

# CLAMBIDAE OF THE ETHIOPIAN REGION (COLEOPTERA: EUCINETOIDEA)

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Endrödy-Younga, S., 1993. Clambidae of the Ethiopian Region (Coleoptera: Eucinetoidae). *Annals of the Transvaal Museum* 36(8): 109–138.

The revision of the Ethiopian Clambidae (Coleoptera) is based on a large collection of material mainly from South Africa and Ghana. Five new species of *Clambus* are described: *C. natalensis*, *C. ndumu*, *C. phallus*, *C. silvaticus* and *C. clavatus*, all from South Africa, as well as two new subspecies, *C. phallus litoralis* from South Africa and *C. splendens palmae* from Ghana. A new synonym, *C. minutus infuscatus* Endrödy-Younga, is established as an objective synonym of its nominate species. *Clambus simsoni* Blackburn, originally described from Australia, is recorded from Réunion and is the most common species in South Africa. The western Palearctic *Clambus minutus* Sturm is recorded from Central and South Africa.

Keywords: Africa, Taxonomy, Historical Biogeography, Coleoptera, Clambidae, *Calyptomerus*, *Clambus*.

## INTRODUCTION

The first two specimens of Clambidae from the Ethiopian Region were collected at the turn of the century in the vicinity of Cape Town and described as *Calyptomerus capensis* by Péringuey in 1892. Five specimens of *Calyptomerus dubius* (Marshall, 1802), collected near Tulbagh and Stellenbosch, remained unidentified until 1961. Another specimen, probably collected earlier than those of Péringuey and bearing the label 'Capland,' was found in the collection of the Natural History Museum of Budapest and described by me (Endrödy-Younga, 1961b) as *Clambus priscus*. More recent material became available through expeditions to Zaire between 1951 and 1954 by the Musée Royal de l'Afrique Centrale, Tervuren. This material (approximately 40 specimens) as well as Kittenberger's East African Collection (Budapest), resulted in the description of six new species (Endrödy-Younga, 1959, 1961b). In Ghana I collected about 100 specimens between 1965 and 1971; these specimens have now been identified and surprisingly only four species, *Clambus pygmaeus* Endrödy-Younga, *C. desaegeri* Endrödy-Younga, *C. variolosus* Endrödy-Younga and *C. splendens* Endrödy-Younga (represented by a new subspecies, *C. s. palmae*) are present. These four species are known from Central and/or East Africa and two of them, *C. pygmaeus* and *C. variolosus*, have also been identified from the Ivory Coast.

An intensive faunal survey in Southern Africa, from 1973 to the present, has yielded over 1100 specimens of Clambidae. Slightly fewer than half of them belong to *C. simsoni* Blackburn (523) and about one-third to *C. capensis* (Péringuey) (308),

the two most widely distributed species in Southern Africa. The remaining 270 specimens are divided among the other 12 Ethiopian species.

Of the 2800 samples collected during the survey, a total of 107 samples from 38 localities included specimens of Clambidae. Occasionally more than one species was collected at the same locality; for instance, three species were collected at Karkloof and four at the Weza Forest Station, mostly in different samples. In individual samples, no more than two species were found together, and pairs of species appeared in different combinations (which in six instances included *C. simsoni*).

Current observations indicate that, with the exception of *C. priscus* Endrödy-Younga and *C. phallus litoralis* subsp. nov., the preferred habitat of clambids is forest. Twelve Southern African and two exclusively tropical species were found in habitats ranging from temperate and tropical rainforest to moderately mesic forest with a dense canopy. The habitat of *C. vinsoni* Endrödy-Younga is not known. *C. priscus* and *C. phallus litoralis* were collected in the litter of isolated low bushes in Atlantic coastal scrub, and in one instance in *Flora capensis* not far from the coast. The former species is the only one that does not occur in forest. *Clambus capensis* shows the least conservatism with regard to habitat, having been collected in wooded, open or bushy areas of the Transvaal, alpine marsh in the Cedarberg mountains (together with *Calyptomerus dubius*), coastal scrub, and only on two occasions in mesic forest. It is the only species collected in two relict forest patches on the edge of the Namib Desert, at Naukluft and in the Richtersveld mountains.

The collecting methods reflect to some extent the microhabitats of Clambidae (the number of samples in which clambids were found are given in parentheses): sifted vegetation litter (32), flight intercept traps (17), baited groundtraps (14), UV-light traps (11), shore-washing (9), beating (5), flood debris (3), decaying fruit, dung, grassnetting (2), air plankton (2), malaise traps (1), and general collection and unspecified (7). The most successful methods with regard to the numbers of species obtained were: sifted vegetation litter (8), shore-washing (6) and baited groundtraps (4).

### HISTORICAL BIOGEOGRAPHY

The Clambidae of the Ethiopian Region can be regarded as an Old World fauna with the intrusion of some circumtropical elements. The relationships of Ethiopian clambids can only be clarified once a cladistic study of the world fauna has been undertaken, but it is apparent that no temperate Gondwana elements (such as the genus *Sphaerotherax* from Australia, New Zealand and Chile) are present.

Circumtropical elements are represented in the Ethiopian fauna by *Clambus desaegeri* and *C. pygmaeus* Endrödy-Younga. This clearly recognizable evolutionary lineage (with long setae on the dorsal surface and metasternum) also occurs in the tropical regions of America, Asia and Australia.

Another characteristic of the Ethiopian fauna is that only a few species are widely distributed in the continental tropical belt. Other tropical areas that have been sufficiently collected (Asia and Central America) are characterized by a high number of species with restricted distributions. The evolutionary conservatism of the Ethiopian species is not readily understood.

The Ethiopian fauna of Clambidae fall into four distribution categories, as shown in the distribution maps (Figs 1, 2, 6, 11 and 13).

#### African tropical elements (Fig. 1, 2)

*Clambus splendens* (including both of its subspecies), *C. pygmaeus* and *C. variolosus*, occur in the equatorial forest belt of the continent from the Ivory Coast in West Africa to eastern Zaire, and one of them seems to be a relict at mid-altitudes on Mount Kilimanjaro (Kibosho, type locality of *C. splendens*) in East Africa. *Clambus vinsoni* (Fig. 2) is restricted to the islands of Mauritius and Réunion; its phylogenetic affiliation is uncertain but might be Oriental. *Clambus elgonicus* Jeannel & Paulian is known only from its

tropical East African type locality and its relationship is also uncertain.

#### Ethiopian elements (Fig. 2)

This category comprises species whose distributions include parts of tropical West and Central Africa as well as temperate and subtropical Southern Africa.

*Clambus hastatus* Endrödy-Younga is known only from two localities: Garamba National Park in eastern Zaire, and Mtubatuba (in forest approximately 30 km inland from the coast) in southern Zululand. The two localities have little in common with regard to environmental conditions. This species might also have an Oriental relationship. An even larger distribution area has been recorded for *C. desaegeri*, from the Ivory Coast, through Ghana to Zaire, and Ntsubane on the north coast of Transkei. (Most of the specimens from Ghana were collected under bunches of ripe and harvested oil-palm nuts, and at Ntsubane under fallen and decaying *Cussonia* fruit.) *Clambus desaegeri* and *C. pygmaeus* belong to a circumtropical lineage of Clambidae (characterized by long and erect setae on the dorsal surface and metasternum) and are sister species, representing the first occurrence in the family where the aedeagi do not differ. *Clambus pygmaeus* is known only from tropical rainforest, whereas *C. desaegeri* also occurs in temperate mesic forest in Transkei. In West Africa (Ghana), *C. pygmaeus* and *C. desaegeri* were taken in the same sample.

#### Southern African elements (Figs 6, 11, 13)

Seven species of the genus *Clambus* are known exclusively from Southern Africa and are apparently endemic to the subcontinent. One of the species, *C. capensis*, is widely distributed in Southern Africa where it is known from virtually all areas suitable to the family, but only from a single locality along the east coast (Struisbaai). The remaining six species occupy two distinct distribution areas. *Clambus priscus* and *C. phallus* spec. nov. occur along the southwestern Cape coast, whereas *C. natalensis* spec. nov., *C. silvaticus* spec. nov., *C. clavatus* spec. nov. and *C. ndumu* spec. nov. occur in the area between the Indian Ocean coast and the Drakensberg mountain range. It is likely that all these species with the exception of *C. ndumu*, are members of the same broad evolutionary lineage. *Clambus ndumu* from subtropical northern Zululand might represent a southern extension of a wider distribution, possibly as a member of the 'Ethiopian element.'

### Intercontinental elements

This category includes three species, two of which, *Calyptomerus dubius* and *Clambus minutus* Sturm, also occur in the western Palaearctic. The third species, *Clambus simsoni*, is found in Australia. The origin of these distribution patterns is unclear, but the possibility of inadvertent transportation by man, particularly in the case of *Calyptomerus dubius* and *Clambus simsoni*, should be considered.

*Calyptomerus dubius* has been reported from Hobart, Tasmania, under the name *Clambus corylophoides* Lea, 1912 (synonymized by Endrödy-Younga, 1974), but since the original description no further material has been forthcoming from the Australian Region. The Tasmanian specimens, if correctly labelled, may represent an unsuccessful colonization. In South Africa the species is widespread in the southwestern Cape, where it has been frequently collected from the turn of the century to present. This species is not known from other parts of the Ethiopian Region.

*Clambus minutus* is widespread in the western Palaearctic, including North Africa and the Canary Islands. It is known from Lake Kivu in Zaire and is also widely distributed in the Natal and Transvaal Provinces of South Africa.

*Clambus simsoni* is the most common species both in South Africa and in Australia. On both continents it occurs in a wide range of natural forest habitats. Its occurrence on Réunion is clearly a post-Gondwana event (of natural or human origin) because the island itself is of a much younger age.

