

Taxonomy of the ceratophysellan lineage (Collembola: Hypogastruridae) in the light of laboratory hybridization studies

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Abstract

The results of recent laboratory hybridization studies on the ceratophysellan lineage species are synthesized, and their impact on the taxonomy of this lineage is discussed. The discovered rule that morphological similarity is proportional to the reproductive isolation degree and in consequence to the relationship between species is a good basis for distinguishing species with potential for classification of the ceratophysellan lineage. The morphological and biological species concepts appear to be fully compatible, and *Schaefferia emucronata*, *S. willemi*, *Ceratophysella denticulata*, *C. engadinensis*, *C. stercoraria*, *C. silvatica*, and *C. granulata* appear to be species consistent with the general lineage concept. The proposed new classification of the ceratophysellan lineage (composed of two genera: *C. denticulata* group + *Typhlogastrura* + *Schaefferia* and *C. armata* group + *Bonetogastrura*) is tested against the results of laboratory hybridization studies. The probable monophyly of *Schaefferia* and polyphyly of *Bonetogastrura* and *Typhlogastrura* show that the phylogeny of the ceratophysellan lineage is more complicated than suggested by presently accepted and proposed classifications. The obtained results are only a premise, and the probability of the conclusion being correct would increase with the number of such tests.

Key words: Collembola, Hypogastruridae, ceratophysellan lineage, laboratory hybridization studies, taxonomy

Introduction

The ceratophysellan lineage sensu Bourgeois & Cassagnau (1972) comprises four genera of the family Hypogastruridae: the cosmopolitan, hemiedaphic genus *Ceratophysella* Börner, 1932; and the holarctic genera *Bonetogastrura* Thibaud, 1974; *Typhlogastrura* Bonet, 1930; and *Schaefferia* Absolon, 1900. Members of the last three underwent regressive evolution during colonization of edaphic, endogeous, or cavicolous habitats and