

## Key and distribution of Afrotropical *Augyles* Schiödte 1866 with the description of *Augyles geiseri* sp. nov. from Gabon and a new record of *A. parvus* (Grouvelle, 1909) from Cameroon (Coleoptera: Heteroceridae)

Stanislav SKALICKÝ

Dukla 322, CZ-562 01 Ústí nad Orlicí, Czech Republic  
e-mail: s.skalicky@wo.cz

**Taxonomy, new species, new record, Coleoptera, Heteroceridae, *Augyles*, Cameroon, Gabon**

**Abstract.** A new species of Heteroceridae, *Augyles geiseri* sp. nov. from Gabon, is described and illustrated. A key for the identification of the *Augyles* Schiödte 1866 species known from the Afrotropical region with their distribution is presented. *A. parvus* (Grouvelle, 1909) is reported for the first time from Cameroon.

### INTRODUCTION

The family Heteroceridae is currently divided into six genera (*Heterocerus* Fabricius 1792, *Augyles* Schiödte 1866, *Micilus* Mulsant et Rey 1872, *Elythomerus* Waterhouse 1874, *Tropicus* Pacheco 1964 and *Haraia* García et Jiménez-Ramos 2020). The genus *Augyles* is easily distinguishable from other genera by the complete post-metacoxal line on the abdomen and 9 or 10 segmented antennae. *Augyles* is represented in the Afrotropical region by only nine species, and is subdivided into two species groups (*Cribratellus* and *Parvus*) based mainly on the structure of the aedeagus (Charpentier 1965). *A. geiseri* sp. nov. represents an additional species of the *Cribratellus* group in the Afrotropical Region.

### MATERIAL AND METHODS

#### Acronyms:

CSU collection Stanislav Skalický, Ústí nad Orlicí, Czech Republic;

NHML The Natural History Museum, London, England (formerly BMNH).

Separate labels are indicated by double slashes, locality data are cited verbatim in “quotation marks”.

### GEOGRAPHICAL DISTRIBUTION OF *AUGYLES* IN THE AFROTROPICAL REGION

The *Parvus* group is represented by four species:

*A. brevisculus* (Charpentier, 1962), distributed in Angola, Botswana, Central African Republic, Congo, Côte d’Ivoire, Democratic Republic of the Congo and Namibia.

*A. davranogloui* Skalický, 2019 from Kenya.

*A. nadae* Skalický, 2004 from Benin.

*A. parvus* (Grouvelle, 1909), distributed in Burkina Faso, Central African Republic, Democratic Republic of the Congo, Chad, Congo, Côte d'Ivoire, Mali, Nigeria, Senegal, Sudan, Tanzania and Cameroon 42 spec. (♂♂, ♀♀): "CAMEROON N-W prov. Wum Vill. env. UV light 6°23'10''N, 10°04'59''E 10.xii.2010 local collector BMNH{E} 2016-44", (1 ♂, CSU, 41 ♂♂, ♀♀ NHML); 19 spec. (♂♂, ♀♀) "CAMEROON N-W prov. OBANG (near Bafut), 3-7.xii.2009, forest, 650 m 6°11'N, 10°05'E, J. Horák lgt. BMNH{E}2016-44", (NHML). First record for Cameroon.

The *Cribratellus* group is represented by six species:

*A. cribratellus* (Fairmaire, 1893), distributed in Eritrea, Ethiopia, Kenya, Somalia, Tanzania and Uganda.

*A. geiseri* sp. nov. from Gabon.

*A. flavidus* (Rossi, 1794), distributed in central Asia, Mediterranean region and the north of the African continent (Algeria, Libya, Morocco, Tunisia). In the Afrotropical region it is known from Congo, Democratic Republic of Congo, Eritrea, Mali, Mauritania, Senegal and Somalia.

*A. namibiensis* Skalický, 1999 from Namibia and Botswana.

*A. niloticus* (Grouvelle, 1896), distributed in the Palearctic part of Africa (Algeria, Egypt, Morocco), in Kazakhstan, Saudi Arabia and Yemen. In the Afrotropical region it is known from the Democratic Republic of Congo, Ghana, Kenya, Namibia, Senegal, Sudan, Zambia and Zimbabwe.

