

PhD Student in Aquatic Agro-Ecology

Department of Wildlife, Fish, & Conservation Biology, University of California, Davis

Summary

We are seeking applications for a new PhD student interested in aquatic ecology and agro-ecology to join the Graduate Group of Ecology (<https://ecology.ucdavis.edu/>) at UC Davis, under the joint supervision of Andrew Rypel (<https://sites.google.com/view/rypel-lab/home>) and Daniel Karp (<https://karp.ucdavis.edu/>). The successful applicant will be funded through a USDA grant and will join a collaborative and interdisciplinary team assessing combined impacts of fish and native waterfowl on rice production, ecosystem services, and greenhouse gas emissions in California's Central Valley.

Strategies for successfully promoting biodiversity and ecosystem services within large-scale, intensive farming operations remain elusive. A notable exception exists in California, where rice farmers flood their fields each winter, supporting millions of migratory waterbirds and other wildlife. Yet growers are beginning to search for alternatives to winter flooding, as climate-induced droughts increase water prices and regulators begin to scrutinize greenhouse gas emissions emanating from flooded fields. We seek to determine whether introducing fish onto rice farms represents a useful approach for incentivizing winter field flooding.

The PhD student will conduct experiments excluding waterbirds and adding fish to rice fields in a full-factorial design to achieve three objectives. First, we will unravel trophic interactions and determine whether relationships between waterbirds and introduced fish are facilitative, neutral, or antagonistic. Second, we will quantify ecosystem services and agronomic effects of waterbirds and fish, comparing metrics of weed control, nutrient cycling, straw decomposition, and crop yields between treatments. Third, we will evaluate emerging evidence that fish (and potentially waterbirds) may initiate a trophic cascade that significantly reduces greenhouse gas emissions from flooded rice fields. While the student will participate in all aspects of the project, their focus will be analyzing interactions between birds and fish (*i.e.*, objective 1) as well as the ensuing impacts on ecosystem services (*i.e.*, objective 2).

Application Information

Candidates with experience in aquatic ecology, freshwater ecosystem ecology, and/or agro-ecology are encouraged to apply. If interested, please send a current CV and a brief (<1 page) cover letter describing your research interests to Daniel Karp (dkarp@ucdavis.edu) and Andrew Rypel (rypel@ucdavis.edu). Interested applicants would then apply to UC Davis's Graduate Group in Ecology (GGE; <http://ecology.ucdavis.edu/>), which is consistently ranked as one of the top ecology graduate programs in the United States. Applications to the GGE are due Dec. 1, 2020 and are evaluated via holistic review, focusing on applicants' backgrounds, experiences, character attributes to enable recruitment of promising, diverse scientists.

UC Davis

The University of California, Davis is a Research I public university located in the Central Valley of California. Easy access to the Sierra Nevada Mountains and the coast provides for a suite of recreational activities. Davis is also adjacent to Sacramento, a burgeoning metropolitan area, and close to San Francisco and Berkeley.