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A NEW SPECIES OF *PACHOLENUS* SCHOENHERR FROM SOUTHEASTERN BRAZIL (COLEOPTERA, CURCULIONIDAE, MOLYTINAE), AND NEW OCCURRENCES OF SPECIES OF THE GENUS

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ABSTRACT

A new species of Pacholenus Schoenherr from southeastern Brazil (Coleoptera, Curculionidae, Molytinae), and new occurrences of species of the genus. Pacholenus monteiroi sp. nov. (type-locality Brazil, Rio de Janeiro state, Carapebus, Parque Nacional da Restinga de Jurubatiba) is described and illustrated. The weevil develops as a stem gall-former in Calypttranthes brasiliensis Spreng (Myrtaceae). The new species is easily distinguished from the other five known of the genus by the presence of a prominent supra-ocular ridge. An updated key for identification for all species of Pacholenus is provided. Three species of Pacholenus are presently recorded for the states of Rio de Janeiro and São Paulo; P. pelliceus and P. monteiroi occur in both states, while P. penicillus is only known from Rio de Janeiro; P. hispidus occurs in São Paulo, being the most widespread species of the genus, ranging from Minas Gerais south to Santa Catarina.

KEYWORDS: Geographic distribution; Neotropical Region; Pacholenini; Stem-gall; Weevils.

INTRODUCTION

During researches conducted by Dr. Ricardo F. Monteiro and his team (Departamento de Ecologia, Universidade Federal do Rio de Janeiro, UFRJ) in Restinga of Jurubatiba, Rio de Janeiro state, Brazil, some weevils of the genus *Pacholenus* Schoenherr, 1826 were reared from *Calypttranthes brasiliensis* Spreng (Myrtaceae) stem galls. The reared adults were sent by Dr. Monteiro to me for identification and I could confirm they belong to a new species of *Pacholenus*, described herein. A search in the collections of the Museu de Zoologia, Universidade de São Paulo

(MZSP) disclosed an additional conspecific specimen collected in Guarujá, São Paulo state.

According to Vanin & Reichardt (1976), *Pacholenus* was erected by Schoenherr, 1826. However, as pointed out by Wibmer & O'Brien (1986), this is a *nomen nudum*, because Schoenherr (1826) designated *Pacholenus pelliceus* as type species of the genus, a taxon not published until 1836. *Pacholenus* became an available name only when the genus was described by Schoenherr (1836:101) and two species of the genus, *P. pelliceus* and *P. penicillus*, were described by Boheman (1836:101 and 102, respectively). Although *P. pelliceus* was not explicitly designated or

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even reported as type species for the genus *Pacholenus* in that publication (Schoenherr, 1836), it is clear that this was Schoenherr's intention, made known in 1826. Thus, the type species of *Pacholenus* Schoenherr, 1836 is *P. pelliceus* Boheman, 1836, by Schoenherr's (1836:101) subsequent designation (Wibmer & O'Brien, 1986).

Since the revision of the Pacholenini by Vanin & Reichardt (1976), no other new species of *Pacholenus* had been described. The genus *Pacholenus* comprises five species (Wibmer & O'Brien, 1986), three known from the Atlantic Forest along southeastern coast of Brazil, and two from Central Brazil, but probably inhabiting gallery forests or forests enclaves (Vanin & Reichardt, 1976). Vanin *et al.* (2000) reported for the first time the biology of a species of the genus, *Pacholenus pelliceus* Boheman, 1836, a stem gall-former. This was made possible due to Dr. Monteiro's observations on weevils reared from galls collected in restinga of Barra de Maricá, Rio de Janeiro state. The unicameral

galls develop in two species of Myrtaceae, *Gomidesia martiniana* Berg and *G. fenziiana* Berg. In the same paper, ecological aspects of the weevil and galls were discussed, the full-grown larva was described, and the assignment of the Pacholenini into the Molytinae corroborated by larval features.

This addition brings the total number of species of *Pacholenus* to six.

MATERIAL AND METHODS

For the study and preparation of the specimens the stereomicroscope Wild M5A and the binocular microscope Leitz SM-Lux were used. Male genital structures were macerated in hot 10% KOH, rinsed in distilled water, and stored in a micro vial with glycerin. Line drawings were made with aid of a camera lucida, the genitalia outlines from glycerin preparations.



