on bird distributions. I led a team of 3 local field assistants to conduct 575 bird surveys across 115 remote tropical forest sites. My findings that commercially valuable birds lived disproportionately far from roads compared to their non-valuable counterparts directly supported the NGO’s efforts to facilitate conservation agreements among small communities surrounding the nature reserve where I worked (Lauck *et al*. in prep). Finally, during the first year of my graduate education, I worked with an NGO and the Costa Rican government to help develop research focused on tourism, infrastructure development and biodiversity (Echeverri *et al*. 2022, *PNAS*). The results of this research will help the government create new policies to incentivize sustainable tourism.

In addition to producing actionable science, I am committed to collaborating with and empowering aspiring scientists of underrepresented identities. I believe that solving global challenges requires a diverse set of perspectives, and yet academia is inaccessible and unwelcoming for many. I have mentored children and peers in parallel to my research activities since the beginning of my research career. During my Fulbright in Indonesia, I mentored three Indonesian post-baccalaureate students who worked as my field assistants. One of my mentees was recently awarded a Chevening Scholarship and earned a master’s degree in the UK. More recently, during my work as a teaching assistant, non-binary and gender-nonconforming undergraduate students have shared that seeing me succeed as a non-binary person in academia has helped them feel more motivated and welcomed. I am gratified to provide the representation that I lacked as a young person. Finally, For the past two summers, I have helped undergraduates access funding so that they could be paid to work with me on my field research. I have mentored four undergraduates and two graduate students as my field assistants so far.

I am also actively working to advance equity and inclusion at UC Davis through much-needed structural changes. In my second year, I was elected to Co-Chair of the Ecology Graduate Student Association. In this role, I facilitated several committees tasked with organizing a yearly research symposium, social events, a student newsletter, and a fundraiser for local charities. To support new students, I created a new comprehensive resource for incoming graduate students to connect underrepresented students with specialized resources. Next, as a committee member of my graduate program’s Diversity, Equity, and Inclusion Task Force, I helped draft community policies that would establish a culture of accountability for discriminatory actions. In my third year, I served as the co-chair of the Ecology Graduate Group Diversity Committee’s Admissions and Awards Subcommittee. In this role I helped facilitate implicit bias trainings for admissions reviewers and facilitate discussion of improvements to the holistic review admissions process. Finally, this past year I was elected to be a Student Representative on the Ecology Graduate Group’s Executive Committee, a group of faculty who make decisions about how the graduate group runs. From this position I hope to improve the program’s recruitment and retention of diverse graduate students.

**Future Plans Essay (2000 characters)**

Briefly describe your proposed future occupation or profession:

Currently ~1100

My research and mentorship efforts have given me broad and deep experience with the ecological dimensions of conservation in agricultural landscape. In the future, I hope to partner with economists and social scientists to design policies and incentives to implement conservation interventions in working landscapes. To that end, in the short term, I will apply for interdisciplinary postdoctoral research programs that will provide mentorship as I develop this new research direction. In the long term, I aim to pursue either a faculty position at a research-focused institution where I could continue mentoring or a fully research-oriented position in government. Ultimately, I hope to continue to produce policy-relevant, actionable science that will increase the climate resilience and biodiversity of human and non-human communities in working landscapes.

**Future Financial Statement**

If you have already been awarded financial support (fellowship, academic employment, etc.) for the 2023-24 academic year, please list the type of funding, the name of the funding agency or organization, and the amount of the award. (2000 characters)

Briefly explain why you qualify for financial need fellowships (2500 characters)

As mentioned earlier, I developed my research program independently and so I have funded my graduate education so far by working as a teaching assistant. This experience has been valuable and enjoyable, but I would like to focus my time and energy on my research for the last year of my graduate degree. In addition, I would like to invest more time in mentoring undergraduates who assist with my project and in service to my program and department. To do so, I would need a fellowship to pay for my tuition and stipend.

If you have previously received financial assistance as an undergraduate or graduate student, briefly describe the forms (loan, fellowship, academic employment, etc.) (didn’t see a character limit)

As an undergraduate, I received a full scholarship from Cornell University that consisted entirely of grants. In addition, I received a federal Pell Grant.

As a graduate student, I received a four-quarter fellowship from the Ecology Graduate Group. In addition, I have worked as both a Graduate Student Researcher and a Teaching Assistant.