



Glostatina, a new xyloctonine subtribe for *Glostatus* (Coleoptera: Curculionidae), based on clear genetic and morphological differences

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e-mail: bjarte.jordal@uib.no**Key words.** Afrotropical, bark beetles, molecular phylogeny, Scolytinae, taxonomy, Xyloctonini

Abstract. An integrated taxonomic revision of the Afrotropical *Glostatus* Schedl, 1939 is presented, which is based on multiple genetic markers and morphological characters. Both types of data clearly distinguish *Glostatus* from other genera in Xyloctonini and support a separate placement in subtribe Glostatina trib. n. Six new species are described: *Glostatus aculeus* sp. n., *G. acutidentis* sp. n., *G. paraxyloctonus* sp. n., *G. procurvus* sp. n., *G. tenuis* sp. n. and *G. tuberculatus* sp. n. The synonymising of the genus *Stephanopodius* Schedl, 1941 with *Glostatus* involved new combinations and synonyms for *Glostatus dispar* (Eggers, 1936) comb. n. (= *Stephanopodius giganteus* Schedl, 1950, syn. n.), *Glostatus ghanaensis* (Schedl, 1962) comb. n., *Glostatus mkulumusius* (Eggers, 1919) comb. n. (= *Stephanopodius usambaricus* Schedl, 1941, syn. n.) and *Glostatus nunbergi* nom. n. for *Stephanopodius squamosus* Nunberg, 1973 (nec *Glostatus squamosus* Schedl, 1962). Other new combinations include *Glostatus tredli* (Reitter, 1908) comb. n., *Glostatus scutiae* (Schedl, 1959) comb. n., and *Glostatus xanthophloeae* (Schedl, 1957) comb. n., all from *Hypothenemus* Westwood, 1836, and *Glostatus giganteus* (Schedl, 1950) comb. n. from *Cryphalus* Erichson, 1836. Additional new synonyms are reported for *Glostatus acaciae* (Schedl, 1957) (= *Glostatus hirsutus* Schedl, 1962, syn. n.), *Glostatus declividepressus* Schedl, 1939 (= *Glostatus assimilis* Schedl, 1957, syn. n.) and *Glostatus pondoanus* Schedl, 1958 (= *Glostatus squamosus* Schedl, 1962, syn. n.; = *Hypocryphalus dubiosus* Schedl, 1970, syn. n.). A key to all known species is provided together with photographs of all the species.

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INTRODUCTION

Glostatus Schedl, 1939 is a strictly Afrotropical genus, found only on the African continent. Species in this genus are mainly found in drier parts of southern and eastern regions, but some species are found further north in Kenya and west in Ghana. Typical species breed in small branches and twigs, mainly under bark, which is typical for bark beetles, but can also excavate tunnels in the wood of such material (Schedl, 1956, 1961). The fauna of dry forests in Africa is often ignored, but it includes a great diversity of bark beetles, with many genera found nowhere else. There is much to learn about these beetles and new studies in arid areas will complement our understanding of bark and ambrosia beetle ecology and diversity.

In a recent revision of the bark beetle tribe Cryphalini, the formerly included genera were divided into several tribes (Johnson et al., 2020). The genus *Stephanopodius* Schedl, 1941 was removed from Cryphalini and transferred to the tribe Xyloctonini. This was based on its morphological similarity to the xyloctonine genus *Glostatus*. Molecular phylogenetic data supports a close relationship to *Glostatus*, but remained elusive with respect to other

xyloctonine affinities (Pistone et al., 2018). The present study uses a multi-gene phylogeny and an examination of morphological characters to test the hypotheses related to their classification. The genus is revised, and a morphology-based identification tool is based on a dichotomous key illustrated with the photographs of all the species.

MATERIALS AND METHODS

Types and other specimens studied are deposited in the following institutions: HNHM – Hungarian Natural History Museum, Budapest, Hungary; MZH – Finnish Museum of Natural History, Helsinki, Finland; NHMUK – The Natural History Museum, London, UK; NHMW – Naturhistorisches Museum, Vienna, Austria; ZFMK – Zoologisches Forschungsmuseum “Alexander Koenig”, Bonn, Germany; ZMHB – Museum für Naturkunde der Humboldt-Universität, Berlin, Germany; ZMUB – University Museum of Bergen, Norway; ZMLU – Zoological Museum (Biological Museum), Lund, Sweden.

Molecular data

Sequence data of Cytochrome Oxidase I (COI, 690 bp), Elongation Factor 1 α (EF-1 α , 561 bp), and the large ribosomal subunit (28S, 707 aligned nucleotide positions) were obtained. DNA ex-

Table 1. Currently valid species in the genus *Glostatus* Schedl, 1939.

Genus	Species	Author	Original genus
<i>Glostatus</i>	<i>acaciae</i>	(Schedl, 1957)	<i>Apoglostatus</i>
<i>Glostatus</i>	<i>aculeus</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>acutidentis</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>bispinosus</i>	Beaver, 1985	<i>Glostatus</i>
<i>Glostatus</i>	<i>carinifer</i>	Schedl, 1957	<i>Glostatus</i>
<i>Glostatus</i>	<i>declividepressus</i>	Schedl, 1939	<i>Glostatus</i>
<i>Glostatus</i>	<i>delicatus</i>	(Schedl, 1962)	<i>Paraglostatus</i>
<i>Glostatus</i>	<i>dispar</i>	(Eggers, 1936)	<i>Stephanoderes</i>
<i>Glostatus</i>	<i>ghanaensis</i>	(Schedl, 1962)	<i>Hypocryphalus</i>
<i>Glostatus</i>	<i>giganteus</i>	(Schedl, 1950)	<i>Cryphalus</i>
<i>Glostatus</i>	<i>gracilior</i>	(Schedl, 1957)	<i>Apoglostatus</i>
<i>Glostatus</i>	<i>kenyae</i>	Schedl, 1957	<i>Glostatus</i>
<i>Glostatus</i>	<i>leprosus</i>	Browne, 1973	<i>Glostatus</i>
<i>Glostatus</i>	<i>mkulumusius</i>	(Eggers, 1920)	<i>Stephanoderes</i>
<i>Glostatus</i>	<i>multispinosus</i>	(Schedl, 1957)	<i>Ctonocryphus</i>
<i>Glostatus</i>	<i>nigrivestis</i>	(Schedl, 1957)	<i>Ctonocryphus</i>
<i>Glostatus</i>	<i>nunbergi</i>	Jordal, nom. n.	<i>Stephanopodius</i>
<i>Glostatus</i>	<i>paraxyloctonus</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>pondoanus</i>	Schedl, 1958	<i>Glostatus</i>
<i>Glostatus</i>	<i>procurvus</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>scutiae</i>	(Schedl, 1959)	<i>Stephanoderes</i>
<i>Glostatus</i>	<i>seydeli</i>	(Nunberg, 1967)	<i>Rhopalocryphus</i>
<i>Glostatus</i>	<i>spinicarinatus</i>	Beaver, 1985	<i>Glostatus</i>
<i>Glostatus</i>	<i>tenuis</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>tredli</i>	(Reitter, 1908)	<i>Cryphalus</i>
<i>Glostatus</i>	<i>tuberculatus</i>	Jordal, sp. n.	<i>Glostatus</i>
<i>Glostatus</i>	<i>vrydaghi</i>	(Nunberg, 1973)	<i>Apoglostatus</i>
<i>Glostatus</i>	<i>xanthophloeae</i>	Schedl, 1957	<i>Stephanoderes</i>
<i>Glostatus</i>	<i>xyloctonus</i>	Schedl, 1941	<i>Ctonocryphus</i>

traction, PCR and sequencing followed Mugu et al. (2018). The ribosomal alignment was constructed in Muscle (Edgar, 2004) given default settings. A proportion of ambiguous alignment sites were pruned in GBlock (Castresana, 2000) based on software settings allowing smaller blocks, gaps, less strict flanking regions and contiguous non-conserved positions. GenBank accession numbers are listed in Table 2.

Morphological analyses

Morphology was studied under a Leica MZ16 stereoscope and photographs taken using a Leica 205 C stereoscope with a Leica camera. Multiple photographs were stacked and aligned in Zeren-eStacker. Internal structures were dissected from specimens macerated either using Proteinase K (DNA extractions) or KOH (8%) and mounted in Euparal on slides. Thirty morphological characters were included in the phylogenetic analysis (Tables 3, 4).

Phylogenetic analyses

Nucleotide sequences from all three genes were concatenated and analysed in combination in MrBayes v 3.2.6 (Ronquist & Huelsenbeck, 2003). Best models for each gene partition were selected using MrModelTest (Nylander, 2004). A subset of taxa was coded for 30 morphological characters and analysed separately in MrBayes using a gamma-distributed rate of character changes based on empirical character variation. Stationarity in likelihoods was visualized in Tracer (Rambaut et al., 2014) and was reached long before the 3 million generations set as the burn-in. Unweighted parsimony (Swofford, 2002) was used as the simplest possible model in comparison to the Bayesian analyses.

RESULTS

Phylogenetic analyses

Phylogenetic analyses of the molecular data, in combination or each gene separately, resulted in very similar results and only the tree topology from the Bayesian analysis of the combined data is included here (Fig. 1). Xyloctonini is not monophyletic and all the species of *Glostatus* were assigned to one clade with the sister group *Afrocosmoderes* Johnson and Jordal, 2020 and *Hypothenemus* Westwood, 1836, and are separated from the other Xyloctonini genera by several well-supported nodes. *Ctonoxylon* Hagedorn, 1910 formed a highly supported clade as sister to *Cryphalomimus* Eggers, 1927, *Scolytomimus* Blandford, 1895 and *Xyloctonus* Eichhoff, 1872. Each of these four genera are clearly separate from each other both genetically and morphologically (Fig. 2). The tree based on morphological characters is nearly identical to that based on molecular data in separating *Glostatus* from the remaining Xyloctonini.

The *Glostatus* clade included one species currently placed in *Stephanopodius*, but also one species of *Hypothenemus* and one of *Cryphalus* Erichson, 1836. Both molecular (Fig. 1) and morphological data (Fig. 2) clearly separated *Glostatus procurvus* sp. n. from the other species in the genus. This species is characterised by strongly procurved sutures on its antennal club. Furthermore, there is a split between the stouter species in which the pronotum in frontal view is more rounded and the more elongated species in which it is trapezoidal.

Comparative morphology

Characters

The most defining characters for *Glostatus* and close relatives are listed in Table 3 (also see Figs 3–32). Among the 30 anatomical structures included in the phylogenetic analyses, only three characters had a retention index below 0.5 (characters 6, 7 and 30). Altogether 12 of the 30 characters indicate that all *Glostatus* differ from the other genera in Xyloctonini (see Table 3).

Dimorphism

Sexual dimorphism in external morphological characters is a general characteristic of *Glostatus* and is more consistently present in this genus than in other Xyloctonini. Females of *Glostatus* usually have two raised teeth on the anterior margin of the pronotum like both the males and females of *Xyloctonus* and *Ctonoxylon*. These teeth are absent in males of almost all species of *Glostatus*, or they are much smaller or are behind the anterior margin. Their eyes are closer together than those of females, although this feature is very variable even within a species. Furthermore, the length of the main interstitial setae is sometimes longer in males than females, especially on the elytral declivity, which also applies to the ground vestiture. Because several of these features are very variable, a large number of specimens need to be examined for reliable identification.

Table 2. GenBank accession numbers of the DNA sequences used in the phylogenetic analyses of Xyloctonini and outgroups.

Tribe	Species	Country	Locality	Collector	COI	EF-1a	28S
Cryphalini	<i>Cryphalus longus</i>	Russia	Primorsky Krai, W. Arsenyev	B. Jordal	JX263796	JX264088	JX263689
Ernoporini	<i>Eidophelus spessivtzevi</i>	Russia	Primorsky Krai, Anisimovka	B. Jordal	JX263800	JX264091	JX263694
Ernoporini	<i>Ernoporus tiliae</i>	Czech Rep.	Moravia, Breclav	K. Novakova	EU191841	EU191873	JX263693
Ernoporini	<i>Procryphalus mucronatus</i>	USA	Utah, Alta Canyon	B. Jordal	JX263804	JX264094	JX263697
Hypoborini	<i>Corditarsus australis</i>	South Africa	West Cape, Knysna	B. Jordal	EU191851	EU191883	AF308354
Hypoborini	<i>Dacryostactus kolbei</i>	Angola	Serra da Neve	S. Roth	KY805902	KY805872	KY805979
Ipini	<i>Ips acuminatus</i>	Norway	Hjuksebø, Notodden	B. Jordal	HQ883661	HQ883733	HQ883573
Ipini	<i>Orthotomicus proximus</i>	Sweden	Salsån, Svenstavik	B. Jordal	JX263835	JX264123	JX263734
Micracidini	<i>Cactopinus rhattbutleri</i>	Mexico	Puebla, Coxcatlan	T. Atkinson	JX263783	JX264075	EU090343
Micracidini	<i>Hylocurus femineus</i>	USA	AZ, Madera Canyon	B. Jordal	AF187108	AF186678	JX263736
Micracidini	<i>Lanurgus matthei</i>	South Africa	East Cape, Tsitsikamma	B. Jordal	MW192014	MW192730	MW192241
Trypophloeini	<i>Afrocoderes madagascariensis</i>	Tanzania	Udzungwa	B. Jordal	KY805895	KY805863	KY805969
Trypophloeini	<i>Hypothenemus birmanus</i>	Thailand	Rai Lai Beach	K. Harkestad	JX263803	JX264093	JX263696
Trypophloeini	<i>Hypothenemus</i> nr. not <i>eruditus</i>	USA	NC, Old Fort	B. Jordal	JX263802	JX264092	JX263695
Trypophloeini	<i>Trypophloeus granulatus</i>	Norway	Møre og Romsdal, Nesset	O. Hansen	KU144915	KY805865	OQ685088
Trypophloeini	<i>Trypophloeus populi</i>	USA	Utah, Provo	L.R. Kirkendall	KC845441	OQ694479	OQ685087
Xyloctonini	<i>Trypodendron domesticum</i>	Norway	Trøndelag, Trondheim	B. Jordal	JX263874	JX264152	JX263779
Xyloctonini	<i>Xyloctonus politus</i>	USA	NH, Mt. Monadnock	B. Jordal	AF187133	AF186683	AF308395
Xyloctonini	<i>Cryphalomimus ater</i>	D. R. Congo	Shaba, Luiswioko	F. Malaisse	OQ685062	–	OQ685089
Xyloctonini	<i>Ctonoxylon amanicum</i>	Tanzania	Udzungwa, Sanje	B. Jordal	OQ685068	–	OQ685095
Xyloctonini	<i>Ctonoxylon atrum</i>	Cameroon	Limbe, Ekonjo	B. Jordal	–	–	OQ685097
Xyloctonini	<i>Ctonoxylon flavescens</i>	Cameroon	Limbe, Ekonjo	B. Jordal	AY376998	AY377062	JX263775
Xyloctonini	<i>Ctonoxylon methneri</i>	South Africa	West Cape, Knysna	B. Jordal	JX263873	OQ694485	OQ685098
Xyloctonini	<i>Ctonoxylon setifer</i>	Tanzania	Udzungwa, Sanje	B. Jordal	OQ685067	OQ694483	OQ685094
Xyloctonini	<i>Ctonoxylon</i> sp. 04	Cameroon	Limbe, Ekonjo	A. Breistøl	OQ685063	OQ694480	OQ685090
Xyloctonini	<i>Ctonoxylon</i> sp. 05	Cameroon	Limbe, Ekonjo	A. Breistøl	OQ685064	–	OQ685091
Xyloctonini	<i>Ctonoxylon</i> sp. 06	Madagascar	Ankarafantsika	B. Jordal	OQ685065	OQ694481	OQ685092
Xyloctonini	<i>Ctonoxylon</i> sp. 11	Madagascar	Mt. d'Ambre	B. Jordal	OQ685069	OQ694484	OQ685096
Xyloctonini	<i>Ctonoxylon uniseriatum</i>	South Africa	West Cape, Wilderness	B. Fischer	OQ685066	OQ694482	OQ685093
Xyloctonini	<i>Glostatus aculeus</i> sp. n.	Tanzania	Mang'ula, Megombera	B. Jordal	JX263869	JX264149	JX263774
Xyloctonini	<i>Glostatus giganteus</i>	South Africa	West Cape, Wilderness	B. Jordal	EU191842	EU191874	–
Xyloctonini	<i>Glostatus leprosus</i>	Cameroon	Limbe, Bonadikombe	B. Jordal	JX263868	JX264148	JX263773
Xyloctonini	<i>Glostatus mkulumusius</i>	Tanzania	Udzungwa	B. Jordal	OQ685057	–	OQ685083
Xyloctonini	<i>Glostatus paraxyloctonus</i> sp. n.	Tanzania	Udzungwa, Sanje	B. Jordal	JX263870	–	JX263776
Xyloctonini	<i>Glostatus pondoanus</i>	South Africa	West Cape, Wilderness	B. Jordal	OQ685056	OQ694477	–
Xyloctonini	<i>Glostatus procurvus</i>	Tanzania	Udzungwa mountains	B. Jordal	OQ685058	KY805864	KY805971
Xyloctonini	<i>Glostatus scutiae</i>	Kenya	Kilifi	R. Gerstmeier	OQ685060	OQ694478	OQ685085
Xyloctonini	<i>Glostatus</i> sp. indet.	Tanzania	Udzungwa	B. Jordal	OQ685059	OQ694476	OQ685084
Xyloctonini	<i>Glostatus tenuis</i> sp. n.	Kenya	Kilifi	R. Gerstmeier	OQ685061	–	OQ685086
Xyloctonini	<i>Glostatus tuberculatus</i>	South Africa	West Cape, Nature's Valley	B. Jordal	EU191843	EU191875	JX263700
Xyloctonini	<i>Scolytomimus phillipinensis</i>	Papua N. Guinea	Madang, Beitata	B. Jordal	JX263871	JX264150	JX263777
Xyloctonini	<i>Xyloctonus aethiops</i>	Madagascar	Andasibe, Mantadia	B. Jordal	OQ685070	OQ694486	OQ685099
Xyloctonini	<i>Xyloctonus biseriatus</i>	Madagascar	Ankarafantsika	B. Jordal	OQ685072	–	OQ685101
Xyloctonini	<i>Xyloctonus latus</i>	South Africa	West Cape, Nature's Valley	B. Jordal	OQ685073	OQ694487	OQ685102
Xyloctonini	<i>Xyloctonus maculatus</i>	South Africa	West Cape, Nature's Valley	B. Jordal	JX263872	JX264151	JX263778
Xyloctonini	<i>Xyloctonus quadridens</i>	Madagascar	Andasibe, Mantadia	B. Jordal	OQ685071	–	OQ685100

