



**ECOSYSTEM SCIENCE
AND SUSTAINABILITY
COLORADO STATE UNIVERSITY**

Social-Ecological Systems and Sustainable Livelihoods in and around Lake Yojoa in Honduras

Start Date: Fall 2024

We seek a PhD student to conduct original research on a transdisciplinary project centered on social-ecological systems and sustainable livelihoods in and around Lake Yojoa in Honduras. The PhD student will be supported for the first three years of the project by the Department of Ecosystem Science and Sustainability as a Graduate Teaching Assistant. The position will be based in Fort Collins, Colorado, with expected extended fieldwork in Honduras within the Lake Yojoa watershed.

Doctoral research project: The Hall lab has ongoing research in central Honduras that addresses the sustainability of a large tropical watershed and the lake it contains, Lake Yojoa (Hall and Fadum, 2022; 2023; Hall, Waters and Fadum 2023; Fadum et al. 2023). One key result of this research is that a single multi-national fish farm in the middle of Lake Yojoa (85 Km²) has caused a dramatic decrease in ecosystem quality in only a few decades - despite holding multiple sustainability accreditations. Research results from this research led the president of Honduras, Xiomara Castro, to suspend the operation license of the fish farm on May, 30th of 2023. For this PhD position, we propose to build on the work and connections of the Hall lab in Lake Yojoa by expanding the areas of inquiry beyond ecosystem sustainability, to include broader social-ecological dimensions in collaboration with the TRILLAR Lab (Dr. Baudoin Farah's Lab). The debates around the desirability of the presence of the fish farm ultimately engage with conceptions of development and wellbeing, power differentials in natural resource governance and food systems, and environmental justice issues across scales. The student will be given leeway to develop their central thesis questions and approaches in conjunction with their academic committee and academic and non-academic collaborators in Honduras. Some initial ideas to guide the proposed research are 1) different stakeholders' perceptions of the fish farm's role in the community and its impact on the lake; 2) the differentiated trade-offs in ecosystem services provision in potential future scenarios (e.g. business as usual with fish farm; without fish farm; with improved aquaculture practices); and 3) the role of sustainable aquaculture accreditations and their ability to create sustainable practice.

[The Hall Lab](#)

We conduct ecosystem science in and around Lake Yojoa and its contributing watershed. We have shown that Lake Yojoa's trophic state has changed from meso/oligotrophic to eutrophic over the past 30 years. In the early 1980's Lake Yojoa experienced seasonal water clarity of up to 10m depth. Today maximum water clarity averages ~3m year-round. This change in trophic state is due to accumulation of ammonium in the bottom of the lake that fuels primary productivity after annual mixus during the historically clear-water season when watershed inputs are low. This change in trophic state is almost entirely (>80%) due to nutrient inputs derived from a large net-pen Tilapia farm that has been operating within the lake since ~1997. The Tilapia farm in Lake Yojoa is now transitioning from a highly productive

system (>77,000 Kg of Tilapia wet mass per day) to being absent from Lake Yojoa after the Honduran government recognized the negative impact it was having on this national treasure. As the lake begins this restorative period the Hall lab in collaboration with a suite of in-country collaborators will continue to monitor the transition of the lake.

The TRILLAR Lab

TRILLAR stands for “Transformations of Rural and Indigenous Livelihoods, Lands, and Autonomous Regimes.” “Trillar,” in Spanish, means “to separate grain from shaft.” We use this verb as a metaphor for the lab’s scientific endeavor, which aims to identify and discuss truths through rigorous mixed methods and dialogues among and across diverse ways of knowing.

Our objective is to contribute to more just and sustainable societies by generating knowledge, fostering critical thinking, and building academic and practice-oriented skills. We tackle questions of change and transformation of social-ecological systems – particularly in rural and indigenous lands – in the face of climate change, rapid urbanization, the expansion of extractive frontiers, and increasing connections to global commodity chains. We do so by bridging social and natural sciences; quantitative and qualitative research methods; and fundamental, applied, and transdisciplinary approaches. Our interests include – but are not limited to – land tenure, land use change, livelihoods, food security and sovereignty, cross-scalar and territorial governance of natural resources, territorial indigenous autonomy, food security and sovereignty, ecosystem services and conservation, and urban-rural interfaces. While the lab is open in geographic focus, our work has been centered in the Andes-Amazon. We are excited to start working in Central America!

