

Research Article / Artículo de Investigación

Species of *Agrilus* Curtis, 1825 (Coleoptera: Buprestidae) found in the Mata Atlantica and Caatinga biomes of Brazil

Especies de *Agrilus* Curtis, 1825 (Coleoptera: Buprestidae) encontradas en los biomas Mata Atlántica y Caatinga de Brasil

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ZooBank: urn:lsid:zoobank.org:pub:B19D1045-A88D-4A38-80B2-07418E3FA38E

<https://doi.org/10.35249/rche.50.4.24.08>

Abstract. A list is presented of *Agrilus* species collected during research conducted within the joint program between the Laboratory of Coleoptera of the Museu de Zoologia da Universidade de São Paulo, São Paulo (Brazil) and the Department of Science of the University of Rome 3, Rome (Italy). This paper represents a first contribution of this project and is aimed at increasing the taxonomic and chorological knowledge of the genus *Agrilus* from Caatinga and the Mata Atlantica, with attention to the Restinga biome. A total of seven species are listed, one of which is undetermined and three are new to science and here described: *Agrilus biffii* n. sp., *Agrilus caatinganus* n. sp., and *Agrilus rossoi* n. sp.

Key words: Agrilini; biomes; buprestid; new species; Restinga.

Resumen. Se presenta una lista de las especies de *Agrilus* recolectadas durante la investigación realizada dentro del programa conjunto entre el Laboratorio de Coleoptera del Museo de Zoologia da Universidade de São Paulo, São Paulo (Brasil) y el Departamento de Ciencias de la Universidad de Roma 3, Roma (Italia). Este artículo representa una primera contribución de este proyecto y está dirigido a incrementar el conocimiento taxonómico y corológico del género *Agrilus* de la Caatinga y de la Mata Atlántica, con especial atención al bioma Restinga. Se enumera un total de siete especies, una de las cuales es indeterminada y tres son nuevas para la ciencia y aquí se describen: *Agrilus biffii* n. sp., *Agrilus caatinganus* n. sp. y *Agrilus rossoi* n. sp.

Palabras clave: Agrinili; biomas; buprestido; nuevas especies; Restinga.

Introduction

A collaboration between the Museu de Zoologia da Universidade de São Paulo, Brazil, and the Department of Sciences, University of Rome 3, Italy, is the implementation of a wildlife program in Brazil concerning the family Buprestidae (Coleoptera) within the scope of L.M.'s postdoctoral research. The program, of which this paper is a first contribution, includes morphological analyses, proposals of hypotheses on the functions of the various morphological structures highlighted in relation to the interactions between insect/host

Received 29 August 2024 / Accepted 27 October 2024 / Published online 29 November 2024

Responsible Editor: José Mondaca E.

plant and insect/environment, the study and dissemination of biological and ethological data, the identification of species with possible phytosanitary and economic importance, and the presentation of faunal knowledge. This paper concerns only the last of these and is mainly aimed at the study of the Buprestidae of the Mata Atlantica, a forest complex distributed on the eastern coast of Brazil, and of the Caatinga, a biome present in the NE of Brazil.

After collect carried out in October in the Itatiaia National Park, a region of Mata Atlantica Forest located in the Rio de Janeiro state, in November and December of 2023, in collaboration with the Civic Museum of Natural History of Carmagnola, Italy, the field research was mainly directed on the Caatinga of Bahia State, one of the five major biomes of Brazil and the only biome exclusively Brazilian and strongly threatened by anthropological impact (Alves *et al.* 2009). The Caatinga is located in the northeast of the country and has a distinct environment with a dry climate, calcareous soil on which grows a sparse and irregular vegetation, characterized by deciduous plants, mainly Mimosaceae, various cacti and xerophilous forms of bromelias (Leal *et al.* 2003). It is a relatively poorly investigated environment with regards to the Buprestidae but is probably much richer in species than previously thought; in the past years a survey in the northeastern Caatinga has recovered approximately 14 different species of Buprestidae (Ianuzzi *et al.* 2006) of which at least one is new to science (Migliore *et al.* 2020).

The Caatinga are probably composed of predominantly xylophagous species, due to the type of vegetation, *i.e.* plants with few leaves, small size and a marked seasonality (Ianuzzi *et al.* 2003) unlike the Mata Atlantica and Amazonian where the availability of food for herbivorous insects, including leaf mining Buprestidae is very high, and the fauna has already been partially investigated in the past decades (Curletti 2016, 2018a, 2018b, 2019a, 2019b, 2020a, 2020b, 2020c, 2020d; Curletti & Migliore 2013, 2014a, 2014b; Curletti & Pineda 2018, 2019; Curletti *et al.* 2013, 2016).

