



## Revision of *Cestocampa* Condé (Diplura, Campodeidae), with description of a new species from caves in the eastern Iberian Peninsula

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(†) Dr. Condé passed away on February 11, 2004, leaving us notes about *Cestocampa balcanica* and the new species

### Abstract

A new cave-dwelling Diplura, *Cestocampa iberica*, is described from the eastern Iberian Peninsula. The new species was collected in ten caves located in the large karstic area occurring along the Castilian-Valencian branch of the Iberian Mountain Range. It closely resembles other *Cestocampa* spp., especially *C. gasparoi* and *C. balcanica*. The delimitation of *Cestocampa* is reviewed. *Cestocampa balcanica* is redescribed and *C. kashiensis* is removed from the genus and transferred to *Plusiocampa*. A phylogeographic analysis, based on the *cox1* mtDNA gene of the new species, reveals a clear geographic structure with high levels of population phylopatriy, indicating limited dispersal capabilities as found in other soil arthropods. Evidence of gene flow between nearby localities suggests interconnections among nearby caves. Under certain climatic conditions the species may be able to disperse over the surface, as suggested by one presumed long-distance dispersal event.

**Key words:** cave-dwelling, phylogeography, Iberian Peninsula, *Plusiocampa*, *Vandelicampa*, Plusiocampinae

### Introduction

Dipluran genera and species often have been poorly delimited and described. This deficiency is also true for Campodeidae in general. Paclt (1957) proposed the subfamily Plusiocampinae to include campodeids with a complex chaetotaxy, although this group has not been universally accepted (Bareth and Pagés 1994). The Plusiocampinae commonly are found in subterranean habitats, including caves and the mesovoid shallow substratum (MSS) (Bareth 2006). As many as 68 out of the 77 known species are true troglobites. In the Euro-Mediterranean region, Plusiocampinae is represented by six genera: *Plusiocampa* Silvestri 1912, *Paratachycampa* Wygodzinsky, 1944, *Hystrichocampa* Condé, 1948, *Cestocampa* Condé, 1956a, *Vandelicampa* Condé, 1955 and *Patrizicampa* Condé, 1956b. Other Plusiocampinae include *Simlacampa* Condé, 1957 from caves in India, two species of *Plutocampa* Chevrizov, 1978 from caves of the far east of Asia, *Condeicampa* Ferguson, 1996 from a cave in the western U.S. and the two bizarre species of the genus *Didymocampa* Paclt 1957, one endogean and the other subterranean, both from China.

The genus *Cestocampa* Condé 1956a is diagnosed exclusively by the presence of a laminar telotarsal process. The remaining morphological features are shared with the *Plusiocampa* (*Plusiocampa*). *Cestocampa* was originally proposed to hold two endogean species, *C. italica* (Silvestri, 1912) (= *Plusiocampa italica*) from Calabre (Italy) and *C. balcanica* Condé, 1956a on the Serbian-Montenegrin border. Bareth (1988) described the first cave-dwelling species of the genus, *C. gasparoi* Bareth, 1988, also from the Calabrian region. An Chinese species, *C. kashiensis* Chou & Tong, 1980, also has been described (Chou & Tong 1980).

In the present paper, we describe a new species of this genus from the eastern Iberian Peninsula. We also redescribe *C. balcanica*, amplifying the short description provided by Condé (1956a) and we propose the transfer