Intercontinental distributions are also known, even at the species level, in other parts of the world. Examples are the Nearctic-Japan-Himalaya distribution of *Clambus howdeni* Endrödy-Younga, 1981 (see Endrödy-Younga, 1981, 1986) and the Mediterranean-Taiwan distribution of *Clambus pilosellus* Reitter (Endrödy-Younga, 1960b, 1986).

A number of generic distributions in the family are similarly unusual and difficult to explain, but are certainly not the result of human transportation. An example is the genus *Sphaerotherax* Endrödy-Younga, eleven species of which occur in Australia and New Zealand. Two further species of the genus were recently discovered in Chile, and are sister species of one of the species found in New Zealand. This is clearly a relict distribution of Gondwana age. The genus *Calyptomerus* Redtenbacher includes three western Palaearctic species and an isolated species in the northern Rocky Mountains of British Columbia and Alaska.

The latter species is closest to species in the Caucasian mountains and not to any in western Europe (Endrödy-Younga, 1961a). A wingless species of the genus *Loricaster* Mulsant & Rey has a circum-Mediterranean distribution. Its sister species is known from California, with seven more distantly related species in the Sonoran region.

It is thus clear that occasional conservatism in phenotypic change is a genetic feature of the family. However, the possibility of human transportation with regard to at least two of the Ethiopian species, *Calyptomerus dubius* and *Clambus simsoni*, should be investigated.

### Family CLAMBIDAE Jacquelin du Val

Clambites Jacquelin du Val, 1857: 113.

Clambidae Thomson, 1859: 64.

The family belongs to the superfamily Eucineoidea in the suborder Polyphaga.

Small, 0.6 and 2.0 mm in length. Body convex, in curled-up position clypeus resting against metasternum. Metacoxa deeply excavate with ventral edge extending into a large coxal plate concealing posterior leg. Elytra cover the body and are never striate or with serial punctures. Head broad, clypeus semicircular (Ethiopian genera), palpi small. Antennae 10-segmented (Ethiopian genera), but 8-segmented in *Loricaster*, always with 2-segmented club. Tarsi 4 or 3-segmented. Abdomen with five or six visible sternites. Procoxae projecting and transverse. Larvae of some species described by Crowson (1979).

The family has been subdivided into three subfamilies (Crowson, 1979), two of which, the Calyptomerinae and Clambinae, are represented in the Southern African fauna by a single genus. The third subfamily, Acalyptomerinae (Crowson, 1979), apparently the most plesiomorphic with a single described species, does not occur in Southern Africa. The subfamily Calyptomerinae is monotypic, whereas Clambinae is worldwide and besides *Clambus* includes the genus *Loricaster* from the Mediterranean and Sonoran regions, and *Sphaerotherax* Endrödy-Younga (1959) in the Australian-New Zealand region as well as in South America (undescribed).

In the Ethiopian Region the generic distinction between *Calyptomerus* and *Clambus* (see below) also applies to the respective subfamilies. To include the exotic genera, Clambidae is described as having: antenna 8-segmented, metasternum without median transverse bend, parameres of aedeagus bilobed (*Loricaster*); eye partially free, third antennal segment hardly longer than fourth, parameres bilobed or deeply incised (*Sphaerotherax*).

The family Clambidae is composed of five genera worldwide with more than 150 species, most of which are in *Clambus*, the only cosmopolitan genus.

### KEY TO THE ETHIOPIAN GENERA OF CLAMBIDAE

- 1(2) Anterior and posterior margins of pronotum meeting at an acute angle without a truncate or arcuate lateral margin (Fig. 3B). Eye completely free laterally (Fig. 3A). Metasternum evenly convex over its entire length. Abdomen with six visible sternites. Parameres bipartite (Fig. 3C) ..... *Calyptomerus* Redtenbacher
- 2(1) Pronotum distinctly truncate or arcuate, broad lateral margin (Fig. 17A, B). Eye completely divided into a dorsal and a ventral half by the genal margin (Fig. 4). Surface of metasternum sharply bent along an arcuate transverse edge or crest (Fig. 15A–C). Abdomen with five visible sternites. Parameres completely fused into a single plate ventral to the penis (Fig. 5) ..... *Clambus* Fischer von Waldheim

#### Genus *CALYPTOMERUS* Redtenbacher

*Calyptomerus* Redtenbacher, 1849: 18, 159; Endrödy-Younga, 1959: 84, 1961a: 404, 1971: 268, 1974: 1, 1981: 34, 1990b: 249; Crowson, 1960: 51, 1967: 211, 1979: 611.

*Comazus* Fairmaire & Laboulbène, 1854–1856: 312.

Type species: *Calyptomerus alpestris* Redtenbacher, 1849, by original monotypy.

Small, transversely convex, reddish brown, moderately shiny, densely and finely punctate, evenly covered by densely set long and yellowish hairs that are closely recumbent to the surface. — Head broad, clypeus broadly arcuate, moderately convex. Eyes occupy lateral angles of head and are completely free, or genal angle drawn slightly onto anterior angle (European *C. alpestris* Redtenbacher, 1849). — Pronotum very broad and short; almost straight anterior margin and arcuate posterior margin meet in a single, acute lateral angle. — Apex of elytra truncate (*C. dubius*) or evenly angled (all other species). — Metasternum gently convex between mesosternum and large metacoxal plates, not sharply bent along a transverse crest as in *Clambus*. — Antennae 10-segmented with two enlarged basal and two club segments. — Aedeagus consists of an open, ring-shaped basal plate, a pair of basally geniculate parameres and a pointed tongue-shaped penis that is shorter than the parameres.

DISTRIBUTION. The genus includes four species: two in Europe and the Mediterranean region, one in the Caucasian mountain region and one in the northern Rocky Mountains of the United States and Canada. One of the western Palaearctic species is also known from South Africa and Tasmania.

#### *Calyptomerus dubius* (Marshall), Fig. 3

*Scaphidium dubium* Marshall, 1802: 234.

*Comazus enshamensis* Stephens, 1829: 184; Johnson, 1966: 186.

*Calyptomerus dubius*: Redtenbacher, 1849: 159; Wollaston, 1857: 147; Endrödy-Younga, 1959: 84, 1961a: 411, 1974: 2, 1990b: 249.

*Calyptomerus troglodytes* Fauvel, 1861: 576; Endrödy-Younga, 1959: 87.

*Clambus corylophoides* Lea, 1912: 458; Endrödy-Younga, 1974: 3.

Lateral margin of eye completely free. Lateral angle of pronotum pointed. Apex of closed elytra truncate. Pubescence even, hairs rather long, densely set, each 1.5 times longer than distance between their insertions, are reclinate.

Head broad and somewhat convex. Eye completely free, genal angle in front of eye rectangular and not extended onto the anterior corner of eye. — Posterior margin of pronotum evenly arcuate to the sharp single lateral angle of which apex is not rounded. — Elytra much longer than combined breadth (40:33), broadest in anterior third of length, evenly contracting posteriorly, apex broadly truncate. Sutural profile highest in anterior quarter of length, from there almost straight to apex. — Aedeagus 0.3 mm long, penis shorter than parameres.

Length 1.10–1.60 mm, breadth 0.70–0.85 mm.

DISTRIBUTION. Circum-Mediterranean and central Europe; South Africa: southwestern Cape; Tasmania.

TYPE MATERIAL. *Scaphidium dubium* Marshall. Type specimen not seen, but probably in National History Museum, London.

*Comazus enshamensis* Stephens. Lectotype without locality, designated by Johnson (1966), in Natural History Museum, London.

*Calyptomerus troglodytes* Fauvel. Holotype in Museum National d'Histoire Naturelle, Paris.

*Clambus corylophoides* Lea. Lectotype ♂, Hobart, Tasmania, leg. A. M. Lea, designated by Endrödy-Younga (1974), in South Australian Museum, Adelaide.

MATERIAL EXAMINED. 5 ♂♂ (all dissected), 6 ♀♀ and 13 additional specimens, all in Transvaal Museum, Pretoria.

*Localities:* SOUTH AFRICA: SW Cape Prov., Nuweberg Mt., camp, 34° 08' S, 19° 01' E, 15.11.1973, air plankton, sunset, leg. Endrödy-Younga, E-Y: 259; 2 *idem*, but at light, E-Y: 260; 1 Cederberg mountains, jeep track, 1100 m, 32° 28' S, 19° 14' E, 7.11.1983, sifted marsh shore, leg. Endrödy-Younga, E-Y: 2055; 5 specimens from Stellenbosch and Tulbagh from early collections in the South African Museum, Cape Town, were discussed by Endrödy-Younga (1961a).

**ECOETHOLOGY.** This species was collected at two localities in the southwestern Cape. The Nuweberg locality is on forested banks of a mountain river, the Cedarberg mountains locality is a moderately shaded mountain marsh. At Nuweberg all specimens were collected in flight, but in the Cedarberg they were sifted from wet vegetation litter on the edge of a marsh.

**Genus CLAMBUS** Fischer von Waldheim

*Clambus* Fischer von Waldheim, 1820: 20; Endrödy-Younga, 1959: 90, 1960b: 257, 1961b: 313, 1971: 268, 1974: 5, 1981: 42, 1990a: 125, 1990b: 257; Johnson, 1966: 6; Crowson, 1979: 611.

*Sternuchus* Leconte, 1850: 222.

Type species: *Dermestes armadillus* De Geer, 1774, by original monotypy.

Head broad, clypeus broadly arcuate between lateral angles; moderately to markedly convex. Eye completely divided by genal and collar margins; dorsal and ventral halves of eye of comparable size, only rarely reduced to few facets on the ventral side (e.g., the North African *C. kaszabi* Endrödy-Younga, 1960b). — Pronotum convex, broad and very long with distinct anterior and posterior lateral angles, or broadly arcuate lateral margin. — Elytra never truncate apically. — Metasternum divided by a sharp transverse edge or crest into slanting anterior and horizontal posterior halves. — Antennae 10-segmented with two enlarged basal and two club segments. — Aedeagus composed of completely fused parameres, and the penis which is characteristic of each species. Ring-shaped basal plate only occasionally joined to base of aedeagus. Structure of integument, pubescence and colour differ between species.