*A. pallens* (Charpentier, 1965), distributed in Kenya, Mozambique, Natal, South Africa, Tanzania, Zambia and Zimbabwe. (Charpentier 1962, 1965, 1968, Mascagni & Monte 2002, 2003a, 2003b, 2008, 2009, Skalický 1996, 1999, 2004, 2014, 2019, 2021).

An additional five species of *Augyles* are known to occur in the Palearctic part of the African continent: *A. gravidus* (Kiesenwetter, 1850) (Algeria, Morocco, Tunisia), *A. maritimus* (Guérin-Ménéville, 1844) (Algeria, Morocco, Tunisia); *A. marmota* (Kiesenwetter, 1850) (Algeria, Tunisia); *A. senescens* (Kiesenwetter, 1865) (Algeria, Morocco) and *A. turanicus* (Reitter, 1887) (Algeria). (Mascagni & Monte 2008, 2009, Skalický 2001).

### *Augyles geiseri* sp. nov.

(Figs. 1-7)

**Type material.** Holotype (♂) (NHML): "GABON 185m Dilo ANPN camp, Ivindo Disturbed forest 0°14'1''S, 12°17'49''E" // "14-19.viii.2019. MV light Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. BMNH(E) 2020-19" // "NHMUK 015013785[ + QR code]" // "HOLOTYPE AUGYLES geiseri Skal. det. Skalický 2023" [red label]. Allotype (♀) (NHML): same data as holotype, but third label "NHMUK 015013804[ + QR code]" and with red "Allotype" label. Paratypes 13 ♂♂, 18 ♀♀ (NHML, CSU): same data as holotype, but with red "Paratype" label and the third label contains a series of numbers from "NHMUK 015013774" to "NHMUK 015013806" (minus the numbers already listed for the Holotype and Allotype). Samples with numbers: "NHMUK 015013775", "NHMUK 015013789" and "NHMUK 015013796" are housed in CSU.

**Description.** Holotype ♂: Total length 2.05 mm (to apex of labrum); elytra 1.30 mm long, 0.85 mm wide across shoulders. Ground colour brown to black, elytra with beige to orange pattern, pronotum with diffuse rusty-red pattern as in Fig. 1; clypeus and head brown; legs brown, knees beige. Ventral surface pale brown, abdomen brown with pale brown margins.

Antennomeres 1-4 pale rusty-red, apical club brown. Visible part of labrum (Fig. 2) about 1.4 times wider than long, laterally curved, anterior angles softly serrate in median portion; finely granulate; setae short, adjacent, with intermixed thin, long erect setae. Mandibles (Fig. 3) relatively short, robust, with acute apex, dorsal subapical tooth short, rounded. Protheca without prosthecal notch, with series of about 12 dense teeth. Clypeus without pair of anterior horns, anterior margin shallowly emarginate; coarsely granular, with short, adjacent setae. Head finely granular, setae sparse and short except for long setae above eyes. Antennae 10-segmented, with 6-segmented club. Scape triangular, pedicel oval, funicles very short. First two antennomeres with long erect setae, club setae very short and adjacent. Pronotum oval, 1.90 times as wide as long, slightly narrower than base of elytra; pronotal base completely rimmed. Surface of pronotum granular without longer punctures, punctures approximately 0.5 diameter of eye facets; setae short, dense, adjacent, longer laterally. Scutellum triangular, pointed, about 1.5 times long as wide, base of scutellum under elytral line. Elytra without longitudinal furrows, without scutellar depressions, humeral depressions shallow, short, extending obliquely almost to one third of the length of elytra. Surface of elytra coarsely granular, granules approximately 0.5 to 1.2 larger than eye facets; setae yellowish, short semi-erected. Ventral surface relatively densely and finely granular; setae adjacent, yellowish, very short. Epipleural ridge present. Metaventricle with post-mesocoxal ridge. Mesosventrite neither spinose nor tuberculate in front of each mesocoxa. Prosternal spine relatively large, rounded. Post-metacoxal line complete. Stridulatory arch marked, without striae. Protibia with 9 stout spines, mesotibia with 9 weak spines. Spines of metatibia weak, concealed by setae. Spiculum gastrale (Fig. 4) 0.75 mm long, V-shaped, arms narrow, firmly connected apically. Aedeagus (Figs. 5-7) 0.75 mm long, elongate, well sclerotized, parameres rounded, parameres and phallobase fused, supporting sheath border posteriorly. Penis with long processus accessorius. Genitalia were mounted in Canada balsam after observation.

