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## Description and DNA barcoding of a new Iberian species of *Pijnackeria* (Scali, 2009) from Sierra Nevada, Spain (Phasmida: Diapheromeridae)

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### Abstract

Male, female and egg of *Pijnackeria recondita* sp. n. are described from specimens collected at about 2,000 m in Sierra Nevada (Spain) feeding on *Cytisus scoparius*. The number of antennae segments in males, the smooth thorax in females and the different sculpturing of the egg capsule are the main differences from the other species of the genus. In addition, DNA barcode sequences (COI and COII) clearly differ from the other Iberian species of the genus. For COI, K2P minimum distance between the new species and the most morphological related species, *Pijnackeria hispanica* (Bolívar, 1878), showed a mean of 8%. In the case of COII, comparison with the other species of *Pijnackeria*, showed a K2P minimum distance range from 8 to 10.5% (mean 9.2%); and comparison with the species of the related genus *Leptynia*, showed a K2P minimum distance range from 7.1 to 10.5%.

**Key words:** Phasmida, Diapheromeridae, New species, Insect morphology, Insect barcoding, Sierra Nevada Spain

### Abbreviations.

MNCN National Museum of Natural Sciences, Madrid, Spain.  
RCBA-UMU Research Collection of Biología Animal, University of Murcia, Spain.

### Introduction

Diapheromeridae Kirby, 1904 (Phasmida, Verophasmatodea) are small- to medium-sized and of a mixture of winged and wingless stick insects species with their legs usually without spines. Their antennae are often longer than their forelegs, with indistinct segments, or very short ones. Globally, 180 genera and approximately 1,600 species of diapheromids are known although numerous species still await formal description.

In the Iberian Peninsula, four stick insect genera are present: *Bacillus* and *Clonopsis* (Bacillidae) and *Leptynia* and *Pijnackeria* (Diapheromeridae). While the former two genera are distributed in the Mediterranean region, *Leptynia* and *Pijnackeria* are only distributed in the Iberian Peninsula up to Southern France. The genus *Pijnackeria* Scali, 2009 was disaggregated from *Leptynia* Pantel, 1890, on the basis of several distinguishing features (Scali 2009). Later on, this complex was also split into 6 species based mainly on karyological and mtDNA (COII) differences (Scali *et al.* 2013). Broad distributional range was pointed out for the parthenogenetics *Pijnackeria hispanica* (Bolívar, 1878) and *P. masettii* Scali, Milani & Passamonti, 2013 while the other four species (*P. lucianae* Scali *et al.*, 2013, *P. barbarae* Scali *et al.*, 2013, *P. lelongi* Scali *et al.*, 2013 and *P. originis* Scali *et al.*, 2013) were located in restricted mountainous areas in the Eastern Iberian Peninsula.

The mitochondrial gene COI has been widely used by taxonomists as a standard DNA barcode sequence for the identification of many animal species and usually has considerable congruence with morphology-based identifications (e.g., Hebert *et al.* 2003; Hausmann *et al.* 2011; Huemer & Hebert 2011; Park *et al.* 2011). DNA barcoding has its disadvantages (Taylor & Harris 2012), as it is of limited use to identify certain species and is not efficiently amplified by PCR in all animal taxa, but it may be used as an additional, and apparently very powerful, method in taxonomy (Schlick-Steiner *et al.* 2010). Despite the wide use of DNA barcodes in the current taxonomy