Data from: Co-foundress confinement elicits kinship effects in a naturally sub-social parasitoid

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Abstract

Kinship among interacting individuals is often associated with sociality and also with sex ratio effects. Parasitoids in the bethylid genus *Goniozus* are sub-social, with single foundress females exhibiting post-ovipositional maternal care via short-term aggressive host and brood defence against conspecific females. Due to local mate competition (LMC) and broods normally being produced by a single foundress, sex ratios are female biased. Contests between adult females are, however, not normally fatal and aggression is reduced when competing females are kin, raising the possibility of multi-foundress reproduction on some hosts. Here we screen for further life-history effects of kinship by varying the numbers and relatedness of foundresses confined together with a host resource and also by varying the size of host. We confined groups of 1 to 8 *Goniozus nephantidis* females together with a host for 5+ days. Multi-foundress

groups were either all siblings or all non-siblings. Our chief expectations included that that competition for resources would be more intense among larger foundress groups but diminished by both larger host size and closer foundress relatedness, affecting both foundress mortality and reproductive output. From classical LMC theory, we expected that offspring group sex ratios would be less female biased when there were more foundresses and from extended LMC theory we expected that sex ratios would be more female biased when foundresses were close kin. We found that confinement led to the death of some females (11% overall) but only when host resources were most limiting. Mortality of foundresses was less common when foundresses were siblings. Developmental mortality among offspring was considerably higher in multi-foundress clutches but was unaffected by foundress relatedness. Groups of sibling foundresses collectively produced similar numbers of offspring to non-sibling groups. There was little advantage for individual females to reproduce in multi-foundress groups: single foundresses suppressed even the largest hosts presented and had the highest per capita production of adult offspring. Despite single-foundress reproduction being the norm, *G. nephantidis* females in multi-foundress groups appear to attune sex allocation according to both foundress number and foundress relatedness: broods produced by sibling foundresses had sex ratios similar to broods produced by single foundresses (ca. 11% males) whereas the sex ratios of broods produced by non-sibling females were approximately 20% higher and broadly increased with foundress number. We conclude that relatedness and host size may combine to reduce selection against communal reproduction on hosts and that, unlike other studied parasitoids, *G. nephantidis* sex ratios conform to predictions of both classical and extended LMC theory.

Methods

As described in the published paper.

Keywords

sociality, Bethylid, Goniozus nephantidis, foundress mortality, host sharing, offspring production, Sex ratio, extended Local Mate Competition theory

Files

1 files for this dataset

JEB_2020_Data_DRYAD.xlsx	91.43 kB	application/vnd.openxmlformats-officedocument.spreadsheetml.sheet

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