

Parasitic ants alter how captive ants recognize nest mates

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Enslaved *Formica* worker ants are more genetically and chemically diverse and less aggressive towards non-nest mates than free-living *Formica* ant colonies, according to a study published February 3, 2016 in the open-access journal *PLOS ONE* by Candice W. Torres and Neil D. Tsutsui from University of California - Berkeley.

Highly social ants, bees and wasps employ sophisticated recognition systems to identify colony members and deny foreign individuals access to their nest. Ants use chemical signals, called cuticular hydrocarbons, to determine nest membership, but some parasitic ants can break the recognition code and live unopposed within a host colony. In this study, the authors examine the influence of the socially parasitic slave-making ant, *Polyergus breviceps* on the nest mate recognition system of its slaves, *Formica altipetens* by comparing the chemical, genetic, and behavioral characteristics of enslaved and free-living *Formica* ant colonies collected in Arizona. Slave-making ants in the genus *Polyergus* depend on their host, *Formica*, for nest maintenance, brood care, and foraging.

The authors found that enslaved *Formica* colonies were more genetically and chemically diverse than their free-living counterparts. The researchers think these differences are likely caused by seasonal raids to steal pupa from several adjacent host colonies.

"When free-living *Formica* ants are kidnapped into the *Polyergus* colony, they enter a society that is comprised of kidnapped ants from many other *Formica* colonies. Here, we show that this rich social environment alters the behaviors displayed by the enslaved [ants](#)", said Neil Tsutsui.

The different social environments of enslaved and free-living *Formica* also appear to affect their recognition behaviors: enslaved *Formica* workers were less aggressive towards non-nest mates than

were free-living *Formica*. Future studies are needed to understand the underlying mechanisms, but the authors suggest their findings indicate that parasitism by *P. breviceps* alters both the chemical and genetic context in which their hosts develop, leading to changes in how they recognize [nest mates](#).

More information: Torres CW, Tsutsui ND (2016) The Effect of Social Parasitism by *Polyergus breviceps* on the Nestmate Recognition System of Its Host, *Formica altipetens*. *PLoS ONE* 11(2): e0147498. doi: 10.1371/journal.pone.0147498

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