Table 3. Variation in the morphological characters of Xyloctonini and outgroups, with states coded for phylogenetic analyses. Characters marked * in the genus *Glostatus* differ distinctly from those in other genera of Xyloctonini.**Head**

1. *Occiput*: 0 triangular; 1 broadly extended caudally. This character varies in Scolytinae. All *Glostatus* and other genera of Xyloctonini, except *Cryphalomimus*, have a broadly extended occiput similar to e.g. *Hypothenemus*, *Cryphalus*, Xyloctonini and various Xyleborini genera.

*2. *Eyes*: 0 entire; 1 sinuate; 2 emarginate; 3 divided. All *Ctonoxylon* and most, but not all, *Scolytomimus* and *Xyloctonus* have divided eyes. *Cryphalomimus* have entire eyes while all *Glostatus* have deeply sinuate eyes.

*3. *Scapus*: 0 longer than funiculus; 1 shorter than funiculus. *Glostatus* have a relatively short scapus, which is shorter than the funiculus in Micracidini, whereas most Scolytinae genera have a long scapus.

4. *Funiculus*, including the pedicel: 0, 7-segmented; 1, 6-segmented; 2, 5-segmented; 3, 4-segmented; 4, 3-segmented. All *Ctonoxylon* have a 7-segmented funiculus; the other genera have 6 segments except some smaller and medium sized *Glostatus* that have 5 segments.

5. *Funicular setae*: 0 hair-like; 1 dense and terminally expanding. The normal condition in Scolytinae would be scant fine setae but males in most of the stout species in *Glostatus* have more dense setae, longer, and apically dilated, on the two-three most apical funicular segments.

6. *Club sutures*, *impression*: 0 smooth; 1 grooved. Each of the three segments of the club of *Glostatus* typically have deep grooves, similar to genera such as *Trypophloeus*.

7. *Club septum*: 0 absent; 1 partial at first suture. This is a partial septum, which is infrequently present in several groups, is a regular feature in *Ctonoxylon*.

8. *Club sutures*, *curvature*: 0 transverse or weakly procurved; 1 strongly procurved. All *Xyloctonus* have strongly procurved and

clearly marked sutures whereas *Scolytomimus* and *Ctonoxylon* have often barely visible procurved sutures. *Glostatus* has mainly transverse and slightly procurved sutures, which are more strongly procurved in a few smaller groups of species.

9. *Club sutures, setae*: 0 hair-like; 1 plumose bundle. Sutures in almost all *Glostatus* are characteristically marked by plumose setae or bundles of setae.

Prothorax

*10. *Pronotum lateral edge*: 0 rounded; 1 carinate. All *Glostatus* have rounded lateral margins on the pronotum, whereas in all other genera in the tribe it has a carinate margin.

*11. *Pronotum frontal view*: 0 oval; 1 trapezoidal. *Glostatus* has a trapezoidal profile, which is particularly prominent in the slender species. Most other Scolytinae have an oval profile in frontal view.

*12. *Dorsal cuticle of pronotum*: 0 smooth; 1 asperate; 2 transcarinate. In some groups of Scolytinae it is variously flattened and smooth, but in many groups there are distinct asperities on the anterior declivous part. In *Glostatus* (and certain genera of e.g. Ernoporini and Corthylini) the asperities at or near the summit form transverse bands of contiguous asperities and pits, occasionally also a transverse carina.

Wings

13. *Elytral base near scutellum*: 0 nearly straight; 1 impressed and sinuate near scutellum. This is generally a variable character in Scolytinae and Xyloctonini.

14. *Interstrial setae*: 0 bristle- or hair-like; 1 spatulate. Most *Glostatus* have spatulate setae, but a few have bristle-like setae as in most *Ctonoxylon*, whereas the other Xyloctonini genera are nearly glabrous or with only fine setae.

15. *Interstrial ground vestiture*: 0 absent; 1 present. Generally absent in all genera of Xyloctonini except *Glostatus*, some *Ctonoxylon* and a few *Xyloctonus*.

Ventral sclerites

16. *Setae on metaventricle*: 0 simple; 1 bifid; 2 plumose. A variable character in Scolytinae, but variously plumose and bifid in nearly all *Xyloctonus* and almost always simple in other Xyloctonini.

17. *Abdominal ventrites*: 0 almost flat; 1 steeply inclined. *Xyloctonus* and *Scolytomimus* have a steeply rising abdomen.

Legs

*18. *Protibial tarsal groove*: 0 shallow; 1 deep; 2 absent. A very deep groove is found in all genera of Xyloctoni except *Glostatus*, which has a much simpler and shallower groove as seen elsewhere in various genera of Scolytinae.

*19. *Metatibial shape, lateral edge*: 0 rounded; 1 angular. The angular shape of the lateral edge of metatibiae is a typical feature of *Glostatus*.

Metathorax

20. *Postnotum*: 0 separate from metanotum; 1 fused. The postnotum is separate from the metanotum in most of the genera compared, except in Ernoporini in which they are fused.

Digestive system

*21. *Ligula*: 0 small; 1 extends over palps. The ligula is large and covers part of the palps in Xyloctonini, but is small in *Glostatus*.

*22. *Labial segment 1*: 0 shorter than segment 2; 1 longer than 2+3 combined. This segment is swollen and large in Xyloctonini, except short and narrow in *Glostatus*.

23. *Lacinial setae*: 0 coarse; 1 fine. This character varies in Scolytinae and the teeth are often rather coarse as in *Glostatus* and most other bark and wood feeders, whereas *Ctonoxylon* and *Xyloctonus* have finer setae intermediate between ambrosia beetles and true bark beetles.

*24. *Anterior plate of proventriculus*: 0 smooth; 1 granulated; 2 angular ridges. Whereas Xyloctonini has plates of many different forms, only *Glostatus* has angular rows of sharp teeth more similar to e.g. *Xylechinus* and some other genera of scolytine.

25. *Median suture on anterior plate*: 0 absent; 1 present. *Ctonoxylon* is the only genus in Xyloctonini with a median suture.

26. *Posterior plate of proventriculus*: 0 developed; 1 absent. In *Scolytomimus* and *Xyloctonus* the posterior part of the proventriculus is almost totally absent.

Aedeagus

*27. *Spiculum gastrale*: 0 forked; 1 simple rod. The spicule in *Glostatus* differs from that in all other Xyloctonini in that it consists

of a thickened rod with basal fork, which is similar to that in Ernoporini and some Hylesinini.

28. *Tegmen*: 0 closed; 1 dorsally open. A feature that varies greatly in Scolytinae, but is open dorsally in all Xyloctonini.

*29. *Manubrium (tegmina apodeme)*: 0 absent; 1 narrow; 2 enlarged scoop-like. Species of *Glostatus* have a minute manubrium, or it is absent, whereas all other Xyloctonini have an enlarged scoop-like manubrium.

30. *Apophyses (penis apodemes)*: 0 free; 1 fused. Some *Glostatus* have fused apophyses as in Ernoporini. Other *Glostatus* and all other Xyloctonini have free apophyses, the normal condition in Scolytinae.

Table 4. Data matrix for the phylogenetic analysis of morphological data (subset of taxa).

	0000000011111111112222222223
	123456789012345678901234567890
<i>Ips</i>	01020000001000002000000101000
<i>Orthotomicus</i>	01020000001000002000000101000
<i>Hylocurus</i>	001200010001011002001102100010
<i>Lanurgus</i>	001200010001011002001102101000
<i>Dacryostactus</i>	00040000000011202000001101010
<i>Corditarsus</i>	000200000000011202000001101010
<i>Ernoporus</i>	000300010002010002011002000111
<i>Procryphalus</i>	00020000000101100201??01000111
<i>Trypodendron</i>	1302000-000000000200??1--01110
<i>Cryphalus</i>	12020001010100100200??01101010
<i>Trypophloeus</i>	02020100000100100200??02001100
<i>Afrocossoderes</i>	0203000-010001100200??01101110
<i>Hypothenemus</i>	12030010010101100200??01101110
<i>Glostatus procurvus</i>	111100110012011000100002000110
<i>Glostatus paraxyloctonus</i>	111111001012011000100002000110
<i>Glostatus aculeus</i>	11111100101201100000002000110
<i>Glostatus pondoanus</i>	111101001012011000100002000111
<i>Glostatus scutiae</i>	111201001012011000100002000111
<i>Cryphalomimus striatus</i>	0000000010000001001101001120
<i>Scolytomimus philippinensis</i>	130100110100100011001111011120
<i>Xyloctonus quadridens</i>	130100010100100111001111011120
<i>Xyloctonus latus</i>	130100010100100111001111011120
<i>Ctonoxylon methneri</i>	1300001-0100011201001111101120
<i>Ctonoxylon uniseriatum</i>	1300001-0100011201001111101120

TAXONOMY

Tribe Xyloctonini Eichhoff, 1878

(Figs 3–32)

Type genus. *Xyloctonus* Eichhoff, 1872.

Diagnosis. Eyes sinuate, deeply emarginated or divided, rarely entire; antennal club flattened, usually with two or three sutures marked by setae, partial septum at suture 1 present or not; funiculus 5-, 6- or 7-segmented; occiput broadly elongated, rarely more triangular. Pronotum tall, anterior slope coarsely asperate, usually with two, occasionally four, raised teeth near the anterior margin in one or both sexes. Scutellum visible, quadrate or triangular, higher or flush with elytra. Elytral interstriae slightly to very strongly raised, rounded or sharply carinated, declivity gently curved, only rarely with spines. Procoxae contiguous, on the anterior surface of the protibiae there is a shallow or deep longitudinal groove for reception of tarsi; metaventricle laterally with an impression to receive metafemur, often on its anterior margin there is a vertical edge or carinae. Postnotum separated from metanotum by a membrane. Aedeagus with large complex of internal sclerites (transfer apparatus); penis and apophyses (penis apodemes) about the same length; tegmen open dorsally.

Subtribe Xyloctonina Eichhoff, 1878

Figs 3–5, 7–9, 12–15, 18, 19, 21, 22, 25, 27–29

Type genus. *Xyloctonus* Eichhoff, 1872.

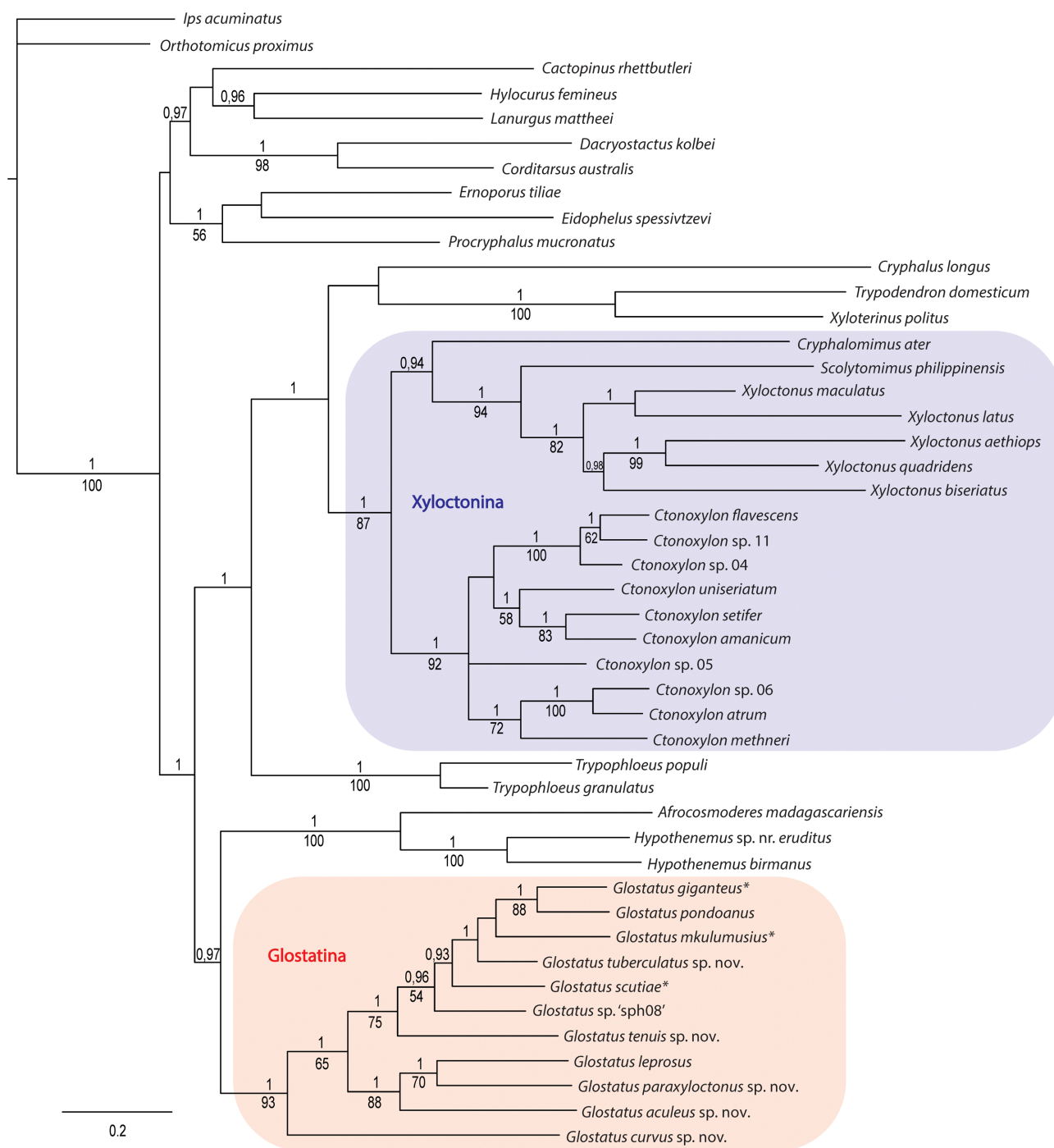


Fig. 1. Phylogeny of Xyloctonini and outgroups (see Table 2 for current tribal placement) based on a Bayesian analysis of the nucleotide data. Posterior probability > 0.90 is noted above nodes and the parsimony bootstrap support values above 50 below the nodes. New taxonomic combinations are marked with an asterisk.