**DISTRIBUTION.** Worldwide, represented by about 100 species.

**KEY TO THE ETHIOPIAN SPECIES OF THE GENUS CLAMBUS**

- 1(4) Posterior half of elytra prominently punctate.
- 2(3) Dorsal surface with rather long but well-spaced recumbent hairs. Lateral margin of pronotum flat-arcuate convex. Posterior edge of metasternum smooth. Aedeagus symmetric, penis elongate (Fig. 5A–B) ... *C. simsoni* Blackburn
- 3(2) Dorsal surface apparently bare, only clypeus with short erect hairs. Lateral margin of pronotum emarginate in middle. Posterior edge of metasternum punctate-marginate. Aedeagus asymmetric, penis short and broad (Fig. 5C–D) ..... *C. variolosus* Endrödy-Younga
- 4(1) Posterior half of elytra not more strongly punctate than rest of dorsal surface, punctures microscopic.
- 5(14) Dorsal surface with prominent pubescence or erect setae.
- 6(11) Vestiture of the elytra uniform and recumbent, hairs much shorter than diameter of eye. Transverse crest of metasternum without long reclinate setae.
- 7(8) Collar margin without a protuberance behind lateral angle of head. Pubescence of dorsal surface denser, hairs recumbent, much more closely set than length of individual hairs ..... *C. natalensis* spec. nov.
- 8(7) Collar margin with a sharp protuberance behind lateral angle of head. Pubescence recumbent.
- 9(10) Pubescence shorter, hairs on elytra as long as distance between their insertions. Horizontal plate of metasternum in middle only one-sixth of lateral length. Aedeagus very narrow, filiform (Fig. 7A–B). Smaller, 0,8 mm. (Zaire, Natal and Réunion.) ..... *C. hastatus* Endrödy-Younga

- 10(9) Pubescence longer, hairs on elytra much longer than distance between their insertions. Horizontal plate of metasternum less reduced in middle, here 3,5 times shorter than lateral length. Aedeagus broader (Fig. 7C–D), larger, 1,0 mm long. (East Africa.)..... *C. elgonensis* Jeannel & Paulian
- 11(6) Vestiture of elytra consisting of very long erect setae that are distinctly longer than diameter of eye (Fig. 17A–B). Aedeagus very small, arcuate penis hardly longer than equally filiform and elongate paramere (Fig. 7E–F).
- 12(13) Elytra evenly set with long setae, numbering 60–80 per elytron (Fig. 17A). Lateral pubescence of pronotum consisting of basally broad setae (Fig. 17C). Sutural profile of elytra more evenly convex (Fig. 17A). Penis narrower, more arcuate (Fig. 7E)..... *C. pygmaeus* Endrödy-Younga
- 13(12) Setation of elytra sparse, in density similar laterally only to *C. pygmaeus*. Lateral pubescence of pronotum consisting of evenly narrow long hairs (Fig. 17D). Sutural profile of elytra more flattened posteriorly (Fig. 17B). Penis broader in lateral view (Fig. 7F)..... *C. desaegeri* Endrödy-Younga
- 14(5) Dorsal surface apparently bare or set with widely-spaced inconspicuous hairs, at least on pronotum and elytra hairs much shorter than distance between their insertions (Fig. 14B)
- 15(18) Lateral angle of head level with eye.
- 16(17) Larger, 1,10–1,25 mm. Dorsal surface with well-spaced short and recumbent light-coloured hairs that are denser on clypeus; ventral surface evenly and densely pubescent. Transverse crest of metasternum simple, posterior edge punctate-marginate. Apical sternite with conspicuous patch of hairs. Penis deplanate with broad apex ..... *C. minutus* Sturm
- 17(16) Smaller, 0,9 mm. Dorsal and ventral surfaces apparently bare, only with microscopic hairs. Transverse crest of metasternum broadly expanded bilaterally from middle, posterior edge smooth. Apical sternite without hairy patch. Penis short, pointed wedge-shaped..... *C. ndumu* spec. nov.
- 18(15) Lateral angle of head at level of posterior margin of eye or more posteriorly.
- 19(20) Lateral margins of pronotum contracted behind anterior angle. — Whole surface with microscopic hairs only. Transverse crest of metasternum broadens towards middle, posterior edge smooth. Metasternum and coxal plates transversely shagreened. Narrow paramere deeply incised at apex. Penis broadens before apical contraction (subspecies *splendens*) or parallel-sided to short apical contraction (subspecies *palmae*) ..... *C. splendens* Endrödy-Younga
- 20(19) Lateral margin of pronotum convex-arcuate.
- 21(22) Posterior horizontal plate of metasternum markedly reduced in middle, its lateral margin about seven times longer. — Whole surface only with microscopic hairs. Transverse crest of metasternum double, posterior edge smooth. Penis long and narrow, flame-shaped with asymmetrically set aperture of ductus ejaculatorius. (Réunion)..... *C. vinsoni* Endrödy-Younga
- 22(21) Metasternum less reduced in middle, laterally five times or less longer.
- 23(24) Genal margin straight along eye between antennal furrow and lateral angle of head. — Antennal segments 7 and 8 distinctly longer than broad. Penis slightly shouldered in middle, wedge-shaped, symmetric (Fig. 10A) ..... *C. capensis* (Péringuey)
- 24(23) Genal margin slightly or strongly bent before reaching lateral angle of head.
- 25(26) Posterior edge of metasternum smooth. Penis deplanate and bifurcate at apex (Fig. 10C)..... *C. clavatus* spec. nov.

- 26(25) Posterior edge of metasternum punctate-marginate (Fig. 15B). Penis not bifurcate.
- 27(28) First club segment of antenna longer than broad (6:5). Penis broad and parallel-sided from base to beyond apex of paramere, shouldered, tapering to elongate apical portion (Fig. 10E)..... *C. priscus* Endrödy-Younga
- 28(27) First club segment of antenna as broad as or slightly broader than long (Fig. 16C).
- 29(30) Pubescence of head denser and consisting of short and stiff semi-erect hairs. Penis dilated preapically (subspecies *phallus*, Fig. 12A) or semi-parallel to truncate apex (subspecies *litoralis*, Fig. 12C)..... *C. phallus* spec. nov.
- 30(29) Pubescence of head more widely spaced, consisting of longer recumbent hairs. Penis broader, deplanate, lateral margins contracted before broadly rounded apex (Fig. 12E)..... *C. silvaticus* spec. nov.

***Clambus simsoni* Blackburn, Figs 5A–B, 6, 14A**

*Clambus simsoni* Blackburn, 1902: 28; Endrödy-Younga, 1959: 95, 1965: 260, 1974: 8, 1990b: 259.

*Clambus flavipes* Lea, 1912: 456; Endrödy-Younga, 1974: 8.

Dorsal and ventral surface with moderately dense, recumbent light-coloured hairs; hairs longer than distance between their insertions (Fig. 14A); in colour matching reddish brown integument, thus pubescence not prominent. Hairs on posterior two-thirds of elytra with prominent basal punctures (Fig. 14A). Lateral angle of head level with posterior quarter of eye. Posterior horizontal portion of metasternum moderately reduced in middle, here one-third of lateral length. Aedeagus symmetric, penis contracted to truncate apex (Fig. 5A).

Head broad, evenly arcuate between lateral angles, sagittal length between clypeus and lateral angles one-third of breadth between angles. Moderately convex, but turns almost vertical to clypeal margin (about 80°). Lateral angle slightly obtuse, genal margin straight, slightly turned to pointed apex; apex level with posterior quarter of eye. Integument shiny, indistinctly shagreened, darker around eyes. — Pronotum evenly convex but not nearly vertical laterally. Anterior angle narrowly, posterior angle very broadly arcuate, lateral margin flatly arcuate between angles. Integument shiny and smooth, basal punctures of hairs hardly discernible. — Elytra almost as broad as long (30:32), lateral margins evenly arcuate. Sutural profile convex in anterior third, rather flatly arcuate to the slightly more arcuate short apical declivity (Fig. 14A). Integument similar to that of pronotum, behind anterior quarter. However, basal punctures of hairs become abruptly large and flat, in apical portion punctures almost as broad as intervals

between them (Fig. 14A). — Posterior horizontal plate of metasternum moderately reduced in middle, here one-third of lateral length, anteriorly crested-marginate, posteriorly not punctate-marginate. Surface slightly less shiny, shagreen more distinct, pubescence denser and shorter than on dorsal surface, basal punctures of hairs very fine. Coxal plates more sharply shagreened, pubescence as on metasternum. — Antenna transparent. Last funicular segment broader than long, circular, preceding two segments slightly longer than broad. — Aedeagus symmetric, 0.27 mm long, 0.04 broad, with free-standing apical portion of penis 0.1 mm. Penis dorsoventrally flattened in ventral view, parallel-sided, abruptly reducing preapically, apex truncate, penis straight in lateral view; fused parameres symmetrically truncate at apex (Fig. 5A–B).

Length 1.00–1.25 mm with head bent; breadth 0.75–0.86 mm.

**DISTRIBUTION.** South Africa: Cape, Transvaal and Natal (Fig. 6); Mauritius; Australia: Queensland to Tasmania, and Western Australia.

**TYPE MATERIAL.** *Clambus simsoni* Blackburn. Lectotype ♂: Tasmania, Simson, Brown Coll., BM 1910-236, in Natural History Museum, London. Designated by Endrödy-Younga (1974).

*Clambus flavipes* Lea. Holotype ♂: Gordon River, Tasmania, J. E. Philip, in South Australian Museum, Adelaide.