Part of this research was also dedicated to the Restinga, a rainforest coastal Atlantic ecosystem, that develops in sandy areas close to the sea, on relatively nutrient-poor soils, covered by vegetation made up of shrubs and medium-sized trees (Falkenberg 1999) which in relation to the Buprestid fauna is almost unknown (Migliore *et al.* 2020). No *Agrilus* species was found in Restinga, which would appear to be a biome not very suitable for the taxa of this genus.

Material and Methods

Photographs were taken with a Canon EOS 5D Mark II camera using different lenses depending on the subjects: Canon MP-E 65 for dorsal views, Lomo Plan 3.5x0.10 for lateral views, and a 20x metallographic microscope lens of unknown brand for the genitalia and frons. Photos were processed using Zerene Stacker software.

The material was collected mainly with the help of green sticky traps, malaise traps, as well as traditional hand collected methods. The specimens were prepared dried and glued on cards by using common water-soluble glue (MZSP) or clear nail polish (GCC) for further study, description and conservation. The use of nail polish was preferred to the entomological glue since this last may melt because of high temperatures and humidity of Brazil, leading to the detachment of the specimens and the growth of moulds, which would render their identification and conservation more difficult.

Acronyms. MZSP: Museu de Zoologia, São Paulo, Brazil. DSUR3: Dipartimento di Scienze dell'Università di Roma 3, Italy. GCC: collection Curletti, Carmagnola, Italy. MCCI: Museo Civico di Storia Naturale, Carmagnola, Italy.

Results

Taxa list

Agrilus anceps Curletti & Migliore, 2014. 1 female, Sao Paulo, Porto Ferreira (Parque Estadual de Porto Ferreira), 21°50'35"S 47°25'22"W, 23.XII.2023-21.I.24, malaise, G. Biffi leg.

Agrilus caatinganus n. sp. See description.

Agrilus fasciatellus Thomson, 1878. 1 female, 26.XI.2023, cross road BA144/BA429, 11°46'55"S 41°10'04"W. Curletti G., Migliore L., Migliore S., Rosso F., legg. (GCCCI).

Agrilus goryi Saunders, 1871. 1 male, BA, Santa Cruz Cabralia, Guaiú, 26.VIII.2022, S. Migliore leg.; 1 female, BA, Porto Seguro, Trancoso, 17.IX.2023, S. Migliore leg.

Agrilus biffii n. sp. See description.

Agrilus rossoi n. sp. See description.

Agrilus sp., 1 female, 26.XI.2023, cross road BA144/BA429, 11°46'55"S 41°10'04"W. Curletti G., Migliore L., Migliore S., Rosso F., legg. (GCCCI).

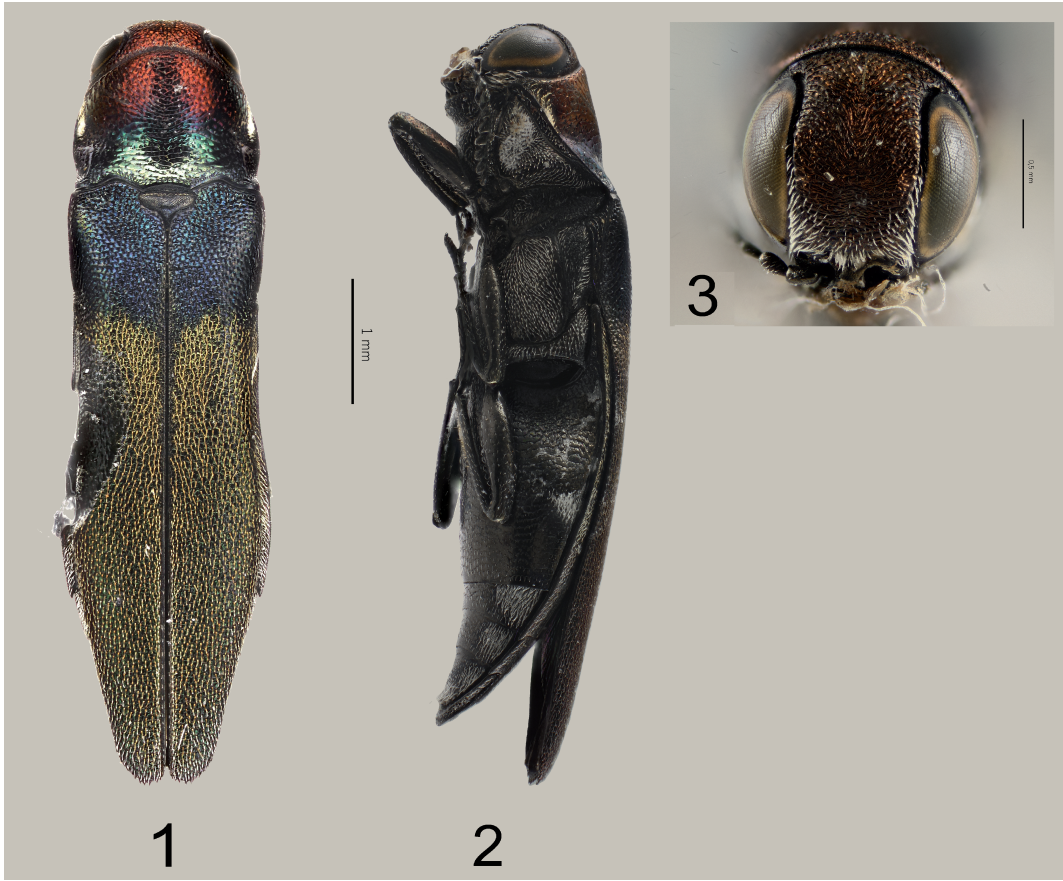
Agrilus (Agrilus) biffii n. sp.
(Figs. 1-3)

