SJSU | DEPARTMENT OF ENVIRONMENTAL STUDIES

The Department of Environmental Studies at San José State University is pleased to present our second public research presentation:

WEDNESDAY, September 15, 2021
12:30 PM – 1:45 PM
https://sjsu.zoom.us/j/5858275843 password: ENVS@SJSU

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Rhizobial mutualisms and legacy effects of globally invasive legumes

Abstract: Elucidating mechanisms that allow certain species to outcompete others as well as their long-term impacts on native ecosystems are fundamental goals in ecology, invasive species management, and environmental restoration. A unique opportunity to clarify the drivers of invasion arises when closely related species are introduced to a novel region, yet vary in their success as invaders. One genus of plants that fit this description are Australian acacias, which vary in invasiveness in their introduced range. Acacia species that have become invasive outcompete native plant species, increase soil erosion, alter soil chemistry, and facilitate invasion of non-native grasses. This talk will discuss a forthcoming project to address largely unanswered questions in invasion biology: What is the role of mutualistic interactions in driving species invasion, and do those interactions have long-term effects even after the invasive species is removed? The goal of this project is to examine a key mutualistic mechanism driving species invasions, focusing on the unique opportunity afforded by exotic acacias. Previous research has shown that mutualistic interactions, such as those between acacias and rhizobia are influential, and in some cases essential for the establishment of non-native legumes in novel ranges. However, understanding of how the acacia-rhizobia symbiosis influences the establishment of individual, highly invasive species is lacking. This project will use two large-scale acacia removal projects to examine the role that rhizobial mutualisms play in the establishment and colonization of Australian Acacia species that have been introduced to California and which have become invasive in this region. This project will also examine legacy effects of acacia invasion to determine the long-term effects of invasion on native ecosystems and habitat restoration success, evaluating how the legume-rhizobia symbiosis contributes to the establishment success of Acacia species when introduced abroad and their potential for long-term impacts on native ecosystems.

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