

***Aedophronus michaeli*, new species from South Africa, with some notes on the genus *Aedophronus* (Coleoptera: Curculionidae: Entiminae)**

Roman BOROVEC

Sloupno 64, 503 53 Smidary, Czech Republic
e-mail: romanborovec@mybox.cz

Taxonomy, new species, Coleoptera, Curculionidae, Entiminae, Brachyderini, *Aedophronus*, South Africa, Afrotropical Region

Abstract. *Aedophronus michaeli* sp. nov. is described from South Africa, Northern Cape, illustrated and compared with closely related species.

INTRODUCTION

The genus *Aedophronus* Schoenherr, 1847 belongs to the tribe Brachyderini Schoenherr, 1826 and currently includes five species known from northeastern South Africa, specifically the Limpopo and Gauteng provinces and two species described from the Democratic Republic of the Congo. The genus was described by Schoenherr based on a single species *A. setosus* Schoenherr, 1847 with the unclear historical locality „Caffraria.“ In his revision „On the African genera of wingless Brachyderinae with connate claws,“ Marshall (1919) described a new genus, *Mimaulodes* Marshall, 1919, based on the species *M. fimbriatus* Marshall, 1919. Later, Marshall described another new species, *Mimaulodes hirtulus*, within the same genus. In 1930, after studying the type of Schoenherr's type species *A. setosus*, Marshall concluded that the remove spaces genera *Mimaulodes* and *Aedophronus* are congeneric and synonymized them. He subsequently added two more species to the genus *Aedophronus*.

The author recently collected specimens of this genus in the Gauteng, North West and Northern Cape provinces of South Africa. The species from the Northern Cape province is distinct from previously known species, and its description is the subject of this article.

MATERIAL AND METHODS

Body length of all specimens was measured in dorsal view from the anterior border of the eyes to the apex of the elytra, excluding the rostrum. Width/length ratio of the rostrum was measured as width at base versus maximum length to the base of the mandibles in dorsal view. Width/length ratios of pronotum, elytra, antennal and tarsal segments were taken at the maximum width and length of the respective parts in dorsal view. Female genitalia were embedded in Solakryl BMX (Medika, Prague); male genitalia were mounted dry on the same card as the respective specimen. Habitus images were taken with a Canon EOS 5D mark II

in combination with a Canon MP-E65 1-5× macro lens. The resulting images were focus stacked by Zerene Stacker and post-processed in Adobe Photoshop CC 2015. Terminology of the rostrum and the genitalia follows Oberprieler et al. (2014). Exact label data of type specimen examined: separate labels are indicated by double slash (//), separate lines by a simple slash (/). Authors' remarks and comments are in square brackets.

The material is deposited in the following collections (identified by the acronyms):
 BMNH Natural History Museum, London, United Kingdom (formerly British Museum of Natural History);
 CMNC Canadian Museum of Nature Collection, Ottawa, Canada;
 MKSS Michael Košťál private collection, Šoporňa, Slovakia;
 NMPC National Museum, Praha, Czech Republic;
 RBSC Roman Borovec collection, Sloupno, Czech Republic.

TAXONOMIC PART

Aedophronus michaeli sp. nov.

(Figs. 1-8)

Type locality. South Africa, Northern Cape, environ of Danielskuil, province Postmasburg.