FIGURES 1-2: *Pacholenus monteiroi* sp. nov., female paratype from Carapebus, RJ, habitus; 1, dorsal view; 2, lateral view. (Length, rostrum excluded = 6.3 mm).

Note on terminology: The spaces between elytral striae are known as intervals, interstices or interstriae, and these are numbered from the suture outwards, by roman numerals. Thus, the sutural interval is the interstice I (Lawrence & Britton, 1991). It must be noticed that Vanin & Reichardt (1976) numbered the intervals in a different way, the first one was called sutural interval, the second considered as being interstice I, the third as interstice II, and so on. In this paper I follow the terminology recommended by Lawrence & Britton (1991). The correlation of terms are the following (terminologies appearing in Vanin & Reichardt, 1976 indicated parenthetically):

interstriae I (sutural interval), interstriae II (interstice I) interstriae III, (interstice II), and so forth.

RESULTS AND DISCUSSION

Pacholenus monteiroi sp. nov.
(Figs. 1-7)

Type-material: Male holotype “Carapebus, RJ, Parque Nacional da Restinga de Jurubatiba, 03.VIII.2006, Ricardo F. Monteiro col.; Espécie indutora de galha”

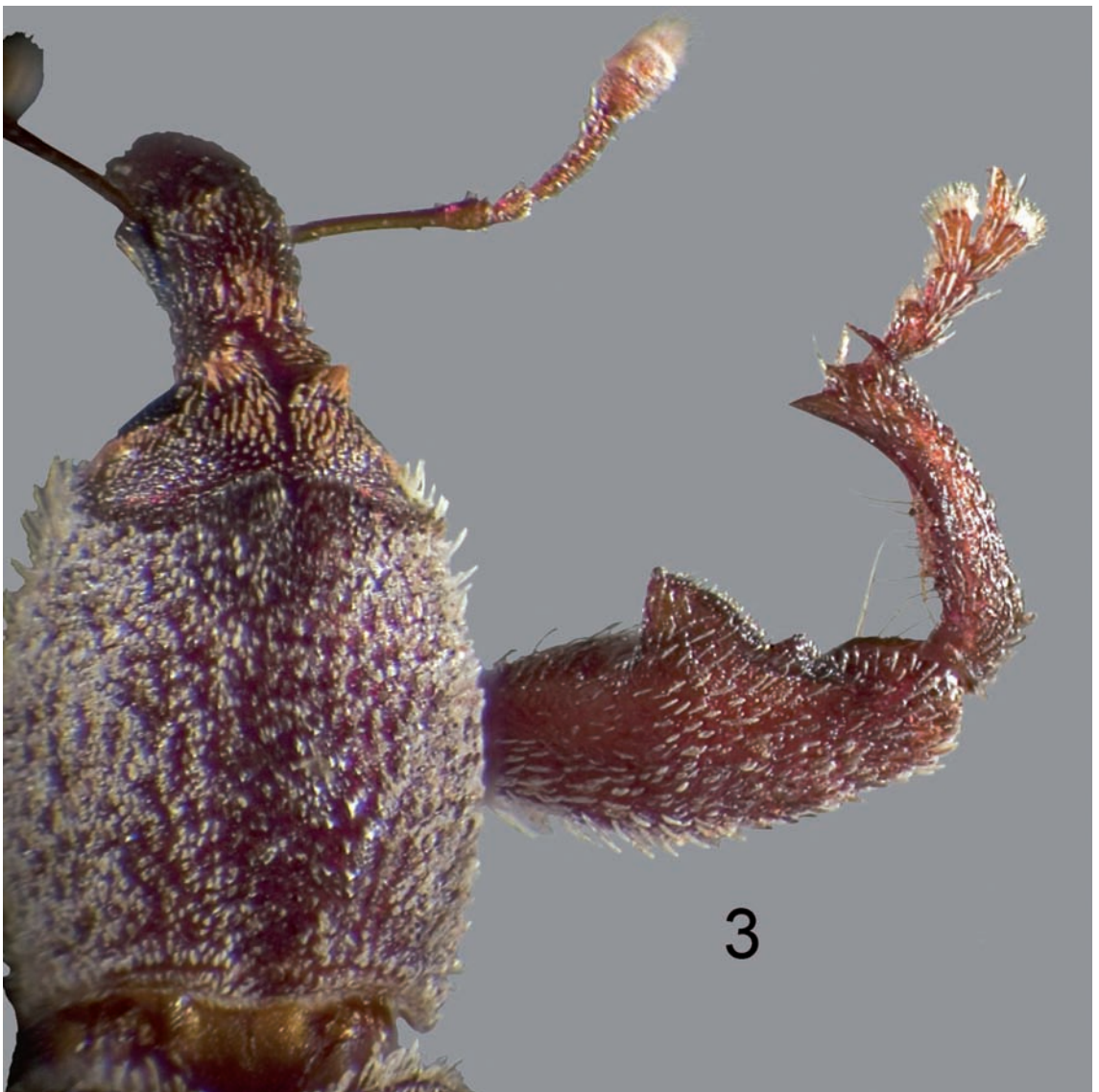


FIGURE 3: *Pacholenus monteiroi* sp. nov., female paratype from Carapebus, RJ; detail of head, pronotum, and right anterior leg, dorsal view.

(MZSP), dissected. Paratypes, same data, (2 males, 2 females, MZSP); same data but 06.IV.2006 (1 male, 1 female, MZSP); "Est. São Paulo, Guarujá, I.XI.1920, Mehu; *Pacholenus* sp., S.A. Vanin det. 1992" (1 female, MZSP).

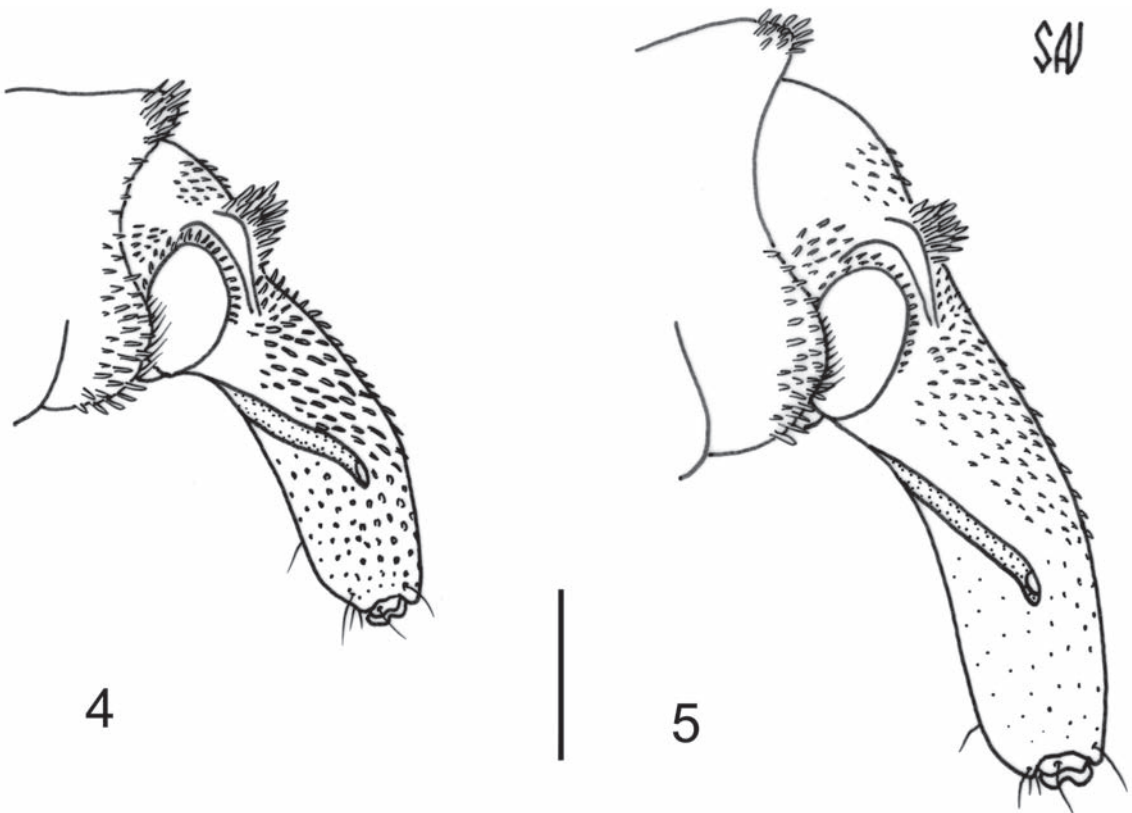
Diagnosis

Integument reddish brown covered by whitish decumbent and erect scales, denser especially on sides of pronotum and on elytral disc. Each supra-ocular ridge with a brush of large and erect dark orange scales. Elytra more or less parallel-sided, only narrowed near jointly rounded elytral apices; elytral declivity very abrupt, with a sinuous transverse band of spatulate and erect white scales.

