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## The classification and phylogenetic status of *Jekelius (Reitterius) punctulatus* (Jekel, 1866) and *Jekelius (Jekelius) brullei* (Jekel, 1866) (Coleoptera: Geotrupidae) using molecular data

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### Abstract

The phylogenetic placement of *Jekelius brullei* (Jekel, 1866) and *J. punctulatus* (Jekel, 1866) (Coleoptera: Geotrupidae) was assessed using mitochondrial and nuclear molecular data to discern contrasting nomenclatural views provided by López-Colón (1996) and the *Catalogue of Palaearctic Coleoptera* (Löbl *et al.* 2006). Our results support both the monophyletic and classification status of the genus *Jekelius* López-Colón, 1989; and the splitting of the genus into the subgenera *Jekelius* López-Colón, 1989 and *Reitterius* López-Colón, 1996. The basal phylogenetic placement of these two species also suggests an oriental origin for *Jekelius* within the western Palaearctic region. Finally, we include a potential distributional map of *Jekelius (Reitterius) punctulatus* (Jekel, 1866) based on an exhaustive search of occurrence data.

**Key words:** Geotrupinae, dung beetles, Balkan Peninsula, potential distribution

### Introduction

*Thorectes* Mulsant, 1842 (Coleoptera: Geotrupidae: Geotrupinae) sensu lato (including *Jekelius* López-Colón, 1989, which we consider a genus) is an apterous genus comprising 43 species according to the recent catalogue of Palaearctic Coleoptera (Löbl *et al.* 2006) and the world Scarabaeidae database (Schoolmeesters 2014). Following the taxonomic criteria of López-Colón (2003), most of these species are distributed in the western Palaearctic region (Fig. 1): 20 species in the Ibero-Balearic region, 15 in the western part of northern Africa (including *J. brullei africanus* (Baraud, 1965)), with one species that is doubtfully shared among both regions (*T. intermedius* (Costa, 1839)), and two species in other western Mediterranean areas (*T. sardous* (Erichson, 1847) and *T. sericeus* (Jekel, 1866)). From the nine species occurring east of the Italian Peninsula, three live in the Balkan Peninsula and the Middle East (*T. intermedius*, *J. punctulatus* (Jekel, 1866), and four subspecies of *J. brullei*) and the other six occur beyond the European region: one in Turkey (*T. asperifrons* (Fairmaire, 1866)), one from Tajikistan (*T. banghaasi* (Reitter, 1892)), one from northern India (*T. stellosus annapurnicus* (Krikken, 1981) and *T. stellosus stellosus* (Krikken, 1981)), and three have been cited from Nepal (*T. martensi* (Krikken, 1981), *T. nepalensis* (Baraud, 1974), and *T. shankara* Carpaneto & Mignani, 1999).