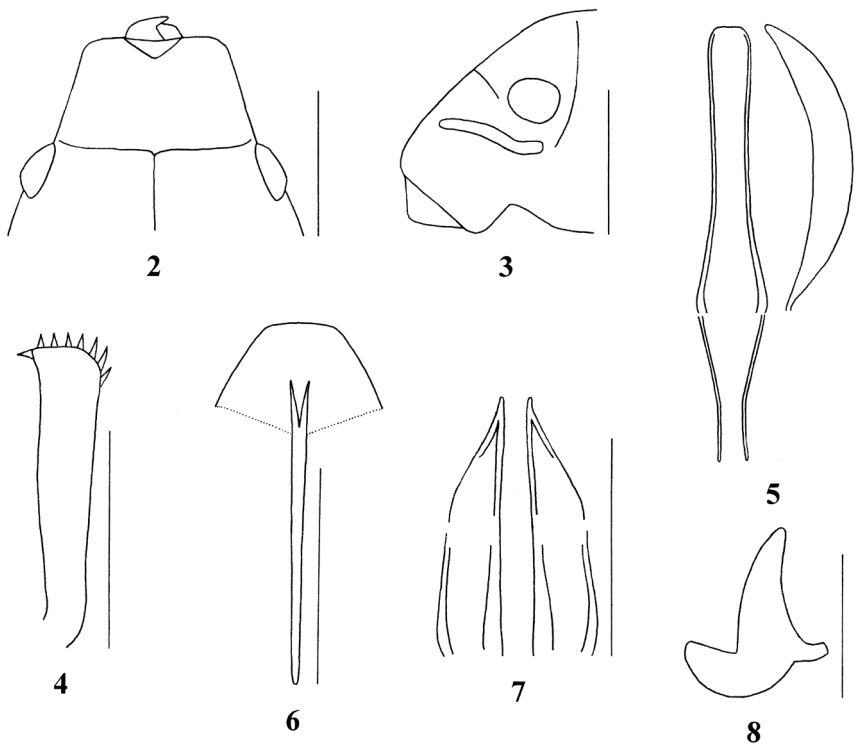
Type material. Holotype (♂): RSA Northern Cape 1431 m / Danielskuil env., pr. Postmas- / burg 28°15.544' S, 23°34.784' E / 4.xi.2023 R. Borovec lgt. // Sweeping of various / plants in perennial / vegetation, (NMPC). Paratypes: (47 specs.): same data as holotype, (BMNH, CMNC, NMPC, RBSC); (1 ♀): RSA Northern Cape 1371 m / S Danielskuil 2 km dir. Lime / Acres 28°18.8' S 23°32.7' E / 2.x.2025 R. Borovec leg. (RBSC); (6 specs.): South Africa / Northern Cape bor. or. / Michael Košťál leg. // Danielskuil env. / pr. Postmasburg 1480 m / S 28°15.5' E 23°34.8' / 14.xi.2022, (MKSS); (19 specs.): South Africa / North West occ. / Michael Košťál leg. // Vryburg 30 km SWW / 1400 m / S 27°6.6' E 24°17.0' / 19.x.2023, (MKSS); (27 specs.): South Africa / Northern Cape bor. or. / Michael Košťál leg. // Danielskuil env. / pr. Postmasburg 1450 m / S 28°15.7' E 23°34.8' / 20.x.2023, (MKSS); (10 specs.): South Africa / Northern Cape bor. or. / Kuruman Hills / Michael Košťál leg. // Kuruman 10 km S / 1430 m / S 27°33.5' E 23°28.5' / 21.x.2023, (MKSS); (30 specs.): South Africa / Northern Cape bor. or. / Michael Košťál leg. // Danielskuil env. / pr. Postmasburg 1450 m / S 28°15.7' E 23°34.8' / 24.x.2023, (MKSS); (12 specs.): South Africa / Northern Cape bor. or. / Michael Košťál leg. // Danielskuil env. / pr. Postmasburg 1450 m / S 28°15.7' E 23°34.8' / 4.xi.2023, (MKSS); (1 ♂ 1 ♀): South Africa / Northern Cape bor. or. / Michael Košťál leg. // Danielskuil env. / pr. Postmasburg 1450 m / S 28°15.7' E 23°34.8' / 2.xi.2025, (MKSS).

Description. Body length 2.31-2.63 mm, holotype 2.56 mm. Body (Fig. 1) integument dark brown, entire antennae and legs paler, reddish brown, only last funicle segments and clubs darker, blackish; spines at apex of all tibiae and claws black. Dorsal part of body densely covered by irregularly angular, small, well isolated appressed scales, as long as wide, 5-6 across width of one interstria, leaving one regular row of small glabrous punctures on each interstria with erect scales protruding from them. Each elytral interstria with one dense regular row of narrowly subspatulate scales, apically rounded, shorter on disc, semi-erect, on apical declivity longer than on disc, here slightly shorter than width of one interstria. Pronotum and head including rostrum with very dense, irregularly scattered, semi-erect subspatulate setae, somewhat shorter than elytral ones. Scapes except of short apical part glabrous; funicles with short, semi-appressed setae; clubs finely setose. The entire legs with similar appressed scales as body, slightly smaller, femora and tibiae with short, semi-erect,



Fig. 1. Dorsal habitus of *Aedrophronus michaeli* sp. nov.

