

## Scientific Note

**New record of *Mythapion adesmiae* Kissinger, 2005 (Coleoptera: Brentidae) in Argentina**Nuevo registro de *Mythapion adesmiae* Kissinger, 2005 (Coleoptera: Brentidae) en ArgentinaSabrina S. Gavini<sup>1\*</sup>  and Marcelo E. Kun<sup>2</sup> 

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**Abstract.** The weevil *Mythapion adesmiae*, previously known from Chilean Patagonia (Aysén and Magallanes regions) and the province of Santa Cruz in Argentina, is recorded for the first time for the province of Río Negro, above the treeline, between 1744-1850 m a.s.l. on Cerro Challhuaco associated with *Adesmia corymbosa*, which is a new plant association. The known records suggest an extensive distribution along the Patagonian Andes of Chile and Argentina.

**Key words:** Apioninae; Fabaceae; Patagonia; vegetación alto-andina.

**Resumen.** El gorgojo *Mythapion adesmiae* conocido previamente para la Patagonia chilena (regiones de Aysén y Magallanes) y la provincia de Santa Cruz en Argentina, es registrado por primera vez para la provincia de Río Negro, por encima de los bosques Andino-Patagónicos, a 1744-1850 m en el Cerro Challhuaco, asociado con plantas de *Adesmia corymbosa*, representando una nueva asociación. Los registros conocidos sugieren una amplia distribución a lo largo de los Andes Patagónicos de Chile y Argentina.

**Palabras clave:** Apioninae; Fabaceae; high-Andean vegetation; Patagonia.

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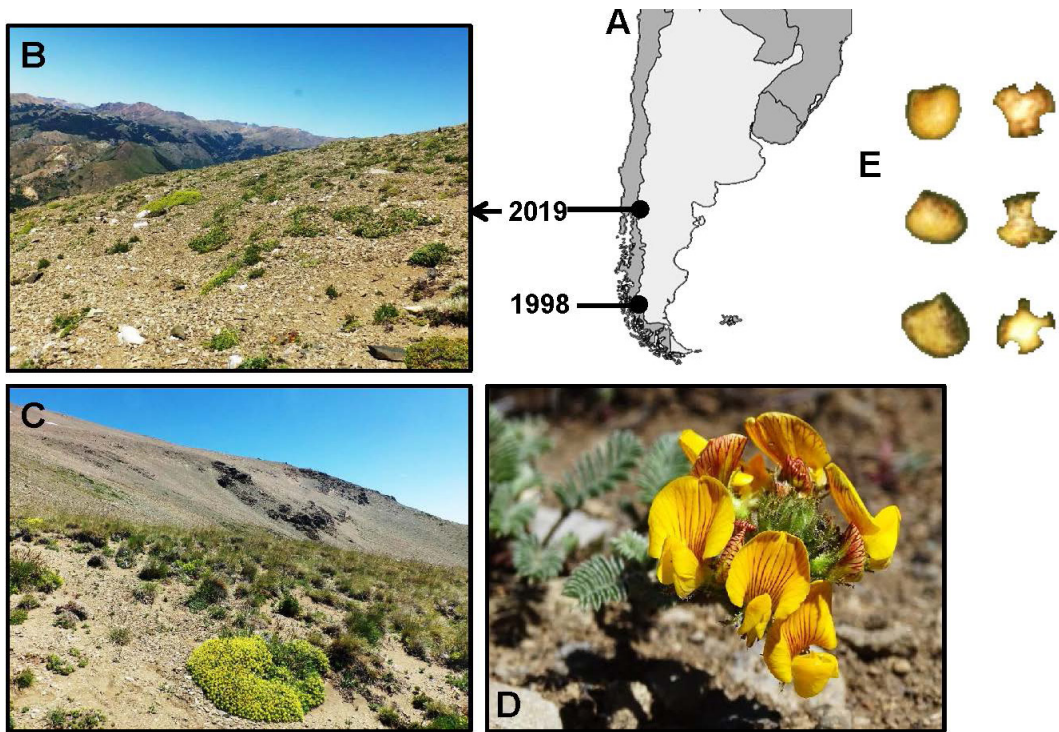
Weevils are beetles belonging to Curculionoidea, the largest superfamily of Coleoptera with more than 70,000 species in the world fauna (Oberprieler *et al.* 2007; Bouchard *et al.* 2009). Excepting Scolytinae, Curculionoidea species are usually recognized by their modified head into a rostrum. The subfamily Apioninae (Brentidae *sensu lato*, straight-snouted weevils) is a monophyletic group (Wanat 2001; Marvaldi *et al.* 2002; Alonso-Zarazaga and Wanat 2014) of very small (0.75-13.0 mm in length) pear-shaped weevils, with straight antennae, having eight narrow segments and a widened compact club, and elongate cylindrical trochanters (Kissinger 2005). Both larvae and adults feed on living plant tissues (stems, leaves, roots, inflorescences) as well as fruits and seeds. In addition, larvae often develop inside stems or roots (forming gall-like structures), leaves, and even seeds (Marvaldi and Lanteri 2005). Even though some Apioninae are associated with gymnosperms (Kissinger 1968; Alonso-Zarazaga and Wanat 2014), most lineages

