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Argentine ants prefer semi-natural sites over urban sites

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Urban ecosystems are becoming more common, converting countryside and natural ecosystems into urban environment, hostile to many organisms, but appealing to others. We focused on the fragile boundaries between urban and natural ecosystems and how native and invasive ants are distributed between them. In the suburbs of the San Francisco Bay Area, we set a nonlinear gradient of 12 sites, from a well-protected nature reserve to the business district of Palo Alto. We monitored ant communities for a year, studied ants' foraging behavior, and compared food webs by analyzing ants' nitrogen and carbon stable isotopes. We found a bimodal distribution of ant species richness, with peaks at both natural and urban sites. In the natural sites we found only native species, while in the urban sites we found both native and invasive species. We found only two species in the semi-natural sites, the native winter ant (*Prenolepis imparis*) and the invasive Argentine ant (*Linepithema humile*). Interestingly, ant abundance showed the opposite trend, with highest abundance at semi-natural sites. We think that competition with other invasive species, in addition to some native species, was keeping *L. humile* abundance low in the urban sites. Distance from buildings was found to be the most important human related environmental factor affecting ants' distribution. When comparing foraging characteristics in field conditions, we found that *L. humile* scored highest on every parameter. The species' remarkable foraging abilities are probably one of the factors making it such a successful invader. Stable isotope analyses revealed that dietary overlap in food preferences was much higher in urban and semi-natural sites, compared with natural sites, where the species diet was more diverse. Moreover, *P. imparis*'s diet was found to highly overlap with *L. humile*'s diet. This is interesting, as they coexist in many habitats, in spite of the strong competition.