Material examined. Holotype female: Brazil, RJ, Itatiaia, Parque Nacional, 12.X.2023, L. Migliore leg. (MZSP 60981).

Holotype description. Length 6.1 mm. Slightly elongated, stumpy form. Head and anterior half of the pronotum red, second half of the pronotum black; dark blue elytra in the anterior part, golden in the anteromedian and posterior part, this last with thick regular pubescence. Head regularly rounded, vertex. 1/3 of the anterior margin of the pronotum wide. Frons with pubescence only in the basal part and along the internal edge of the eye but limited to the lower half. Clypeus carinate, narrow, quadrangular in shape. Antennae serrate from the 4th antennomere. Pronotum depressed on the sides and at the base, regularly convex in the median part. Disc glabrous, except for a pruinose white spot on the sides before the anterior angles. Superficial sculpture, with regular striae oblique anteriorly, horizontal at the base. Lateral margins slightly arcuate, posterior angles almost straight. Anterior margin regularly rounded. Prehumeral carinulae interrupted. Marginal carinae joined in the posterior half. Gular lobe rounded. Prosternal plate parallel. Scutellum transverse, large, carinate. Elytra with rounded, denticulate apices. Thick, short and regular pale-yellow pubescence on the mid-anterior and posterior parts; its colour could be due to the reflection of the integuments. Ventral part black; regular white pubescence on the metecoxa and metepisternum. Pruinose white spots on the sides of the ventrites, the basal one is smaller. Margin of the basal ventrite rounded. Metatibia longer than the metatarsus. Basal metatarsomere less long than the sum of the following three. All claws simply dentate.

Etymology. Named after esteemed colleague and friend Gabriel Biffi, for his constant support and collaboration.

Diagnosis. *Agrilus biffii* n. sp., according to Curletti & Brûlé (2011), belongs to group 04, characterized by the red pronotum anteriorly and blue/black posteriorly. The group is present with just under fifty species in the Neotropics. Among these, the morphologically closest species is *A. captivus* Fisher, 1944 from Trinidad which differs mainly in its less extensive elytral pubescence, present only in the distal half.



Figures 1-3. *Agrilus biffii* n. sp. 1. Holotype male, dorsal view. 2. Holotype male, lateral view. 3. Holotype male, frontal view. / **Figuras 1-3.** *Agrilus biffii* n. sp. 1. Holotipo macho, vista dorsal. 2. Holotipo macho, vista lateral. 3. Holotipo macho, vista frontal.

Agrilus (Agrilus) caatinganus n. sp.
(Figs. 4-7)

Material examined. Holotype male: Brazil, Bahia, 21.XI.2023, Doce Sertao, 11°36'56''S 41°01'56''W. Green sticky traps placed on non-spinous Fabaceae tree. Curletti G., Migliore L., Migliore S., Rosso F., legg. (MZSP).

