

A new remarkable genus of Xantholinini from Madagascar (Coleoptera: Staphylinidae: Staphylininae: Xantholinini)

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Taxonomy, new genus, new species, Coleoptera, Staphylinidae, Xantholinini, *Arnaldolinus*, Madagascar

Abstract. A new genus of the tribe Xantholinini, *Arnaldolinus* gen. nov. with type species *Arnaldolinus bordonii* sp. nov., from Madagascar is described and illustrated.

INTRODUCTION

The family Staphylinidae is the largest family of the order Coleoptera with more than 63 000 species and about 3 500 genera (Ahn et al. 2017). The tribe Xantholinini is represented by many genera and a large number of species in all zoogeographic regions. The Afrotropical genera and species of Xantholinini excluding the Madagascan (Lemurian) subregion were recently revised (Bordoni 2016). Bordoni (2016) listed the currently valid genera from all zoogeographical regions, including 29 genera from the Afrotropical region. An additional genus, *Platydromus* Fauvel, 1905 described from Madagascar is missing in this list. Among thousands of Staphylinidae specimens recently collected by Petr Baňar and his collaborators during a long-term research in Madagascar and sorted by me I, found a new very interesting genus, which I describe in the present paper.

MATERIAL AND METHODS

The aedeagi of dissected males were embedded in Euparal. Dry-mounted specimens were studied using an MBS 10 binocular stereomicroscope. Microsculpture was observed at 56 × magnification. Habitus images were taken with a Canon EOS 700D camera in combination with a Canon MP-E65 1-5x macro lens. Images of aedeagi, male tergites and sternites were made using the above mentioned camera mounted on a Motic BA 410E-T compound microscope in transmitted light. Resulting images were focus stacked using ZereneStacker and then post-processed in Paint.Net, Paint, XnView and Live Photogallery.

Measurements are as follows: body length, from the front of closed mandibles to the tip of the abdomen; forebody length, from the front of the clypeus to the apical margin of the elytra; head length, from the front of the clypeus to the front of the neck; head width, across the widest part of the head including the eyes; elytral length, from the base of the shoulder to the posterior angle measured parallel to the sutural line (as in Janák & Bordoni 2014);

elytral width, combined width of elytra across their widest part; length of the aedeagus, from the base of the median lobe to the apex of the paramere. The terminology of the aedeagus follows Smetana (1982), with the voluminous part of the aedeagus as the basal bulbous and the apical portion between the parameres as the median lobe (see also Janák & Bordoni 2014).

Locality labels for the material examined were cited in the original version and marked with quotation marks (" "). Additional data were marked with brackets [].

The material examined is deposited in the following collections:

MMBC Moravian Museum, Brno, Czech Republic (P. Baňaf);

JJRC private collection J. Janák, Rtyň nad Bílinou, Czech Republic.

Abbreviations: n- number of specimens measured, L- length, W- width, R- ratio, HT- holotype, PT-paratype.

TAXONOMY

Arnaldolinus gen. nov.

(Figs. 1-15)

Type species: *Arnaldolinus bordonii* sp. nov.

Description. Body elongate, slender (Fig. 1), of large size (about 17-19 mm).

Head densely and coarsely punctate, some punctures coalescent but not forming semi-impressed rows of coalescent grooves, frontal grooves moderately long, ocular grooves obsolete (Fig. 2). Anterior margin of frons between antennal insertions extended into a short, moderately narrow, apically slightly rounded process (epistoma), limited at each side by rounded emargination, and slightly impressed dorsally. Eyes small, temples longer than length of eyes seen from above, evenly rounded, posteriorly without groove or denticle (Figs. 2, 5). Antennae geniculate, moderately short, antennal insertions separated from each other by distance about equal to distance separating each insertion from anteromedian margin of eye (Fig. 2), first segment long, thickened towards apex, equal in length to at least the four following segments combined, second segment shorter than third, distal segments more or less transverse (Fig. 1). Labrum completely chitinised, short, transverse, lobate apically, with long and strong apical setae (Fig. 2). Mandible falciform, lateral furrow reduced to vague impression at base (Figs. 2, 5). Maxillary palpi moderately long and narrow, segment 3 shorter than segment 2, segment 4 slightly longer and narrower than segment 3, subacute apically (Figs. 2, 5). Labial palpi long and moderately narrow, last segment distinctly longer than segment 2 (Figs. 2, 5). Mentum short, transverse, quadrilobate anteriorly. Ligula divided. Gula very short, gular sutures contiguous (Fig. 5).