Allotype ♀: Total length 2.25 mm (incl. labrum); elytra 1.45 mm long, 0.85 mm wide across shoulders. Pronotum slightly narrower than base of elytra. Externally similar to male.

Variability. Size with slight variation (total length 2.00 mm to 2.45 mm in both sexes). Epipleural ridges are barely present in some paratypes. The ground colour is light brown and the pattern of elytra is slightly different in several specimens.

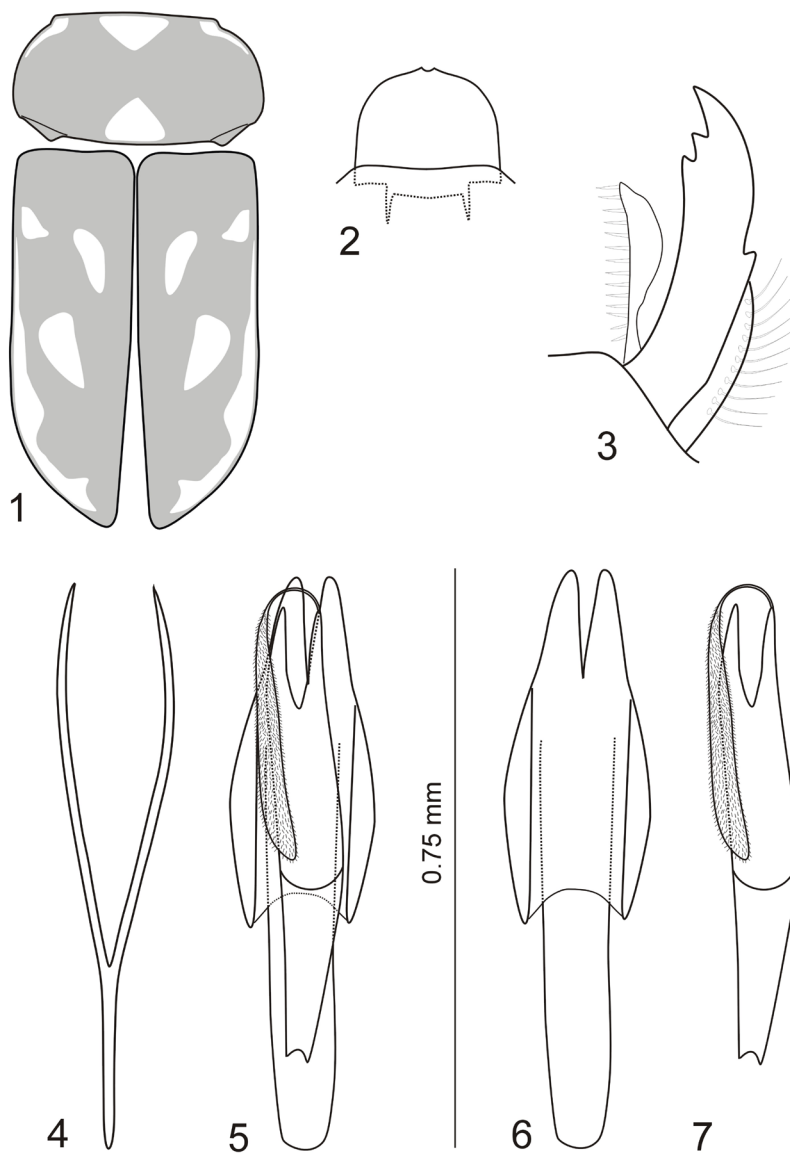
**Differential diagnosis.** According to the shape of aedeagus *A. geiseri* sp. nov. belongs to the *cribratellus* group and it is closely related to *A. flavidus*. It differs from the latter in the punctuation of elytra (punctures at most a third the size of eye facets in *A. flavidus*), absence of epipleural ridge in *A. flavidus*, in the morphology of the male genitalia (compare Figs. 1, 5-7 and 8-11) and in geographic distribution (see Fig. 41). Afrotropical species of Heteroceridae include only one previously described taxon with an epipleural ridge: *A. cribratellus* (FAIRMAIRE, 1893). They can be distinguished by their different elytral patterns (see Figs. 1 and 12), punctuation of elytra (elytral punctures approximately 0.5 to 1.2 times the size of eye facets in *A. geiseri* and approximately 0.5 to 2 times the size of eye facets

in *A. cribratellus*), morphology of the male genitalia (compare Figs. 5-7 and 13-15), and in geographical distribution (see Fig. 41).

