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Phylogeny of the genera *Euclidiodes* and *Hasodima* (Lepidoptera: Geometridae) and description of two new species from the Fray Jorge relict forest in northern Chile

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Abstract

The Fray Jorge National park contains the northernmost temperate relict forest of Chile (30º40'S), located over 1000 kilometers north of the rest of the coastal *Aextoxicon punctatum* (olivillo) communities of southern Chile. In this work we describe two new species of moths in the Fray Jorge relict forest belonging to the genera *Hasodima* Butler 1882 and *Euclidiodes* Warren 1895: *H. ediliacarmenae* Parra **sp. nov.** and *E. frayjorgeana* Parra **sp. nov.** The sister species of these new taxa are distributed in the central-southern zone of Chile, in plant associations where the olivillo is present. We hypothesize that the ancestor from which these species derived was widely distributed in association with coastal "olivillo" forests, which became restricted in distribution during interglacial periods, resulting in the isolation of these insects' populations, and their subsequent speciation.

Key words: Ennominae, Lithinini, Nacophorini, *Hasodima ediliacarmenae*, *Euclidiodes frayjorgeana*

Introduction

Species of geometrids from the genera *Euclidiodes* and *Hasodima* are distributed throughout the austral region of South America, in the temperate forest zone of central and southern Chile. This pattern of distribution coincides with the greatest diversity of geometrids on continental Chile south of 33º S (Parra 1997).

The genera *Euclidiodes* Warren 1895 and *Hasodima* Butler 1882 have five and three species, respectively (Parra 1999, Parra & Pascula-Toca 2003). In his review of the *Euclidiodes* Parra (1999) indicates that this genus is distinguished from other Lithinini by the "W" shaped gnathos and by the shape of the anellus process. According to Parra (1999) this genus is conformed by the species *agitata* (Butler 1882), *beechei* Parra 1999, *chiloensis* (Butler 1893), *meridionalis* (Wallengren 1860) and *ophiusina* (Butler 1882). Pitkin (2002) and Scoble & Hausmann (2007) transfer the following taxa to *Euclidiodes*: *chone* (Rindge 1986) (from *Yapoma*), *valdiviana* (Bartlett-Calvert 1893) (from *Incalvertia*), *xanthe* (Rindge 1986) (from *Duraglia*).

Parra & Pascual-Toca (2003) define *Hasodima* by the presence of a pseudouncus in the male genitalia. The unpaired furca and symmetrical juxta of the male genitalia are characters which allow this genus to be included in the Nacophorini tribe (Pitkin 2002). *Hasodima* includes the species *bartletti* Parra & Pascual-Toca 2003, *boreas* (Butler 1882) and *elegans* (Butler 1882).

Fray Jorge National Park contains the northernmost temperate forest of Chile (30º40'S), located over 1000 km north of the rest of the southern coastal olivillo communities in the country (Villagrán *et al.* 2004).

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