Diagnosis. Eyes sinuate or divided, rarely entire; antennal club flattened, usually with two or three procurved sutures marked by setae, partial septum at suture 1 present or not; funiculus 6- or 7-segmented; occiput broadly elongated (triangular in *Cryphalomimus*). Pronotum spherical, anterior slope coarsely asperate, with two, occasionally four, raised teeth near the anterior margin in both sexes. Scutellum visible, quadrate or triangular, higher or flush with elytra. Elytral striae impressed, interstriae raised, sometimes sharply carinated; declivity rather short, gently curved. Procoxae contiguous, anterior surface of pro-

biae with a deep longitudinal groove for reception of tarsi; metaventricle laterally with an impression to receive metafemur, marked on its anterior margin by a vertical edge or carinae.

Subtribe Glostatina, subtrib. n.

ZooBank taxon LSID:
948476B4-7CC3-440B-8BDD-551872A54682

(Figs 6, 10, 11, 16, 17, 20, 23, 24, 26, 30–158)

Type genus. *Glostatus* Schedl, 1939.

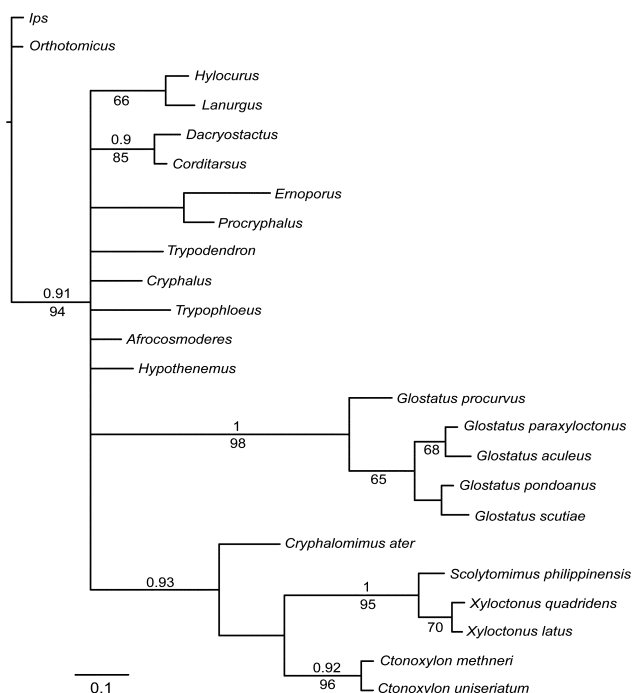


Fig. 2. Phylogeny of Xyloctonini based on a Bayesian analysis of the morphological data (Tables 3 and 4). Outgroup taxa are represented by genera, and Xyloctonini ingroup taxa by selected representative species. Posterior probability is noted above nodes and bootstrap support values (parsimony) below nodes.

Diagnosis. Eyes sinuate, in males often very narrowly separated above; antennal club usually clearly marked by three transverse or procurved, grooved sutures marked by setae, partial septum rarely present at suture 1; club attached to a 5- or 6-segmented funiculus; scapus shorter than funiculus; posterior of head (occiput) broadly elongated; labial palp segments 1 and 2 nearly rhomboid, of subequal length; coarse lacinial teeth. Pronotum in front view tall, outline either rounded or trapezoidal, lateral margins rounded; in males usually smooth near anterior margin, female usually with two, rarely with four, raised teeth; asperities on summit densely placed, often fused. Elytral interstria with bristle- or scale like main setae in uniseriate rows; ground vestiture dense, shorter than main setae. Anterior surface of protibiae with a shallow groove for reception of tarsi; meso- and metatibiae characteristically angulate at anterolateral margin. Anterior plate in proventriculus without median suture, armed by angulate rows of sharp teeth. Male aedeagus with narrow apical lobe of penis, apophyses (penis apodemes) fused or not anteriorly; spiculum gastrale very thick, forked caudally.

Comments. Molecular data clearly separates *Glostatus* from other genera of Xyloctonini (Fig. 1) as previously documented by larger phylogenetic analyses (Jordal & Cognato, 2012; Johnson et al., 2018). Morphologically they also differ in having sinuate eyes (entire eyes in *Cryphalomimus* and deeply sinuate in two species of *Xyloctonus*), a shorter antennal scapus, rounded lateral edge of pronotum and the generally trapezoidal shape of prothorax in front view, in part caused by the transverse cluster of asperities inflating the dorsum of the pronotum. Their legs

differ in having a shallow protibial groove and the meso- and metatibiae having angular anterolateral edges. The aedeagus in some species has fused apophyses and all species have a forked and very thick spiculum gastrale similar to Ernoporini, but the postnotum is nevertheless not fused with the metanotum, and differs further from species in Ernoporini by the shapes of the eyes, pronotum and legs.

The subtribe designation of *Glostatus* is based on clear genetic and morphological differences from the other genera in Xyloctonini, but acknowledges that some previous phylogenetic analyses of larger data sets have supported a sister relationship between *Glostatus* and other genera in Xyloctonini (Pistone et al., 2018).

Genus *Glostatus* Schedl, 1939

- Glostatus* Schedl, 1939: 386.
- Stephanopodius* Schedl, 1941: 396, syn. n.
- Ctonocryphus* Schedl, 1941: 398 (synonym by Wood, 1986).
- Apoglostatus* Schedl, 1957a: 155 (synonym by Schedl, 1964).
- Cryphalomimus* Browne, 1962: 75 (preoccupied by Eggers, 1927).
- Cryphalomimetes* Browne, 1963: 242 (replacement name, synonym by Wood, 1980).
- Paraglostatus* Schedl, 1964 (synonym by Wood, 1984).
- Rhopalocryphus* Nunberg, 1967 (synonym by Schedl, 1980).

Type species. *Glostatus declivedepressus* Schedl, 1939: 386 (monotypic).

Diagnosis. As for subtribe.

Distribution. Africa, from Egypt and Ghana to South Africa, mainly in dry forests, but also in rainforests.

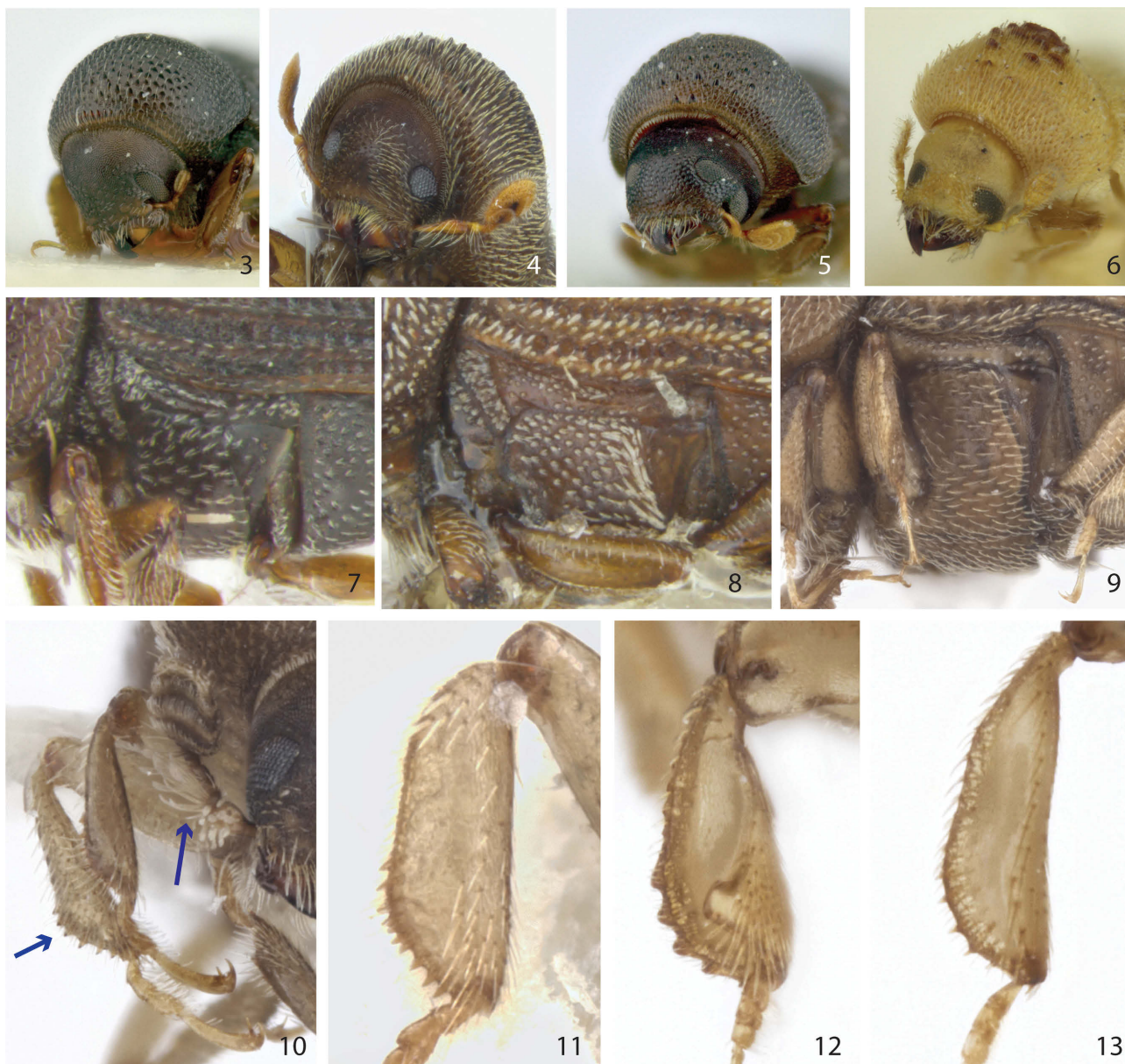
Comments. Species in *Glostatus* and *Stephanopodius* are similar in all major characters (Figs 1–2). Eyes are sinuate to broadly (but not deeply) emarginated. The antennal club is generally broad, laterally slightly constricted by three sutures marked by rows of short and coarse setae or small bundles of setae. The antennal funicle is 5- or 6-segmented irrespective of previous classifications. The pronotum is strikingly dome-shaped with large asperities on the anterior slope, on the summit forming contiguous rough ridges or rows of confluent pits; basal and lateral edges of pronotum are rounded. Elytral interstriae are slightly raised with bristle-like or spatulate setae in uniseriate rows, with dense ground vestiture consisting of slightly or much shorter bristles or scale-like setae.

Included species (Table 1)

***Glostatus mkulumusius* (Eggers, 1919), comb. n.**

- Stephanoderes mkulumusius* Eggers, 1919: 241.
- Stephanopodius mkulumusius* (Eggers, 1919), combination by Schedl, 1979.
- Stephanopodius usambaricus* Schedl, 1941: 396, syn. n. (Figs 33, 34, 36, 37, 39, 40)

Diagnosis. Length 1.3–1.8 mm, 2.2–2.4× as long as wide; antennal funiculus 5-segmented; club with three slightly procurved sutures marked by bundles of setae; male frons variably impressed, with longer setae along inner margin of eyes separated above by 1.5–1.9× their width (females 1.7–2.0). Interstitial setae twice as long as broad, expanding



Figs 3–13. Detailed characteristics of Xyloctonini. Frontal views of (3) *Cryphalomimus striatus*, (4) *Ctonoxylon* sp., (5) *Xyloctonus bimarginatus* and (6) *Glostatus xanthophloeae*. Lateral sclerites showing variation in the different type of setae and impressions with carinae for reception of femur in (7) *Xyloctonus opacus*, (8) *Ctonoxylon uniseriatum* and (9) *Ctonoxylon* sp. (10–13) Legs and antennae of various Xyloctonini. (10) Pro- and mesotibiae, and antennae of a male *Glostatus paraxyloctonus* sp. nov; arrows indicate the lateral angular shape of the mesotibiae and the long and terminally spatulate setae on the antennal funiculus; (11) metatibia of *Glostatus seydeli*; (12, 13) pro- and metatibiae of *Ctonoxylon* sp.

apically; ground vestiture dense, barely longer than broad, much smaller than main setae.

Type material. Syntypes female and male (incorrectly labelled neotype and allotype): D.O. Afrika, Amani, Eichelbaum leg. 1908, Hagedorn coll. 1915 [NHMW]. Holotype *Stephanopodius usambaricus*: Usambara, Derema, 850 m, 28. Aug. 1891, Conrad S. [NHMW].

Distribution. Tanzania, Malawi.

New records. Tanzania, Udzungwa, W. Mang’ula, 1000 m alt. GIS –7.84, 36.85, 12.11.2009, ex old dry twig 3 cm diam, B. Jordal, leg (5) [ZMUB]. [ZMUB]; Malawi, Mt. Mulanje, S16°01’3.9” E35°32’36.6”, 950 m, sifting, 24.XI.2018, Banar and Hlavak, leg. (1) [ZMUB].

Comments. The types of *S. mkulumusius* and *S. usambaricus* are nearly identical and placed in *Glostatus* based on the shape of their legs, pronotum, eyes and antennae, and genetic data (Fig. 1). Additional specimens collected from the Udzungwa mountains have only slightly longer ground vestiture, but it varies greatly between specimens collected from the same twig. Hence, variation is typical in this species as in many other *Glostatus*. New records for southern Tanzania and Malawi increase the known distribution southwards. Host plants were not identified, but specimens were always found in twigs and thin branches on the ground, with egg tunnels cut transversely to the wood grain.



Figs 14–24. Antennae and digestive structures of Xyloctonini. Antennae of (14) *Ctonoxylon* sp., (15) *Xyloctonus quadridens*, (16) *Glostatus procurvus* and (17) *Glostatus tuberculatus*. Mouthparts (maxillae and labium) of (18) *Ctonoxylon methneri*, (19) *Xyloctonus quadridens* (maxilla only) and (20) *Glostatus pondoanus*. Proventriculus (inner surface) of (21) *Ctonoxylon methneri*, (22) *Xyloctonus quadridens*, (23) *Glostatus aculeus* sp. n. and (24) *Glostatus procurvus* sp. n.

