Reproductive isolation keeps hybridizing Daphnia species distinct

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ABSTRACT: We asked whether pre- (e.g., assortative mating, temporal isolation) or postzygotic (e.g., hybrid inviability, infertility) barriers are more likely to affect the hybridization between *Daphnia galeata* and *Daphnia hyalina*. We compared the taxonomic composition of different reproductive stages in the life cycle of *D. galeata*, *D. hyalina*, and their hybrids in Greifensee (Switzerland) by using molecular genetic methods. We found evidence for reproductive isolation between taxa and that hybrids in particular, have reduced sexual fitness. The results provide one potential mechanism for parental taxa to remain distinct. F1 hybrid dominance in Greifensee could be explained by an increased asexual reproduction of hybrids that results in a higher proportion of gravid females compared with the parental *D. galeata*. The low sexual fitness of hybrids limits the abilities of hybrids to take advantage of diapausing eggs. The lower dispersal ability, including colonization of new habitats, and survival probability during harsh environmental conditions, could, therefore, lead to underestimates of historical hybrid occurrence by using diapausing egg bank reconstructions.

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