

Aspects of reproductive biology and ecology of *Coenagrion mercuriale* at its southern range margin

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Coenagrion mercuriale is a threatened damselfly in most parts of its geographic distribution. It is listed as endangered in North Africa, where no data on its biology or ecology are available. This study aims to illustrate the reproductive behaviour and habitat preferences of adults in a population located in north-east Algeria, representing the southern limit of the species distribution. After emergence, adults spent 3 to 4 days away from the water to mature. Young mature individuals returned to the stream to mate, sometimes not far from their emergence site. The mean duration of copulation and oviposition were 20.08 ± 8.79 min (\pm SD) and 52.66 ± 12.17 min (\pm SD), respectively, separated by a short post-copulatory rest of 4.60 ± 2.02 min (\pm SD). Copulation duration was positively correlated with male body length while resting duration was positively related to copulation duration. Single males and breeding pairs preferred the same habitats, characterized by relatively dense and high in-channel bank vegetation, and a quite large stream bed, with a substrate which mainly consisted of clay and silt. A comparison of the reproductive behaviour and habitat preferences with a population located in the northern limit of the distribution range is presented and discussed.

Keywords: Odonata; damselfly; endangered; Algeria; reproductive behaviour; habitat preferences

Introduction

All species exist in a limited geographic range that varies in size and spatial structure. Species life history pattern changes in different parts of the range (Conover, 1992; Stearns, 1992). These environment-mediated responses are often referred to as plasticity, which can be detected not only in morphology but also in physiology and behaviour (Scheiner, 2002; Smith-Gill, 1983; Tanaka, 2004; Thompson, 1992; Van Buskirk, 2002; Van Buskirk & Arioli, 2005). In temperate regions, one might expect that population differences are more marked in the two latitudinal extremes of the geographic range because they face substantially different environmental conditions, mainly in temperature. Understanding the pattern of life history trait variation along a distribution range is crucial to determining how marginal populations are adapted to their local

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