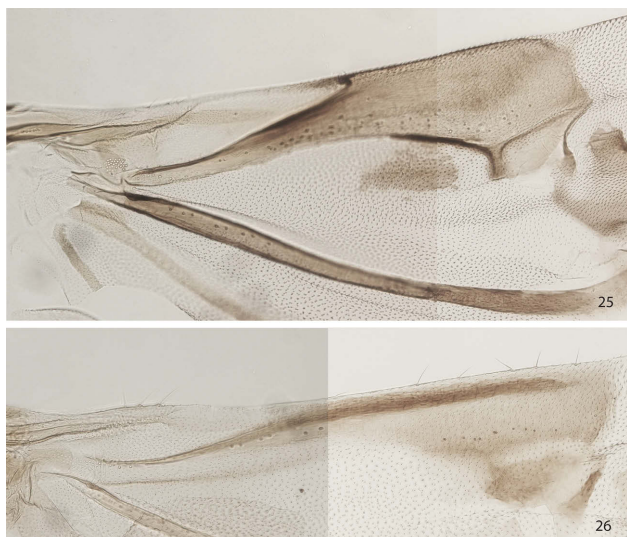
***Glostatus xanthophloae* (Schedl, 1957), comb. n.**

Stephanoderes xanthophloae Schedl, 1957b: 58.
Hypothenemus xanthophloae (Schedl, 1957), combination by Browne, 1963.
 (Figs 35, 38, 41)

Diagnosis. Length 1.7–2.0 mm, 2.2–2.4× as long as wide; antennal funiculus 5-segmented; club narrow, about twice as long as broad, with three slightly procurved su-

tures marked by bundles of setae; male frons impressed, with short setae along inner margin of eyes which are separated above by 2.1–2.2× their width. Interstitial setae spatulate, 3× as long as broad; ground vestiture dense, barely longer than broad, much shorter than main setae.

Type material. Holotype, female: Kenya, Rift Valley, ex *Acacia xanthophloea*, 7.XI.1952, Dr K.E. Schedl, leg. [NHMW]. Paratype, male: same data as holotype.



Figs 25 and 26. Wings of (25) *Ctonoxylon* sp. and (26) *Glostatus tuberculatus* sp. n.

Distribution. Kenya.

Comments. The previous placement in *Hypothenemus* is incorrect as it has all the typical features of *Glostatus*. In fact, this is possibly a variant of *G. mkulumusius* and differs only in having a narrower antennal club and narrower interstitial main setae. All known specimens are teneral and therefore less sclerotized, they are only slightly larger than *G. mkulumusius*, and the eyes are only slightly more separated. New samples are needed to test species validity using genetic data. The type series was collected from *Acacia* (Fabaceae) twigs.

***Glostatus giganteus* (Schedl, 1950), comb. n.**

Cryphalus giganteus Schedl, 1950: 22.

(Figs 42, 43, 45, 46, 48, 49)

Diagnosis. Length 2.3–2.5 mm, 2.2–2.3× as long as wide; eyes separated above in females by 2.0–2.1× their width (male 1.8×). Antennal funiculus 5-segmented, club with three transverse sutures; interstitial main setae mainly on declivity and very dense, spatulate, slightly longer than broad, square-shaped; ground vestiture very short, dagger-shaped.

Type material. Holotype, female: [South Africa] Natal, P. Reincoll, leg. [NHMW].

Distribution. South Africa.

New records. South Africa, Western Cape, Wilderness NP, Ebbe Flow, ex branch of unknown tree, 31 October 2006, B. Jordal, leg. (2) [ZMUB]; Eastern Cape Province, Bathurst, 20.2.1962, acc. P.E. 693 (1) [NHMW].

Comments. Described in the genus *Cryphalus* based on a badly preserved specimen with ventral side and legs buried in glue. Two new specimens were collected from a very dry branch of a thorny tree, possibly *Scolopia* (Salicaceae), which are morphologically identical to the holotype, both the frons and antennae, and the dorsal and lateral sides of the body have the same type of setae and asperities. This

species is a typical *Glostatus*. One additional but slightly deviating male specimen (locality: Bathurst) found in the NHMW collection is also likely to be this species. The South African distribution therefore covers three provinces from western Cape to Natal.

***Glostatus gracilior* (Schedl, 1957)**

Apoglostatus gracilior Schedl, 1957c: 872.

Glostatus gracilior (Schedl, 1957), combination by Schedl, 1964.

(Figs 44, 47, 50)

Diagnosis, female. Length 1.7–1.9 mm, 2.5–2.7× as long as wide; eyes separated above by 2.3× their width; antennal funiculus 6-segmented, club with three transverse sutures; interstitial main setae narrowly spatulate about 4–5× as long as broad; ground vestiture dagger-shaped, about half the length of the main setae and 2–3× as long as broad.

Type material. Holotype female and paratype male: Tanzania, Shagai, no. 1221 [Tanzania, Shagayu forest reserve, West Usambara] [NHMUK].

Distribution. Tanzania.

Comments. A unique species in being elongated and golden in appearance. Only known from the type locality.

***Glostatus kenyae* Schedl, 1957**

Glostatus kenyae Schedl, 1957a: 154.

(Figs 51, 54, 57)

Diagnosis. Body length 2.5–3.0 mm, 2.1–2.3× as long as wide; antennal club with three transverse sutures; eyes separated above by 1.2–1.4× their width; posterior row of four asperities on pronotal summit forming front of four pits; elytral ground vestiture semirecumbent, a little shorter than main setae, which are spatulate and 3–4× as long as wide; protibiae with 9 lateral socketed denticles.

Type material. Holotype female and paratype male: Kenya, Forest de Nairobi. Allaud and Jeannel, N. 1911, 1700, St. 11. [NHMW].

Distribution. Kenya.

New record. Kenya, Nairobi, Hotel Boulevard garden, at light, 9.VII.1978, Leg. Cederholm [ZMLU].

Comments. Differs from *G. tenuis* sp. n. in being bigger and stouter and from *G. acaciae* by the shorter and spatulate interstitial setae and much shorter and semirecumbent ground vestiture.

***Glostatus tenuis*, sp. n.**

ZooBank taxon LSID:

DA2DD21C-8FE7-4626-A7C1-C2BE1B23B646

(Figs 52, 55, 58)

Diagnosis. Antennal funiculus 5-segmented; eyes separated by slightly more than their width; elytral ground vestiture of semirecumbent bristles, main interstitial setae spatulate and about 3–4× as long as broad; protibia with 6 lateral denticles.



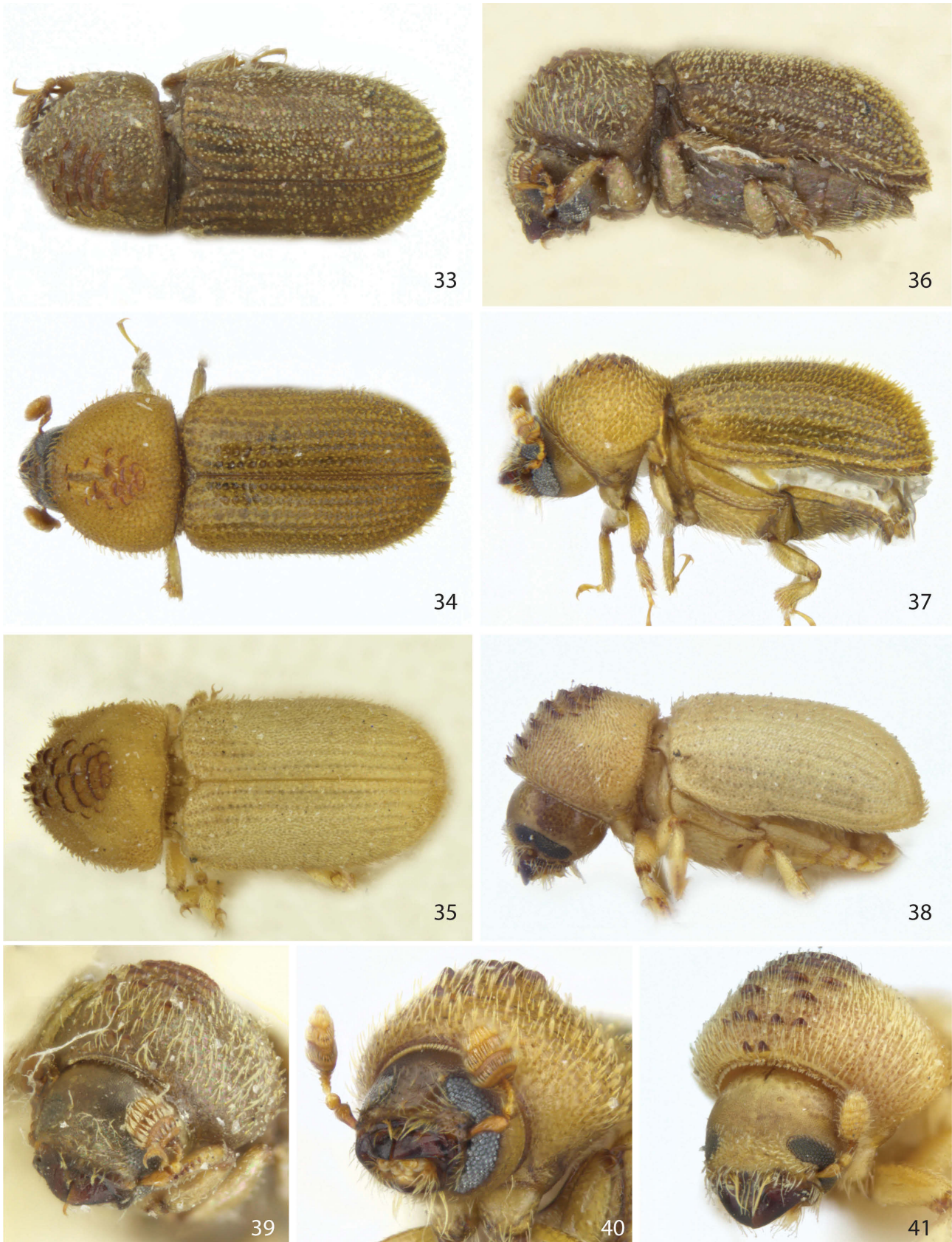
Figs 27–32. Male genitalia with attached spiculum gastrale of (27) *Xyloctonus quadridens*, (28) *Ctonoxylon* sp., (29) *Ctonoxylon methneri*, (30) *Glostatus tuberculatus* sp. nov., (31) *Glostatus pondoanus* and (32) *Glostatus procurvus* sp. n.

Description, female. Length 1.7–1.9 mm, 2.3–2.5× as long as wide. Colour light brown or yellow. Frons slightly concave between eye margins from epistoma to vertex, lateral impressed area with broad white setae. Eyes separated above by 1.3× their width. Antennal scapus about 1.5× longer than pedicel, funiculus (including pedicel) 5-segmented; club with three transverse sutures. Pronotum distinctly raised at summit, on its anterior slope less than 20 asperities on median half and two small raised subcontiguous teeth along the anterior margin; posterior one third and laterally finely reticulated; vestiture consisting of mixed spatulate and hair-like setae. Scutellum smooth, flush with elytra. Elytral interstriae with uniseriate rows of narrowly spatulate setae about 3–4× as long as broad; ground vestiture consists of semirecumbent bristle-like setae about half

the length of main setae; strial setae minute and hair-like. Legs. Protibiae with 6 lateral denticles. Meso- and metatibiae angulate near apex, with 5 or 6 tiny denticles along mainly the apical margin.

Male. There is externally almost no sexual dimorphism, but males have two raised teeth very close to the anterior margin and the frons is only slightly more impressed. Aedeagus similar to *G. pondoanus*, with apophyses as long as penis, a large complex internal sclerite; tegmen open dorsally, with a short, squared manubrium; spiculum forked, thicker than apophyses.

Type material. Holotype female: Kenya, Kilifi, Watamu, Arabuko Sokoke Forest, S3.32058 E39.92483, UV-trap, 2.III.2017, leg R. Gerstmeier [ZMUB]. Allotype and paratypes: same data as HT [2 NHMW, 4 ZMUB].



Figs 33–41. Dorsal, lateral and frontal views of (33, 36, 39) *Glostatus mkulumusius*, female syntype ('neotype'); (34, 37, 40) *Glostatus mkulumusius*, male; (35, 38, 41) *Glostatus xanthophloae*, female holotype.



Figs 42–50. Dorsal, lateral and frontal views of (42, 45, 48) *Glostatus giganteus* female holotype; (43, 46, 49) *Glostatus giganteus*, female; (44, 47, 50) *Glostatus gracilior*, female holotype.



Figs 51–59. Dorsal, lateral and frontal views of (51, 54, 57) *Glostatus kenyae*, female holotype; (52, 55, 58) *Glostatus tenuis*, female holotype; (53, 56, 59) *Glostatus scutiae*, female(?) holotype ('type').



Figs 60–68. Dorsal, lateral and frontal views of *Glostatus acaciae*. (60, 63, 66) *Glostatus acaciae*, male paratype; (61, 64, 67) *Glostatus acaciae*, female holotype; (62, 65, 68) *Glostatus hirsutus* (synonym), female holotype.

Etymology. The Latin nominative adjective *tenuis*, meaning slender, refers to the more elongated shape compared to the near identical but larger and stouter species *G. kenya*.

Distribution. Kenya. Only known from the type locality.

Biology. This species was caught by UV-light trap.

Comments. Morphologically similar to *G. mkulumusi*, but differs in having smaller asperities on the pronotum and by longer main setae and ground vestiture on elytra. It is also genetically very different (Fig. 1). It seems closely related to *G. kenya* from which it mainly differs by its smaller size, more elongated shape, a 5-segmented funiculus and fewer lateral denticles on the protibiae.

***Glostatus scutiae* (Schedl, 1959), comb. n.**

Stephanoderes scutiae Schedl, 1959: 708.

Hypothenemus scutiae (Schedl, 1959), combination by Browne, 1963.

(Figs 53, 56, 59)

Diagnosis. Length 1.5–2.1 mm, 2.1–2.2× as long as wide; male frons concave, eyes variably separated by less than their width, female frons slightly impressed, eyes separated by approximately 1.5× their width; antennal funiculus 5-segmented, club with three transverse or slightly procurved sutures; pronotum with sharp and broad pronotal asperities near the summit, fewer and smaller near the anterior margin; elytral ground vestiture long and acuminate, only slightly shorter than the narrowly spatulate main interstitial setae, all setae a little longer on declivity compared to disc, especially in males; protibiae with 7 lateral denticles.

Type material. Holotype ('type') female, and paratype(?) male: Kenya, Mukutano, 29.VIII.1955, ex *Scutia indica*, JCM Gardner leg. 1783 [NHMUK].

Distribution. Kenya.

New records. Kenya, Kilifi, Watamu, Arabuko Sokoke Forest, S3.32058 E39.92483, UV-trap, 2.III.2017, leg R. Gerstmeier [7, ZMUB].

Comments. Wood & Bright (1992) mention that this is probably a species of *Glostatus*, but did not implement a change. New collections from a dry coastal forest enabled genetic analyses, which firmly placed this species in *Glostatus* (Fig. 1). It is clearly dimorphic in terms of the frons and position of the eyes and have all the typical features of *Glostatus*.

The Kenyan type locality Mukutano is one of several places inland at a medium altitude and is similar to the dry site at Arabuko Sokoke along the coast. Many specimens were attracted to a UV-light trap at the coastal site. The previously reported host plant *Scutia indica* is a synonym of *Scutia myrtina* (Rhamnaceae), which is widely distributed in East Africa, India and eastern Asia.

***Glostatus acaciae* (Schedl, 1957)**

Apoglostatus acaciae Schedl, 1957a: 155.

Glostatus acaciae (Schedl, 1957), combination by Schedl, 1964.

Glostatus hirsutus Schedl, 1962: 1070, syn. n.

(Figs 60–68)

Diagnosis. Body length 3.0–3.4 mm, 2.2–2.3× as long as wide; funiculus 6-segmented; antennal club with three transverse sutures; female eyes separated above by 1.7–2.0× their width; elytral ground vestiture erect, each seta a little thinner and shorter than the bristle-like main interstitial setae. Male frons slightly impressed, eyes slightly less separated (1.3–1.5× their width) and interstitial setae longer on declivity than in females. Both sexes have two teeth on the front of the pronotum, near but not on the anterior edge.