**MATERIAL EXAMINED.** 48 ♂♂ (41 dissected), 72 ♀♀ and 475 additional specimens, all in Transvaal Museum, Pretoria.

**Localities:** SOUTH AFRICA: *southwestern Cape Province:* 1 Hawequas Mt., 33° 34' S, 19° 08' E,

5.11.1973, sifted forest litter, leg. Endrödy-Younga, E-Y: 202; 16 Nuweberg For. Station, 34° 03' S, 19° 04' E, 15.11.1973, air plankton, E-Y: 259; 3 *idem*, but at kerosene light E-Y: 260; 3 Dwarsberge, 34° 02' S, 19° 01' E, 15.11.1973, sifted litter, leg. Endrödy-Younga, E-Y: 253. *Southeastern Cape Province*: 1 Alexandria For. Reserve, 33° 43' S, 26° 23' E, 3.12.1987, general collecting, leg. Endrödy-Younga, E-Y: 2549; 1 *idem*, but 4.12.1987, UV light, E-Y: 2552. *Southern Natal*: 2 Weza Forest Station, 30° 36' S, 29° 45' E, 23.11.1989, fungous logs, leg. Endrödy-Younga & Klimaszewski, E-Y: 2715; 6 Weza, Bangeni Forest, 30° 38' S, 29° 29' E, 21.11.1989, sapping *Podocarpus*, leg. Endrödy-Younga & Klimaszewski, E-Y: 2708; 27 Weza, Lower Stinkwood Forest, 20° 34' S, 29° 43' E, 17.11.1989, intercept trap 11 days, leg. Endrödy-Younga & Klimaszewski, E-Y: 2688; 1 *idem*, but 20.11.1989, fungous logs, E-Y: 2702; 2 Weza, Impetyene Forest, 30° 37' S, 29° 43' E, 16.11.1989, intercept trap in forest 12 days, leg. Endrödy-Younga & Klimaszewski, E-Y: 2691; 1 *idem*, but trap in grassveld, E-Y: 2680; 1 Weza, Lovedale, 30° 40' S, 29° 41' E, 24.2.1985, ground traps with banana bait 13 days, leg. Endrödy-Younga, E-Y: 2161; 2 *idem*, but intercept trap 3 days, E-Y: 2162; 3 Weza, Ingeni Forest, 30° 32' S, 9° 41' E, 18.11.1989, intercept trap in forest 10 days, leg. Endrödy-Younga & Klimaszewski, E-Y: 2721. *Natal Midlands*: 149 Karkloof Forest Reserve, 1300 m, 29° 18' S, 30° 13' E, 2.12.1989, fresh dead branches, leg. Endrödy-Younga & Klimaszewski, E-Y: 2732; 6 *idem*, but 5.12.1989, beaten in forest, E-Y: 2733; 9 *idem*, but 2.19.1989, UV light, E-Y: 2738; 9 *idem*, but 5.12.1989, sifted forest litter, E-Y: 2745; 4 *idem*, but 9.12.1989, from under bark, E-Y: 2755; 1 *idem*, but 10.12.1989, beaten in forest, E-Y: 2756; 4 Karkloof For. Res., 1440 m, 29° 18' S, 30° 12' E, 13.12.1989, sifted forest litter, leg. Endrödy-Younga & Klimaszewski; E-Y: 2768; 3 Northington Forest 1420 m, 29° 28' S, 30° 01' E, 12.12.1989, forest floor litter, leg. Endrödy-Younga & Klimaszewski; E-Y: 2767; 1 Doreen Clark Nature Reserve, 29° 34' S, 30° 17' E, 11.12.1987, forest litter on river bank, leg. Endrödy-Younga & Klimaszewski, E-Y: 2759. *Natal-Drakensberg mountains*: 1 Cathedral Peak, 28° 57' S, 29° 19' E, 14.3.1976, river bank: Ndumeni, leg. Endrödy-Younga, E-Y: 1083. *Eastern Transvaal*: 9 Nelshoogte Forest Station, 25° 50' S, 30° 50' E, 30.11.1986, UV light, leg. Endrödy-Younga, E-Y: 2334; 1 Nelshoogte gallery forest, 25° 51' S, 30° 53' E, 2.12.1986, sifted forest litter, E-Y: 2341; 2 *idem*, but shorewashing, E-Y: 2343; 1 Nelshoogte, Devils' Knuckles, grassveld, 25° 47' S, 30° 49' E, 4.12.1986, grassnetting, leg. Endrödy-Younga, E-Y: 2350; 2 *idem*, but groundtraps with banana bait 67 days, E-Y: 2552; 2 *idem*, but indigenous forest 25° 47' S, 30° 50' E, 25.9.1986, intercept trap 30 days, E-Y: 2291; 1 *idem*, but groundtraps 30 days, E-Y: 2292; 6 *idem*, but 24.10.1986, intercept traps 41 days, E-Y: 2309; 9 *idem*, but 4.12.1986, traps 61 days, E-Y: 2351; 1 *idem*, but 11.2.1987, traps 56 days, E-Y: 2445; 4 *idem*, but 12.2.1987, sifted forest litter, E-Y: 2448; 6 Berlin Forest Station, 300 m below, 25° 33' S, 30° 45' E, 4.2.1987, UV light at forest river, leg. Endrödy-Younga, E-Y: 2416; 4 Berlin Forest Station, gorge, 25° 32' S, 30° 44' E, 22.9.1986, forest litter in rock crevices, E-Y: 2284; 1 *idem*, but 22.9.1986, intercept traps 31 days, E-Y: 2282; 1 *idem*, but 30.10.1986, traps 42 days, E-Y: 2304; 4 *idem*, but 9.12.1986, traps 56 days, E-Y: 2366; 2 *idem*, but 4.2.1987, traps 41 days, E-Y: 2408; 1 Berlin Forest Station, Karst plateau, 25° 31' S, 30° 46' E, 8.12.1986, beating bush, leg. Endrödy-Younga, E-Y: 2365; 1 Berlin Forest Station, sinkhole, 25° 31' S, 30° 46' E, 20.9.1986, groundtraps with faeces bait 33 days, leg. Endrödy-Younga, E-Y: 2276; 1 *idem*, but 20.9.1986, sifted forest litter, E-Y: 2278. Uitsoek Forest Station: 1 Waterfall area, 25° 16' S, 30° 33' E, 13.12.1986, UV light, leg. Endrödy-Younga, E-Y: 2385; 20 *idem*, but 5.2.1987, E-Y: 2421; 27 *idem*, but 7.2.1987, E-Y: 2431; 6 *idem*, but 9.4.1987, E-Y: 2460; 3 *idem*, but 7.2.1987, beating, E-Y: 2430. Uitsoek Forest Station: Groot Kloof indigenous forest, 25° 15' S, 30° 33', 28.9.1986, intercept trap 28 days, leg. Endrödy-Younga, E-Y: 2294; 7 *idem*, but 25.10.1986, trap 50 days, E-Y: 2319; 93 *idem*, but 15.12.1986, trap 53 days, E-Y: 2390; 2 *idem* but 28.9.1986, groundtraps with faeces bait 28 days, E-Y: 2295; 7 *idem*, but 15.12.1986, traps 53 days, (2) faeces bait, (5) banana bait, E-Y: 2391; 4 *idem*, but 6.2.1987, traps with meat bait 62 days, E-Y: 2423; 1 *idem*, but 26.10.1986, sifted forest litter, E-Y: 2320; 6 *idem*, but 16.12.1986, E-Y: 2395; 4 *idem*, but *Cussonia* bark, E-Y: 2393; 1 *idem*, but forest fruits, E-Y: 2394; 13 *idem*, but 6.2.1987, UV light, E-Y: 2428; 1 Mt. Sheba, 24° 51' S, 30° 45' E, 27.11.1986, from river stones, leg. Endrödy-Younga, E-Y: 2322; 3 Hazyview 25° 04' S, 31° 07' E, 3.4.1990, air plankton, leg. Endrödy-Younga, E-Y: 2777; 80 Pilgrimsrest, 11 km SE, 1400 m, 24° 56' S, 30° 54' E, 31.12.1985, relict forest edge, malaise trap, leg. S. and J. Peck, 85-276. MAURITIUS: 1 Macabé Forest, on UV light, 12.1.1966, leg. Y. Gomy.

ECOETHOLOGY. The species was collected only in forest, and in virtually all forested areas in South Africa. It is the most common species in the region and was collected by sifting, beating, groundtraps



with different baits, and flight intercept and malaise traps. As in Australia, it is the only species regularly attracted to light in large numbers.

*Months recorded:* September to April, peaking between December and February, and covering the general activity period of insects occurring in the climatic conditions of the subregion. These observations are based on the localities in eastern Transvaal that are listed above, where a one-year survey was carried out in 1986/87. It is likely that the activity period of other Clambidae species are similar, and that it is dependent on rainfall and summer temperatures.

***Clambus variolosus* Endrödy-Younga, Figs 1, 5C–D**

*Clambus variolosus* Endrödy-Younga, 1959: 99, 1961b: 317.

Shiny dark reddish brown, apparently bare, only clypeus and ventral surface with fine and long hairs. Posterior half of elytra conspicuously punctate. Lateral angle of head acutely-rectangular, its apex level with posterior margin of eye. Lateral margin of pronotum emarginately truncate. Metasternum one-third of lateral length in middle, anterior margin double-crested, posterior edge finely punctate-marginate. Aedeagus asymmetric, penis short.

