
RECENT RESEARCH ACTIVITIES

Diversity in reproductive strategies is likely linked to invasion success of ants

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A number of mechanisms/traits have been proposed to explain successful invasion of ants, reproductive strategy, however, receives relatively less attention simply because most of studies have focused on supercolony, unicoloniality and competitive superiority as underlying mechanisms. To strengthen our understanding, my laboratory has been devoting research efforts on characterizing the association of diversity of reproduction modes and success of invasive ants in recent years. Here I would like to briefly summarize recent findings from our laboratory regarding this particular topic.

Worker reproduction in yellow crazy ant

We reported recently that workers of invasive yellow crazy ants (*Anoplolepis gracilipes*) are capable of reproducing regardless queen presence or not [1]. Observation indicated that a very high proportion of worker-produced eggs serve as a main food source for certain groups of colony members, especially for larvae of early instar whose diet relies exclusively on the worker-producing eggs (Fig. 1). These findings suggest that worker reproduction may have played a role in provisioning vital protein nutrition in the colony. Data are being collected to empirically demonstrate how invasion of *A. gracilipes* is facilitated by the worker reproduction.

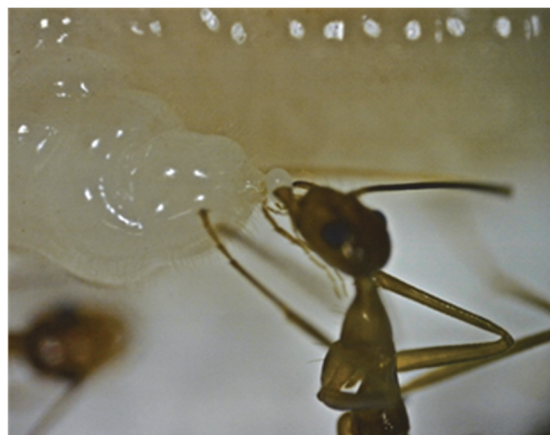


Figure 1. A worker of yellow crazy ant is feeding an egg to a queen-destined larva. Note this egg is infertile and is predominately produced by an ant worker. As such type of eggs generally serves as food for colony members, it is also termed “trophic egg”.

Parthenogenesis of exotic *Strumigenys* ants

Strumigenys rogeri Emery1890, originating from Africa, has been considered as a widespread tramp species as this ant is found distributed in numerous non-native ranges including Taiwan. We found that queens of this ant species reproduce asexually throughout where they were collected in Taiwan [2]. Furthermore, unmated queens are able to produce both workers and young queens (asexually) under laboratory conditions in as short as 39 days. These findings suggest that asexual reproduction may have helped this tramp ant overcome some invasion barriers that otherwise may prevent their establishment and subsequent dispersal in Taiwan and elsewhere.

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References

- [1] Lee CC, Nakao H, Tseng SP, Hsu HW, Lin GL, Tay JW, Billen J, Ito F, Lee CY, Lin CC, Yang CC. Worker reproduction of the invasive yellow crazy ant *Anoplolepis gracilipes*, *Frontier in Zoology*, 14, 24, 2017a. (doi: 10.1186/s12983-017-0210-4)
- [2] Lee CC, Hsu SF, Yang CC, Lin CC. Thelytokous parthenogenesis in invasive dacetine ant *Strumigenys rogeri* (Hymenoptera: Formicidae) in Taiwan. *Entomological Science*, 2017b. (in press)