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<p>According to inclusive fitness theory individuals may give up their own reproduction for the good of others, if the benefits to costs ratio is larger than the inverse of the relatedness between the individuals. This theory can be tested by studying worker-queen conflicts of social Hymenoptera. If inclusive fitness theory holds, the caste giving up reproduction, the workers, should win these conflicts.</p> <p>Haplodiploid sex determination system of Hymenoptera causes workers to be more related to their sisters than to their brothers (relatedness asymmetry). This leads to worker-queen conflict over sex allocation, for workers prefer female-biased sex ratio, whereas queen optimum is an equal investment in both sexes. If queen number or queen mating frequency vary among colonies, relative relatedness asymmetry can vary within a population. Then, under worker control colonies with high relative relatedness asymmetry are expected to produce only females and colonies with low relative relatedness asymmetry are expected to produce males. Environmental factors leading to sex ratio specialization of colonies can be colony size (large colonies specialize in females and small colonies in males) or differential dispersal of the sexes (large colonies specialize in better dispersing sex and small colonies in the other one). Workers and queens may also have conflict over allocation of resources between reproductive brood (males and future queens) and colony maintenance (new worker force). If workers aim to female-biased sex ratios, they convert diploid brood into reproductive females, leading to high reproductive allocation. Queens, on the other hand, aim to stay as reproductives in the old colony, and want a larger proportion of diploid offspring to be converted into workers. The strength of both conflicts depend on kin structure (number and relatedness of coexisting queens, queen mating frequency), and reproductive allocation conflict is further modified by colony survival probability and female nest founding success.</p> <p>In this study reproductive conflicts in red ant <i>Myrmica ruginodis</i>, where queen number varies among colonies, were examined. Colony-level sex allocation ratios were split, so that single-queened (high conflict) colonies produced females and multiple-queened (low conflict) colonies produced males, suggesting that workers control the sex allocation. At the population level sex ratios can be male-biased or female-biased, depending on the intensity of competition between related females. Colony size or relative productivity did not affect the proportion of sexuals in the brood, and no conclusive evidence for worker control over reproductive allocation was obtained. It is possible, that the assumptions of the theory were not met in the study species, or that in short-lived <i>Myrmica</i> ants there is no realized conflict over reproductive allocation.</p> <p>In conclusion, this study adds to the growing body of evidence of worker control over sex allocation in social insects, and reveals interesting patterns of differential reproductive allocation in single-queened and multiple-queened colonies of <i>M. ruginodis</i>. It also demonstrates the interplay of environmental and genetical factors in establishing population-wide and colony-level reproductive allocation patterns.</p>			
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