Head markedly convex, vertical profile meeting clypeal margin at 60° angle. Genal margin straight or posterior third slightly bent towards apex. Lateral angle pointed, straight portion of gena closes a rectangle with collar margin. Gena with an unusual fringe of outward-pointing fine hairs. Integument shiny with fine but distinct basal punctures of hairs (x160) on the vertex with very fine, dark, silky and short hairs, directed forward and reclinate. Clypeus with much longer, yellow silky semi-erect hairs that are longer than one-half the diameter of eye. — Anterior angle of pronotum more broadly rounded than posterior angle, lateral margin symmetrically emarginate between angles (not convex as usual). Integument, punctation and microscopic pubescence as on vertex, but latter more widely spaced. — Elytra as long as combined breadth, markedly convex transversely; lateral convexity conceals margin anteriorly, in dorsal view evenly arcuate to the slightly angular apex; convex sutural profile slightly flattened in median half of length. Area of distinct punctation on apical half of elytra drawn forward in middle of each elytral disc, here punctation is rather sharp, punctures much smaller than intervals between them. Punctation of rest of elytra similar to that of pronotum, microscopic pubescence uniform as on pronotum. — Posterior horizontal plate of metasternum

moderately reduced in middle, here about one-third of lateral length. Anterior margin sharply double-crested, crests close together laterally, evenly separating to the middle; posterior edge punctate-marginate. Metasternum and coxal plates smooth, very finely punctate, pubescence rather dense, reclinate hairs shorter than those of clypeus. Sternites transversely shagreened with few fine hairs in a small tuft on apex of anal sternite. — Legs and antennae transparent yellow. Antennal segment 8 as long as broad, segment 7 of equal length, but narrower, both slightly angular on inside, segment 6 longer. — Aedeagus 0,22 mm long with free-standing apical portion of penis 0,04 mm. Basal plate attached as a ring, paramere and penis both asymmetric (Fig. 5C–D).

Length 1,1 mm, breadth 0,7 mm (measurement of 0,9 mm for breadth erroneous in original description).

**DISTRIBUTION.** Zaire, Republic of the Congo, Ghana and the Ivory Coast (Fig. 1).

**TYPE MATERIAL.** Holotype ♂ and 2 paratypes: (Zaire), Kivu: Terr. Lubero, Mulo, 1880 m, 3.vii.1954, leg. R. P. M. J. Célis; 'dans terran an Berlese.' Holotype and 1 paratype in Musée Royal de l'Afrique Centrale, Tervuren; 1 paratype in Natural History Museum, Budapest.

**MATERIAL EXAMINED.** Holotype ♂, 8 ♂♂ (all dissected), 8 ♀♀, and 11 additional specimens: 2 (types) in Musée Royal de l'Afrique Centrale; 4 in Naturhistorisches Museum, Basel; 3 in Natural History Museum, Budapest; 2 in Transvaal Museum, Pretoria; 18 in author's collection.

*Localities:* ZAIRE: (see types). GHANA: Western Region: 18 Pretsea, 30 m, 04° 55' N, 01° 52' W, 15.2.1966, (harvested) oil-palm fruits, leg. Endrödy-Younga, sample no. 133; 4 *idem*, but 28.8.1967, sample no. 262; 1 Volta Reg., Kpeze, 400 m, 06° 52' N, 00° 01' W, 28.8.1967, dead raffia trunk, leg. Endrödy-Younga, sample no. 265; 1 Ashanti Reg., Kumasi, Nhiasu, 350 m, 06° 45' N, 01° 36' W, 10.12.1967, light trap, leg. Endrödy-Younga, sample no. 280. IVORY COAST: 5 Danané, Dropleu, 10.10.1980, tamisage ss. tronc mort, leg. Mahnert-Perret.

**ECOETHOLOGY.** *Clambus variolosus* is known only from tropical rainforest. In Ghana it was found under harvested oil-palm nuts, and both in Ghana and the Ivory Coast on dead tree trunks. It is attracted to light.

*Months recorded:* July, August, October, December and February.

***Clambus natalensis spec. nov.*, Figs 5E–F, 11**

Small, moderately convex, dark chestnut-brown with uniform and rather dense, reclinate lighter brown pubescence. Lateral angle of head level with posterior quarter of eye, broadly rounded into basally emarginate collar margin. Lateral margin of elytra preapically emarginate in males. Posterior horizontal plate of metasternum markedly reduced in middle, anterior margin not crested, posterior margin punctate-marginate. Aedeagus symmetric in shape, penis with elongate pointed apex.

Head moderately convex, vertical profile meets clypeal margin at angle of about 60°. Lateral angle of head level with posterior quarter of eye, broadly rounded, producing a second flat angle behind the deep collar furrow. Integument densely shagreened, providing a greasy sheen, basal punctures of hairs very fine. Pubescence uniform on whole disc, hairs longer than distance between their insertions; hairs directed forward and inward, and slightly lighter in colour than integument. — Both anterior and posterior angles of pronotum broadly rounded, former more obtusely angled than latter. Microsculpture and pubescence as on head, hairs radiating from a centre just behind middle of anterior margin. — Elytra longer than combined breadth (26:22), broadest behind humeri, from there slightly contracting, in posterior section strongly arcuate towards apex; preapical section emarginate in males, resulting in a produced apical angle, simple in females. Shagreen of integument gradually stronger from base to apex, but without enlarged basal punctures of hairs as in *C. simsoni*. Pubescence as on pronotum, hairs directed posteriorly. — Posterior horizontal plate of metasternum markedly reduced in middle, here less than a third of lateral length (4:15); anterior margin sharp but not high-crested, posterior edge punctate-marginate. Shagreen of entire ventral side coarse, much stronger than anywhere on dorsal surface, pubescence uniform, hairs shorter, finer and denser than on dorsal surface. — Antenna short, last funicular segment much broader than long in males, as broad as long in females. — Aedeagus 0,32 mm long with free-standing apical portion of penis 0,11 mm, penis at apex of paramere 0,045 mm broad (Fig. 5E–F).

Length 0,92–1,05 mm, breadth 0,55 mm.

**DISTRIBUTION.** South Africa: Natal, eastern Cape and eastern Transvaal (Fig. 11).

**MATERIAL EXAMINED.** 2 ♂♂ (both dissected) and

2 ♀♀, all in Transvaal Museum, Pretoria.

Holotype ♂ and allotype ♀: S. Afr., Natal Midlands, Northington, 1420 m, 29° 18' S, 30° 01' E, 12.12.1989, sifted forest litter, leg. Endrödy-Younga, E-Y: 2764; 1 paratype ♂: (eastern) Cape, Amatole (Mountain), Isidenge Forest Station, (forestry block) A1, 32° 41' S, 27° 16' E, 14.11.1987, indigenous for. litter, leg. Endrödy-Younga, E-Y: 2511; 1 paratype ♀, S. Afr., E. Transvaal, Berlin For. Station, gorge, 25° 32' S, 30° 44' E, 23.10.1986, intercept trap 42 days, leg. Endrödy-Younga, E-Y: 2304. The latter specimen was lost at its dissection.

**ECOETHOLOGY.** The specimens were sifted from forest floor litter without any selection for specialized food source

*Months recorded:* October, November and December.

**ETYMOLOGY.** Named after the Province of Natal, South Africa, where it was collected.

***Clambus hastatus* Endrödy-Younga, Figs 2, 4A, 7A–B**

*Clambus hastatus* Endrödy-Younga, 1961b: 319.

Very small, less than a millimetre in length. Collar margin ends in a small but sharp process behind rounded lateral angle of head; angle level with posterior quarter of eye (Fig. 4A). Metasternum strongly reduced in middle, here only about one-sixth of lateral length. Antenna transparent and short, last funicular and two club segments each broader than long. Chestnut-brown, shiny, with even, semi-erect short pubescence. Aedeagus filiform, penis parallel-sided, with evenly tapering apex; apex of paramere asymmetric (Fig. 7B).

Head broad, moderately convex both transversely and longitudinally. Clypeus evenly arcuate, forming rounded and obtuse (about 130°) lateral angles, slightly contracting before reaching a small and sharp projection of collar margin; projection reaches to about the level of lateral angle (Fig. 4A). Integument shiny, indistinctly shagreened. Pubescence semi-erect, transparent, not prominent, hairs 1,5 times longer than distance between their insertions. — Pronotum moderately convex, lateral lobes at angle of approximately 45°; both lateral angles broadly rounded. Surface and pubescence as on head, hairs radiating from centre of disc. Lateral lobes lighter, transparent. — Elytra hardly longer than combined breadth (23:21). Sides evenly arcuate, sutural profile evenly and flatly arcuate, reaching apex at 70° angle. Integument shiny with slightly more distinct shagreen at

apex than at base. Pubescence as on head and pronotum, basal punctures of hairs fine. — Metasternum strongly reduced in middle, here about one-sixth of lateral length (2,3:14), anterior margin sharply crested, posterior edge not punctate-marginate. Metasternum, coxal plates and sternites more strongly shagreened than dorsal surface, pubescence similar, punctures fine. — Antennae short, ochre-yellow, all segments shorter than usual for genus. Segment 4 less than twice longer than broad; segment 5 slightly longer, segment 6 as long as broad, segments 7 to 10 broader than long. — Aedeagus 0,3 mm long and penis 0,03 mm broad, parallel-sided with evenly tapering pointed apex where it is dorsoventrally bent. Fused parameres asymmetrically rounded at apex (Fig. 7A–B).

Length 0,8 mm, breadth 0,52 mm.

DISTRIBUTION. South Africa: Natal; Zaire and Réunion (Fig. 2).

TYPE MATERIAL. Holotype ♂ and 5 paratypes: Congo Belge, P.N.G. (Parc National Garamba), Miss H. de Saeger, Il/gd/4, 26.vi.1951, Réc. J. Verschuren, 1967 (sample number). Holotype and 4 paratypes in Musée Royal de l'Afrique Centrale, Tervuren; 1 paratype ♀ and 1 ♂ (Réunion) in the author's collection.