Type material. Holotype female(?), and paratypes males and female (3): Kenya, Mukutano, VII.1955, ex dead *Rhus* sp., JCM Gardner leg. [NHMUK]. Holotype, female(?) of *G. hirsutus*: [Tanzania] D.O. Afrika, Usambara, 1912 [NHMW].

Distribution. Kenya, Tanzania, South Africa.

New records. South Africa, Western Cape province, Knysna, Diepwalle [–33.957, 23.152], 3.XI.2007, ex *Trichocladus crinitus* branch, B. Jordal, leg.; Goudveld, Krisjan Se-Nek [–33.913, 22.948], 5.XI.2007, ex *Trichocladus crinitus*, B. Jordal, leg.; Wilderness, Ebbe Flow [–33.980, 22.613], 2.XI.2007, ex *Podocarpus falcatus*, B. Jordal, leg.

Comments. With the new records this species now extends from Kenya to South Africa. Male and female are present at early egg laying. Egg tunnels are excavated irregularly but transversely to the wood grain. Eggs are laid in pits along the egg tunnels (3 eggs, n = 1).

The host plant records of *Podocarpus* (Podocarpaceae) and *Trichocladus* (Hamamelidaceae) add to an already unusually broad host range (Wood & Bright, 1992), including *Acacia* (Fabaceae), *Ficus* (Moraceae), *Juniperus* (Cupressaceae), *Maba* (Ebenaceae) and *Rhus* (Anacardiaceae).

***Glostatus nunbergi*, nom. n.**

ZooBank taxon LSID:

C3612C65-0EBE-444C-B187-1415B2E405AD

Stephanopodius squamosus Nunberg, 1973: 9, syn. n. (preoccupied by *Glostatus squamosus* Schedl, 1962: 1071).

(Figs 69, 72, 75)

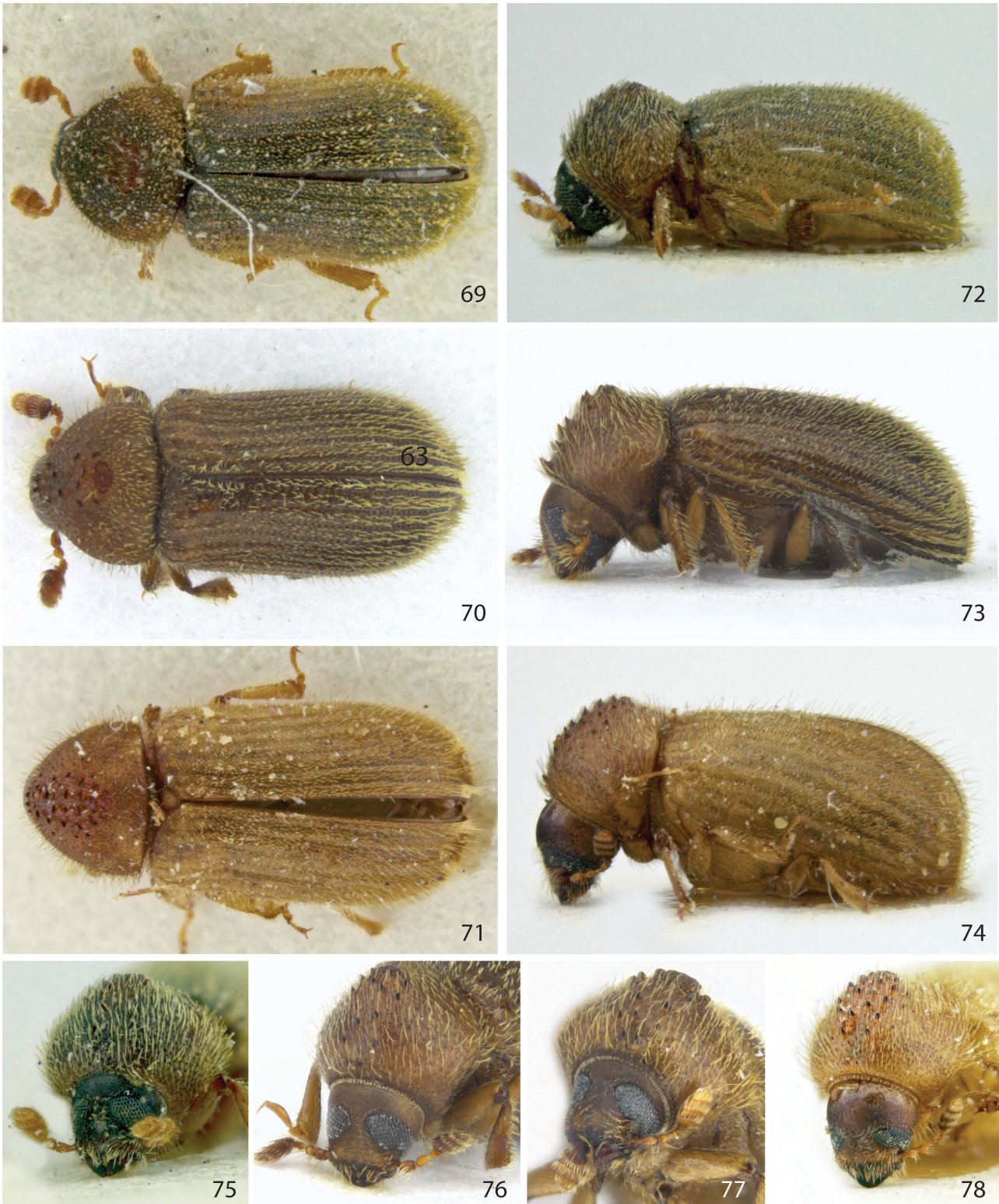
Diagnosis, male. Length 2.7 mm, 2.2× as long as wide; frons weakly impressed, eyes narrowly separated by slightly less than their width; antennal funiculus 5-segmented, club with three deeply marked transverse sutures, each segment sub-articulated. Pronotal asperities rather few, absent from anterior margin, surface between asperities micro granulate; elytral striae marked by small and densely set punctures; elytral ground vestiture dagger shaped, partly raised, about half the length of scattered uniseriate and narrowly spatulate main setae, all setae a little longer on declivity. Protibiae with 8 lateral denticles.

Type material. Holotype, female? Congo Belge [Democratic Republic of Congo], Nord Massif Ruwenzori, Kaloga, 2080 m, V.1953, JM Vrydagh leg. 4062a [RMCA].

Etymology. Renamed after Marian Nunberg, a Polish taxonomist and author of this species.

Distribution. Democratic Republic of Congo.

Comments. This species is very similar to *G. acutidentis* sp. n., but differs in having a 5-segmented antennal



Figs 69–78. Dorsal, lateral and frontal views of (69, 72, 75) *Glostatus nunbergi* nom. n., female holotype; (70, 73, 76) *Glostatus acutidentes*, female holotype; (77) *G. acutidentes*, female paratype, note variation in eye width; (71, 74, 78) *Glostatus vrydaghi*, female(?) holotype ('type').

funiculus, a generally granulated surface on the pronotum, very slightly broader setae on pronotum and elytral interstriae, and by the shorter and dagger-shaped ground vestiture. There is nothing noted on its biology other than it was collected at a high altitude.

***Glostatus acutidentes*, sp. n.**

ZooBank taxon LSID:

7DFCD892-C024-4906-8801-AA2CFA805135

(Figs 70, 73, 76, 77)



Figs 79–87. Dorsal, lateral and frontal views of *Glostatus pondoanus*. (79, 82, 85) *Hypocryphalus dubiosus* (synonym), female paratype; (80, 83, 86) *Glostatus squamosus* (synonym), female holotype; (81, 84, 87) *Glostatus pondoanus*, male, compared with holotype.

Diagnosis, female. Frons weakly impressed, eyes narrowly separated by less than their width; antennal funiculus 6-segmented, club with three deeply marked transverse sutures, each segment sub-articulated. Pronotal asperities rather few, narrow and sharp; elytral striae clearly marked by small and densely set punctures; elytral ground vestiture bristle-like, raised, only slightly shorter than the bristle-like main setae, all setae a little longer on declivity.

Description, female. Length 2.2–2.7 mm, 2.2–2.3× as long as wide. Colour dark brown. Frons weakly impressed, eyes separated by 0.4–0.7× their width; antennal funiculus 6-segmented, antennal club 1.5–1.7× longer than broad, with three subarticulated segments marked by deep sutures. Pronotal asperities fewer than 20, narrow and sharp, two teeth along anterior margin. Elytral striae clearly marked by small punctures separated on average by their diameter; elytral ground vestiture bristle-like, raised, only slightly shorter than the bristle-like main setae, which are only discernible in profile; all setae a little longer on declivity. Protibiae with 7 lateral denticles; meso- and metatibiae not clearly visible, likely with 5 or 6 tiny lateral denticles near apex.

Male unknown.

Type material. Holotype female and paratype (1): Tanzania, Empakani Crater, Ngorongoro Highlands, 2278 m, S02°54'55" E35°51'23", 26–28.vii.12, general coll, leg Smith R. & Takano H. [NHMUK]. Paratype: Kenya, Kakamega Forest, 1600 m alt., 0.27N34.88E, Jan. 2003, W. Freund and C. Schmidt leg. [ZFMK].

Additional material. Tanzania, Olchoromyokie, Mt. Kitumbaine, 2111 m, S02°54'57" E36°14'38", 7–9.v.12, dung pit-fall, leg Smith R and Takano H. (1 NHMUK); Kenya, Nairobi, 29.11.1973, H. Silfverberg (1 MZH).

Distribution. Kenya, Tanzania.

Comments. This species differs from *G. nunbergi* in having sharper asperities on the pronotum, generally smoother cuticle, a little longer and narrower ground vestiture and 6-segmented antennal funiculus. All records are from high altitudes, ranging from 1600 to 2300 m. Two specimens not included in the type series have less marked striae, but are likely to be conspecific.

Etymology. Plural form of the Latin masculine participle *acutus*, meaning sharpened, and the plural form of *dens*, tooth, referring to the very sharp asperities on the anterior part of the pronotum.

***Glostatus vrydaghi* (Nunberg, 1973)**

Apoglostatus vrydaghi Nunberg, 1973: 10.

Glostatus vrydaghi (Nunberg, 1973), combination by Wood & Bright (1992).

(Figs 71, 74, 78)

Diagnosis, female. Length 3.9 mm, 2.2× as long as wide, mature colour black; frons weakly impressed, eyes separated above by 1.6× their width; antennal funiculus 6-segmented, club with three transverse sutures. Pronotum small, only about 0.4× as long as elytra, asperities rather small, two smallest along anterior margin, surface near lateral margins finely granulate-reticulate; elytral ground vestiture very fine and short, dagger-shaped, slightly longer

and raised on upper declivity, on lower part of declivital interstriae 2–4 adpressed; main interstitial setae very long, hair-like. Protibiae with 11 lateral denticles.

Type material. Holotype (female?) and paratype: Congo Belge [Democratic Republic of Congo], Nord Massif Ruwenzori, Mahungu, 3280 m, VI.1953, JM Vrydagh leg. 4057a [RMCA].

Distribution. Democratic Republic of Congo.

Comments. This species is unique in having very thin hair-like interstitial setae combined with a small pronotum relative to elytra. It is only known from a high altitude locality. In his original description of the species, Nunberg (1973) ignored the synonymy of *Apoglostatus* suggested by Schedl (1964).

***Glostatus pondoanus* Schedl, 1958**

Glostatus pondoanus Schedl, 1958: 558.

Glostatus squamosus Schedl, 1962: 1071, syn. n.

Hypocryphalus dubiosus Schedl, 1970: 177 [*Stephanopodius dubiosus* (Schedl, 1970), combination by Johnson et al., 2020], syn. n.

(Figs 79–87)

Diagnosis. Length 2.2–2.8 mm, 2.1–2.2× as long as wide. Frons largely flattened, eyes separated above in females by 2–2.5× their width, in males 1.5–2.0× their width, antennal funiculus 6-segmented (rarely 5-segmented); club with three slightly procurved sutures; elytral ground vestiture dagger-shaped, about 3× as long as broad, on declivity erect and sharply pointed, dense, fluffy and white-coloured on declivital interstriae 1; interstitial main setae 2–3× longer than ground vestiture, narrowly spatulate or acuminate, especially on declivity; protibiae with 6 lateral denticles; posterior edge of abdominal ventrites 2–4 each with a single transverse row of split setae.

Type material. Holotype, female: South Africa, Pondoland, Port St. John [NHMUK]. Holotype, female, of *G. squamosus*: Natal [NHMW]. Paratype?, male of *H. dubiosus*: South Africa, Alexandria, 7.8.1959, H Grobler, Ac.X.576 [NHMW].

Distribution. South Africa (Western Cape, Eastern Cape, KwaZulu-Natal).

New records. South Africa, Western Cape province, 13 km N Hoekwil, Woodville [–33.933, 22.639], ex *Scolopia zeyheri*, 1.XI.2007; Bloukrans, Stinkhoutkloof [–33.95, 23.63], 10.XI.2007, ex *Eucalyptus camaldulensis* and *Virgilia oroboides*; Knysna, Diepwalle [–33.957, 23.152], 3.XI.2007, ex *Curtisia dentata*, *Platylophus trifolius*, *Podocarpus falcatus*, and *Trichocladus crinitus*; Goudveld, Krisjan Se-Nek [–33.913, 22.948], 5.XI.2007, ex *Curtisia dentata*; Nature's Valley [–33.965, 23.562], 8.XI.2007, ex *Sideroxylon inerme*; Wilderness, Ebbe Flow [–33.980, 22.613], 31.X.2007, ex *Scolopia zeyheri*; Eastern Cape province, Alexandria Forest [–33.70, 26.35], 15.XI.2007; all records [ZMUB] B. Jordal, leg.

Comments. *Hypocryphalus dubiosus* was placed in *Stephanopodius* by Johnson et al. (2020). Further comparison shows that one specimen has a 5-segmented funiculus, but otherwise is identical to the holotypes of *G. pondoanus* and *G. squamosus*. All of the specimens of *G. pondoanus* and its synonyms examined have characteristic split setae



Figs 88–96. Dorsal, lateral and frontal views of (88, 91, 94) *Glostatus dispar*, female, compared with holotype; (89, 92, 95) *Glostatus tuberculatus*, male holotype; (90, 93, 96) *Glostatus tredli*, female holotype.

along the posterior margin of ventrites 2–4, which is a unique trait in this genus and therefore strongly supports conspecificity. The NHMW collection contains a specimen of this species with the name tag *Glostatus 'royanae'*, presumably a manuscript name, which was never published.

Previous records only included the host plants *Fagara capensis* (Rutaceae) *Ekebergia capensis* (Meliaceae) and *Elaeodendron* (Celastraceae). The new records reveal a much broader host plant range including the plant families Myrtaceae, Fabaceae, Cornaceae, Cunoniaceae, Podocarpaceae, Hamamelidaceae, Sapotaceae and Salicaceae. This is perhaps made possible by breeding in rather old branches. Egg tunnels were excavated irregularly into the wood of branches between 3–15 cm in diameter. Males and females formed pairs and only in one case was a female found alone after laying 13 eggs. Brood sizes ranged between 11–13 eggs ($n = 3$).

***Glostatus dispar* (Eggers 1936), comb. n.**

Stephanoderes dispar Eggers, 1936: 35.

Stephanopodius dispar (Eggers, 1936), combination by Schedl, 1941.

Stephanopodius giganteus Schedl, 1950: 26, syn. n.

(Figs 88, 91, 94)

Diagnosis. Length 2.0–2.8 mm, 2.1–2.2× as long as wide. Frons slightly impressed from epistoma to just below upper level of eyes, which are separated above in females by 2.5–3.0× their width, in males 2.0–2.5× their width, antennal funiculus 5-segmented; elytral striae strongly impressed, whole elytra appearing striped; ground vestiture on interstriae bristle-like, chaotic; interstitial main setae narrowly spatulate, twice the length of ground vestiture, uniseriate.