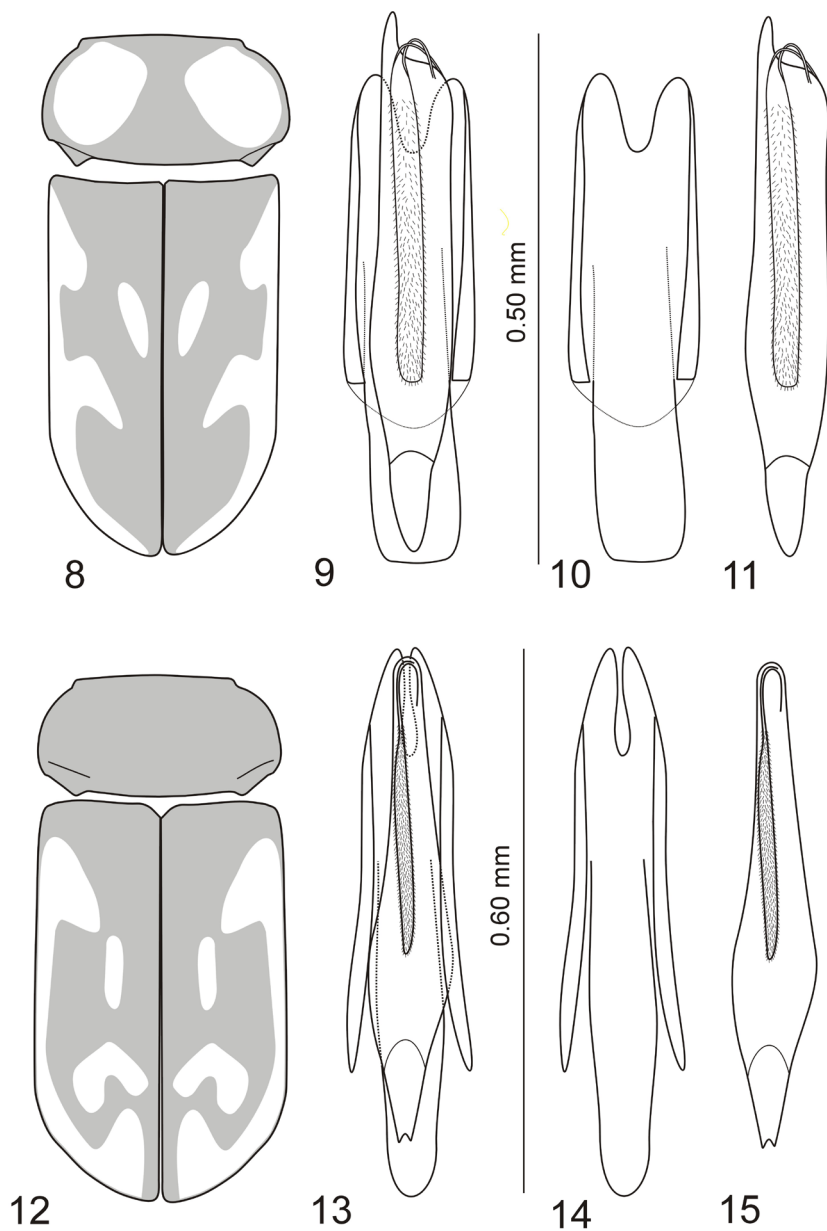
**Etymology.** The new species is named after Dr. Michael F. Geiser, curator of the Coleoptera collection in NHML.

