Roles of invasive species litter accumulation and decomposition in California’s ephemeral wetlands

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My research seeks to understand whether invasive species encroachment and its subsequent increase in litter accumulation will limit the growth of native species in California’s ephemeral wetlands. After my first season in the field I found that as little as one centimeter of litter greatly reduced native species germination and flowering and that it was not uncommon for litter depths to reach five times that amount. However, the most common invasives, annual grasses, were able to thrive at much higher litter depths than the natives.

In addition to understanding how the existence of a litter layer impacts native forb species my research also focuses on the rate of litter decomposition over time. Understanding how quickly organic matter decomposes and leaves the system is closely tied with the presence of a litter layer. For example if the invasives are slower to decompose then a thick litter layer will stay in place longer continuing to lower native species survival. My first field season has shown that the dominant invasive species (Italian rye grass) decomposes significantly slower than a native California grass. In summary, my work has shown that invasive species are slower to decompose and deposit large amounts of litter that have the capability to hinder endangered native vernal pool species. Understanding the relationship between the invasive and native species in this system will help land managers better protect these beautiful wetlands.

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