

Taxonomic diagnosis of *Dicyrtomina ornata* and *D. saundersi* (Collembola: Dicyrtomidae) and analysis of their population genetic structure

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Abstract

The taxonomic validity of two presumed species of the collembolan genus *Dicyrtomina* was evaluated by using allozyme electrophoresis. Twenty-one loci were screened in seven populations assigned to *D. ornata* and eight populations assigned to *D. saundersi*. The presence of loci fixed for alternative allelic patterns in sympatric populations demonstrated that the two species are reproductively isolated, therefore confirming their specific status. Average genetic distance between populations of the two species was $D=0.714$. Populations of *D. ornata* were more differentiated from one another with respect to those of *D. saundersi*, which showed higher levels of gene flow.

Key words: Allozymes, reproductive isolation, genetic distance, gene flow, “colour pattern species” concept

Introduction

Collembola are one of the most important groups of soil arthropods. They usually inhabit the most superficial litter layer, although many strictly edaphic species exist (Hopkin 1997). In favorable habitats, their biodiversity can be fairly high, with several congeneric species living in sympatry. Due to their small size and the inconsistency of many external morphological characters, which exhibit inter-individual variability, species diagnosis is often very difficult. As a result of such a difficulty, specialists often discuss over slight differences in pigmentation patterns, and especially on whether such characters are useful to erect new species (the “color pattern species” concept: Yoshii 1989), or should be simply used to erect forms, varieties or subspecies (*e.g.* in Cassagnau 1987; Poinso-Balaguer 1972).