#### KEY TO THE *AUGYLES* FROM AFROTROPICAL REGION

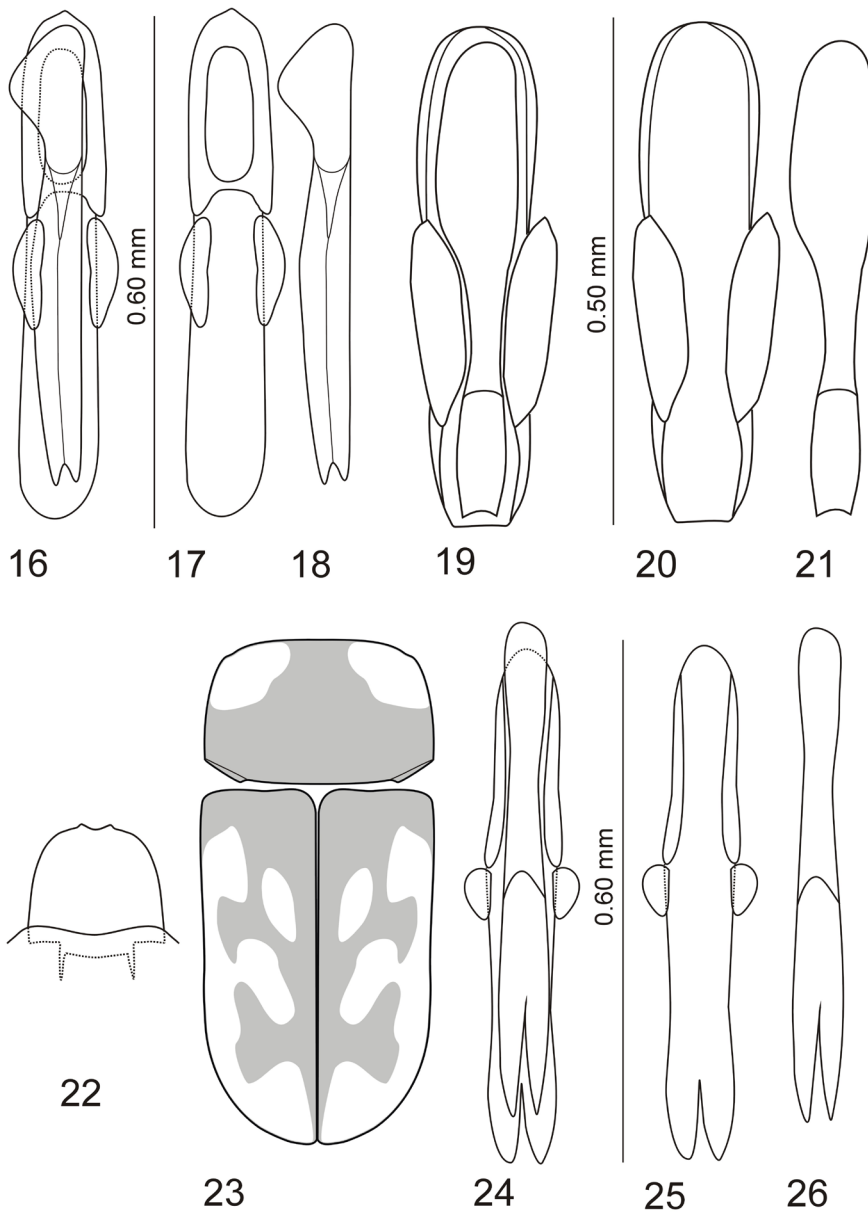
1	Epipleural ridge present .....	2
-	Epipleural ridge absent .....	3
2	Antennae 11 segmented, surface of elytra with punctures approximately 0.5 to 2 times the size of eye facets. Aedeagus as in Figs. 13-15 .....	<i>A. cribratellus</i>
-	Antennae 10 segmented, surface of elytra with punctures approximately 0.5 to 1.2 times the size of eye facets. Aedeagus as in Figs. 5-7 .....	<i>A. geiseri</i> sp. nov.
3	Male genitalia without processus accessorius ( <i>Parvus</i> group) .....	4
-	Male genitalia with processus accessorius ( <i>Cribratellus</i> group) .....	7
4	Elytra uniformly black brown or rusty red without spots, or with only small apical spots. ....	5
-	Elytra with a distinct pattern. ....	6
5	Ground colour reddish brown to black with pale apical spot. Aedeagus as in Figs. 16-18 .....	<i>A. brevisculus</i>
-	Ground colour light chestnut brown without any distinct pattern. Aedeagus as in Figs. 19-21 .....	<i>A. davranogloui</i>
6	Labrum without lateral spines (Fig. 22). Elytral spots as in Fig. 23. Aedeagus as in Figs. 24-26 .....	<i>A. parvus</i>
-	Labrum with lateral spines (Fig. 27). Elytral spots as in Fig. 28. Aedeagus as in Figs. 29-31 .....	<i>A. nadae</i>
7	Clypeus without pair of anterior horns in male specimens. ....	8
-	Clypeus with of anterior horns in male specimens. ....	9
8	parameres deeply separated, narrowed externally, aedeagus as in Figs. 32-34 .....	<i>A. namibiensis</i>
-	parameres shallowly separated, as wide as tegmen (Fig. 10) .....	<i>A. flavidus</i>
9	Puncture of elytra about as same size as eye facets. Elytra light to dark brown well defined spots. Aedeagus as in Figs. 35-37 .....	<i>A. niloticus</i>
-	Puncture of elytra much smaller than eye facets. Elytra to yellow, spots diffuse. Aedeagus as in Figs. 38-40 .....	<i>A. pallens</i>



