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 3960 characters

I am a 4th-year PhD student studying the combined effects of habitat conversion and climate change on biodiversity. I hope to become a leader in conservation science in agroecosystems, either as a faculty member or lead scientist at an NGO, creating knowledge that will safeguard biodiversity and empower rural and indigenous people. I took my first steps towards this goal when I won a Fulbright Student Research grant to co-design a study with an Indonesian NGO. We found that commercially valuable birds lived disproportionately far from roads compared to their non-valuable counterparts (**Lauck** *et al*. in prep). Simultaneously, we uncovered a widespread and lucrative trade in wild birds in Borneo (Rentschlar ***et al*.** 2018, *Trop. Con. Sci.*). Then, in my first year of graduate school, I worked with an NGO and the Costa Rican government to understand how biodiversity and infrastructure drive nature tourism (Echeverri ***et al*.** 2022, *PNAS*).

My current research is designed to suggest concrete conservation interventions that could help maintain biodiversity in agriculture. Many forms of habitat conversion remove insulating tree canopies, thereby exposing organisms to temperature extremes. 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 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 nesting success of birds across the 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 predicted even lower nesting success in the future with projected climate change.

The next step of my research focuses on understanding the mechanisms that may underlie bird fitness declines with climate and land-use change. I hypothesized that extreme temperatures in agriculture cause reductions 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. To understand these mechanisms, 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, 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 by securing grants (total $42,035), collaborating 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. Looking forward, 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 ~3989 characters

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 am non-binary; I grew up in a rural area without representation and with financial hardship that could have prevented me from attending university. Fortunately, a full scholarship from Cornell University allowed me to escape. After university, I won a Fulbright to conduct an independent research project in Indonesia, and in the process, learned about the ways I am privileged, despite the challenges my upbringing posed. I seek to create positive change in three main ways. Firstly, I produce actionable science. I have co-developed research 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 people who 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. My research supported conservation agreements among communities surrounding the nature reserve where I worked. In addition, our findings that the wild bird trade in Borneo is more widespread and lucrative than previously known helped the NGO pressure local natural resource officials to increase enforcement. Next, I helped conduct research in collaboration with an NGO to help the Costa Rican government design policy to incentivize sustainable tourism. Finally, my current research will suggest concrete conservation interventions to maintain biodiversity and ecosystem service delivery in working lands as climate change disproportionately warms agriculture and cities.

In addition to producing actionable science, I collaborate with and empower 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. 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, gender-nonconforming undergraduate students have shared that my presence as a non-binary person in academia has helped them feel welcome. I am gratified to provide the representation that I lacked as a young person. Finally, I have helped three undergraduate students access stipend funding so that they could assist me with research.

I am also working to advance equity and inclusion at UC Davis through structural changes. First, I was elected to Co-Chair of the Ecology Graduate Student Association. I facilitated committees which organized a yearly research symposium, social events, a student newsletter, and a fundraiser for local charities. In addition, I created a new program handbook for incoming graduate students and connected 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. I helped facilitate implicit bias trainings for admissions reviewers and discussion of improvements to the holistic review admissions process. Finally, this past year I was elected to the Ecology Graduate Group’s Executive Committee, a group 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, as I do not have any other way to pay for these costs.

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 need-based full scholarship from Cornell University that consisted entirely of grants. In addition, I received a federal Pell Grant. Finally, I received federal work-study grants while working for Cornell University’s Outdoor Education program.

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.