Figs. 2-8. Structural details of *Aedrophronus michaeli* sp. nov.: 2- head with rostrum in dorsal view; 3- head with rostrum in lateral view; 4- right protibia; 5- penis in dorsal and lateral view; 6- sternite VIII in female; 7- gonocoxites; 8- spermatheca. Scale 0.50 mm for all figures.



narrowly subspatulate scales. Dorsal vestiture light brownish with bronze metallic sheen, interstriae 3 and 5 at apical declivity with different longitudinal spot from white scales, interstriae 2 at short basal part, interstriae 4 in basal half with white longitudinal vittae, interstriae 7 and 8 white in entire length; pronotum with four slender longitudinal, white vittae; entire rostrum white. Erect elytral scales light brown, scales on vittae white.

Rostrum (Figs. 2, 3) short and wide, $2.05\text{--}2.12\times$ as wide as long, widest at base, distinctly evenly tapered apicad with straight sides, at base $1.29\text{--}1.35\times$ as wide as at apex; in lateral view with dorsal and ventral margin straight, ventral margin short, about as long as longitudinal diameter of eye. Epifrons very wide, in dorsal view occupying the entire dorsal area of rostrum, flat, posteriorly separated from head by straight, very slender, not deepened transverse sulcus. Frons densely squamose. Epistome small and short, U-shaped, posteriorly slightly carinated. Mandibles glabrous; deciduous mandibular processes slender, long, longer than scapes, regularly curved. Antennal scrobes dorsally invisible; in lateral view short and narrow, furrow-shaped, weakly S-shaped curved, directed clearly below eyes. Eyes small, weakly vaulted and weakly prominent from outline of head in dorsal view; in lateral view subcircular, placed near the dorsal margin. Vertex very wide, almost flat, with very slender but distinct median longitudinal stria, anteriorly reaching transverse sulcus, posteriorly almost reaching anterior margin of pronotum. Head very short, distinctly shorter than longitudinal length of eye.

Antennae slender and short; scape short, $4.2\text{--}4.4\times$ as long as at apex wide, straight, very slender, enlarged in very short apical part, here $0.7\times$ as wide as club, $1.1\times$ as long as funicle, reaching middle of eye in repose. Funicle segment 1 largest, $1.6\text{--}1.7\times$ as long as wide, twice as long as small segment 2, this $1.2\text{--}1.3\times$ as long as wide; segments 3 and 4 $1.2\text{--}1.3\times$ as wide as long; segment 5 $1.3\text{--}1.4\times$ as wide as long; segment 6 $1.5\text{--}1.6\times$ as wide as long; segment 7 $1.8\text{--}1.9\times$ as wide as long; club $1.6\text{--}1.7\times$ as long as wide.

Pronotum (Fig. 1) short, $1.63\text{--}1.69\times$ as wide as long, widest slightly behind middle, with regularly rounded sides, with slightly narrower anterior margin than posterior one; disc regularly domed with short, slender, sometimes hardly visible median longitudinal stria; base straight. Pronotum in lateral view almost flat.

Elytra (Fig. 1) oval, $1.25\text{--}1.29\times$ as long as wide, widest at middle, with regularly rounded sides, humeri regularly rounded, weakly laterally prominent, elytra apically broadly rounded, in lateral view almost flat, posterior declivity vertical. Striae narrow, regularly narrowly punctured; all interstriae equally flat, $4\text{--}5\times$ wider than striae.

Femora edentate. Protibiae (Fig. 4) somewhat slender with lateral margin straight, apically regularly rounded, enlarged inwards with short brown mucro, armed with seven short, sparse, black spines, three lateral spines slightly longer than inner four ones, shortly extended to lateral part. Meso- and metatibiae with apical surface densely squamose, lying on inner side of tibiae, laterally fringed with slender black spines, mucronate; metatibiae lacking corbel. Tarsi slender; segment 2 $1.1\text{--}1.2\times$ as wide as long; segment 3 $1.3\text{--}1.4\times$ as wide as long and $1.2\times$ as wide as segment 2; onychium long, $1.9\text{--}2.0\times$ as long as segment 3; claws narrow, solidly fused at basal half, then faintly divergent.

Abdominal ventrites $1.20\text{--}1.24\times$ as long as wide, with ventrite 1 at middle about $1.5\times$ as long as 2; 2 weakly shorter than 3 and 4 combined; 5 in females slightly longer and apically

more rounded than in males. Suture between ventrites 1 and 2 slightly sinuose, fine, the others straight, fine. Metaventral process very narrow, obtuse, about as wide as a third of transverse diameter of metacoxa.