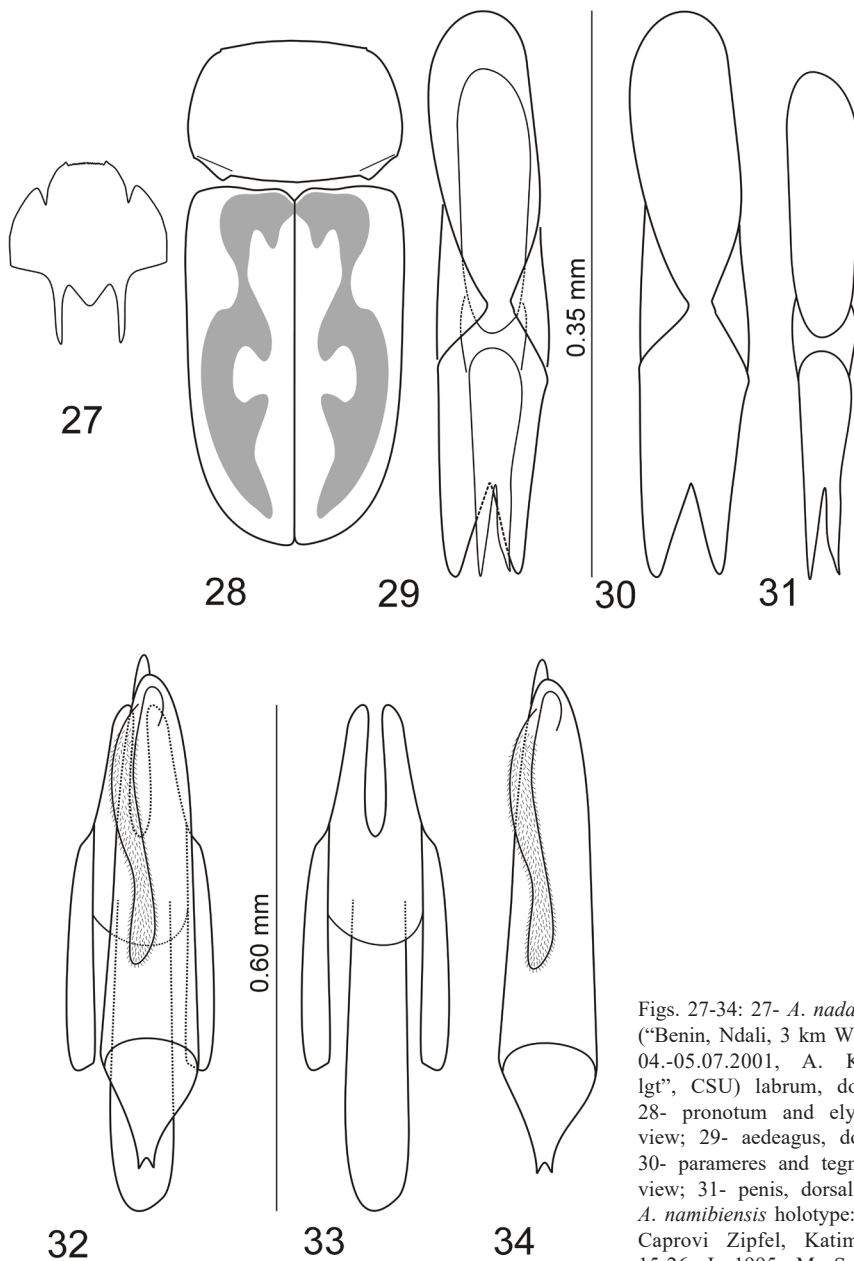
Figs. 1-7: *A. geiseri* sp. nov. (holotype): 1- pronotum and elytra, dorsal view; 2- labrum, dorsal view; 3- right mandible and prosthema, dorsal view; 4- spiculum gastrale, dorsal view; 5- aedeagus, dorsal view; 6- parameres and tegmen, dorsal view; 7- penis dorsal view. Figs. 1-3 not to scale.