Holotype description. Length 4.4 mm. Narrow, cylindrical body. Dark dorsal color, slightly metallic; bronzed vertex, dark olive green pronotum, dark bronze almost black elytra, with a pair of small spots of white pubescence at the distal 2/3. Head furrowed longitudinally along its entire length. Vertex about half the width of the anterior margin of the pronotum, glabrous frons, bright green. Epistome without transverse carina. Antennae dark, serrate from the fourth antennomere. Pronotum glabrous, convex, narrow and relatively elongated, with non-arcuate lateral margins and slightly obtuse posterior angles. Strong and transversal sculpture. Prehumeral carinulae practically absent. Marginal carinae joined at the distal 3/4 small gular sclerite, with slightly sinuated anterior margin. Prosternal process pubescent, parallel. Scutellum small, oval, with not very evident transverse carina. Elytra with rounded and strongly denticulated apices. The spots of dorsal pubescence are close to the suture and, although clearly visible, are composed of a few setae, in variable numbers,

8 on the left elytra and just 6 on the right. Ventral side bronze, pubescence not very thick, short and regular, denser on the meso- and metepisternum. Apex of apical ventrite sinuate. Legs with metatibia longer than the metatarsus. Basal metatarsomere as long as the sum of the following two. Anterior claws bifid, median and basal simply dentate. Aedeagus 1.0 mm in length, flat, sclerified, oval, with pointed median lobe apex (Fig. 7).

Etymology. After Caatinga, the name of the biome that characterizes the north of the state of Bahia, the environment in which the new species was found.

Comments and comparative notes. The holotype of *Agrilus caatinganus* n. sp. was found with the help of green sticky traps posed in the canopy of a medium-sized tree belonging to the Myrtaceae family.

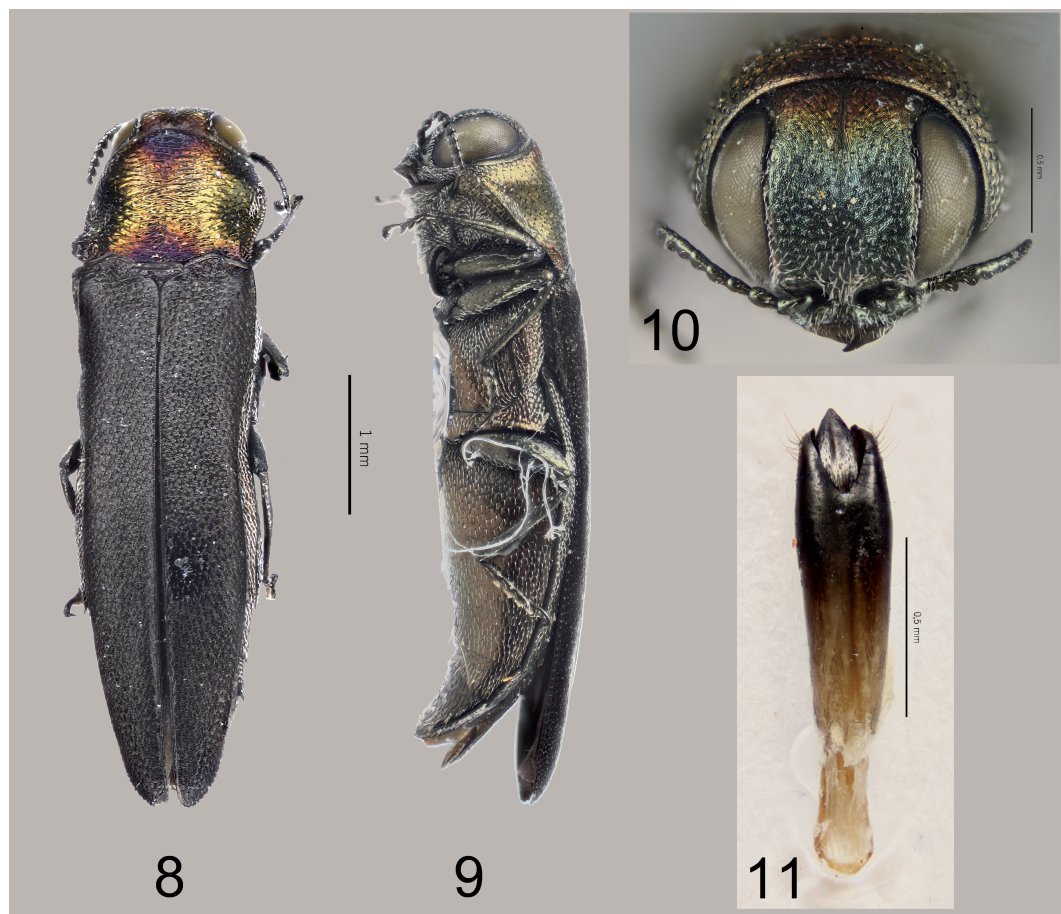
Agrilus caatinganus n. sp., characterized by a cylindrical body and a pair of elytral spots, can be confused with *Agrilus strigosus* Kerremans, 1897, described from the state of Minas Gerais. It differs substantially for the two-tone body, the different sculpture of the vertex and the pronotum, and for the absence of the prehumeral carinulae.