Pronotum without dorsal rows of punctures, lateral parts with densely and coarsely punctate strip (Fig. 2); anterosternal plate with a suture (Fig. 6); both superior and inferior line of pronotal hypomera strongly developed, superior line turning downwards about middle and almost joining inferior line next to front margin of procoxae and continuing onto front margin of pronotum (Figs. 6, 7). Prosternum elevated medioposteriorly (Fig. 6), with posteromedian carina (Fig. 8), intercoxal process protruding, triangular; epimera present.



Figs. 1-4. *Arnaldolinus bordonii* gen. nov., sp. nov.; 1-3- holotype; 4- paratype. 1- habitus; 2- head and pronotum; 3, 4- aedeagus.

Mesosternum very short, transverse, widely separating middle coxae (Fig. 9). Metasternum very long (Fig. 9).

Elytra overlapping at suture (Fig. 1). Legs moderately long; protarsi simple (not dilated) in either sex, first four segments gradually becoming shorter, last segment about as long as three preceding segments combined; protibiae with numerous strong spines on outer margin; mesotibiae strongly spinose, with complete apical ctenidium; first segment of mesotarsus and metatarsus about equally long as second, last segment about as long as preceding three segments combined; metatibiae spinose on outer margin (Fig. 10), with complete apical ctenidium (Fig. 11).

Abdomen ‘Staphylininae-shaped’ with fourth or fifth segment broadest. Tergite 7 with complete membranous palisade fringe at its posterior margin (Fig. 1).

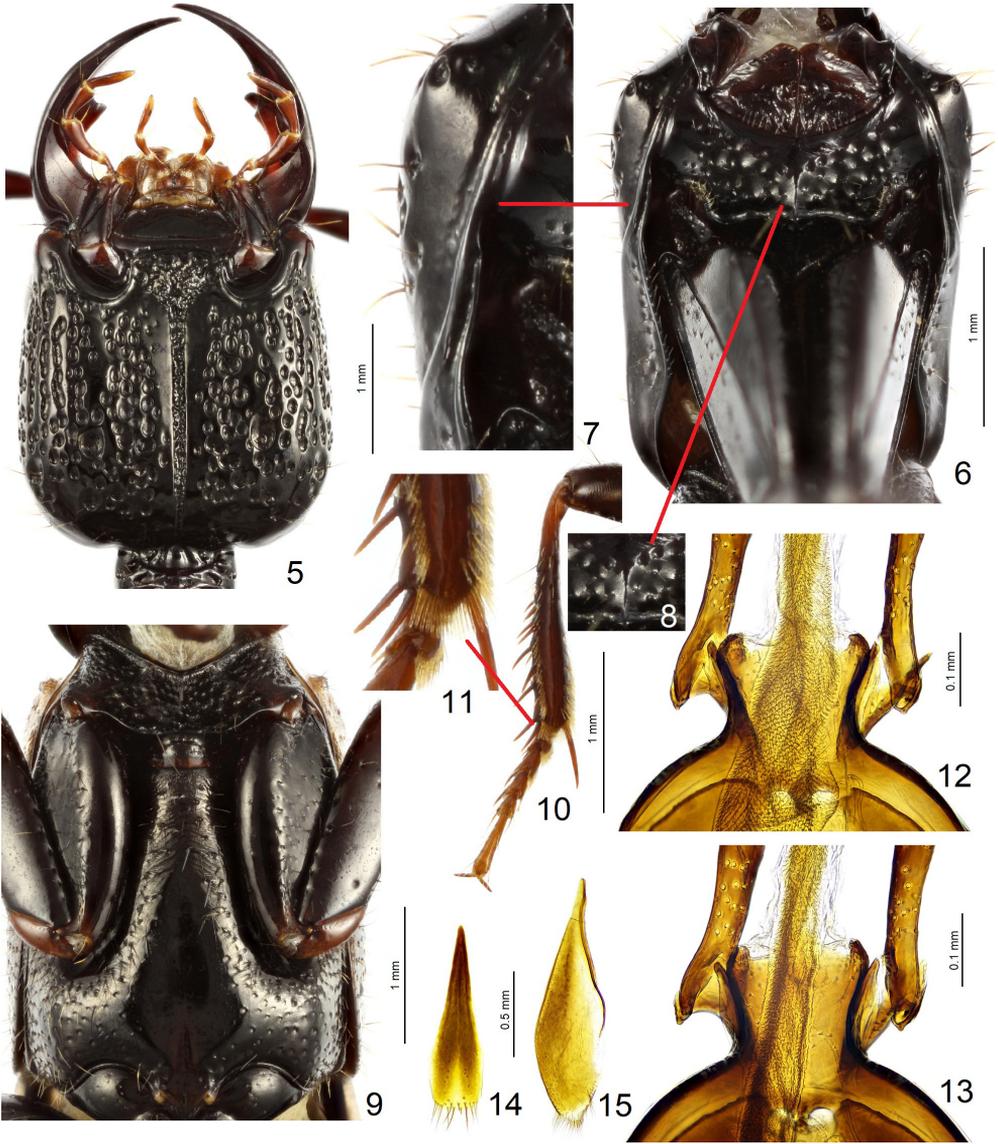
Male. Tergite and sternite 8 of male simple, not modified. Tergite 10 of male genital segment rather narrowly exposed between sclerites of tergite 9, strongly narrowed proximally (Fig. 14), sclerites of tergite 9 contiguous mediobasally. Sternite 9 of male genital segment asymmetrical (Fig. 15), located centrally. Aedeagus with basal bulbous subovoid (Figs. 3, 4), median lobe apically without distinct plate or process, weakly chitinised (Figs. 12, 13), with symmetrical parameres and inner sac with shape of variably long and wide ribbon with scales of different size (Figs. 3, 4).

