

California State University, Fresno
Department of Biology Colloquium Seminar Series
presents...

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Professor of Biology

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Lake Constance (Germany) food web impacts by trophic state, climate change, and invasive species (Seminar on Fulbright Scholar research)



Friday, March 18, 2022

3:00 – 4:00 pm

Research on freshwater ecosystems is shifting to exploring the effects of climate change, invasive species, and their interactions with habitat degradation, which is critical to guiding conservation efforts. However, changes are difficult to predict due to complex interactions between the stressors and 'new' system states due to climate change and invasive species. Addressing the current gaps and challenges in contemporary freshwater research such as ecosystem resiliency is a key goal of the SeeWandel (Eng. = 'Lake Change') project in Lake Constance, Germany. Lake Constance is one of the most studied lakes in the world; our work builds on this foundation to advance our understanding of how the Lake Constance ecosystem and food web respond to unprecedented changes in its structure and functioning. The dramatic decline in nutrient loading and concentrations are related to the decline in the production of valuable fisheries species. We find that these declines are more recently associated with a rather novel trophic pathway mediated by three-spined stickleback fish, a pan-global species yet invasive to Lake Constance. As with many or most impactful invasive species, stickleback effects are via direct predation on early life-history stages of whitefish, the most economically important fishery resource in the lake. An additional layer is that the spatial overlap (and thus predator-prey interaction) is likely mediated by stickleback avoidance of parasitism of a pseudophyllidean cestode, which affects sticklebacks in post-reproductive adult stages. These food web interactions are important in the context of the trophic (nutrient) status of the lake, and are integrated with societal resources including drinking water, tourism, and the economics of the Lake Constance fishery.

Zoom virtual meeting:

<https://fresnostate.zoom.us/j/84543877621?pwd=VmduNjFublBEV09aSU1SRmRiZF1Bdz09>

If you need a disability-related accommodation or wheelchair access, please contact Lindasue Garner at the Department of Biology at (559) 278-2001 or e-mail lgarner@csufresno.edu at least one week prior to the event.