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Articles

Ecosystem services in the face of invasion: the persistence of native and nonnative spiders in an agricultural landscape

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The presence of intact natural ecosystems in agricultural landscapes can mitigate losses in the diversity of natural enemies and enhance ecosystem services. However, native natural enemies may fail to persist in agroecosystems if invaders dominate species interactions. In this study, native and nonnative spiders were sampled along transects that extended from oak woodland and riparian zones into surrounding California vineyards, to assess the role of natural habitat as a source for spider biodiversity in the vineyard landscape, and to compare the dominance of exotic *Cheiracanthium* spiders between habitats. Many spider species were more abundant in natural habitat than in vineyards, and numbers of spiders and spider species within vineyards were higher at the vineyard edge adjacent to oak woodland. These results suggest that natural habitat is a key source for spiders in vineyards. The positive effect of oak woodland on the vineyard spider community extended only to the vineyard edge, however. Proportions of *Cheiracanthium* spiders increased dramatically in the vineyard, while numbers of native wandering spiders (the native ecological homologues of *Cheiracanthium* spiders) decreased. Dispersal limitation and strong habitat preferences may have prevented native wandering spiders from establishing far from the vineyard edge. Exotic *Cheiracanthium* spiders, in contrast, may possess specific adaptations to vineyards or to a wide range of habitats. Results suggest that the ecosystem services provided by intact natural habitat may be limited in agricultural landscapes that are dominated by invasive species.

Keywords: [agroecosystems](#), [Araneae](#), [biodiversity](#), [Cheiracanthium spp.](#), [ecosystem services](#), [habitat diversity](#), [habitat fragmentation](#), [invasive species](#), [Napa County](#), [California](#), [USA](#), [Miturqidae](#), [predator diversity](#), [vineyards](#)

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