MATERIAL EXAMINED. RÉUNION: 1 La Réunion, St. Gilles-les-Bains, lumière, iv.1966 leg. Y. Gomy. SOUTH AFRICA: 2 ♂♂, 4 ♀♀. S. Afr., Zululand. Mtubatuba, 28° 29' S, 32° 10' E, 7.iv.1974, cattle dung (sifted), E-Y: 334, leg. Endrödy-Younga. ZAIRE: 1 ♀ paratype, Zaire, Garamba National Park.

ECOETHOLOGY. The only recorded habitat for this species is dung pads, where the samples of six South African specimens were collected. Although clambids are occasionally found in association with dung (*C. phallus phallus* and *C. silvaticus*) it is only utilized as a form of vegetation litter.

***Clambus elgonicus* Jeannel & Paulian, Figs 1, 7C–D**

*Clambus elgonicus* Jeannel & Paulian, 1945: 67; Endrödy-Younga, 1961b: 315.

Medium-sized, reddish brown with long recumbent silky pubescence both on dorsal and ventral surfaces. Lateral angle of head flatly rounded and level with posterior margin of eye; collar margin with small but sharp protuberance. Posterior plate of metasternum moderately reduced in middle.

Apical portion of penis acutely triangular, paramere asymmetric at apex (Fig. 7C).

Head moderately convex longitudinally, dorsal profile meets clypeal margin at angle of about 50°. Lateral angle of head flatly rounded, the inconspicuous angle level with posterior margin of eye, slightly emarginate behind angle before reaching the small but sharp collar protuberance. Integument smooth and shiny, only with a faint trace of shagreen; basal punctures of hairs inconspicuously small. Pubescence dense, particularly towards clypeal margin. Hairs about twice as long as distance between their insertions, semi-erect and directed forward. — Pronotum evenly but moderately convex transversely, lateral lobes about 45° horizontally. Anterior lateral angle more narrowly rounded than posterior one, lateral margin almost straight in median section. Integument about as smooth as that of head, basal punctures of hairs slightly more pronounced. Pubescence even longer than on head, but hairs more spaced, about 1,5 times longer than distance between their insertions. Hairs semi-erect, slightly recumbent, silky, radiating from two adjacent centres behind anterior margin. — Elytra slightly longer than combined breadth (32:28). Lateral margins evenly rounded, sutural profile highest behind scutellum, flatly arcuate to apex. Shagreen of integument blurred but slightly more intense than on pronotum, basal punctures of hairs fine but clearly visible, becoming slightly stronger towards apex. Pubescence as on pronotum, hairs directed backward. — Posterior horizontal plate of metasternum markedly reduced in middle, here about 3,5 times shorter than lateral length. Transverse crest rounded and simple, posterior edge of plate not punctate-marginate. Metasternum more strongly shagreened than coxal plates, punctation of latter very distinct. Pubescence of ventral surface even, similar to that of elytra but with reclinate hairs. — Antenna yellow, moderately elongate, all segments longer than broad, only segments 8 and 9 as broad as long. — Aedeagus 0,37 mm long with free-standing portion of penis 0,12 mm; penis at apex of fused parameres 0,04 mm (Fig. 7C–D).

Length 0,93–1,05 mm, breadth 0,73–0,75 mm, largest being the male holotype.

DISTRIBUTION. East Africa: Kenya (Fig. 1).

MATERIAL EXAMINED. 1 ♂, 2 ♀♀ (types), all in Museum National d'Histoire Naturelle, Paris.

Holotype ♂ and 2 ♀ paratypes: Kenya, Campi Cherangani, Marakwet, 3000 m, Nid no. 2 (holotype and 1 paratype); Nid no 1 (second paratype). 12 and 15.iii.1933 (ex-description).

ECOETHOLOGY. The type specimens were collected in the burrows of mole-rats.

***Clambus pygmaeus*** Endrödy-Younga, Figs 1, 7E, 15C, 17A, C

*Clambus pygmaeus* Endrödy-Younga, 1959: 100, 1961b: 315.

Very small with long erect setae both on dorsal and ventral surfaces (Figs 7E, 15C). Genal margin narrow along eye, obtuse and broadly rounded, lateral angle of head level with middle of eye, turning without emargination into slightly contracting collar margin. Posterior horizontal plate of metasternum about one-third of lateral length in middle, its transverse crest with long reclinate setae (Fig. 15C). Aedeagus very small, parameres almost as long as filiform and arcuate penis (Fig. 7E). Dark reddish brown.

Head moderately convex, vertical profile joins clypeal margins at angle of about 70°. Clypeus flatly arcuate. Lateral angle of head obtuse, about 130°, broadly arcuate, level with middle of eye. Genal margin narrow and parallel to margin of eye, not expanded at lateral angle. Collar margins contracted but not emarginate. Integument smooth and shiny with very fine punctures to hairs. Hairs of vertex very fine, with short recumbent setae near clypeus. In middle of vertex two fine and vertically erect setae as long as diameter of eye but usually adherent to the surface. — Pronotum evenly convex but not nearly vertical laterally. Posterior lateral angle more broadly arcuate than anterior angle, lateral margin in a short section straight in-between angles (Fig. 17A). Integument smooth and shiny with indistinct shagreen on lateral lobes. An extremely fine, rather dense pubescence on lateral lobes, with reclinate hairs, creating impression of a distinct microscopic transverse striation. The fine hairs distinctly broadened basally (Fig. 17C). Four erect setae similar to those of elytra, set in rectangle near base, but these are often broken or adhere to surface. Basal punctures of hairs hardly discernible. — Elytra slightly broader than long (22:21), convex, evenly arcuate in both dorsal and in lateral views (Fig. 17A). Integument smooth and shiny. Each elytron evenly set with about 80–100 very long recumbent setae, setae almost twice as long as distance between their insertions, or longer than diameter of eye (Fig. 17A). — Posterior horizontal plate of metasternum moderately reduced in middle, here 2,5 times shorter (7:17) than lateral length. Anterior margin sharply crested, plate transversely concave. Anterior crest with an even fringe of long, reclinate setae, setae longer than plate in middle (Fig. 15C); short semi-erect hairs present under

the fringe of setae. Integument smooth and shiny, posterior edge of plate not punctate-marginate. Transverse mid-band of coxal plates distinctly shagreened, otherwise smooth, recumbent setae shorter than on metasternal crest. Sternites shiny with few fine hairs. — Antennae short, transparent yellow, all segments reduced in length, last two funicular segments markedly broader than long in males, less so in females. — Aedeagus 0,17 mm long, with apex of penis extending beyond paramere by only 0,03 mm. Breadth of penis at base only 0,016 mm. Penis evenly narrow and evenly arcuate, apical bristles of paramere long (Fig. 7E).

Length 0,70–0,80 mm with head bent, breadth 0,60–0,65 mm.

DISTRIBUTION. Zaire, Ghana and the Ivory Coast (Fig. 1).

TYPE MATERIAL. *Clambus pygmaeus*: holotype, sex not determined (single type specimen): Congo, Bumba (Zaire) xii.1939–i.1940, leg. H. de Saeger in Musée Royal de l'Afrique Centrale, Tervuren.

MATERIAL EXAMINED. Holotype, 6 ♂♂ (all dissected), 7 ♀♀, 24 additional specimens. Holotype and 1 ♂ in Musée Royal de l'Afrique Centrale, Tervuren; 24 in author's collection; 7 in Natural History Museum, Budapest; 2 in Transvaal Museum, Pretoria; 1 in Natural History Museum, Basel.

*Localities*: ZAIRE: 1 type specimen as listed above. GHANA: 27 Western Region, Pretsea, oil-palm plantation, 30 m (alt.), 04° 55' N, 01° 52' W, 15.2.1966, harvested oil-palm fruits, leg. Endrödy-Younga, no 133; 1 Ashanti Reg., Kwadass, 320 m (alt.), 06° 42' N, 01° 39' W, 26.2.1969, at black light, leg. Endrödy-Younga, no. 314; 1 *idem*, but 28.4.1969, at light, leg. Endrödy-Younga, no. 341; 1 *idem*, but: 28.7.1969, mercury vap. light, leg. Endrödy-Younga, no. 383, 1 *idem*, but 4.8.1969, no. 384; 4 Volta Region, Kpeze-Abuadi, 06° 52' N, 00° 30' E, 15.9.1971 air plankton, leg. Endrödy-Younga, no. 475; IVORY COAST: 1 Danane, 10.10.1989, dead tree trunk, leg. Mahnert and Perret.

ECOETHOLOGY. The specimens from Ghana were sifted from under bunches of harvested oil-palm nuts, or in flight, or when attracted to light.

***Clambus desaegeri*** Endrödy-Younga, Figs 2, 7F, 17B, D

*Clambus desaegeri* Endrödy-Younga, 1961b: 316.

Very similar to *C. pygmaeus* but with fewer long setae on elytra. Characters not repeated here are as described for *C. pygmaeus*.

Long and erect setae of vertex (one pair) and those of the pronotum (two pairs) stronger, usually present (not adhering to surface or broken) (Fig. 17B). — Fine, reclinate short hairs of lateral lobe of pronotum cover a smaller area, hairs thin and simple (Fig. 17D). — Stiff, long erect setae only 40–50 per elytron, mostly restricted to lateral margin, setae slightly longer and stronger (Fig. 17B). Lateral profile slightly flattened in median section of length (Fig. 17B). — Penis less arcuate, dilated in basal half, apical bristles of paramere short (Fig. 7F).

Length 0,75–0,85 mm with head bent, breadth 0,63–0,68 mm.

**DISTRIBUTION.** South Africa: Transkei; Zaire, Ghana (Fig. 2).

**TYPE MATERIAL.** Holotype ♂: Congo Belge (Zaire), Parc National Garamba: II (gd) 5, 21.i.1952, no. 3050, leg. H. de Saeger; allotype ♀: *idem*, but II (cd) 9, 8.ii.1951, no. 1237, leg. J. Verschuren; 1 paratype: II (hd) 8, 30.i.1952, no. 3089, leg. J. Verschuren; 1 paratype: II (ee) 13, 27.iv.1951, no. 1652, leg. J. Verschuren. Holotype, allotype and 1 paratype in Musée Royal de l'Afrique Centrale, Tervuren; 1 paratype in Natural History Museum, Budapest.