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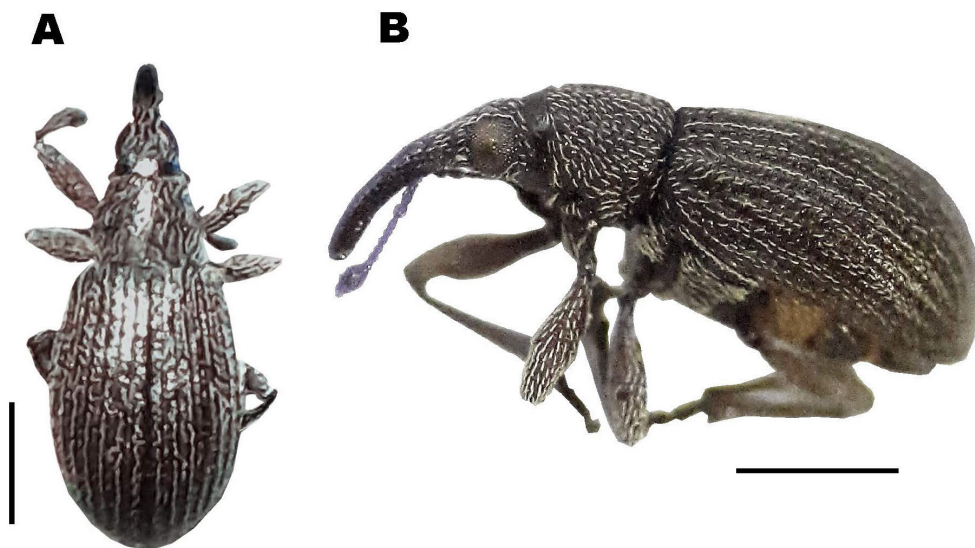
are associated with angiosperms of the families Apiaceae, Asteraceae, Euphorbiaceae, Fabaceae and Lamiaceae, among other families (Anderson and Kissinger 2002; Badenes-Perez and Johnson 2007; Maia 2012; Alonso-Zarazaga and Wanat 2014). The evolutionary success of these weevils apparently lies in their specialized endophytophagy (Brooks and McLennan 2002; Oberprieler *et al.* 2007).

The knowledge of Apioninae and their distribution in South America is limited; nonetheless, we can highlight the studies in Chile (Kissinger 2002, 2005; Elgueta and Marvaldi 2006) and a recent review of the taxonomic diversity of Brazilian Apioninae (de Sousa *et al.* 2019). The genus *Mythapion* Kissinger, 2005 encompass few species with scarce biological and ecological information. The species recorded for Argentina are *M. trifolium* Kissinger, *M. simplex* Béguin-Billecocq (*Apion simplex*), *M. rufonigrum* Béguin-Billecocq (*Apion rufonigrum*) (Kissinger 2005; de Sousa *et al.* 2019), and *Mythapion adesmiae* Kissinger, 2005, recorded for Santa Cruz province and in Chile (Kissinger 2005; Elgueta and Marvaldi 2006). Herein we provide a new record for Río Negro province.



**Figure 1.** *Mythapion adesmiae* Kissinger records in Argentina (A). Santa Cruz province in 1998, in proximity to the Torres del Paine National Park, and Río Negro province in 2019 in the Nahuel Huapi National Park. The Andean environment above treeline where specimens were collected (B, C). Host plant *Adesmia corymbosa* (D). Credit of *Adesmia* photograph, Marcela Ferreyra, used with permission. Photographs of non-damaged seeds (left side) and damaged seeds (right side) (E). Seeds are about 3 mm in diameter. / Registros de *Mythapion adesmiae* Kissinger en Argentina (A). Provincia de Santa Cruz en 1998, en cercanías al Parque Nacional Torres del Paine, y provincia de Río Negro en 2019 en el Parque Nacional Nahuel Huapi. El ambiente andino por encima del bosque donde se recolectaron los ejemplares (B, C). Planta huésped *Adesmia corymbosa* (D). Crédito de la fotografía de *Adesmia* a Marcela Ferreyra, usada con autorización. Fotografías de semillas no dañadas (lado izquierdo) y semillas dañadas (lado derecho) (E). Las semillas tienen unos 3 mm de diámetro.