DESCRIPTION

Length (in mm, rostrum excluded): male 4.2-5.0; female 5.5-6.4.

Head: Rostrum shorter than pronotum (males and females), in males about 0.85 times and in females 0.75 times as long as pronotum; in males more strongly arched from near antennal insertion to apex; base wider at apex than at base (1.2 times) in both sexes; scrobes deep, on ventral face of rostrum obliquely directed to base but not meeting each other. Antennae near apical third of rostrum; apex of scape extended to anterior margin of eye; flagellomere I wider and longer than any of the following flagellomeres, about 1.4 times as long as II; III-V subequal, about as wide as long; VI and VII slightly wider than long; club fusiform, sutures inconspicuous, about 2.2 times as long as wide, and nearly as long as the flagellomeres II-VII combined. Eyes oval, narrowed ventrally, dorsally separated by slightly less than rostrum width at base; ommatidia coarse, with 9 to 10 facets at widest point and about 22 on length; dorsal outer margin of eyes fringed with oval orangish scales. Frons with a pair of supra-ocular ridges, more prominent in males, each one with a brush of hirsute, spatulate dark orange scales; with an elongate feeble depression between eyes. Rostrum and remaining parts of dorsum of head with elongate dark orange scales, ventrally glabrous.



FIGURES 4-5: *Pacholenus monteiroi* sp. nov., head, lateral views; 4, male holotype; 5, female paratype. (Scale = 0.5 mm).

Pronotum about as long as wide, widest about middle, with lateral sides gently curved towards apex and base; front margin produced into a bilobed median projection, protruded above head; postocular lobes rounded, well indicated; vibrissae well developed. Surface with coarse and more or less sparse foveolate punctures, which are masked by the cover of white decumbent scales; vestiture longer and denser at lateral sides; region of bilobed projection with dark orange and dark brown elongate scales.

Scutellum rounded, covered by white scales.

Elytra slightly wider than pronotum, 2.6-2.7 times as long as wide, more or less parallel-sided, only narrowed near jointly rounded apices; elytral declivity very abrupt near apex, declivous region of each elytron deeply concave. Striae very coarse, formed by foveolate punctures, about as large as interstriae width. Surface covered by small, white decumbent scales; with some sparse black elongate scales on sutural interstriae. Interstriae I (= sutural interval) slightly raised near base and more strongly raised on elytral declivity; interstriae III weakly raised near base; dorsal surface of elytra with a sinuous transverse band of white scales, beginning in elytral suture and reaching striae IX; with, erect, dark brown spatulate scales in front of white transverse band, forming clusters on raised elytral suture and on prominent tuberosity formed by confluence of interstriae III-V.

Front femora bearing four long stiffed setae; each femur with one large triangular tooth, inner margin straight, outer margin sinuous, and with one smaller tooth, very acuminate, placed between

the larger one and the apex of femur; tibiae short and strongly curved. Legs with white and setiform scales. Ventrites I and II, and III and IV, with about the same length, but II about 1.4 times as long as III and IV combined; sutures between ventrites I and II obliterated; ventrite II with distal margin regularly curved from base, slightly shorter than III and IV combined.

Male genitalia: Median lobe of aedeagus 4 times as long as wide, basal apodeme very slightly shorter than median lobe; apex very acuminate; internal sac (= endophallus) with a small, foliaceous and concave sclerite, surrounded by microtrichiae. Apodemes of tegmen about 0.7 times as long as apodemes of aedeagus.