Female. Unknown.

Differential diagnosis. The new genus differs from other genera of Xantholinini that lack dorsal rows of punctures on the pronotum in the combination of the following characters:

- 1) superior line turning downwards about middle, almost joining inferior line next to front margin of procoxae and continuing onto front margin of pronotum (Figs. 6, 7).
- 2) head densely and coarsely punctured, punctures sometimes coalescent but not forming semi-impressed rows of coalescent grooves (Figs. 2).
- 3) lateral part of pronotum densely and coarsely punctate, without a row of punctures or grooves (Fig. 2)
- 4) metatibia with only complete apical ctenidium, which extends onto inner margin backwards to about third (Fig. 11).
- 5) mandibles falciform (Figs. 2, 5)
- 6) maxillary and labial palpi elongate (Figs. 2, 5)
- 7) labrum distinctly lobate (Fig. 2)
- 8) aedeagus with median lobe apically without distinct plate or process, weakly chitinised (Figs. 12, 13).

The sister group of *Arnaldolinus* gen. nov. could be *Gauropterus* C. G. Thomson, 1860; this is supported by the following three characters: superior line turning downwards in about middle and almost joining inferior line next to front margin of procoxae and continuing onto front margin of pronotum (Figs. 6, 7), pronotum without dorsal series but with lateral punctures (Fig. 2) and metatibia with only complete apical ctenidium, which extends onto inner margin backwards to about third (Fig. 11), but *Gauropterus* differs from *Arnaldolinus* gen. nov. by the presence of semi-impressed rows of coalescent grooves on head, by presence of lateral series of punctures on pronotum situated in impressed groove (Smetana 1982: Fig. 7; Bordoni 2002: Fig. 412), by stout mandibles (Coiffait 1972: Fig. 66 D, Bordoni 2002: Fig. 416), by less elongate maxillary and labial palpi (Coiffait 1972: Figs. 66 E, F; Smetana 1982: Figs. 124, 125; Bordoni 2002: Figs. 413, 414) and by the different shape of aedeagus with more elongate basal bulbous and median lobe (Coiffait 1972: Figs. 66 G, H, I; Smetana 1982: Fig. 129; Bordoni 2002: Fig. 423 and following; Bordoni 2016: Fig. 355 and following). The shape of labrum in *Gauropterus* is very variable, only slightly emarginate medially (Coiffait 1972: Fig. 66 B, Bordoni 2002: Figs. 426, 432), more or less lobate or