Figs. 8-15: 8- *A. flavidus*: (“IRAN, Isfahad prov. Isfahan Nazhavan Park, mud of bank of the river Zayandeh 8.x.2015 leg. S. Skalický”, CSU) pronotum and elytra, dorsal view; 9- aedeagus, dorsal view; 10- parameres and tegmen, dorsal view; 11- penis, dorsal view; 12- *A. cribratellus*: (“Kenya E, 600m E of Mwingi Sosoma 27.11.2011 Snížek lgt.”, CSU) pronotum and elytra, dorsal view; 13- aedeagus, dorsal view; 14- parameres and tegmen, dorsal view; 15- penis, dorsal view. Figs. 8 and 12 not to scale.

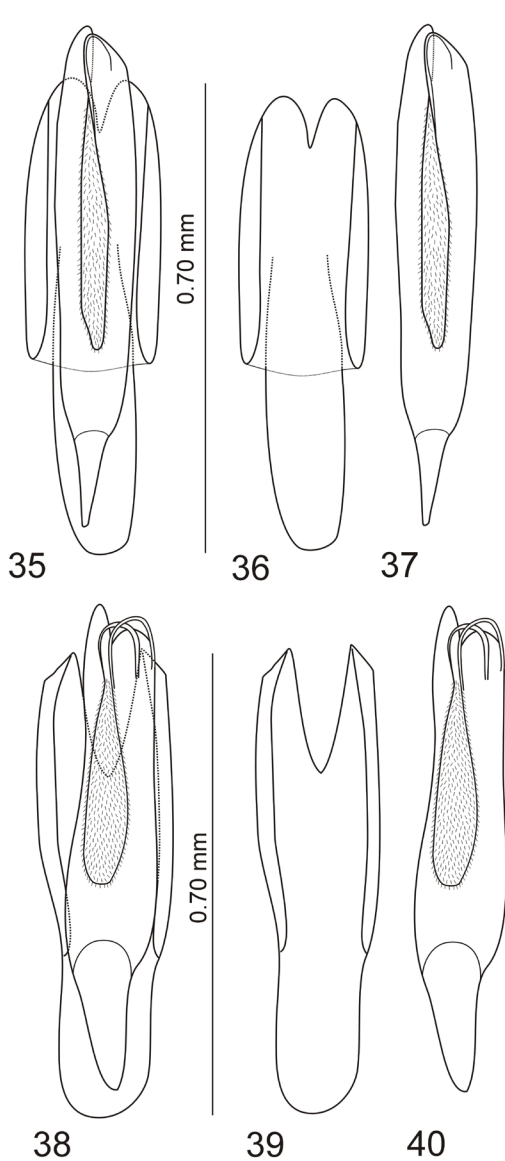


Figs. 16-26: 16- *A. brevisculus*: ("GHANA North Dayi shore of the lake Volta 12.viii.2020 V. Gross lgt.", CSU) aedeagus, dorsal view; 17- parameres and tegmen, dorsal view; 18- penis, dorsal view; 19- *A. davranogloui* holotype: ("Kenya E, 600m E of Mwingi Sosoma, 27.11.2011 Snížek lgt.", CSU) aedeagus, dorsal view; 20- parameres and tegmen, dorsal view; 21- penis, dorsal view; 22- *A. parvus*: ("CAMEROON N-W prov. Wum Vill. env. UV light 6°23'10"N, 10°04'59"E 10.xii.2010 local collector BMNH{E} 2016-44", CSU) labrum, dorsal view; 23- pronotum and elytra, dorsal view; 24- aedeagus, dorsal view; 25- parameres and tegmen, dorsal view; 26- penis, dorsal view. Figs. 22-23 not to scale.



