Predators and parasites may increase evolutionary stability

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A new study explores the role of natural enemies, such as predators and parasites, for mixed mating, a reproductive strategy in which hermaphroditic plants and animals reproduce through both self- and cross-fertilization. The findings highlight the possible evolutionary consequences of these interactions.

Mating systems are a complex set of traits that reflect interactions among genetics, population structure, demography, and numerous environmental factors that influence mating success. These traits have profound consequences for genetic variation. Plants and animals display a dramatic range of mating systems, including mixed mating.

The mechanism by which enemies are transmitted between individuals is also found to have a significant effect on outcrossing, the process by which new genetic material is introduced into a breeding line. This provides an ideal model for the study of evolution.

The findings show that natural enemies likely play a significant role in the evolutionary stability of a particular reproductive strategy and may influence the mating systems of their “victims” (the plants and animals they affect) by altering interactions between victims and other ecological community members. For example, enemies may alter the availability of mates in a population, which may have direct consequences for victim mating system evolution. Enemies may also influence the expression of traits that are important for mating system evolution, thereby improving the evolutionary stability of mixed mating as a reproductive system.

“Consideration of natural enemies has added a new dimension to our understanding of mating system evolution in both plants and animals,” says Janette A. Steets, lead author of the study. “Although theoretical and empirical evidences are just beginning to accumulate, they largely point to an enemy effect on mating systems and demonstrate that enemies can create dynamics that lead to the evolutionary stability of mixed mating.”

Source: Blackwell Publishing Ltd.