Male terminalia. Penis (Fig. 5) moderately small, slender and long, $3.9\text{--}4.1\times$ as long as wide, widest at base and in short basal part tapered apicad, then subparallel sided with slightly concave sides, apically broadly rounded, slightly obtuse; in lateral view weakly regularly curved, equally wide along entire length, in short apical part evenly tapered apicad. Temones short, body of penis $1.7\text{--}1.9\times$ as long as temones. Tegmen with slender complete ring lacking parameres, manubrium very short, about half as long as ring diameter.

Female terminalia. Sternite VIII (Fig. 6) with somewhat large subtrapezoidal plate, slightly wider than long, apical margin weakly obtuse, fringed with dense, somewhat long setae, basal margin membranous; apodeme slender, $2.0\text{--}2.2\times$ as long as plate, terminating inside of basal half of plate. Gonocoxites (Fig. 7) well sclerotised, with proximal part subparallel-sided and shorter distal part evenly tapered apicad, pointed, lacking styli. Spermatheca (Fig. 8) with short cornu, subtriangular, distinctly tapered apicad; ramus small, slightly longer than wide; collum large, subtriangular, slightly curved, twice as long as cornu and about $5\times$ as long as ramus.

Differential diagnosis. *Aedophronus michaeli* easily differs from all other South African species in the genus by the erect elytral setae short, shorter than width of one interstria, narrowly subspatulate, apically rounded. All other South African species (which means *A. setosus* Schoenherr, 1847, *A. fimbriatus* (Marshall, 1919), *A. hirtulus* (Marshall, 1927), *A. pretoriensis* Marshall, 1930 and *A. echinatus* Marshall, 1931) have erect elytral setae slender, piliform, apically pointed, long to very long, in *A. setosus* as long as interstria width, in all other species distinctly longer than width of one interstria.

Biology. All type specimens were swept during the day from low, sparse, partly dry perennial vegetation.

Etymology. The species is dedicated to my colleague and age-long friend Michael Košťál (Šoporna, Slovakia), an eminent weevil specialist who collected part of the type material.

REMARKS

The Brachyderini genus *Aedophronus* Schoenherr, 1847 is defined by small body size, up to 4.6 mm, dorsally densely squamose with long, dense, conspicuous erect setae on the entire dorsal part of body, rostrum short and wide, widest at base and distinctly evenly tapered apicad with straight sides, epifrons very wide, in dorsal view occupying entire rostral area, posteriorly separated from head by very slender, straight, not deep transverse sulcus, in middle connected with similar slender longitudinal median stria on vertex, this posteriorly almost reaching anterior margin of pronotum, epistome small, short, U-shaped, posteriorly weakly carinated, antennal scrobes in dorsal view invisible, in lateral view narrow, furrow-shaped, curved below ventral eye margin, eyes with small tuft of erect white scales on their

ventral margin, visible in dorso-lateral view, antennae short and slender, with scape shorter than rostrum between antennal insertions, pronotum short and wide with regularly rounded sides, elytra oval with weakly rounded humeri, lacking laterally prominent humeral calli and subhumeral bumps, femora edentate, protibiae with lateral margin straight, apically distinctly rounded, armed with short and sparse blackish 9-11 spines, lateral 2-3 spines slightly longer and sparser than the others, metatibiae lacking corbels with apical surface densely squamose, lying on inner side of tibia, claws connate, abdominal ventrites densely squamose with ventrite 1 in middle almost twice as long as 2, 2 slightly shorter than 3+4 combined, suture between ventrites 1 and 2 slightly sinuose, metaventral process narrow, narrower than half transverse diameter of metacoxa, penis moderately small with temones distinctly shorter than body of penis, tegmen lacking parameres with very short manubrium, female sternite VIII with subtrapezoidal plate, apically truncate with fringe of setae and basal margin membranous, gonocoxites moderately well sclerotised, apically evenly tapered forming sharp tips lacking styli, spermatheca with developed ramus and collum.

Aedophronus is easily distinguished from the other South African Brachyderini genera *Podionops* Schoenherr, 1847 and *Proscopus* Marshall, 1919. From the monotypic genus *Podionops* including the species *P. wahlbergi* Schoenherr, 1847, *Aedophronus* differs by smaller body size, at most 4.6 mm (at least 4.5 mm in *Podionops*), rostrum distinctly tapered along entire length (vs. parallel-sided in apical half in *Podionops*), eyes weakly vaulted, weakly prominent from outline of head in dorsal view and not reaching dorsal margin of head in lateral view (vs. exceptionally vaulted and prominent eyes in dorsal view, distinctly exceeding dorsal margin of head in *Podionops*), pronotum transverse, at least 1.5× as wide as long, distinctly wider than head including eyes (vs. slender pronotum, 2.1-2.2× as long as wide, distinctly narrower than head including eyes in *Podionops*), elytra oval, at most 1.4× as long as wide (vs. elytra slender, elongated, twice as long as wide in *Podionops*).