Figures 4-7. *Agrilus caatinganus* n. sp. 4. Holotype male, dorsal view. 5. Holotype male, lateral view. 6. Holotype male, frontal view. 7. Holotype male, aedeagus. / **Figuras 4-7. *Agrilus caatinganus* n. sp.** 4. Holotipo macho, vista dorsal. 5. Holotipo macho, vista lateral. 6. Holotipo macho, vista frontal. 7. Holotipo macho, edeago.

Agrilus (Agrilus) rossoi n. sp.
(Figs. 8-11)

Material examined. Holotype male: Brazil, Bahia, 26.XI.2023, crossroad BA144/BA429, 11°46'55"S 41°10'04"W. Green sticky traps placed on spineless Fabaceae tree. Curletti G., Migliore L., Migliore S., Rosso F., legg. (MZSP).



Figures 8-11. *Agrilus rossoi* n. sp. 8. Holotype male, dorsal view. 9. Holotype male, lateral view. 10. Holotype male, frontal view. 11. Holotype male, aedeagus. / **Figuras 8-11.** *Agrilus rossoi* n. sp. 8. Holotipo macho, vista dorsal. 9. Holotipo macho, vista lateral. 10. Holotipo macho, vista frontal. 11. Holotipo macho, edeago.

Holotype description. Length 5.0 mm. Almost glabrous, bright golden-bronze head and pronotum, pitch black elytra. Vertex 1/3 as wide as the anterior margin of the pronotum, furrowed. Frons dark green, glabrous, depressed. Epistome without transverse carina. Closed antennal pores. Antennae dark, short, slightly lobed, serrate from the fourth antennomere. Pronotum gibbous, wider anteriorly, flattened in the median area, strongly depressed laterally. Anterior margin advanced between the eyes. Lateral margins straight posteriorly. Prehumeral carinulae short and not very evident, parallel to the external edge. Marginal carinae joined posteriorly. Disc with strong, raised, transversal sculpture. Vestigial white setae not very evident in the lateral-anterior part. Narrow gular sclerite, with sinuated anterior margin. Prosternal process broad, flat, strongly pubescent, cuneiform with absent

angles. Scutellum wider than long, with strong transverse carina. Narrow elytra, revealing a large part of the lateroterga which are regularly pubescent. Apices separately rounded and denticulate. Ventral side regularly and slightly pubescent, with shorter and less thick hairs than those present on the lateroterga and metepisterna. Apex of apical ventrite slightly sinuated. Legs with metatibia longer than metatarsus. Basal metatarsomere just less long than the sum of the following two. Anterior claws bifid, median and posterior simply dentate. Aedeagus 1.3 mm long, flattened, sclerotized, symmetrical, with sharp median lobe apex (Fig. 11).

Etymology. The species is named after a member of the mission, Federico Rosso.

Comments and comparative notes. Also, *Agrilus rossoi* n. sp. was found on a green sticky trap settled on a non-spinous Fabaceae tree, together with one specimen of *Agrilus fasciatellus* Thomson, 1879.

Referring to Curletti & Brûlé (2011), *Agrilus rossoi* n. sp. is placed in group 03, characterized by dichroism with a red/bronzed pronotum in contrast with the black elytra. In particular, among the numerous Nearctic species that characterize the new species, it is morphologically similar to *Agrilus versicolor* Chevrolat, 1837 from which it differs in the more elongated shape, in the narrower and less sinuous vertex, in the color of the pronotum golden bronze instead of red and in the peculiar conformation of the prosternal process.

Acknowledgements

We are indebted to Gigi Migliore and Dadá Migliore for support during our survey in Bahia, and to Andrea Di Giulio of DSUR3. This work was supported by grants to LJM from Pró-Reitoria de Inclusão e Pertencimento da Universidade de São Paulo - PRIP/USP, Project number 2023 -794. Finally, thanks to Maurizio Gigli, author of the photos.

Author Contributions

GC: Conceptualization, investigation, methodology, writing - original draft preparation, resources, reviewing and editing, supervision, visualization. **ER:** Data curation, investigation, reviewing and editing, visualization. **LM:** Data curation, investigation, reviewing and editing.

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