**MATERIAL EXAMINED.** Holotype ♂, 4 ♂♂, 2 ♀♀ and 6 specimens not dissected: 3 in Transvaal Museum, Pretoria; 8 in author's collection.

**Localities:** ZAIRE: type specimens as listed. GHANA: 1 Western Region, Pretsea, 04° 55' N, 01° 52' W, 15.2.1966, oil-palm fruits, leg. Endrödy-Younga, sample no. 133; 2 *idem*, but 17.6.1969, air plankton, sample no. 372; 2 Ashanti Region, Kumasi, 330 m (alt.), 06° 43' N, 01° 35' W, 13.5.1969, air plankton, leg. Endrödy-Younga, sample no. 364; 3 *idem*, but 25.6.1969. SOUTH AFRICA: 3 Transkei: Ntsubane Forest, 31° 27' S, 29° 44' E, 24.11.1988, rotten *Cussonia* fruits, leg. Endrödy-Younga, E-Y: 2577.

**ECOETHOLOGY.** This species was sifted from under harvested bunches of oil-palm nuts in Ghana and in decaying *Cussonia* fruits in Transkei, and thus might prefer fermenting fruit in decaying plant material.

### ***Clambus minutus* (Sturm), Figs 2, 4C, 8A–B**

*Agathidium minutum* Sturm, 1807: 64.

*Clambus minutus*: Fairmaire & Laboulbene, 1854: 327.

*Clambus minutus*: Endrödy-Younga, 1959: 104; 1960: 291.

*Clambus infuscatus* Endrödy-Younga, 1959: 98; Endrödy-Younga, 1961b.

*Clambus minutus infuscatus*: Endrödy-Younga, 1961b: 322.

**syn. nov.**

Large or medium-sized for the family, shiny reddish to dark chestnut-brown with widely-spaced and uniform recumbent pubescence on entire dorsal surface. Lateral angle of head level with posterior one-third of eye (Fig. 4C). Posterior horizontal plate of metasternum moderately reduced in middle, here less than a third of lateral length (6:20); anterior margin finely and evenly crested, posterior edge punctate-marginate. Penis broadly deplanate (Fig. 8A).

Head moderately convex, vertical profile joining clypeal margin at angle of about 60°. Lateral angle of head rectangular, rather broadly rounded, angle level with posterior one-third of eye (Fig. 4C). Genal canthus together with its collar portion broadest at lateral angle (Fig. 4C). Integument smooth and shiny with indistinct shagreen. Pubescence of clypeus marginally longer, but considerably denser than on pronotum; hairs much longer than distance between their insertions, more than one-half the diameter of eye. The pubescence in *C. capensis* and related species consisting of shorter, slightly more erect, stiffer and darker hairs. — Anterior lateral angle of pronotum more narrowly rounded than posterior angle, lateral margin turning evenly into posterior angle. Integument similar, but hairs more widely spaced than on clypeus. — Elytra longer than combined breadth (35:31). Sutural profile high behind scutellum, from there evenly and rather flatly arcuate to apex. Integument little more shagreened towards apex, basal punctures of hairs hardly discernible. — Posterior horizontal plate of metasternum moderately reduced in middle, here less than one-third of lateral length (6:20); plate completely flat longitudinally, anterior margin sharp but not crested, posterior edge clearly punctate-marginate (*cf.* Fig. 15B). Integument, together with that of coxal plates, clearly though not coarsely shagreened. Pubescence similar, but denser than on dorsal surface, forming a dense patch at apex of anal sternite. — Aedeagus slightly asymmetric, 0,4 mm long with free-standing portion of penis 0,14 mm; penis at apex of paramere 0,1 mm broad, the stronger sclerotized and darker ductus ejaculatorius marked as an asymmetric line along middle of deplanate penis. Structure of penis is unique in the family. Basal piece hyaline with long process (Fig. 8A–B).

Length 1,10–1,25 mm, breadth 0,75–0,78 mm.

**DISTRIBUTION.** South Africa: Transkei, Natal and Transvaal; Zaire, Mediterranean region and central Europe (Fig. 2).

**TYPE MATERIAL.** *Agathidium minutum* Sturm.

Type specimen not seen.

*Clambus infuscatus* Endrödy-Younga: Congo Belge: holotype and 2 paratypes: Kivu, Terr. Lubero, Mt. Bugera, 2000–2100 m, x–xi. 1954, leg. R. P. M. J. Célis; 1 paratype: *idem*, but Bukristu, 2000 m. ix. 1954, all with 'dans terrain an Berlese.' Holotype and 2 paratypes in Musée Royal de l'Afrique Centrale, Tervuren; 1 paratype in Natural History Museum, Budapest.

MATERIAL EXAMINED. 12 ♂♂ (all dissected) and 9 ♀♀ from South Africa, all in Transvaal Museum, Pretoria; 6 ♂♂, 4 ♀♀ from Europe, in author's collection.

*Localities*: SOUTH AFRICA: *eastern Transvaal*: 4 Nelshoogte, gallery forest below Station, 25° 51' S, 30° 53' E, 2.12.1986, shore washing, leg. Endrödy-Younga, E-Y: 2343; 1 *idem*, but Forest Station, 25° 50' S, 30° 50' E, 30.11.1986, UV-light collection, leg. Endrödy-Younga, E-Y: 2334. *Northern Transvaal*: 3 Waterberg, farm Haakdoringboom, 24° 11' S, 27° 50' E, 13.2.1976, Mogol River flood debris, leg. A. Strydom, E-Y: 1038. *Natal Midlands*: 1 Karkloof Forest Res., 1300 m, 29° 18' S, 30° 13' E, 9.12.1989, on wet river boulders, leg. Endrödy-Younga & Klimaszewski, E-Y: 2754. *Southern Natal*: 11 Weza, Impetyene Forest, 30° 37' S, 29° 42' E, 26.11.1989, shore washing in forest, leg. Endrödy-Younga & Klimaszewski, E-Y: 2719. *Transkei*: 1 Port St. Jones [Johns], 1923, leg. R. E. Turner.

REMARKS. *Clambus infuscatus* was described on the basis of four specimens from the Kivu area of Zaire, and was largely compared with another Ethiopian species, *C. capensis*. When it was subsequently found in the Cape Province, its relationship to the Palearctic species *C. minutus* became evident (Endrödy-Younga, 1961b). It was found that the Ethiopian and Palearctic material differed slightly in the apex of the fused parameres, and *infuscatus* was thus given subspecific status. The 12 newly-dissected South African males listed above, however, revealed that even this difference is not constant, and *Clambus minutus infuscatus* is therefore synonymized with *C. minutus*.

ECOETHOLOGY. All South African collecting localities of *C. minutus* are along river banks, but in both mesic forest and gallery bush in woody savanna. Most specimens were collected by shore-washing or in flood debris.

*Months recorded*: November, December and February.

***Clambus ndumu spec. nov.***, Figs 8C–D, 11, 15A

Very small, convex, shiny reddish brown with hardly discernible pubescence that is not longer on clypeus. Lateral angle of head level with posterior quarter of eye, broadly rounded. Posterior horizontal plate of metasternum strongly reduced in middle, here one-fifth of lateral length (Fig. 15A). Aedeagus small and stout (Fig. 8C–D).

Head moderately convex. Vertical profile joins clypeal margin at angle of about 70°. Lateral angle of head level with posterior quarter of eye, almost rectangular with rounded apex; collar margin convexly arcuate before turning into basal emargination; collar furrow sharp but not deep. Integument indistinctly shagreened, pubescence uniform and very short. — Anterior lateral angle of pronotum obtuse and more narrowly rounded than very broadly rounded rectangular posterior angle; short section of lateral margin straight behind anterior angle. Integument shiny with hardly discernible shagreen and equally fine pubescence. — Elytra as long as combined breadth, evenly arcuate both in dorsal and lateral views. Integument and pubescence similar to that of pronotum. — Posterior horizontal plate of metasternum strongly reduced in middle, here only one-fifth of lateral length; anterior margin broadened, reaching about half of plate's length in middle (clearest in lateral view), plate slightly convex longitudinally; posterior edge not punctate-marginate (Fig. 15A). Integument smooth and shiny, shagreen of coxal plates moderately distinct, transverse on sternites; pubescence of ventral surface uniform and as fine and inconspicuous as on dorsal surface. — Antennae not particularly short, two last funicular segments longer than broad in both sexes. — Aedeagus small with stout basal piece and paramere. Length 0,19 mm with free-standing apical portion of penis 0,055 mm; breadth of basal piece 0,07 mm (Fig. 8C–D).

Length 0,9 mm, breadth 0,6 mm.

DISTRIBUTION. South Africa: northern Zululand (Fig. 11).

MATERIAL EXAMINED. 3 ♂♂, 1 ♀ and 3 additional specimens, all in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 5 paratypes: N. Zululand, Ndumu Game Res., 26° 53' S, 32° 16' E, 12.6.1989, shore washing on freshwater pan Banzi, leg. Endrödy & Klimaszewski, E-Y: 2612.

ECOETHOLOGY. The type series was collected from a thick layer of vegetation litter on the well-

shaded shore of a freshwater lake.

ETYMOLOGY. The name refers to that of the nature reserve where the species was collected. Ndumu is the name of a Zulu chieftain who lived in the area.

***Clambus splendens* Endrödy-Younga**

*Clambus splendens* Endrödy-Younga, 1959: 97, 1961b: 318.