Figs. 5-15. *Arnaldolinus bordonii* gen. nov., sp. nov.; 5-12, 14, 15- holotype; 13- paratype. 5- head ventral; 6- pronotum ventral; 7- detail of pronotal lines; 8- detail of prosternum; 9- meso- and metasternum; 10- metatibia; 11- ctenidium; 12, 13- median lobe of aedeagus; 14- tergite 10; 15- sternite 9.

quadrilobate (Bordoni 2002: Figs. 420, 439; Bordoni 2016: Fig. 352 and following). For this reason, the shape of labrum is of little importance in distinguishing *Arnaldolinus* gen. nov. and *Gauropterus*.

Arnaldolinus gen. nov. also has major similarities to *Thyrecephalus* Guérin-Ménéville, 1844, such as lack of dorsal series on pronotum and similar pronotal lines. *Thyrecephalus* is very variable and also contains species with densely and coarsely punctate head - as *Thyrecephalus flavioilaceus* Janák, 2017 from Madagascar or some recently revised Mexican species (Márquez J. & Asiain 2016). *Arnaldolinus* shares with Nearctic and some Mexican *Thyrecephalus* a carinate prosternum (Smetana 1982, Márquez J. & Asiain 2016). The recent study of Mexican species of *Thyrecephalus* suggests that the development of posteromedian carina of the prosternum is a variable intra-specific character (Márquez J. & Asiain 2016). *Thyrecephalus* differs from *Arnaldolinus* gen. nov. by different punctation on pronotum (with characteristic large puncture without seta near anterior angles and in some species with variable number of additional punctures with long setae in anterior angles and along sides on pronotum, but these punctures never form coarsely and densely punctate strips), shorter and wider maxillary palpi and by metatarsi with a subapical ctenidium.

Arnaldolinus gen. nov. has also some similarities to *Platydomus*, a genus described from Madagascar. *Platydomus* differs from *Arnaldolinus* gen. nov. by flattened tarsi, shorter maxillary palpi and different punctation on pronotum not forming coarsely and densely punctate strips.

Etymology. This new genus is dedicated to Arnaldo Bordoni, an eminent specialist in the systematics of Staphylinidae, and particularly of Xantholinini, who has been revising this tribe from the word's various geographical regions in stages, on the occasion of his recent 80th birthday.

***Arnaldolinus bordonii* sp. nov.**

(Figs. 1-15)

Type material. Holotype (♂): Madagascar: "MDA/Jan.2016/FIT nr. 3, N MADAGASCAR, MONTAGNE D'AMBRE NP, 1035 m; [12°31'37.8"S 49°10'16.7"E] FIT by big tree, 13-18.1.2016; P. Baňář lgt." (MMBC). Paratype (1 ♂): same data as holotype, (JJRC).

Description. (n = 2). Body length 17.5-18.5 mm (HT = 18.5 mm, PT = 17.5 mm), forebody length 8.5-8.7 mm (HT = 8.5 mm, PT = 8.7 mm). Body elongate, slender. Black, shoulders narrowly yellowish, elytral epipleura with yellowish backwards narrowed band, second antennomeres, base of tibiae and tarsi reddish (Fig. 1).

Head (Fig. 2) rounded, subrectangular, distinctly convex, longer than wide (L/W HT = 1.23, PT = 1.19), only slightly dilated posteriorly. Maximum width situated in posterior quarter. Eyes moderately large, not protruding from the contour of head, temples markedly longer than length of eyes seen from above (R HT = 2.46, PT = 2.79). Posterior angles rounded, without small teeth. Punctation very dense and coarse, several punctures setiferous, some punctures contiguous. Postocular region with several setiferous punctures. Surface shining, without microsculpture, impunctate area on frons with extremely fine scattered

