

A new species of *Neapion* (*Neotropion*) Alonso-Zarazaga from Paraguay (Brentidae: Apioninae)

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Abstract. A new species of the genus *Neapion* Alonso-Zarazaga, 1990 subgenus *Neotropion* Alonso-Zarazaga, 1990 (Brentidae: Apioninae) is described and illustrated. *Neapion* (*Neotropion*) *cleidecostae* sp. nov. (Type locality: Paraguay, Misiones) is the second Apioninae species from South America with dense, thin vestiture and raised areas on the elytra. In addition to these characters, vestiture color pattern and male genitalic characters such as penis shape, length of the tuning fork-shaped sclerite in the internal sac (the largest found in Apioninae), and shape of the tegminal plate are diagnostic of this new species.

Key-Words. Apionini; Chacoan province; Ixapiini; Neotropical region; Taxonomy.

INTRODUCTION

The New World genus *Neapion* Alonso-Zarazaga, 1990 (Apionini: Ixapiina) was defined to include species belonging in the genus *Apion* Herbst, 1797, subgenus *Ixias* Sainte-Claire Deville, 1924 *sensu* Kissinger (1968). Two subgenera were recognized by Alonso-Zarazaga (1990): *Neapion* (type species *N. (Neapion) umboniferum* (Fall, 1898)) and *Neotropion* Alonso-Zarazaga, 1990 (type species *N. (Neotropion) xanthoxyli* (Fall, 1898)). These subgenera have specialized trophic habits: *Neapion* feeds only on plants of the family Caprifoliaceae, while *Neotropion* only on Rutaceae (Alonso-Zarazaga, 1990; De Sousa & Ribeiro-Costa, 2018; De Sousa *et al.*, 2019).

The genus *Neapion* has 18 described species, six of which in the subgenus *Neapion*, which is distributed in the Nearctic region (Canada to the Northeastern United States) and in the Mexican transition zone (Mexico). The subgenus *Neotropion* comprises 12 species, with seven of them occurring in the Nearctic (USA) and part of the Neotropical region (Central America and the Antilles) (Kissinger, 1968, 1990; O'Brien & Wibmer, 1982; Wibmer & O'Brien, 1986; Alonso-Zarazaga, 1990). The remaining five species are restricted to the Neotropical region (Central and South America) and include: *N. (Neotropion) lebasii* (Gyllenhal, 1839), which occurs from Central America to Colombia; *N. (Neotropion) peculiare* (Wagner, 1909) and *N. (Neotropion) americanum* (Wagner, 1908), which occur from Central America

to Brazil; *N. (Neotropion) marquesae* De Sousa & Ribeiro-Costa, 2018 and *N. (Neotropion) diringsi* De Sousa & Ribeiro-Costa, 2018, which are restricted to Brazil (Alonso-Zarazaga, 1990; Kissinger, 1968, 1990; O'Brien & Wibmer, 1982; De Sousa *et al.*, 2019).

Neapion is characterized by the pronotum without basal flange; elytra with vestiture forming transverse or longitudinal bands, or spots of coarse, broad, light or dark colored scales; elytral intervals 7 and 9 each with one specialized seta in the apical quarter in *N. (Neapion)*, while only in the interval 9 in *N. (Neotropion)*; elytra with striae joining apically in the following pattern: 1 + 2 + 9, 3 + 4, 5 + 6, 7 + 8 (*N. (Neapion)* 1 + 9, 2, 3 + 4, 5 + 6, 7 + 8); no sexual dimorphism (*e.g.*, mucrones) in male tibiae; broad tarsi, first and second pro-tarsomeres as wide as long; toothed claws; tegminal plate fused to the free ring; long tuning fork-shaped sclerite in the internal sac of penis (Kissinger, 1968, 1990; Alonso-Zarazaga, 1990; De Sousa & Ribeiro-Costa, 2018).

The subgenus *Neotropion* can be diagnosed by: body robust; pronotum conical, sides almost straight; antennae inserted distal than the width of the frons (closer than the width of the frons in *N. (Neotropion) peculiare* (Wagner, 1909)); head with moderately elevated lateral keels, extending beyond half the length of an eye in ventral view; prostegium strongly protruding, sometimes medially bifid; parameroid lobes sparsely microsetose in membranous region, with some macrochaetae in the sclerotized area (Kissinger, 1968;

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Alonso-Zarazaga, 1990). In addition, *N. (Neotropion) clarki* (Kissinger, 1990), from Mexico, and *N. (Neotropion) marquesae*, from Brazil, differ from the other species in the subgenus by having remarkable raised areas on the elytra, which is uncommon among Apioninae.