Type material. Holotype female(?): S. Rhodesia [Zimbabwe], Salisbury [NHMUK]. Holotype female(?) of *S. giganteus*: Rhodesien [Zimbabwe] [NHMW].

Distribution. South Africa, Zimbabwe, Tanzania, Zambia.

New record. Zambia, Kabwe, Kasanka NP, S12°32'28" E30°12'42", 30.xi.–1.xii.12, light trap Edwards funnel, leg Smith R. & Takano H. [2, NHMUK], new country.

Comments. *Stephanopodius giganteus* Schedl, 1950: 26, here synonymized with *Glostatus dispar* (Eggers, 1936) comb. n. and thus placed in *Glostatus*, is thereby also made homonymous with *Glostatus giganteus* (Schedl, 1950: 22), comb. n., described in the same publication of Schedl as *Cryphalus giganteus*.

***Glostatus tuberculatus*, sp. n.**

ZooBank taxon LSID:

E0426B45-31A4-42A6-B81F-8CAE8736B2B1

(Figs 89, 92, 95)

Diagnosis, male. Elytral striae impressed, whole elytra appearing somewhat striped, vestiture on declivital interstriae 1 denser and white-coloured; posterior part of mainly the lateral interstriae carinate, abruptly flattened on declivity, interstriae 5 and 9 terminating in a coarse tubercle.

Description, male. Length 2.2 mm, 2.2× as long as wide. Colour dark brown. Frons concave between eye margins from epistoma to upper level of eyes, vestiture sparse. Antennal funiculus 6-segmented; antennal club with three slightly procurved sutures. Pronotum distinctly broader than long, about 14 asperities near summit, none near anterior margin, on summit forming a transverse, short, irregular row of tuberculate asperities; vestiture consisting of soft hair-like setae. Scutellum flush with elytra, with small, fine setae. Elytral striae distinctly impressed, elytra appearing striped; interstriae with ground vestiture of confused but densely set bristle-like setae, on declivity slightly raised and on interstriae 1 very dense and white-coloured; interstitial main setae narrowly spatulate, a little longer than ground vestiture. Legs. Protibiae with 6 lateral denticles (other tibiae not visible on type).

Female. Not known. Based on the sexual dimorphism in related species, presumably very similar to the male, but likely have two raised teeth on the anterior margin of pronotum, the eyes may be more broadly separated and the tubercles on elytral declivity smaller.

Type material. Holotype male: South Africa, Cape province, Skaife, 25–26.iv.1995, 34°16'S 18°23'E, leg. U. Göllner [ZMHB].

Additional record. South Africa, Western Cape, Nature valley, ex woody *Erica*, 8.XI.2006, B. Jordal, leg. [DNA voucher CrSph03, ZMUB].

Etymology. The Latin nominative adjective *tuberculatus* means tuberculate, referring to the four small tubercles terminating four of the carinated interstriae.

Distribution. South Africa. The type locality is possibly Cape Town. The other record is further east in the same province.

Biology. A male and female pair with three eggs was collected from a woody species of *Erica*. This is the first known host plant record from this genus, which is in a family (Ericaceae) with very few known host plants for bark beetles (Wood & Bright, 1992).

***Glostatus tredli* (Reitter, 1908), comb. n.**

Cryphalus tredli Reitter, 1908: 55.

Stephanoderes tredli (Reitter, 1908), combination by Eggers, 1940.

Hypothenemus tredli (Reitter, 1908), combination by Browne, 1963.

(Figs 90, 93, 96)

Diagnosis, female. Length 1.4 mm, 2.0× as long as wide. Frons weakly concave, with scattered setae as long as antennal club; eyes separated by 3× their width; antennal club with three transverse sutures; about 13 or 15 large pronotal asperities as broad as the antennal club, at the summit with five strongly overlapping and partly fused asperities, on anterior margin of pronotum two small subcontiguous asperities; elytral striae slightly impressed with closely separated punctures, interstriae much wider than striae; ground vestiture consisting of fine densely scattered setae on disk, short and scattered scale-like setae on declivity, with longer interstitial main setae in irregular uniseriate rows from base to apex, about 2–4 x as long as ground vestiture.



Figs 97–105. Dorsal, lateral and frontal views of (97, 100, 103) *Glostatus carinifer*, male holotype; (98, 101, 104) *Glostatus carinifer*, female paratype; (99, 102, 105) *Glostatus delicatus*, female holotype.



Figs 106–112. Dorsal, lateral and frontal views of *Glostatus procurvus* sp. n. (106, 108, 110) male allotype; (111) male paratype; (107, 109, 112) female holotype.

Type material. Holotype, female: Aegyptus [Egypt], Cairo, leg. Boehm [HNHM].

Distribution. Egypt.

Comments. Originally described by Reitter in the genus *Cryphalus* and later transferred to *Hypothenemus* (as *Stephanoderes*, syn.) by Eggers (1940). However, the shape of the tibiae, sinuate eyes, pronotum with a trapezoidal frontal profile and the three transverse sutures on the antennal club marked by bundles of setae clearly indicate that this is a species of *Glostatus*.

***Glostatus carinifer* Schedl, 1957**

Glostatus carinifer Schedl, 1957c: 871.

(Figs 97, 98, 100, 101, 103, 104)

Diagnosis. Length 2.6–3.2 mm, 2.2–2.5× as long as wide. Eyes separated above by 1.2× their width in males, 1.5–1.7× in females; antennal funiculus 6-segmented; club with three strongly procurved sutures. Pronotum with a long transverse carina replacing the posterior row of asperities; elytral ground vestiture dense, on disc short and semi-recumbent, on declivity longer and raised; interstitial main setae narrowly spatulate, in males slightly more acuminate and hardly discernible from the relatively longer ground vestiture. Protibiae with 6 lateral denticles.

Type material. Holotype male and 1 female paratype: Tanzania [Tanzania], Lushoto, ex living *Syzygium*, 17.III.1955, JCM Gardner, leg. [NHMW]. Paratypes, male and female: same data as holotype [NHMUK].

Distribution. Tanzania.

***Glostatus delicatus* (Schedl, 1962)**

Paraglostatus delicatus Schedl, 1962: 1072, but also see Schedl, 1964: 305.

Glostatus delicatus (Schedl, 1962), combination by Wood, 1984. (Figs 99, 102, 105)

Diagnosis, male. Length 2.0 mm, 2.1× as long as wide. Eyes separated above by 2.2× their width, frons deeply impressed from epistoma to just above upper level of eyes; pronotal summit with broadly transverse carina; elytral ground vestiture dagger-shaped, 3–5× longer than broad, interstitial main setae broad, subquadrate, no more than 2× longer than broad.

Type material. Zululand [South Africa, KwaZulu-Natal], Es- howe [NHMW].

Distribution. South Africa.

Comments. Due to the poor quality of the antennal club and glued legs of the type, the exact relationship with other species cannot be determined. It shares with *G. carinifer* the same broad carina on its pronotal summit, and the sutures on the glued antennal club may be similarly procurved. It is also similar to *G. giganteus*, both in having a broad and short pronotum and the main interstitial setae subquadrate. For testing these alternative hypotheses more material needs to be collected.

This species was described by Schedl (1962b) in *Paraglostatus* before the publication of the genus (1964), possibly a consequence of a delayed printing. Bright & Skidmore (1997) report *Nuxia* (Stilbaceae) and *Cassine* (Celastraceae) as host plants without reference to the primary source.

***Glostatus procurvus*, sp. n.**

ZooBank taxon LSID:

8DA7EF0A-6441-42B9-A916-44AD37125145

(Figs 106–112)

Diagnosis. Pronotal summit with transverse carinae or straight line of contiguous asperities; antennal club with three strongly procurved sutures marked by fine setae; interstitial main setae broad and subquadrate, densely arranged in uniseriate rows.

Description, male. Length 2.1–2.4 mm, 2.1–2.2× as long as wide. Colour dark brown. Frons concave between eye margins from epistoma to upper level of eyes, vestiture sparse, mainly near the eyes. Antennal funiculus 6-segmented; club with three strongly procurved sutures marked by fine setae. Eyes separated above by 0.4–0.5× their width. Pronotum distinctly broader than long, about 20–30 asperities on anterior slope, at summit with asperities fused into a broad carina or straight line of contiguous asperities, no asperities near anterior margin; vestiture consisting of bristle-like and spatulate setae of various lengths. Scutellum flush with elytra, with scant small setae. Elytral striae slightly impressed on disc, more strongly on declivity, appearing striped; interstriae with very short ground vestiture of bristle-like setae, on declivity slightly raised and a little longer; interstitial main setae densely arranged in rows, spatulate, subquadrate, about 2× longer than broad.

Legs. Protibiae with 8 lateral denticles; meso- and metatibiae with 7 very small apical denticles. Proventriculus with anterior plate entire, with transverse rows of needle-like teeth; tips of closing teeth bushy. Aedeagus with massive basal sclerites, apophyses free, apex of penis with a broad lobe almost as wide as the middle part, tegmen with tiny manubrium; spiculum gastrale thick, forked at apex.

Female. Similar to male except eyes separated by 0.6–0.7× their width, frons slightly less impressed, and the anterior margin of pronotum has two raised teeth.

Type material. Holotype female: Tanzania, Udzungwa mountains, Chita, 700 m, ex dry twig, 17.11.2009, B. Jordal, leg. GIS: –8.48°, 35.94° [ZMUB]. Allotype, male [ZMUB] and paratypes (7): same data as holotype [5 ZMUB, 2 NHMW]

Etymology. The Latin nominative adjective *curvus*, meaning curved, and the Latin prefix *pro-*, meaning in front, referring the three procurved sutures on the antennal club.

Distribution. Tanzania.

Biology. Several broods consisting of teneral adults were dissected from an old and dry twig of an unknown tree. The parental tunnels were excavated in the wood of the twig, with larvae and young adults tunnelling in different directions.

Comments. This species is very similar to *G. carinifer* but is distinctly smaller in size, the eyes are more narrowly separated in both sexes, the pronotal asperities on average considerably broader and the carina on its summit shorter, the main interstitial setae are distinctly subquadrate and the striae are less impressed.

***Glostatus declividepressus* Schedl, 1939**

Glostatus declividepressus Schedl, 1939: 386.

Glostatus assimilis Schedl, 1957c: 871, syn. n.

(Figs 113, 114, 116, 117, 119, 120)

Diagnosis. Length 2.1–2.4 mm, 2.0–2.1× as long as wide; male frons broadly impressed up to the upper level of eyes, female more lightly impressed; antennal funiculus 6-segmented, club with three strongly procurved sutures; eyes separated above by 1.5–1.9× their width; declivity gently flattened beginning at posterior half of elytra; ground vestiture short on disc, raised and much longer and very similar to the pointed main interstitial setae; protibiae with 8 or 9 lateral denticles, metatibiae with 9 or 10 lateral and apical denticles.

Type material. Holotype, male: D.O.A. [Tanzania], Usambara [NHMW]. Holotype and paratype of *G. assimilis*: Kenya, Jilore, 7.XII.1956, JCM Gardner [NHMUK]; allotype, male, and one paratype: same data as holotype [NHMW].

Distribution. Kenya, Tanzania.

New record. Kenya, Kilifi, Watamu, Arabuko Sokoke Forest, S3.32058 E39.92483, UV-trap, 2.III.2017, leg R. Gerstmeier [ZMUB].

Comments. The new record reported here is from the same area as the type series of *G. assimilis*. Type specimens of *G. assimilis* are identical to *G. declividepressus*, which has priority. The type of the latter species was collected from the nearby Usambara mountains, likely at a medium



Figs 113–121. Dorsal, lateral and frontal views of (113, 116, 119) *Glostatus declividepressus*, male holotype; (114, 117, 120) *Glostatus assimilis* (synonym), female compared with holotype; (115, 118, 121) *Glostatus nigrivestis*, female holotype.



Figs 122–130. Dorsal, lateral and frontal views of (122, 125, 128) *Glostatus ghanaensis*, male from type locality, compared with holotype; (123, 126, 129) *Glostatus seydeli*, female compared with holotype; (124, 127, 130) *Glostatus leprosus*, female holotype.

altitude. Bright & Skidmore (1997) report *Brachystegia* (Fabaceae) as the host plant, without citing the primary source.

***Glostatus nigrivestis* (Schedl, 1957)**

Ctonocryphus nigrivestis Schedl, 1957c: 873.

Paraglostatus nigrivestis (Schedl, 1957), combination by Schedl, 1964.

Glostatus nigrivestis (Schedl, 1957), combination by Wood, 1984.

(Figs 115, 118, 121)

Diagnosis, female. Length 2.7 mm, 2.3× as long as wide. Antennal funiculus 6-segmented, club with three strongly procurved sutures; eyes separated above by 2× their width; pronotal summit with very broad asperities almost as broad as the antennal club; elytral ground vestiture erect, almost as long as main interstitial setae of the same stiff acuminate type, elytra appears to bear spikes; protibiae with 11 lateral denticles.

Type material. Holotype, female: Tanganyika [Tanzania], Gologolo [Usamara], 1553, JCM Gardner [NHMUK].

Distribution. Tanzania.

Comments. Superficially similar to *G. acaciae*, but sutures on the antennal club are strongly procurved. It is more closely related to *G. declivedepressus*, from which it is distinguished mainly by longer elytra with steeper declivity and broader pronotal asperities. It differs further from both species by the more numerous lateral denticles on the protibiae.

***Glostatus ghanaensis* (Schedl, 1962), comb. n.**

Hypocryphalus ghanaensis Schedl, 1962: 66.

Cryphalomimus ghanaensis (Schedl, 1962), combination by Browne, 1962.

Cryphalomimetes ghanaensis (Schedl, 1962), combination by Browne, 1963.

Stephanopodius ghanaensis (Schedl, 1962), combination by Wood, 1980.

(Figs 122, 125, 128)

Diagnosis. Length 2.3–2.7 mm, 1.9× as long as wide. Antennal funiculus 5-segmented, club with three increasingly procurved, subangular sutures; frons slightly impressed above epistoma, in males with a central sharp tubercle at upper level of eyes, in both sexes the eyes are separated by 2.0× their width; pronotum very short, much broader than long; elytral ground vestiture triangular, as long as wide; interstitial setae long and bristle-like on posterior half of elytra, shorter and spatulate on anterior half; protibiae with 6 or 7 lateral and apical denticles; abdominal ventrite 1 with fine mixed bifid and trifid setae.

Type material. Holotype, male: Ghana, Kumasi [NHMUK].

Additional material. Ghana, Bobiri (Kumasi), 19.IX.62 [3, NHMUK].

Distribution. Ghana.

Comments. Although this species is superficially similar to *Cryphalus*, it is a typical *Glostatus* based on external features and also internal characters such as the proventricu-

lus (apical plate entire, with transverse subangular rows of sharp teeth) and male genitalia (fused apophyses, dorsally open tegmen, and thick forked spicule), as illustrated by Browne (1962). The genus *Cryphalomimus* Browne, 1962 for Schedl's species *Hypocryphalus ghanaensis* was pre-occupied by *Cryphalomimus* Eggers, 1927, and the replacement genus *Cryphalomimetes* Browne, 1963 was synonymized with *Stephanopodius* by Wood (1980); the latter genus is here synonymised with *Glostatus*. This species was collected from bark of *Bussea* and *Hymenostegia* trees (Fabaceae).

***Glostatus seydeli* (Nunberg, 1967)**

Rhopalocryphus seydeli Nunberg, 1967: 321.

Glostatus seydeli (Nunberg, 1967), combination by Schedl, 1980.

(Figs 123, 126, 129)

Diagnosis, female. Length 2.5 mm, 1.9× as long as wide. Frons impressed just above epistoma, eyes separated by 2.4× their width; antennal funiculus 6-segmented, club with three strongly procurved sutures; elytral interstria with short spatulate setae, length on posterior half about 4× their width, on anterior half shorter. Protibiae with 10–12 small lateral denticles; on metatibiae 10 tiny denticles, mainly on apical margin.

