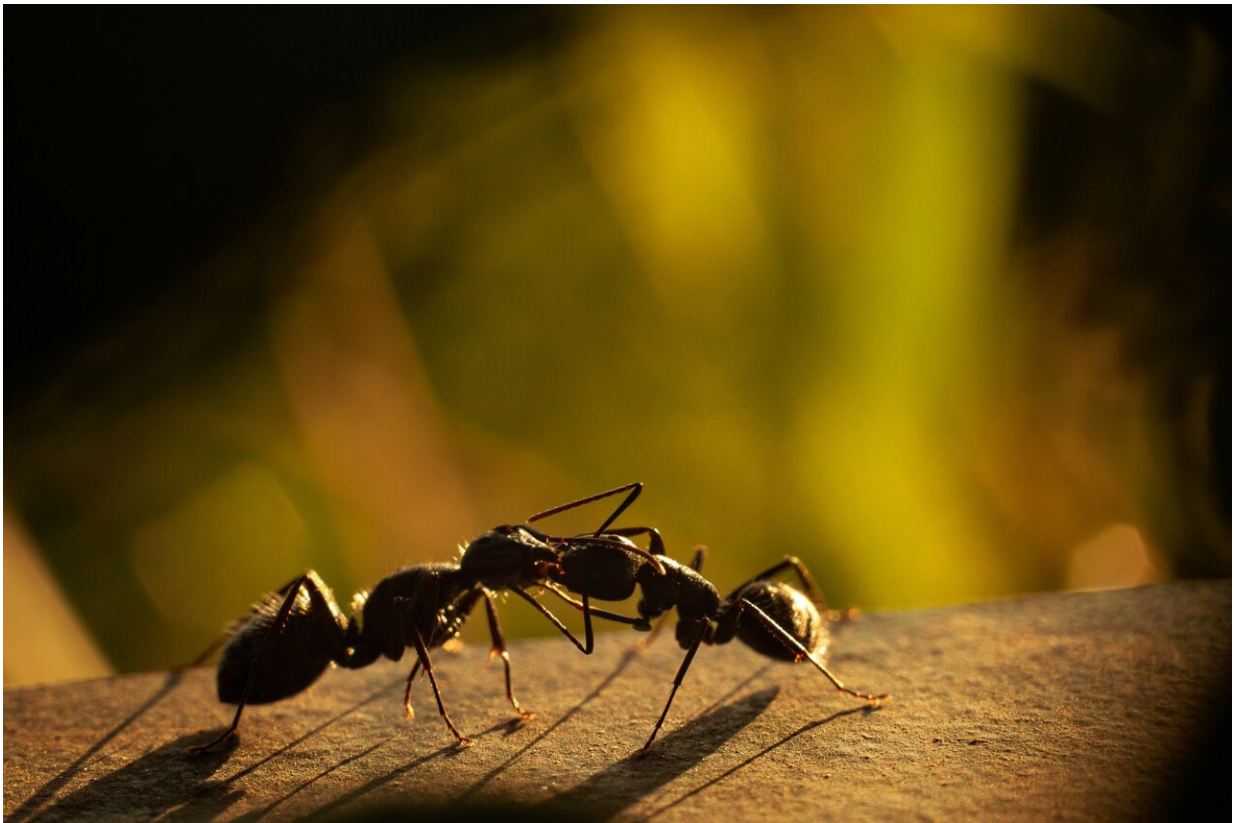


The simultaneous study of both workload distribution and division of labor

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A new paper published in *The Quarterly Review of Biology* reviews studies of workload distribution and division of labor to advance understanding of the factors that determine individual differences in the

costs and benefits of cooperation and the contexts in which each factor is most relevant.

Cooperative groups are ubiquitous in [animals](#), note authors Maria G. Smith and Christina Riehl in "Workload Distribution and Division of Labor in Cooperative Societies," as are the challenges of allocating [labor](#) to accomplish cooperative tasks, including territory defense, hunting, and brood care.

Individual contributions can differ in two ways, both of which can influence fitness. Group members can vary in overall helpfulness ([workload](#)) or specialize in different tasks (division of labor). They summarize the literature on unequal workload distribution and division of labor while offering suggestions for conducting additional work on these topics, particularly in taxa other than the eusocial insects.

The authors note that cooperatively breeding groups often contain unrelated caregivers and may be maintained by the same kinds of mutualistic fitness benefits invoked in collective action. Even in [family groups](#), fitness interests of genetic relatives are not identical. Hence, they argue, "such a distinction between the collective action and offspring care frameworks is not productive, especially given that differences in individual contributions could be driven by the same factors—either by differences in individual-level costs and benefits of cooperation or by free-riding—in both cases." The authors then highlight the strengths of each framework and discuss how combining them could lead to a better understanding of workload distribution and its causes and consequences.

Historically, workload distribution has been studied in the contexts of collective action and cooperative offspring care. Both research areas aim to understand how shared benefits can emerge from individual contributions but remain poorly integrated. The authors posit that each of these kinds of literature has strengths that could benefit the other and

highlight potential areas of crosstalk.

The authors also review the literature on the division of labor in taxa other than the eusocial insects, discuss parallels and differences in the division of labor between eusocial insects and other animals, and encourage more work on cooperative, noninsect taxa. "Rigorous work on individual contributions to cooperative tasks will expand our understanding of the causes and consequences of individual variation and the evolutionary stability of social living," they write.

The authors conclude that the [collective action](#) and offspring care literatures address many of the same hypotheses for the factors driving individual variation in cooperation and, therefore, should be integrated more fully. "Such crosstalk might help to further our understanding of the factors that determine [individual differences](#) in the costs and benefits of cooperation and the contexts in which each factor is most relevant."

More information: Maria G. Smith et al, Workload Distribution and Division of Labor in Cooperative Societies, *The Quarterly Review of Biology* (2022). [DOI: 10.1086/721520](https://doi.org/10.1086/721520)

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