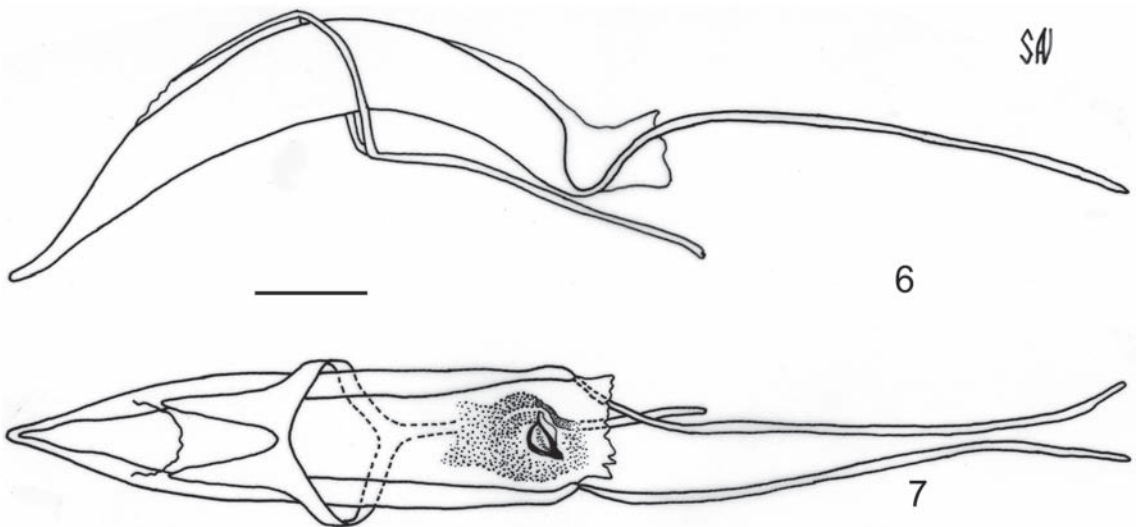
Ventral integument darker than integument of dorsum and of legs.

Etymology: It is a pleasure to name the new species in honor of Dr. Ricardo F. Monteiro, in recognition of his significant contributions to the knowledge of the biology of weevils.

Geographic distribution: Southeastern Brazil, from Rio de Janeiro south to São Paulo, along the coast.

Type locality: BRAZIL, Rio de Janeiro state, Carapibus, Parque Nacional da Restinga de Jurubatiba.

Host relationships: *Pacholenus monteiroi* develops as a stem gall-former in *Calypttranthes brasiliensis* Spreng (Myrtaceae).



FIGURES 6-7: *Pacholenus monteiroi* sp. nov., aedeagus of holotype; 6, lateral view; 7, dorsal view. (Scale = 0.2 mm).

Remarks

Pacholenus monteiroi is best characterized by the prominent supra-ocular ridges, each one with a brush of large and erect dark orange scales (Figs. 3 and 4), unique in the whole genus. In the other known species of *Pacholenus*, the frons close to the upper margin of eyes are not elevated, but has a similar brush of erect, spatulate, orange scales.

Males are distinguished from females by the beak being slightly shorter, more abruptly curved near antennal insertion, and more rugose and more scaled than that of female. Furthermore, the supra-ocular ridges and the brushes are more developed in males.

Pacholenus monteiroi should be confused with *P. canescens*, both species sharing the elytral interstriae III weakly raised near base and the whitish dorsal vestiture. However, in *P. canescens* the elytral declivity is not abrupt, without tumescence or special vestiture, while in *P. monteiroi* the elytral declivity is very

abrupt, with tumescences on sutural area and in the confluences of interstriae II-V, and has a transverse band of white scales. The new species is, up to now, the smallest member of the genus (4.2-6.4 mm); another small species is *P. hispidus*, but it is slightly larger (6.7-8.5 mm) and well characterized by the strong scaly tumidity of suture on elytral declivity.

The known host of *P. monteiroi* is *Calyptranthes brasiliensis* Spreng, and those of *P. pelliceus* are *Gomidesia martiniana* Berg and *G. fenziiana* Berg (Vanin *et al.* 2000). Thus, these two species of the genus *Pacholenus* develops as stem-galls of plants of the family Myrtaceae. According to Souza *et al.* (2007), *Calyptranthes brasiliensis* Spreng is a brush or a tree which may reach eight meters high, ranges from Bahia south to Santa Catarina, and may inhabit the Tropical Rain Forest, the Restinga vegetation and the "Mata de Tabuleiro" of Espírito Santo state. Details concerning the gall structures and the weevil biology will be published elsewhere by Dr. Monteiro and collaborators.

Key to species of *Pacholenus* (modified from Vanin & Reichardt, 1976).