Aedophronus differs from the genus *Proscopus*, including the only species *P. marginatus* Marshall, 1919, by smaller body size, at most 4.6 mm, with distinct erect setae (at least 6 mm, lacking erect setae in *Podionops*), mandibles glabrous (squamosely in *Podionops*), scapes glabrous (vs. squamosely in *Podionops*), tarsi narrow (vs. wide in *Podionops*).

Aedophronus is by its shape of rostrum similar to the Cneorhinini genus *Mimaulus* Schoenherr, 1847 and *Protostrophus* Marshall, 1919. *Aedophronus* differs from *Mimaulus* by metatibiae lacking corbels (vs. distinct squamosely corbels in *Mimaulus*) and also protibiae apically simply rounded (vs. produced externally into a long slender process, armed with distinct spines in *Mimaulus*).

Aedophronus by its body appearance resembles the Cneorhinini genus *Protostrophus* Marshall, 1919. *Aedophronus* shares with *Protostrophus* not only identical shape of rostrum and antennal scrobes, but also similar structure of the body, in many species also apical portion of protibiae with short sparse black spines and female terminalia. *Aedophronus* differs from *Protostrophus* by metatibiae lacking corbels (vs. short, slender, densely squamosely corbels in *Protostrophus*), weakly vaulted eyes, weakly prominent from outline of head in dorsal view (vs. distinctly vaulted eyes, often asymmetrically, distinctly prominent from outline of head in *Protostrophus*), pronotum and head with rostrum with distinct erect setae (vs. lacking setae or with short, semi-appressed setae in *Protostrophus*), apical

surface of metatibiae distinctly squamose (vs. glabrous in *Protostrophus*), slender tarsi with segment 3 slightly wider than 2 (vs. wide tarsi with segment 3 distinctly wider than 2 in *Protostrophus*).

Voss (1962) described two new species of *Aedophronus* from the Democratic Republic of the Congo: *A. subvariegatus* Voss, 1962, and *A. ornatulus* Voss, 1962. Unfortunately, I have not had the opportunity to study the type material of either species. Their precise generic placement cannot be assessed from the original descriptions; however, it appears that the genus *Aedophronus* is primarily restricted to southern Africa. Therefore, the existence of two species so far from the previously known distribution of the genus will need to be confirmed by studying their type material. Nevertheless, in the descriptions of both species, Voss states, for example, that the elytral setae are longer than the width of the interstriae, which significantly distinguishes them from the new species described herein. Voss also compares both species to *A. hirtulus*, which possesses long and slender setae.

ACKNOWLEDGEMENTS. I wish to thank Maxwell Barclay, Michael Geiser and Keita Matsumoto for their kind assistance during my visit in the Natural History Museum in London. I am grateful to Michael Košťál (Šoporňa, Slovakia) for helping with the loan of his material. I also thank Pavel Krásenský (Chomutov, Czech Republic), for providing the photograph attached to this paper.

REFERENCES

- MARSHALL G. A. K. 1919: On the African genera of wingless Brachyderinae with connate claws (Coleoptera, Curculionidae). *Annals and Magazine of Natural History* (9) 3(13): 1-28.
- MARSHALL G. A. K. 1930: New Curculionidae, with notes on synonymy. *Annals and Magazine of Natural History* (10) 6: 551-577.
- OBERPRIELER R. G., ANDERSON R. S. & MARVALDI A. E. 2014: 3. Curculionoidea Latreille, 1802: Introduction, Phylogeny. Pp. 285-300. In: LESCHEN R. A. B. & BEUTEL R. G. (eds.): *Handbook of Zoology, Arthropoda: Insecta; Coleoptera, Beetles, Volume 3: Morphology and systematics (Phytophaga)*. Walter de Gruyter, Berlin/Boston, 675 pp.
- VOSS E. 1962: Attelabidae, Apionidae, Curculionidae (Coleoptera Rhynchophora). *Exploration du Parc National de l'Upemba. Mission G. F. de Witte* 44: 1-380.

Received: 25.4.2026

Accepted: 10.5.2026

Printed: 5.10.2026

