Expansion of vineyards in California’s North Coast wine grape growing region have fragmented oak woodland habitats and reduced the amount of floral resources available to native bees. Increasing floral diversity in vineyards may provide resources for native bees and reduce the negative effects of this habitat fragmentation. Some have theorized that landscape diversity will determine how native bees respond to localized on-farm diversification practices.

In this study, native bees were collected from paired vineyard plots with and without flowering summer cover crops. In order to evaluate the interaction between landscape and field-scale habitat diversity, the vineyard sites were located along a continuum of landscape diversity (ranging from low to high diversity). Flowering cover crop species included Phacelia tanacetifolia, Ammi majus, and Daucus carota. At peak bloom, the flowers were sampled for native bees, at the same time bees were collected from grasses and weedy vegetation in the paired control plots.

Our results indicate that, overall, flowering cover crops attract a greater abundance and diversity of bees than more common ground cover such as grasses or resident weedy vegetation. Additionally, the native bee populations found on flowering cover crops appear to be influenced by changes in landscape heterogeneity, although the influence varied for each species of flower. Planting flowering cover crops in vineyards can attract native bees and increase bee diversity in fragmented landscapes, but providing floral resources may not do much to improve the population of native bees if there are no suitable areas for nesting within their foraging range.