Type material. Holotype, female: [Democratic Republic of] Congo, Elisabethville [Lubumbashi] [MRCA].

Additional material. Zambia, Kitwe, Chati, 7–16.III.1980, K. Löytyniemi, leg. [MRCA].

Distribution. Democratic Republic of Congo, Zambia.

Comments. Together with *G. ghanaensis* these two species are the most rotund in the genus. *Glostatus seydeli* is distinguished from *G. ghanaensis* by the 6-segmented funiculus, the relatively longer pronotum (Figs 122, 123) and shorter and more spaced main interstitial setae.

The locations at which these two species were collected in Congo and Zambia are only 200 km apart and in miombo forest. The host plant *Brachystegia* (Fabaceae) is typical for many *Glostatus* species in this part of Africa.

***Glostatus leprosus* Browne, 1973**

Glostatus leprosus Browne, 1973: 290.

(Figs 124, 127, 130)

Diagnosis. Length 1.4–2.2 mm, 2.0–2.2× as long as wide. Frons weakly impressed in female, eyes separated above by 3.2–3.5× their width, males with slightly more impressed lower frons, with eyes separated by 2.0–2.5× their width; antennal funiculus 6-segmented, club with three weakly procurved sutures; elytral ground vestiture of very dense, small, scale-like setae, especially on declivity; main interstitial setae slightly longer, densely placed scale-like setae; striae deeply impressed.

Type material. Holotype, female: Nigeria, Adamawa, Gangoro forest reserve, 4000 feet, XII.1969, H. Roberts, leg. [MRCA]. Paratypes, male and female: same data as holotype [NHMUK].

Distribution. Nigeria, Democratic Republic of Congo, Cameroon.



Figs 131–137. Dorsal, lateral and frontal views of (131, 133, 135) *Glostatus xyloctonus*, male compared with holotype; (132, 134, 136) *Glostatus paraxyloctonus* sp. n., female allotype, and (137) frontal view of male holotype.

New record. Cameroon, SW province, Bonadikombe, S. Limbe, ex Caloncoba, 24. N. 2007, B. Jordal, leg. [ZMUB], new country.

Comments. The male is very similar to the female and differs only in the less broadly separated eyes and by the reduced and displaced teeth near the anterior margin of the pronotum. Specimens collected in Cameroon are smaller than those from the type locality in Nigeria, but otherwise identical. The size difference could be due to different altitudes, with type locality at about 1300 meters and the new collection from Cameroon close to sea level (see Jordal, 1998). This species is also reported from mid-altitudes in south-eastern Congo (Browne, 1973).

***Glostatus xyloctonus* (Schedl, 1941)**

Ctonocryphus xyloctonus Schedl, 1941: 398.
Glostatus xyloctonus (Schedl, 1941), combination by Schedl, 1961.

(Figs 131, 133, 135)

Diagnosis, female. Length 1.8–1.9 mm, 1.8–1.9× as long as wide. Frons flat, antennal funiculus 6-segmented, club with three procurved sutures; eyes separated above in females by 3.0–3.3× their width, in males by 2.0× their width; pronotum much broader than long, females, but not males, with two raised teeth on the anterior margin; elytral interstriae slightly elevated, especially interstriae 1; ground vestiture dense, very short and scale-like, main setae a little longer, about 2× longer than broad; protibiae



Figs 138–146. Dorsal, lateral and frontal views of (138, 141, 144) *Glostatus bispinosus*, male holotype; (139, 142, 145) *Glostatus multispinosus*, male and (140, 143, 146) female, both compared with holotype.

with 8 lateral denticles, metatibiae with 8–9 tiny lateral and apical denticles.

Type material. Holotype, female: Kamerun [NHMW].

Distribution. Cameroon, Nigeria.

New record. [Nigeria] Iwo Road, ex *Brachystegia eurycoma*, 18.10.62, H. Roberts, leg. [NHMW], new country.

Comments. This species is very similar to *G. leprosus* and *G. paraxyloctonus*, but is stouter, the beginning of declivity is slightly humpbacked, and the stria punctures are larger and less impressed. It differs from the other two stout species *G. seydeli* and *G. ghanaensis* by its smaller size, less procurved sutures on the antennal club and the shorter main setae on the elytral interstriae.

This species is recorded from Nigeria for the first time, although these specimens have been present in NHMW for a long time. Several specimens were collected from *Brachystegia* (Fabaceae), which is a common host plant for many species of *Glostatus*.

***Glostatus paraxyloctonus*, sp. n.**

ZooBank taxon LSID:

35354F7B-72FE-4F10-B4E6-99F228597381

(Figs 132, 134, 136, 137)

Diagnosis. Antennal club with three weakly and irregularly procurved sutures; funiculus 6-segmented with long and terminally inflated setae. Males with transverse carina on frons, surface below carina flattened and transversely striped; pronotum with a narrow longitudinally band of sharp asperities from anterior margin to the summit.

Description, male. Length 1.7–1.9 mm, 2.0–2.1× as long as wide; colour very dark brown. Frons flattened below a transverse carina just below upper level of eyes, flattened area transversely, wavy striped; vestiture of fine setae near eyes and on epistoma. Eyes separated above by 1.8–1.9× their width. Antennal funiculus 6-segmented, club with three slightly procurved sutures, basal suture more strongly procurved. Pronotum broader than long, with a longitudinal band of sharp asperities reaching anterior margin. Scutellum nearly flush with the elytra, with mixed short fine and spatulate setae. Elytral striae impressed and sharply defined; interstriae flat on disk, slightly raised or inflated on declivity; ground vestiture of dense, very short and scale-like setae, main interstitial setae a little longer, about 2–3× longer than broad, separated within a row by 2–4× their length. Protibiae with 8 lateral denticles, meso- and metatibiae with 8 or 9 tiny lateral and apical denticles.

Female similar to male except frons convex, eyes separated by 2.6–2.8× their width, and pronotal asperities more broadly spread.

Type material. Holotype, male: Tanzania, Morogoro prov. Sanje [GIS -7.793, 36.897], ex *Brachystegia* 1.July.2010, B. Jordal, leg. [ZMUB]. Allotype female and 4 paratypes: same data as holotype [3 in ZMUB, 2 in NHMW].

Etymology. Composed of the name of the related species *xyloctonus* (Greek: *xylo*, meaning wood, and *cthonius*, meaning underneath) and the Greek prefix *para-*, meaning next to or near, referring to the close similarity to that species.

Distribution. Tanzania.

Biology. Specimens were dissected from a small branch of *Brachystegia* (Fabaceae) about 8 cm thick. Tunnels were in the bark, and not in the phloem. Males were observed fighting outside the entrance tunnels when a female was present in the opening, which suggests that the latter is the colonizing sex. Males move very fast in very much the same manner as in other *Xyloctonini* genera such as *Ctonoxylon* and *Scolytomimus* (pers. obs.).

Comments. This species is very similar to *G. xyloctonus*, but males differ in having a transverse carina on the frons and by the narrow longitudinal band of acute asperities reaching the anterior margin of the pronotum; and in both sexes by the more elongated shape of the body, the slightly longer main interstitial setae and the more deeply and sharply defined striae.

***Glostatus bispinosus* Beaver, 1985**

Glostatus bispinosus Beaver in Beaver & Löytyniemi, 1985: 77.

(Figs 138, 141, 144)

Diagnosis. Length 1.9–2.0 mm, 2.0× as long as wide. Male frons with transverse carina at level of eye indentation (female smooth); antennal funiculus 6-segmented, with long inflated setae only in males; club with three weakly procurved sutures; male elytral declivity with two coarse and blunt spines, in females reduced to small nodules.

Type material. Holotype, male and paratype female: Zambia, Kitwe, Chati, 7–23–30.V.1980, K. Löytyniemi, leg. [NHMUK].

Distribution. Zambia.

Comments. Females of this species are rather similar to *G. paraxyloctonus*, distinguished mainly by two small nodules on the declivity. Males differ more by having distinct declivital spines, different position of the frontal carina and the broader distribution of pronotal asperities not reaching the anterior margin.

***Glostatus multispinosus* (Schedl, 1957)**

Ctonocryphus multispinosus Schedl, 1957c: 873.

Glostatus multispinosus (Schedl, 1957), combination by Schedl, 1964.

(Figs 139, 140, 142, 143, 145, 146)

Diagnosis, male. Length 2.0–2.2 mm, 1.9–2.0× as long as wide. Frons with transverse carina near upper level of eyes; antennal funiculus 6-segmented, with scattered, long, terminally inflated setae; club with three slightly procurved sutures; eyes separated above by 2.0× their width; elytral interstriae increasingly carinated posteriorly, each ending in a small spine at the beginning of the declivity, the declivity smooth except for six long spines on interstriae 2, 4 and 6; elytral apex extended into an acuminate flange; protibiae with 8 lateral denticles. Female of the same size and proportions, with eyes separated by 2.5× their width; pronotal asperities larger and setae longer; declivital interstriae coarsely tuberculated, with six larger tubercles in the same position as spines in the male.



Figs 147–158. Dorsal, lateral and frontal views of (147, 151, 155) *Glostatus spinicarinatus*, male paratype, and (148, 152, 156) female paratype; (149, 153, 157) *Glostatus aculeus*, male holotype, and (150, 154, 158) female allotype.

Type material. Holotype, male: Kenya, Kilifi, 6.VII.1956, JCM Gardner [NHMUK].

Other material examined. Zambia, Kitwe, Chati 1–7.VIII.1979, K. Löytyniemi, coll. [MRCA].

Distribution. Kenya, Zambia.

Comments. The holotype is a male as described (spinose armature) in the original description (Schedl, 1957c).

***Glostatus spinicarinatus* Beaver 1985**

Glostatus spinicarinatus Beaver in Beaver & Löytyniemi, 1985: 78.

(Figs 147, 148, 151, 152, 155, 156)

Diagnosis, male. Length 1.9–2.2 mm, 2.5–2.6× as long as wide. Antennal funiculus 6-segmented with few setae; club with three transverse sutures; elytral interstriae carinated just before and beginning of declivity, interstriae 1 carinated on declivity to elytral apex, on its lower fourth with two coarse spines, on interstriae 5 with one additional spine in the middle of declivity; protibiae with 8 lateral denticles. Female of the same size and proportions, but eyes are more widely separated and the elytral declivity is comparatively smooth and interstriae are only slightly raised and finely granulated.

Type material. Holotype, male, and female paratype: Zambia, Kitwe, Chati 1–7.VIII.1979, K. Löytyniemi, coll. [NHMUK]. Paratypes: same data as holotype, except 14.VIII.1979 [MRCA].

Distribution. Zambia.

Comments. The elongated shape clearly separates this species from other species bearing spines on the declivity. It is also one of very few species in which females do not have two raised teeth on the anterior margin of the pronotum.

***Glostatus aculeus*, sp. n.**

ZooBank taxon LSID:

A1BFCC6C-FBB8-471A-983B-421F66F09B57

(Figs 149, 150, 153, 154, 157, 158)

Diagnosis. Scutellum raised from the surrounding elytra; elytral base very strongly bisinuate. Both sexes with raised or carinated interstriae, on lower declivity with interstriae 5 and 7 discontinued by interstriae 3; males with a pair of very long spines on lower declivity, in females reduced to a pair of obtuse spines or tubercles.

Description, male. Length 1.9–2.0 mm (not including the long spines), 1.8–1.9× as long as wide. Colour light (teneral) to dark (mature) brown. Frons impressed from epistoma to a transverse carina just below upper level of eyes; vestiture scant. Eyes separated above by 2.4–2.6× their width. Antennal funiculus 6-segmented, with dense, long, terminally inflated setae; club with three slightly procurved sutures. Pronotum much broader than long, with broad asperities on the anterior slope, including two raised teeth on the anterior margin. Scutellum raised above the elytra, covered by dense scale-like setae. Elytral striae impressed, each interstriae subcarinate, odd-numbered interstriae more strongly raised, where only 1, 3 and 9 continue to apex, with 5 and 7 blocked by the raised interstriae 3

below a pair of long spines just before apex. Elytral ground vestiture consisting of dense, short and scale-like setae, main setae similar to ground vestiture. Protibiae with 7 or 8 lateral denticles, meso- and metatibiae with 8 or 9 tiny lateral and apical denticles. Proventriculus with anterior plate undivided, with angular transverse rows of tiny sharp teeth; apex of closing teeth bushy. Aedeagus with apophyses free, as long as penis; with a large complex basal sclerite; tegmen open dorsally, with tiny, blunt manubrium; spiculum gastrale forked, a little thicker than apophyses.

Female similar to male except transverse carina on frons slightly less prominent, eyes separated above by 3.0–3.2× their width, elytral interstriae less raised and odd-numbered interstria only slightly higher than others, and the two spines on declivital interstriae 3 short, obtuse.

Type material. Holotype male: Tanzania, Udzungwa, Megombera, 200 m. alt. 14.11.2009 (#4), [GIS: -7.81, 36.97] B. Jordal, leg. [ZMUB]. Female allotype and 10 paratypes: same data as holotype [7 in ZMUB, 4 in NHMW].

Etymology. From the Latin masculine noun *aculeus*, meaning stinger, or thorn, referring to the sharp spines on the male declivity.

Distribution. Tanzania.

Biology. Broods of variably sclerotised (teneral) adults were dissected from the phloem layer of an old branch of about 15 cm in diameter on the ground.

Identification key to the species of *Glostatus*

Although the different sexes or even individuals of the same sex may differ greatly, the identification key focuses where possible on the least ambiguous characters. If particularly striking male characters are included in the key, the female state (and exceptions) is used in cases of ambiguity. Because of the nearly continuous distribution of some character states, it is helpful to run the key in multiple directions in order to resolve uncertainties.

- 1 Antennal club with three strongly procurved sutures, anterior median point of a suture reaching beyond posterior lateral margin of next suture..... 2
- Sutures in club either transverse or only weakly procurved (middle of suture not exceeding lateral edge of next suture).. 8
- 2 Stout species, < 1.9× as long as wide; elytral ground vestiture very short, scale-like..... 3
- Body more elongated, > 2.0× as long as broad; ground vestiture at least twice as long as wide..... 4
- 3 Interstitial erect setae short and scale-like; funiculus 6-segmented; Zambia *G. seydeli*
- Interstitial erect setae long and hair-like, slightly spatulate at tips; funiculus 5-segmented; Ghana *G. ghanaensis*
- 4 Pronotal summit with 4–5 asperities forming a contiguous transverse row or sharp carina; interstitial main setae either scale-like or slightly spatulate, distinct from setae in ground vestiture 5
- Pronotal summit with irregularly spaced asperities; interstitial main setae bristle-like and likely to be confused with the slightly shorter ground vestiture of similar type..... 7
- 5 Pronotal summit with transverse row of asperities or short carina, eyes in both sexes separated above by less than 0.7× the width of an eye; body length 2.1–2.4 mm; Tanzania.....
..... *G. procurvus* sp. n.