Medium-sized, markedly convex, integument smooth and shiny, apparently bare, minute hairs, even on clypeus hardly discernible at magnification of  $\times 160$ . Posterior angle of head obtuse and rounded, collar margins only moderately contracted; angle level with posterior quarter of eye. Ventral side shiny and also apparently bare, with fine transverse shagreen and fine basal punctures of hairs. Posterior horizontal plate of metasternum strongly reduced in middle, here a quarter of lateral length, anterior margin sharply crested but crest only slightly elevated, simple; posterior edge smooth. Aedeagus symmetric, parallel-sided penis dilated before tapering to apex; basally fused parameres very small, deeply incised at apex. Reddish brown. The species is composed of two subspecies.

***Clambus splendens splendens* Endrödy-Younga, Figs 1, 9A–B**

*Clambus splendens* Endrödy-Younga, 1959: 97, 1961b: 318.

Head moderately convex. Genal margin straight to lateral angle of head, angle obtuse, about  $130^\circ$ , its apex flatly rounded; collar margin straight, not emarginate and only moderately contracting to basal angles of head, bearing a tiny protuberance at end of shallow collar fossa, well removed from the angle. Integument shiny with indistinct transverse shagreen. Fine basal punctures of hairs more apparent than the uniformly minute hairs. — Pronotum convex transversely, anterior angle slightly obtuse (about  $100\text{--}110^\circ$ ), narrowly rounded, posterior angle rectangular, rather broadly rounded. Lateral margins distinctly contracted behind anterior angle (Fig. 16A). Integument smooth and shiny with distinct basal punctures of hardly visible hairs. — Elytra slightly broader than long (20:19). Lateral margins evenly arcuate to broad apex, sutural profile even and markedly convex. Integument and microscopic pubescence similar to that of pronotum. — Ventral side as shiny as dorsal surface, with the same microscopic pubescence. Shagreen of metasternum,

coxal plates and sternites appear as fine transverse ripples (Fig. 15D); basal punctures of hairs very fine, but more visible than the hairs themselves. Posterior horizontal plate of metasternum in the middle one-quarter of its lateral length. Anterior crest sharp, crest simple, only slightly elevated, narrow; posterior edge of plate smooth. — Antenna transparent yellow, segment 7 much shorter than segments 6 and 8, almost square; segment 8 slightly broader than 7. — Aedeagus 0,31 mm long with free-standing portion of penis 0,17 mm (paratype from Kibosho), penis at preapical dilation 0,05 mm. Basally fused parameres very small, with long bilateral apical processes, each bearing one (possibly a pair) of long sensory setae (Fig. 9A–B).

Length 0,80–0,90 mm, breadth 0,60–0,75 mm.

DISTRIBUTION. Tanzania, Republic of the Congo: Brazzaville; Zaire (Fig. 1).

TYPE MATERIAL. Holotype and 2 paratypes Kibosho, leg. Katona (Kilimanjaro, Tanzania) and 1 paratype Kivu, Terr. Lubero Mulo, 1880 m, 22.vi.1954, leg. Célis. Holotype and 1 paratype in Natural History Museum, Budapest; 1 paratype each in Musée Royal de l'Afrique Centrale, Tervuren and author's collection.

MATERIAL EXAMINED. TANZANIA: 1 ♀: Tanganyika, Usa Riv., 3900 feet (1188 m), sifted litter in gallery forest, 1–10.1.1966, leg. J. Szunyogh. CONGO: 1 ♂: Brazzaville, ORSTOM park, 27.12.1963, light trap, sample no. 534, leg. Endrödy-Younga.

***Clambus splendens palmae* subsp. nov., Figs 1, 9C–D, 14C, 15D, 16A**

The West African subspecies differs from the East and Central African nominate subspecies only in characters of the aedeagus.

Aedeagus 0,22 mm long with free-standing portion of penis 0,11 mm. Penis parallel-sided, without a preapical dilation, instead tapering to rounded apex (Figs 9C–D, 14C).

DISTRIBUTION. West Africa and Ghana (Fig. 1).

MATERIAL EXAMINED. 8 ♂♂ (all dissected), 7 ♀♀ and 4 additional specimens. Holotype, allotype and 11 paratypes in author's collection. Other paratypes: 4 in Natural History Museum, Budapest; 2 in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 5 paratypes: Ghana,

Western Region, Pretsea 30 m, 04° 55' N, 01° 52' W, 15.2.1966, (harvested) oil-palm fruits, leg. Endrödy-Younga, sample no. 133; 6 *idem*, but 26.8.1967, no. 262; 2 *idem*, but 17.6.1969, air plankton, no. 372; 1 Ghana, Western Region, Gese, between Busua and Pretsea, 17.vi.1969, leg. Endrödy-Younga, sample no. 373; 1 Ghana, Ashanti (Region), 06° 42' N, 01° 39' W, 19.3.1969, black light, leg. Endrödy-Younga, sample no. 328; 1 *idem*, but Kwadaso, 259 m, 06° 55' N, 01° 39' W, 14.vii.1969, light trap on field, quartz light, sample no. 381.

**ECOETHOLOGY.** All specimens were collected in tropical semi-deciduous rainforest, or in plantations of *Elaeis guineensis* (oil-palm) providing similar ecological conditions. Most specimens were collected together with *C. pygmaeus* under heaps of harvested bunches of oil-palm nuts. Active at least in both rainy seasons.

**ETYMOLOGY.** The genitive of the Latin *palma*, -ae (feminine), referring to the oil-palm plantations where the species most frequently occurs.

***Clambus vinsoni*** Endrödy-Younga, Figs 2, 9E–F  
*Clambus vinsoni* Endrödy-Younga, 1965: 263.

Small, shiny, light reddish brown, apparently bare. Lateral angle of head large, acutely rectangular, situated at hind margin of eye. Posterior horizontal plate of metasternum markedly reduced in middle; elevated anterior margin broadening gradually towards middle, extending to about half the length of plate; posterior edge smooth. Aedeagus only slightly asymmetric, penis elongate dorsoventrally, double-arcuate (Fig. 9E–F).

Lateral angle of head broadly rectangular, collar margin sharply contracted behind angle but broadly extended behind eye, causing that angle to seem to be behind eye, although connecting line almost touches posterior margin of eye. Integument shiny, with indistinct traces of shagreen, scattered hairs and their basal punctures microscopic ( $\times 160$ ). — Anterior lateral angle of pronotum narrowly rounded, posterior lateral angle very broadly rounded; short anterior section of lateral margin straight. Integument smoother, pubescence more spaced than on vertex. — Elytra markedly longer than combined breadth, evenly arcuate in both dorsal and lateral views. Integument and microscopic pubescence similar to that of pronotum. — Posterior horizontal plate of metasternum markedly reduced in middle, here about one-seventh of lateral length (3:21). Anterior margin sharp but only slightly elevated, double-

crested, narrow laterally, broadest bilaterally from middle. Posterior edge of metasternum smooth. Integument of metasternum, coxal plates and sternites smooth, pubescence of the first two longer than on dorsal surface, microscopic hairs of sterna forming dense patch at apex of anal sternite. — Aedeagus 0,37 mm long with free-standing apical portion of penis 0,17 mm. Penis almost symmetric, but aperture of ductus ejaculatorius in asymmetric ventral position (Fig. 9E–F).

Length 1,0 mm, breadth 0,63 mm.

**DISTRIBUTION.** Mauritius and Réunion (Fig. 2).

**TYPE MATERIAL.** Holotype  $\sigma$ : Mauritius, Moka, 8.vii.1936, leg. J. Vinson. Paratypes 1 *idem*, but 15.xi.1935; 3 *idem*, but 22.viii.1936. Holotype in Natural History Museum, London; paratypes in Mauritius Institute, Port Louis, and in Natural History Museum, Budapest.

**MATERIAL EXAMINED.** 1  $\sigma$  (dissected) and 2  $\text{♀♀}$ . Specimens deposited: 2 in coll. Y. Gomy, 1 in author's collection.

**Localities:** RÉUNION: 2 Dos d' Ane, rotten leaves of sugar cane, 8.8.1967, leg. Y. Gomy. MAURITIUS: 1 St. Giles-les-Bains, 31.3.1966, at light, leg. Y. Gomy.

***Clambus capensis*** (Péringuey), Figs 6, 10A–B, 15B, 16B, 18C–D

*Calyptomeres capensis* Péringuey, 1892: 109.

*Clambus capensis*: Endrödy-Younga, 1959: 98, 1961b: 321.

Lateral angle of head at posterior margin of eye. Genal canthus perfectly straight along eye between antennal furrow and lateral angle of head (Fig. 16B). Posterior horizontal plate of metasternum markedly reduced in middle, here about one-fifth of lateral length; anterior margin finely crested, posterior edge distinctly punctate-marginate (Fig. 15B). Shiny chestnut-brown to almost black with shiny and short semi-erect bristles, uniform on both dorsal and ventral surfaces.

Head moderately convex, profile meets clypeal margin at angle of 60°. Lateral angle large, triangular, angle 100°; apex narrowly rounded; broader horizontally than one-half the diameter of eye (5:9). Genal margin perfectly straight, only bent to form the actual apex of lateral angle (Fig. 16B). Collar furrow double-crested. Integument shiny with indistinct shagreen and minute basal punctures of hairs. Pubescence consists of rather short and shiny semi-erect bristles, becoming gradually and slightly longer towards clypeus,



where they are directed forward; hairs of clypeus denser than on pronotum and longer than distance between their insertions. — Anterior lateral angle of pronotum more narrowly rounded than posterior angle, lateral margin evenly arcuate into posterior angle. Integument similar to that of head, well-spaced bristles shorter than distance between their insertions, bristles radiate from a centre anterior to middle of disc. — Elytra markedly longer than combined breadth (40:32), evenly arcuate in both dorsal and lateral views. Integument and pubescence similar to that of pronotum (*cf.* Fig. 14B). — Posterior horizontal plate of metasternum markedly reduced in middle, here about one-fifth of lateral length. Anterior crest sharp, fine, even and simple. