Arnhold Environmental Graduate Fellowship:
Remote Sensing and Conservation Planning
Fall 2021

Project Background

The University of California Santa Barbara (UCSB) and Conservation International (CI) recently launched the Arnhold UC Santa Barbara-Conservation International Climate Solutions Collaborative to unify their demonstrated expertise and networks to conduct cutting-edge applied research to yield tangible, progressive solutions, and propel the careers of emerging environmental professionals. Through this partnership, the Environmental Market Solutions Lab (emLab) at UCSB and CI are launching several applied collaborative research projects pushing the boundaries on resilient ocean and land conservation, natural climate solutions, and the frontier of impact investing in the blue economy. The Collaborative has also created the Arnhold Environmental Fellows program - a powerful opportunity for undergraduate and graduate students to engage in collaborative research projects and receive mentorship from experts in the fields of environmental and ecological science.

We are currently hiring graduate student fellows to support the following projects:

Remotely sensed impacts of natural climate solutions: Natural climate solutions (e.g., actions that increase carbon storage or avoid greenhouse gas emissions in land and wetlands) are important interventions to combat climate change. Evaluating the effectiveness of natural climate solutions (e.g. the change in forest cover or land use) can be challenging due to cost and differing time and spatial scales. However, advances in remote sensing provide new possibilities for impact evaluation. In this project, UCSB and CI will evaluate the effectiveness of natural climate solutions and other conservation interventions with remote sensing measurements. The graduate student(s) selected for this project will be responsible for:

- Developing and adapting remote sensing based measures of agricultural technology adoption, crop production, crop residue burning, afforestation and/or deforestation for field sites in Africa and South Asia
- Validating, synthesizing and improving existing code and data to process remote sensing imagery
- Supporting statistical analysis, including evaluation of measurement errors in remote sensing based measures
- Combining ground truthing data, survey data and remote sensing-based measures into tabular datasets for analysis
- Contributing to publications and reports describing imagery, data processing and validation

Climate-informed conservation planning: Climate change is driving shifts in species ranges as well as the landscape of biodiversity threats. These shifts threaten to undermine the benefits of protected areas and other area-based conservation investments in the future. In this project, UCSB and CI are seeking to ensure conserved area networks are climate-proofed by advancing our understanding of how ecosystems will respond to climate change and creating a framework for incorporating this information in the planning process. The graduate student(s) selected for this project will be responsible for:

- Identifying and managing spatial and remote sensing data related to land use/land cover, agriculture, climate, & biodiversity
- Developing and executing reproducible code for spatial and statistical analyses
- Gathering and reviewing literature

Desired Skills and Experience

Ideally, the selected candidates would demonstrate the following:

- Proficiency with coding languages such as R, Python, the Google Earth Engine API, and/or Stata;
- Prior independent research experience working on a related topic;
- Experience working with remotely sensed data and familiarity with machine learning methods for remotely sensed data (for remotely sensed impacts project);
- Advanced knowledge of GIS (for climate-informed conservation planning project);
- Excellent technical skills including experience collecting, managing, processing, and analyzing large datasets;
- Excellent quantitative skills including statistics and econometrics;
- Interest in mentoring or teaching undergraduate researchers

Fellow Selection Criteria

Students will be selected as Arnhold Environmental Fellows based on the following criteria:

- Excellence in environmental and ecological science and research
- Interest, skills, and experience related to the project responsibilities described above
- Registered UCSB graduate student

Special consideration will be given to candidates that enhance diversity in the environmental sciences.

emLab is committed to sustaining an equitable and inclusive workplace and to the goal of reflecting the rich diversity of our campus community within our staff. We encourage applications from students of all backgrounds and majors. We strive to create an adaptive, supportive environment, especially during circumstances caused by the COVID-19 pandemic. As such, this student will work remotely for the beginning of this appointment, with the possibility of remote work for the duration.

How to Apply

To apply, please send your resume and cover letter to Jen Bone at jebone@ucsb.edu. In your application package, please include the following:

1. Your resume
2. A short cover letter (no longer than one page) that includes information on (a) any relevant work or volunteer experience that relates to the desired skills and experience outlined above for the projects you are interested in, b) your availability this Fall (e.g., how many hours/week you are available to work, and (c) if applicable, any information on how your participation in the Fellowship would enhance diversity in the environmental sciences.

The Arnhold Environmental Graduate Fellows will be paid $18/hr and will work for the duration of Fall quarter. The successful candidates will be expected to commit 8-10hr/week, with up to 20hr/week possible, depending on the candidates' schedules.

<u>Application Deadline: September 3rd, 2021</u>