The influence of predator species and prey age on the immediate survival value of antipredator behaviours in a damselfly

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With 3 figures

Abstract: The efficacy of antipredator behaviours may depend on both intrinsic and extrinsic factors. We experimentally studied the effects of predator species and prey age on the immediate survival value of swimming and lamella loss in larval damselflies. Four predators: two invertebrates (the notonectid, Notonecta viridis and the dragonfly larva Aeshna cyanea), and two vertebrates (the three-spined stickleback Gasterosteus aculeatus and the sunfish Lepomis gibbosus) were tested with all combinations of two instars of the damselfly Lestes sponsa (F-0 and F-2). The number of escapes by swimming away were much lower when larvae were attacked by the two fishes than by the two invertebrates. Moreover Lepomis never removed lamellae and killed all larvae. The instars did not differ in the number of escapes by swimming, but F-0 instars were caught more at the lamellae than F-2 instars. All larvae that survived a capture were caught at the lamellae and the majority (90%) did so by autotomy. The ontogenetic increase in the immediate survival value of this antipredator behaviour was dependent upon the predator species. It was highest in captures by the Notonecta (40%), and lower when larvae were caught by the Aeshna or Gasterosteus (ca. 17%). This was probably because the biological relevance of the magnitude of the speed difference between damselfly instars depends upon the predator’s attack performance. We discuss the consequences of these findings for the macrohabitat distribution of the larvae and for the multicomponent antipredator behaviours prey may use.

Introduction

Avoiding predation is an important activity for animals, a single mistake may lead to death. Hence, there is strong selection on antipredator behaviour...