Research at the James: **Is nest mate recognition relaxed in introduced populations of *Vespula pensylvanica*, an invasive yellowjacket wasp?**

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Invasive species can be ecologically and economically detrimental. The social insects, including social wasps, are among the most damaging invasive animals. In Hawaii, a yellowjacket (*Vespula pensylvanica*) wasp native to the Western United States has become invasive and exhibits a social phenotype not seen in native populations in which foreign queens join nests in the middle of the season, suggesting relaxed nestmate recognition. Such relaxed nestmate recongnition could result from reduced diversity in the introduced range. In this project, Kevin will determine whether the switch to this alternative social phenotype is associated with relaxed nestmate recognition by comparing non-nestmate rejection rates using field experiments in California and Hawaii. He will also analyze the chemical compounds that may underlie nestmate recognition to determine whether their variability is lower in the introduced range.

Kevin will compare nestmate recognition behavior between native and invasive yellowjacket wasp populations in California and Hawaii. At each site, 10-15 colonies will be found. At each colony freeze-killed nestmates and non-nestmates will be presented to departing foragers. Behavioral responses of the foragers will be scored relative to the degree of nest-defense behaviors that is demonstrated. Kevin will standardize nestmate recognition trials by fitting the nest entrance with a small tunnel apparatus that allows presentation of a stimulus wasp (freeze-killed nestmate or non-nestmate) to a single departing forager within the nest entrance. Comparisons of nestmate defense behavior between native and invasive populations will test the prediction that native wasps will behave more defensively to foreign wasps than will wasps from invasive populations.

Results of this study will further our understanding of the plasticity of social phenotypes within a species between native and invasive populations and how this might facilitate invasion of these species to new habitats.