- Pronotal summit with a long transverse carina; eyes separated by more than width of an eye 6
- 6 Main interstitial setae bristle-like, 5–10× as long as broad; body length 2.6–3.2 mm; Tanzania.....*G. carinifer*
- Main interstitial setae scale-like, about 2× as long as broad; body length about 2.0 mm; South Africa..... *G. delicatus*
- 7 Body 2.3× as long as wide; pronotal asperities almost as broad as antennal club; elytral disk longitudinally weakly curved, declivity steep, occupying about one-quarter of elytral length; Tanzania.....*G. nigrivestis*
- Body 2.0× as long as wide; pronotal asperities as broad as thickness of the scapus; elytral disk slightly impressed on posterior half; declivity long and gently curved, extending almost half the length of elytra; Tanzania, Kenya *G. declivedepressus*
- 8 Interstitial ground vestiture very short, usually as broad as long, appearing dot-like; interstitial main setae short, spatulate and dense; pronotum in front view evenly rounded; body shape stout, <2.1× as long as broad (except *G. spinicarinatus* 2.5× as long as wide) 9
- Ground vestiture, at least on posterior half of elytra, distinctly longer than wide; interstitial main setae usually bristle- or hair-like (some species have short scale-like setae); pronotal summit extended dorsally, in front view appearing trapezoidal; body more elongated, all except one species >2.2× as long as wide 15
- 9 Elytral interstriae rounded in its entire length; declivity in males and females without projections..... 10
- Elytral interstriae in both sexes carinated on posterior half, declivity with prolonged declivital spines (smooth in female *G. spinicarinatus*) 12
- 10 Interstitial main setae barely larger than ground vestiture, almost contiguous; setae on anterior fifth of metasternum and first abdominal ventrite bifid; Nigeria, Cameroon *G. leprosus*
- Interstitial main setae 2–4× longer than ground vestiture, separated by more than their length; all setae on metasternum and first abdominal ventrite not divided 11
- 11 Stout, about 1.9× as long as wide; main interstitial setae 2× as long as broad; Cameroon, Nigeria..... *G. xyloctonus*
- More elongated, about 2.1× as long as wide; main interstitial setae 3–4× as long as broad; Tanzania..... *G. paraxyloctonus* sp. n.
- 12 Elongated species, >2.2× as long as wide; male funiculus with scant, fine setae; male declivity with interstriae 1 narrowly raised in the form of a tall tuberculated carinae, terminating in two large spines; female elytra without carinae and spines; Zambia.....*G. spinicarinatus*
- Stout species, <2.0× as long as wide; male funiculus with many long and terminally expanded setae; male declivity with interstriae 1 at most slightly raised and without spines; female declivity with short spines or pair of tubercles 13
- 13 Elytral declivity with one pair of pyramidal spines on interstriae 3, at base as wide as long (a shorter but distinct pair of tubercles present in females); contour of declivity otherwise smooth; Zambia*G. bispinosus*
- Elytral declivity and disk roughly carinated and with more than one pair of tubercles and spines 14
- 14 Lower apical margin of elytra horizontally extended, flap-like; male with three pairs of equally long spines on lower declivity, upper declivital margin circumscribed by a series of small spines; female with many short tubercles; Kenya, Zambia.....*G. multispinosus*
- Lower apical margin of elytra vertical, not extended; male with one pair of long spines and several short tubercles; female with one distinct pair of short spines and one or two small tubercles terminating in carinated interstriae; Tanzania *G. aculeus* sp. n.
- 15 Large species, 3.9 mm long; interstitial main setae very long, fine and hair-like; Democratic Republic of Congo..... *G. vrydaghi*
- Not longer than 3.2 mm; main interstitial setae either similar to or likely to be confused with ground vestiture, or erect and bristle-like, or spatulate 16
- 16 Length 1.7–1.9 mm, elongated species, >2.5–2.7× as long as wide; Kenya *G. gracilior*
- Length 1.3–3.2 mm, <2.4× as long as wide 17
- 17 Elytral ground vestiture on disc scant and hair-like, on declivity dense and scale-like; pronotum with a maximum of 14 very large square asperities, similar in size to the antennal club; Egypt..... *G. tredli*
- Elytral ground vestiture of the same type from elytral base to apex, sometimes longer on declivity; pronotal asperities usually more numerous and smaller than the club 18
- 18 Elytral ground vestiture very short, barely longer than broad, appearing dot-like; interstitial main setae scale-like, almost as broad as long 19
- Elytral ground vestiture bristle-like, erect or semi-recumbent; interstitial main setae bristle-like or spatulate, at least 3× as long as broad..... 21
- 19 Broadly spatulate setae on elytral interstriae mainly confined to declivity; body length 2.3–2.5 mm; South Africa *G. giganteus*
- Spatulate setae along entire interstriae; body length 1.6–2.0 mm 20
- 20 Antennal club almost as broad as long; body length 1.3–1.8 mm; Tanzania, Malawi*G. mkulumusius*
- Antennal club almost twice as long as broad, body length 1.7–2.0 mm; Kenya *G. xanthophloae*
- 21 Elytral striae distinctly impressed, punctures subcontiguous, interstriae sharply defined..... 22
- Elytral striae weakly impressed, punctures either well separated or irregularly placed (striae may be more distinct in two species but if asperities on pronotum are narrow and sharp then follow this option)..... 24
- 22 Elytral interstriae carinate in posterolateral areas, ending in a sharp tubercle on interstriae 5 and 9 at the declivity, other declivital interstriae smooth; South Africa *G. tuberculatus* sp. n.
- Elytral interstriae uniform throughout, declivity without tubercles 23
- 23 Antennal funiculus 6-segmented; interstriae slightly raised, rounded, main setae 3–4× longer than ground vestiture; abdominal ventrites 2–4 with transverse row of split setae; South Africa *G. pondoanus*
- Antennal funiculus 5-segmented; interstriae raised and flattened on posterior half of elytra, main setae about twice the length of ground vestiture; abdominal ventrites with scale-like setae; Zimbabwe, Zambia..... *G. dispar*
- 24 Elytral ground vestiture erect; interstitial main setae blunt or acuminate bristles 25
- Elytral ground vestiture largely semirecumbent; interstitial main setae clearly spatulate 28
- 25 Longest elytral setae as long as width of tibiae; eyes separated above in both sexes by more than width of an eye; funiculus 6-segmented; body length 3.0–3.4 mm; Kenya, Tanzania..... *G. acaciae*

- Longest elytral setae much shorter than width of tibiae; eyes separated above in males by less than width of an eye; funiculus 5- or 6-segmented; body length < 2.8 mm 26
- 26 Elytral setae only slightly longer on declivity; body length 2.2–2.7 mm; Democratic Republic of Congo, Tanzania, Kenya 27
- Elytral setae 2–4× longer on declivity; body length 1.5–2.1 mm; Kenya *G. scutiae*
- 27 Antennal funiculus 5-segmented; pronotum granulated between asperities; elytral ground vestiture dagger-shaped, on disc only 1–2× as long as broad; Democratic Republic of Congo *G. nunbergi* nom. n.
- Funiculus 6-segmented; pronotum smooth between asperities; ground vestiture on elytral disc 3–5× longer than broad; Tanzania, Kenya *G. acutidentis* sp. n.
- 28 Antennal funiculus 6-segmented; body length 2.5–3.0 mm, 2.1–2.3× as long as wide; Kenya *G. kenyae*
- Antennal funiculus 5-segmented; body length 1.7–1.9 mm, 2.3–2.5× as long as wide; Kenya *G. tenuis* sp. n.

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REFERENCES

- BEAVER R.A. & LÖYTTYNIEMI K. 1985: Bark and ambrosia beetles (Coleoptera: Scolytidae) of Zambia. — *Rev. Zool. Afr.* **99**: 63–85.
- BRIGHT D.E. & SKIDMORE R.E. 1997: *A catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 1 (1990–1994)*. NRC Research Press, Ottawa, 368 pp.
- BROWNE F.G. 1962: Two new genera of the Scolytidae (Coleoptera). — *W. Afr. Timber Borer Res. Unit Tech. Bull.* **5**: 75–80.
- BROWNE F.G. 1963a: Some new Scolytidae (Coleoptera) from West Africa. — *Ann. Mag. Nat. Hist.* **6**: 241–248.
- BROWNE F.G. 1963b: Taxonomic notes on Scolytidae (Coleoptera). — *Entomol. Ber. (Amsterdam)* **23**: 53–59.
- BROWNE F.G. 1973: Some Scolytidae (Coleoptera) from tropical Africa. — *Rev. Zool. Bot. Afr.* **87**: 279–297.
- CASTRESANA J. 2000: Selection of conserved blocks from multiple alignments for their use in phylogenetic analysis. — *Mol. Biol. Evol.* **17**: 540–552.
- EDGAR R.C. 2004: MUSCLE: multiple sequence alignment with high accuracy and high throughput. — *Nucl. Acids Res.* **32**: 1792–1797.
- EGGERS H. 1919: 60 neue Borkenkäfer (Ipidae) aus Afrika, nebst zehn neuen Gattungen, zwei Abarten. — *Entomol. Blätt.* **15**: 229–243.
- EGGERS H. 1927: Neue Borkenkäfer (Ipidae, Col.) aus Afrika (Nachtrag III). — *Rev. Zool. Bot. Afr.* **15**: 172–199.
- EGGERS H. 1936: Neue Borkenkäfer (Coleoptera, Scolytidae) aus Afrika, Nachtrag VI. — *Ann. Mag. Nat. Hist.* **18**: 33–40.
- EGGERS H. 1940: Zur Synonymie der Borkenkäfer (Ipidae, Col.). — *Entomol. Blätt.* **36**: 61–62.
- EICHHOFF W.J. 1872: Neue exotische Tomiciden Arten. — *Berl. Entomol. Z.* **15**: 131–137.
- EICHHOFF W.J. 1878: Ratio, descriptio, emendatio eorum Tomi-cinorum qui sunt in Dr. Medin. Chapuiss et autoris ipsius collectionibus et quos praeterea recognovit. — *Mém. Soc. Roy. Sci. Liège (Ser. 2)* **8**: 1–531, 5 pls.
- JOHNSON A.J., MCKENNA D.D., JORDAL B.H., COGNATO A.I., SMITH S.M., LEMMON A.R., LEMMON E.M. & HULCR J. 2018: Phylogenomics clarifies repeated evolutionary origins of inbreeding and fungus farming in bark beetles (Curculionidae, Scolytinae). — *Mol. Phylogenet. Evol.* **127**: 229–238.
- JOHNSON A.J., HULCR J., SMITH S.M., COGNATO A.I., KNIZEK M., ATKINSON T.H., MANDELSHTAM M.Y., PARK S., YOU L. & JORDAL B.H. 2020: Revision of the bark beetle genera within the former Cryphalini (Curculionidae: Scolytinae). — *Insect Syst. Divers.* **4**: 1–81.
- JORDAL B.H. 1998: A review of *Scolytodes* Ferrari (Coleoptera: Scolytidae) associated with *Cecropia* (Cecropiaceae) in the northern Neotropics. — *J. Nat. Hist.* **32**: 31–84.
- JORDAL B.H. & COGNATO A.I. 2012: Molecular phylogeny of bark and ambrosia beetles reveals multiple origins of fungus farming during periods of global warming. — *BMC Evol. Biol.* **12**: 133, 10 pp.
- MUGU S., PISTONE D. & JORDAL B.H. 2018: New molecular markers resolve the phylogenetic position of the enigmatic wood-boring weevils Platypodinae (Coleoptera: Curculionidae). — *Arthropod Syst. Phylog.* **76**: 45–58.
- NUNBERG M. 1967: Zur Kenntnis der afrikanischen Borken- und Kernkäferfauna (Coleoptera, Scolytidae et Platypodidae). — *Rev. Zool. Bot. Afr.* **76**: 313–340.
- NUNBERG M. 1973: Zur Kenntnis der Borken- und Kernkäfer-Fauna (Coleoptera: Scolytidae et Platypodidae) des Ruwenzori-Gebirges. — *Explor. Parc Nat. Virunga (Ser. 2)* **23**: 3–29.
- NYLANDER J.A.A. 2004: *MrModeltest v. 2*. Evolutionary Biology Centre, Uppsala University. URL: <https://github.com/nylander/MrModeltest2>
- PISTONE D., GOHLI J. & JORDAL B.H. 2018: Molecular phylogeny of bark and ambrosia beetles (Curculionidae: Scolytinae) based on 18 molecular markers. — *Syst. Entomol.* **43**: 387–406.
- RAMBAUT A., SUCHARD M.A., XIE D. & DRUMMOND A.J. 2014: *Tracer v1.6*. URL: <http://tree.bio.ed.ac.uk/software/tracer/>
- RONQUIST F. & HUELSENBECK J.P. 2003: MRBAYES 3: Bayesian phylogenetic inference under mixed models. — *Bioinformatics* **19**: 1572–1574.
- SCHEDL K.E. 1939: Scolytidae und Platypodidae. 59 Beitrag, I. Zur synonymie der Borkenkäfer. — *Rev. Zool. Bot. Afr.* **32**: 379–387.
- SCHEDL K.E. 1941: Neue afrikanische Gattungen und Arten. — *Rev. Zool. Bot. Afr.* **34**: 379–424.
- SCHEDL K.E. 1950: Fauna Aethiopica, III. 103 Contribution. — *Bull. Inst. Roy. Sci. Nat. Belg.* **26**(50): 1–36.
- SCHEDL K.E. 1956: Breeding habits of arboricole insects in Central Africa. In Becker E.C. (ed.): *Proceedings, 10th International Congress of Entomology, Montreal*, pp. 183–197.
- SCHEDL K.E. 1957a: Bark and timber beetles from South Africa. 156 Contribution. — *Ann. Mag. Nat. Hist.* **12**: 149–159.
- SCHEDL K.E. 1957b: Scolytoidea nouveaux du Congo Belge, II. Mission R. Mayne – K.E. Schedl 1952. — *Ann. Mus. Roy. Congo Belge Tervuren (Ser. 8, Sci. Zool.)* **56**: 1–162.
- SCHEDL K.E. 1957c: Some new bark- and timber-beetles from East Africa. 156 Contribution. — *Ann. Mag. Nat. Hist.* **12**: 865–883.
- SCHEDL K.E. 1958: A few new African Scolytidae in the British Museum. — *Ann. Mag. Nat. Hist.* **13**: 557–560.
- SCHEDL K.E. 1959: Some more new Scolytidae from British East Africa. 171. Contribution to the morphology and taxonomy of the Scolytidae. — *Ann. Mag. Nat. Hist.* **13**: 705–710.

- SCHEDL K.E. 1961: Scolytidae und Platypodidae Afrikas. Band I (part). Familie Scolytidae. — *Rev. Entomol. Moçambique* **4**: 335–742.
- SCHEDL K.E. 1962a: On some African bark and timber beetles. — *W. Afr. Timber Borer Res. Unit Tech. Bull.* **5**: 57–74.
- SCHEDL K.E. 1962b: Scolytidae und Platypodidae Afrikas. Band III. Familie Platypodidae. — *Rev. Entomol. Moçambique* **5**: 595–1352.
- SCHEDL K.E. 1964: Zur Synonymie der Borkenkäfer, XV. — *Reichenbachia (Dresden)* **3**: 303–317.
- SCHEDL K.E. 1970: South African bark and timber beetles. — *Ann. Transvaal Mus.* **26**: 177–182.
- SCHEDL K.E. 1979: Die typen der Sammlung Schedl Familie Scolytidae (Coleoptera). *Kataloge der wissenschaftlichen Sammlungen der Naturhistorischen Museums in Wien (Entomologie)*, Band 3 Heft 2. Naturhistorisches Museum, Wien, 286 pp.
- SCHEDL K.E. 1980: Zur Synonymie der Borkenkäfer 28, 339 Beitrag. — *Z. Arbeitsgem. Oesterr. Entomol.* **31**: 117–124.
- SWOFFORD D. 2002: *PAUP*. Phylogenetic Analysis Using Parsimony (*and Other Methods)*. Ver. 4. Sinauer Associates, Sunderland, Massachusetts.
- WOOD S.L. 1980: New genera and new generic synonymy in Scolytidae (Coleoptera). — *Great Basin Nat.* **40**: 89–97.
- WOOD S.L. 1984: New generic synonymy and new genera of Scolytidae (Coleoptera). — *Great Basin Nat.* **44**: 223–230.
- WOOD S.L. 1986: A reclassification of the genera of Scolytidae (Coleoptera). — *Great Basin Nat. Memoirs* **10**(2): 1–110.
- WOOD S.L. & BRIGHT D.E. 1992: A catalog of Scolytidae and Platypodidae (Coleoptera). Part 2: Taxonomic index. — *Great Basin Nat. Memoirs* **13**: 1–1553.

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