Ecosystem Sustainability Graduate Program at CSU

Many physical, ecological and social factors interact to shape the future of our ecosystems and societies. CSU’s innovative graduate program in Ecosystem Sustainability enables students to develop core competencies in ecosystem science—the study of organisms and the environment from a systems perspective—and apply that knowledge to address real-world issues. We help develop leaders in sustainability science: a new generation of practitioners able to address complex, integrated social and ecological problems, in collaborative partnerships with researchers, resource users and decision-makers. Our graduates have the tools to understand complex scientific questions in sustainability, and the leadership and collaborative skills required to address current and future issues in sustainability. The program serves as a foundation for a wide range of careers, including academic and scholarly professions, and work in government agencies, non-governmental organizations, and corporate and entrepreneurial environments.

Join us, and you will work at the cutting edge of new research on ecosystem sustainability. Collaborating with some of the world’s leading ecosystem and sustainability scientists, you will explore solutions to global problems related to water resources, food supplies, energy, greenhouse gas management, land use change, climate change, and environmental justice, amongst others.

The Department of Ecosystem Science and Sustainability in the Warner College of Natural Resources is committed to inclusion in our instruction, research, service, and outreach. Warner College and ESS members hold themselves accountable for fostering a college community rooted in inclusive mindedness. Warner and ESS students, faculty, and staff uphold and embrace CSU’s principles of community: respect, inclusion, integrity, social justice and service. Everyone is welcomed. The Warner and ESS communities recognize the disparities that exist within the field of natural resources and therefore call on individuals whose passions and work align with our college’s effort to make change.

Warner College and ESS supports an environment where identities, cultures, experiences, and ideas are recognized, valued, and appreciated.

Required Qualifications

- Strong interest or expertise in social-ecological systems and justice and sustainability issues in Latin America, as evidenced by relevant Bachelor's and Master's degrees;
- Strong interest in theoretical and methodological innovation, especially through interdisciplinary approaches;
- Affinity to, and/or experience with, qualitative OR quantitative research methods, AND interest in developing mixed methods approaches that bridge quantitative and qualitative research methods;
- A commitment to participatory and transdisciplinary research and ethical engagement with local communities and partners (from research design to results dissemination);
- Strong interest and ability to work collaboratively within the Hall, the TRILLAR Lab, CSU, and with partners in Honduras and Lake Yojoa;
- Fluent in Spanish and English (interviews will be conducted in both languages).
- Interest and availability to conduct extended fieldwork in Honduras and Lake Yojoa.

Desired Qualifications

- Strong interest and broad expertise in social-ecological systems and justice and sustainability issues in Honduras or Central America, as evidenced by prior research or work experience.
- Affinity to, and experience with, qualitative AND quantitative research methods, AND interest in developing mixed methods approaches that bridge quantitative and qualitative research methods;
- Experience with participatory and transdisciplinary research and ethical engagement with local communities and partners (from research design to results dissemination) as evidenced by prior research or work experience;
- Strong interest and ability to work collaboratively as evidenced by prior research or work experience;
- Prior experience conducting fieldwork in Honduras or other Latin American countries, including remote areas;
- A solid publication track-record (which can include non-peer reviewed literature and materials written in non-English languages);
- Experience communicating research results in different formats for diverse audiences.

Position Funding: The PhD position comes with 3 years of TA support. As a TA, the student will be responsible for working 20 hours/week during the Fall and Spring semesters as a teaching assistant for assigned courses (to be determined) in CSU's Department of Ecosystem Science and Sustainability. Summer support will also be provided during the initial 3 years. The student will be co-advised by a team of interdisciplinary faculty (Dr. Ed Hall and Dr. Andrea Baudoin Farah).

Stipend: The Teaching Assistant stipend is \$1,969 monthly (subject to change at the University level), including summer, initially budgeted for 3 years, plus health insurance.

Application details:

Please send your Intent to Apply to Dr. Ed Hall (Ed.Hall@colostate.edu) **AND** Dr. Andrea Baudoin Farah (Andrea.Baudoin_Farah@colostate.edu), indicating your name and "Lake Yojoa SES PhD position " in the subject line of the email.

Your application, combined in one single pdf, should include, in order:

- a letter explaining your interest and suitability for the position (max 2 pages);
- a full curriculum vitae (CV) including information on language proficiency for both Spanish and English (please include the most recent language test scores or any other supporting information if available).
- the contact information of three references/referees;
- up to 3 selected publications (not required).

For full consideration please submit all materials by March 8th, 2024 (23:59 MST). Position open until filled.

The successful candidate will need to submit an official application to the “Ecosystem Sustainability PhD” via the CSU Graduate School Admissions portal at <https://gradadmissions.colostate.edu/apply/> after notification of selection for Fall 2024. Please visit <https://warnercnr.colostate.edu/ecosystem-sustainability-apply/> to view full application instructions. Please note that the GRE requirement has been waived.

Questions? Please contact Dr. Ed Hall (Ed.Hall@colostate.edu) or Dr. Andrea Baudoin Farah (Andrea.Baudoin_Farah@colostate.edu).