Figs. 27-34: 27- *A. nadae* holotype: ("Benin, Ndali, 3 km W of Sontou, 04.-05.07.2001, A. Kudrna jr. lgt", CSU) labrum, dorsal view; 28- pronotum and elytra, dorsal view; 29- aedeagus, dorsal view; 30- parameres and tegmen, dorsal view; 31- penis, dorsal view; 32- *A. namibiensis* holotype: ("Namibia Caprovi Zipfel, Katimo Mulilo, 15-26. I. 1995, M. Snižek leg.", CSU) aedeagus, dorsal view; 33- parameres and tegmen, dorsal view; 34- penis, dorsal view. Figs. 27-28 not to scale.





Figs. 35-40: 35- *A. niloticus*: (“Egypt Kahira Oasis hotel, light 16.9.2009 S. Skalický lgt.”, CSU) aedeagus, dorsal view; 36- parameres and tegmen, dorsal view; 37- penis, dorsal view; 38- *A. pallens*: (“RSA EASTERN TRANSSVAAL SW of Komatipoort 7.2.2003 lgt. Snížek”, CSU) aedeagus, dorsal view; 39- parameres and tegmen, dorsal view; 40- penis, dorsal view.

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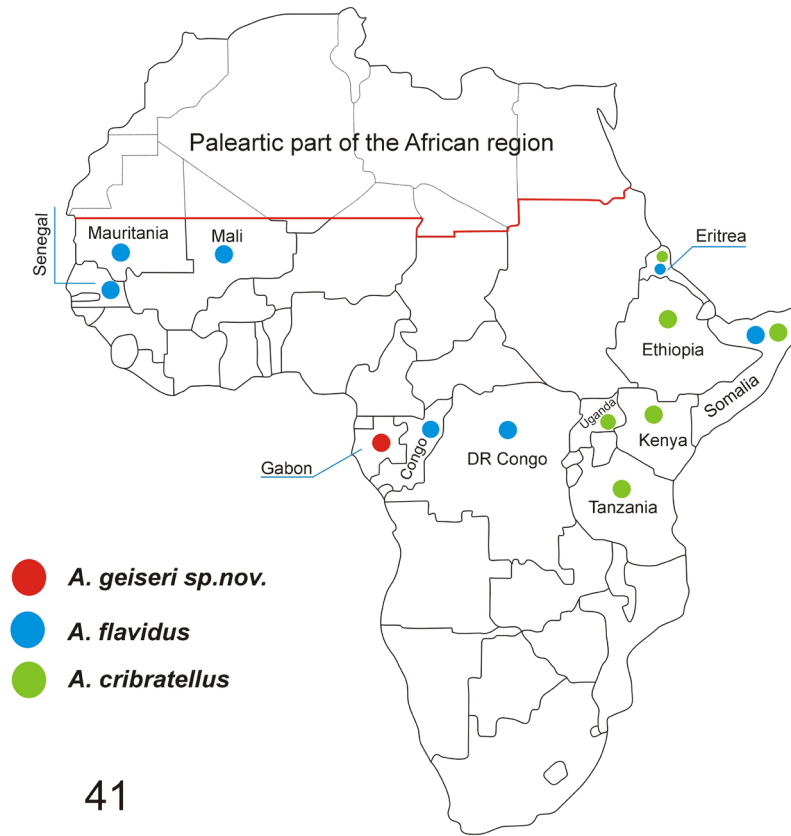


Fig. 41. Geographical distribution of *A. cribratellus*, *A. flavidus* and *A. geiseri* sp. nov. in the Afrotropical Region.

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