According to web site Coleoptera-neotropical.org the first and unpublished detection of *M. adesmiae* in the Argentine Patagonia occurred on December of 1998 in the region of Torres del Paine, located in the transition area between the Magellanic forests and the Patagonian steppes (collected by Juan E. Barriga-Tuñón from Universidad Católica del Maule, Chile). Those specimens were found in Chile and Santa Cruz province, Argentina (Fig. 1A). In February of 2019 we found specimens of *M. adesmiae* on Cerro Challhuaco, between 1744-1850 m a.s.l. (41°16'S 71°18'W), in the vicinity of San Carlos de Bariloche within the Nahuel Huapi National Park, Río Negro province (Fig. 1A). Deciduous forests of *N. pumilio* occur from ~1000 m to the treeline that is about 1600 m, where this tree grows prostrated and forms a low 'krumholz'. Above the treeline unfolds the high-Andean ecosystem characterized by a sparse and low vegetation cover (< 20% at 1600 m vs. < 5% at 2000 m, see Figs. 1B, C) resulting in a patchy-landscape represented by isolated cushion-plant patches and a surrounding bare ground matrix (Nuñez *et al.* 1999; Gavini *et al.* 2020). Mean annual temperature is 3.7 °C, with short, mild, dry summers and cold, wet winters, whereas mean annual precipitation is approx. 860 mm, mostly in the form of snow between May and October (Gavini *et al.* 2020). Asteraceae, Poaceae and Apiaceae are the best represented families, with perennial herbs, dwarf shrubs and cushion nursing plants the predominant life forms (Ezcurra and Gavini 2020). Individuals of *M. adesmiae* (Fig. 2) were found associated with *Adesmia corymbosa* Clos (Fabaceae) (Fig. 1D), mainly within fruits and newly opened flowers (2 specimens), with their bodies covered with pollen. Additionally, seeds showed signs of predation (Fig. 1E). The specimens' identification was done following Kissinger (2005) and the voucher specimens (24 individuals) were deposited in the Zoology Department at the Centro Regional Universitario Bariloche, Río Negro, Argentina.



**Figure 2.** *Mythapion adesmiae* Kissinger. Dorsal view (A). Lateral view (B). Length of adult female specimens was 1.93 mm - 1.99 mm (n=3) (length of the rostrum in females: 0.60 mm - 0.62 mm), length of adult male specimens was 1.89 mm - 2.04 mm (n=5) (length of the rostrum in males: 0.53 mm - 0.55 mm). Scale: 500  $\mu$ m. / *Mythapion adesmiae* Kissinger. Vista dorsal (A). Vista lateral (B). La longitud de hembras adultas fue de 1,93 mm - 1,99 mm (n=3) (longitud del rostro en hembras: 0,60 mm - 0,62 mm), la longitud de machos adultos fue de 1,89 mm - 2,04 mm (n=5) (longitud del rostro en machos: 0,53 mm - 0,55 mm). Escala: 500  $\mu$ m.

The known records suggest that *M. adesmiae* is probably distributed throughout the entire Patagonian Andes, possibly reaching Neuquén province. Furthermore, the species survive the extreme climatic conditions of cold, freeze and drought that characterize the high-Andean environment (Chown 1993; Van der Merwe *et al.* 1997). *Mythapion adesmiae* is associated with the genus *Adesmia* (Fabaceae), such as *A. boronioides* and *A. pegajosa* (Kissinger 2005) being *A. corymbosa* a new record. There are about 100 species of *Adesmia* in Argentina, herbs and shrubs that grow in montane and semi-desert zones (Ulibarri and Burkart 2000), such as *A. glomerula*, *A. longipes* and *A. parvifolia* from the high Andes of Patagonia (Ferreya *et al.* 2020) that could be also host plants of *M. adesmiae*. Despite their seed-consuming behavior, these weevils may be pollinators because when they reach inflorescences for feeding, shelter, mating, and oviposition they transport pollen and pollinate flowers (Eriksson 1994). Pollination by weevils could be important in environments characterized by low abundance and restricted activity of flying pollinating insects (Körner 2003).

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