During a taxonomic study on the South American fauna of Apioninae, a new species with raised areas on the elytra was recognized, which is here described and illustrated. We adjust the key to South American species of *N. (Neotropion)* presented in De Sousa & Ribeiro-Costa (2018) to include the new species. With this addition, the subgenus now includes 13 species.

MATERIAL AND METHODS

The holotype of *Neapion (Neotropion) diringsi* deposited in the Museu de Zoologia, Universidade de São

Paulo, São Paulo (MZSP) and the holotype and paratype of *Neapion (Neotropion) marquesae*, respectively deposited in the Coleção Entomológica Pe. Jesus Santiago Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba (DZUP) and Laboratório de Ecologia e Taxonomia de Artrópodes Terrestres, Universidade Federal de Mato Grosso, Cuiabá (LETA), were directly examined for comparison.

Other species were compared through images: *N. (Neotropion) peculiare* and *N. (Neotropion) americanum* are available in Kissinger (1968); photographs of the holotype of *N. (Neotropion) xanthoxyli* (Fall, 1898) – type species of the subgenus *Neotropion* – are available in The Database of the Zoological Collections (CVZBASE), Museum of Comparative Zoology, Harvard University (available at: <http://mczbase.mcz.harvard.edu/name/Apion>); and images of the holotype of *N. (Neotropion) clarki*, provided by the United States National Museum



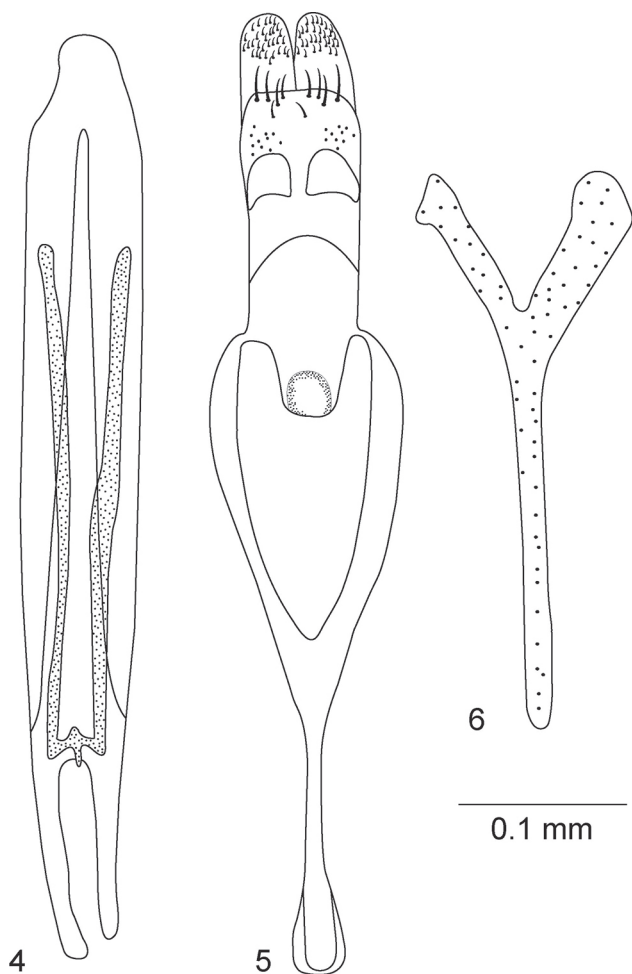
Figures 1-3. *Neapion (Neotropion)* species. (1) *Neapion (Neotropion) cleidecostae* sp. nov., holotype male, habitus, lateral. (2-3) *Neapion (Neotropion) marquesae* De Sousa & Ribeiro-Costa, habitus: (2) holotype male, lateral; (3) paratype female, dorsal.

of Natural History, Smithsonian Institution, Washington, DC, USA (USNM).

Terminology for external general morphology and genitalia followed Alonso-Zarazaga (1990) and Alonso-Zarazaga & Wanat (2014). Measurements followed Kissinger (1968) and De Sousa & Ribeiro-Costa (2018).