1. Supra-ocular ridges well developed, each one with a brush of large and erect dark orange scales (Figs. 3 and 4). Elytral declivity with a sinuous transverse band of white spatulate and erect scales (Figs. 1 and 2)..... *P. monteiroi* sp. nov.
- Supra-ocular ridges absent, but in some species a tuft of erect large scales may be present. Elytral declivity without a transverse band of white scales.....2
- 2(1). Apical margins of each elytron produced into a caudate process3
- Apical margins of each elytron not produced into a caudate process, sutural angle jointly rounded or acuminate.....4
- 3(2) Caudate process of elytra large (length about two times the base width, in lateral view) and strongly curved upwards. Dorsal surface of elytra without V-shaped, light bands.. *P. penicillus* Boheman, 1836
- Caudate process of elytra short (length about equal to base width, in lateral view) and not curved upwards. Dorsal surface of elytra with two V-shaped, light bands, one beginning at humeri and reaching about middle of elytra on suture, and the second beginning near middle and reaching the upper part of the declivity on suture.....*P. bifasciatus* Reichardt & Vanin, 1976
- 4(2) Interstriae I not raised on elytral declivity and with normal vestiture.. *P. canescens* Vanin & Reichardt, 1976
- Interstriae I raised on elytral declivity and with a tuft of strong, erect spatulate scales.....5
- 5(4) Elytra more or less parallel-sided, abruptly narrowed towards rounded apices; scaly protuberance on suture weakly raised, elytral declivity oblique when viewed laterally..... *P. pelliceus* Boheman, 1836
- Elytra with margins slightly widened from base to middle, and then regularly narrowed towards the jointly acuminate apices; scaly protuberance on suture more strongly raised, elytral declivity almost perpendicular when viewed laterally*P. hispidus* Vanin & Reichardt, 1976

Additions to the geographic distribution of *Pacholenus* spp.

Considering the scarcity of specimens of *Pacholenus* species in collections, I thought it would

be worthwhile to report the data found in the labels of new material of that genus incorporated into the entomological collection of the Museu de Zoologia, since the publication of Vanin & Reichardt (1976).

Pacholenus pelliceus Boheman, 1836. BRAZIL. Rio de Janeiro state, Maricá, G. Martiana & R.F. Monteiro col. II. 1993 (1 male, 1 female, MZSP). São Paulo state, Botucatu, 14.IX.1972, O. Chamma col. (1 female, MZSP). The occurrence of *P. penicillus* was ratified for the Rio de Janeiro state by Vanin *et al.* (2000); this species is now recorded for the first time for the state of São Paulo.

Pacholenus penicillus Boheman, 1836. BRAZIL. Rio de Janeiro state, Casemiro de Abreu, Barra de São João, 15.VI.1992. J. Becker col. (2 exs., MZSP). Up to now, the exact locality of the single now specimen of this species remained unknown. The locality where the two examined specimens were collected, Casemiro da Rocha, in the state of Rio de Janeiro and near the coast, agrees well with the possible geographic range of the species hypothesized by Vanin & Reichardt (1976).

Considering the new described species and the new distributional data, the number of *Pacholenus* species recorded for the states of Rio de Janeiro and São Paulo are raised to three; *P. pelliceus* and *P. monteiroi* occur in both states, while *P. penicillus* is only known from Rio de Janeiro; *P. hispidus* occurs in São Paulo, being the most widespread species of the genus, ranging from Minas Gerais through São Paulo and Paraná to Santa Catarina.

RESUMO

Nova espécie de Pacholenus Schoenherr do sudeste do Brasil (Coleoptera, Curculionidae, Molytinae), e novas ocorrências de espécies do gênero. Pacholenus monteiroi sp. nov. (localidade-tipo Brasil, Estado do Rio de Janeiro, Carapebus, Parque Nacional da Restinga de Jurubatiba) é descrita e ilustrada. Esse gorgulho se desenvolve em galhas caulinares de Calyptranthes brasiliensis Spreng (Myrtaceae). A nova espécie é facilmente distinta das outras cinco conhecidas do gênero devido à presença de uma crista supra-ocular proeminente. Uma chave atualizada para identificação das espécies de Pacholenus é fornecida. Três espécies de Pacholenus ocorrem nos estados do Rio de Janeiro e São Paulo; P. pelliceus e

P. monteiroi ocorrem em ambos os estados, enquanto que *P. penicillus* apenas no Rio de Janeiro; *P. hispidus* ocorre em São Paulo, sendo a espécie do gênero com a distribuição mais ampla, sendo encontrada desde Minas Gerais até Santa Catarina.

PALAVRAS-CHAVE: Distribuição geográfica; Galha caulinar; Gorgulhos; Pacholenini; Região Neotropical.

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