micropunctures. Frontal grooves v-shaped, very distinct in large impunctate area, external groove leading to ocular puncture deep. Ocular grooves very short and shallow, leading from inner margin of eye to ocular puncture. Labrum quadrilobate (Fig. 2), maxillary palpi moderately long and narrow, segment 4 about four times as long as wide, subacute apically (Figs. 2, 5). Labial palpi long and narrow, last segment slightly flattened and widened in about middle, about three times as long as wide, subacute apically (Figs. 2, 5). Antennae geniculate, moderately short, antennal insertions separated from each other by a distance about equal to distance separating each insertion from anteromedian margin of eye (Figs. 3, 5), first segment long, thickened towards apex, equal in length to at least the four following segments combined, second segment shorter than third; distal segments transverse and flattened; fifth segment slightly transverse (R HT = 0.82, PT = 0.71); tenth segment markedly transverse (R HT = 0.68, PT = 0.63); last segment rounded-triangular.

Pronotum (Fig. 2) rounded-trapezoidal, moderately convex, markedly longer than wide (R HT = 1.51, PT = 1.50), slightly longer and markedly narrower than head (length of pronotum/length of head HT = 0.96, PT = 0.95; width of pronotum/width of head HT = 0.82, PT = 0.86), anterior margin rounded, towards anterior angles slightly emarginate, anterior angles well marked; pronotum markedly narrowed posteriorly, lateral margins slightly concave behind middle, posterior angles less distinct, widely rounded. Anterior part of pronotum with numerous punctures situated between anterior margin and anterior angles, lateral part with densely and coarsely punctate strip (Fig. 2). Surface shining, without microsculpture, but with extremely fine micropunctures. Prosternum elevated medioposteriorly (Fig. 6), with posteromedian carina and with narrowly triangular intercoxal process. Scutellum triangular, sparsely and very coarsely punctured, surface with dense microsculpture of transverse waves.

Elytra (Fig. 1) slightly trapezoidal, markedly longer than wide (R HT = 1.12, PT = 1.17), about as long as pronotum and markedly longer and larger than pronotum (length of elytra/length of pronotum HT = 0.97, PT = 1.01; width of elytra/width of pronotum HT = 1.31, PT = 1.30), flat, with prominent humeral angles, lateral sides slightly widened posteriorly; irregularly punctured, not forming rows, punctures in sutural and humeral part slightly more finely and markedly more densely punctured than remaining parts of dorsal side of elytra, lateral parts with large longitudinal impunctate strip. Surface between punctures with scattered, extremely fine micropunctures.

Abdomen (Fig. 1) moderately narrowed posteriorly, with seventh tergite bearing very fine whitish palisade fringe; punctuation coarse and dense. Surface between punctures with very fine transverse waves.

Legs moderately long and narrow (Fig. 1). Meso- and metatibia with complete apical ctenidium (Figs. 10, 11).

Male. Sternite 8 as long as tergite 8, broadly rounded apically. Sternite 9 (Fig. 15) asymmetrical, apical portion weakly sclerotized and furnished with a thick brush of fine hairs. Tergite 10 (Fig. 14) elongate, apical margin slightly rounded and bearing several moderately long bristles. Aedeagus 2.5 mm long (HT, PT = 2.5 mm), bulbus subovoid (Figs. 3, 4), median lobe broad, weakly sclerotised apically, without chitinised plate (Figs. 12, 13), parameres long and slender, symmetrical. Inner sac with the shape of a variably long and wide ribbon with scales of different size (Figs. 3, 4).

Female. Unknown.

Differential diagnosis. *A. bordonii* sp. nov. is in body shape and colour quite similar to some (mostly undescribed) *Gauropterus* from Madagascar, but differs from all these species in the generic characters described above, and mainly by the characteristic punctuation of the head and pronotum.

Etymology. The name is derived from the surname of Arnaldo Bordoni.

ACKNOWLEDGEMENTS. I thank Arnaldo Bordoni (Firenze, Italy) for our fruitful discussions about the status of the described species. I am obliged to Guillaume de Rougemont (Oxford, Great Britain) for his suggestions for improving the English. Special thanks are due to Petr Banař for the loan of the very interesting material.

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Received: 5.12.2018
Accepted: 20.12.2018
Printed: 31.3.2019