For dissection, specimens were soaked for 24 hours in lukewarm water with a drop of detergent. The genitalia was extracted after removing the abdomen, which was opened laterally along the pleural region and the tapered tergites. Genitalia were then placed in lukewarm 10% potassium hydroxide (KOH) solution, to dissolve fat and soft tissue, and then mounted on flat or concave slides for examination under a stereomicroscope and optical microscope. After drying, the abdomen was glued to the body of the original specimen, and the genitalia was placed in a separate microvial, for long term conservation.

Photographs of external morphology were taken with a LEICA DFC 500 digital camera attached to a LEICA MZ16 microscope and then processed with the LEICA Application Suite 3D viewer module and version montage 4.7 (software) of TAXonline – Rede Paranaense de Coleções Biológicas in the Zoology Department, Universidade Federal do Paraná (UFPR). Illustrations of genitalia were made using a stereomicroscope or a microscope coupled with a camera lucida.



Figures 4-6. *Neapion* (*Neotropion*) *cleidecostae* sp. nov. (4) penis, dorsal; (5) tegmen, dorsal; (6) spiculum gastrale.

***Neapion* (*Neotropion*) *cleidecostae* sp. nov.**
(Figs. 1, 4, 5, 6)

Type material: Holotype ♂ (DZUP): [red border printed label] dissected, glued on paper triangle, with genitalia placed in a separate microvial: Paraguay, Misiones: Villa Florida, 17.IV.1988, Col R.C. Aguilar, *Apion* sp. G.H. Rosado Neto det. 1997.

Diagnosis: This new species resembles *N. (Neotropion) marquesae* (Figs. 2-3) in the shape of the head, antennae, thorax, and the position of the raised areas on the elytra: two in interval 2, four in interval 4 and one in each posterior $\frac{1}{3}$ of intervals 5 and 6; in North American *N. (Neotropion) clarki*, two raised areas in posterior $\frac{1}{2}$ of intervals 2, 4, and 6 and one at the basal $\frac{1}{3}$ of intervals 3 and 5. Furthermore, *N. (Neotropion) cleidecostae* sp. nov., differs from *N. (Neotropion) marquesae* by characteristics given in the key.

Description: Similar to *N. (Neotropion) marquesae* (c.f., De Sousa & Ribeiro-Costa, 2018), except as described below.

Measurements (in mm), male holotype: Length 2.8, rostrum length 0.76, maximum width 0.32, pronotum length 0.80 and maximum width 0.96, elytra length 1.8 and maximum width 1.16. Integument black dorsally, antennae dark brown and abdomen black. Vestiture on rostrum, head, pronotum disc and elytra of thin, dark tan or brown scales; pronotal lateral scales thicker and light tan; scales on legs off-white and brown; scales around the eyes, mesanepisternum, mesepimeron, metanepisternum and coxae off-white.

Rostrum: Mesorostrum about 1.6 times wider than apex.

Male terminalia and genitalia (Figs. 4-6): Manubrium ca. 1.6 times longer than arm (Fig. 5); temones about 0.32 times pedon length; internal sac with two long (0.54 mm) parallel sclerites, obliquely joined (Fig. 4), shaped like a tuning-fork; tegmen (Fig. 5) with parameroid lobes shorter in the membranous area; fenestrae as wide as long, separated by about 0.3 times fenestral width; prostegium protruding medially, rounded; manubrium widened apically.

Female: Unknown.

Etymology: This species is named in honor of Dr. Cleide Costa, Museu de Zoologia, Universidade de São Paulo, who first encouraged the study of immature beetles in Brazil. The specific epithet is a noun in the genitive case.

The new species is placed below in the key to South American species of *Neapion* (*Neotropion*) adapted from De Sousa & Ribeiro-Costa (2018):

1. Vestiture dense (Figs. 1-3); elytral intervals convex, with raised areas in intervals 2, 4, 5, 6..... 1A
— Vestiture sparse; elytral intervals flat, without raised areas 2

- 1A. Elytra with vestiture heterogeneously colored, basal half with light tan scales, posterior half with one macula short, oblique, with dark scales from interval 1 to 2; internal sac with two long (0.52 mm) and parallel sclerites, transversely joined; prostegium protruding medially in a squared shape.....
..... *N. (Neotropion) marquesae* De Sousa & Ribeiro-Costa, 2018
- Elytra with vestiture homogeneously colored, dark tan and/or brown scales, without macula; internal sac with two long (0.54 mm) and parallel sclerites, obliquely joined (Fig. 4), prostegium protruding medially in a rounded shape..... *N. (Neotropion) cleidecostae* sp. nov.

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