

The dance of the damselflies: Starvation and its affect on movement behaviour.

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Eligible for student prize

An organism's activity is often linked to differences in their life histories. Previous studies have shown that fast-slow life history strategy dichotomies exist between multiple organisms and within communities of Odonate assemblages. Slow species display a sit and wait behaviour, waiting for prey to come to them, while fast species actively hunt. It is expected that during periods of starvation, the movement behaviour of slow species will decrease to allow survival for extended periods (such as winter) until food becomes available. On the other hand, when fast species are starved, individuals are expected to increase their movements to look for prey that does not exist as they have higher energy requirements. Naiads of two species of damselflies (Odonata: Zygoptera) were collected from a single site in rural Otago, New Zealand. Movement behaviour was recorded for each individual as they starved. *Xanthocnemis zealandica* (a slow species) took longer to starve and moved less than *Austrolestes colenisonis* (a fast species). Differences in starvation tolerance and movement behaviour between the two species are consistent for species exhibiting a fast-slow life history dichotomy. However, contrary to expectations, as starvation occurred *X. zealandica* movement increased and *A. colenisonis* decreased. The increase in movement of *X. zealandica* is likely to be due to plasticity in behavioural responses. It becomes advantageous for individuals to abandon the sit and wait behaviour and increase their chances of encountering prey. The higher movement rate of *A. colenisonis* uses up valuable resources foraging for non-existent prey, once energy is used up, there is no more available and movement decreases before death occurs.

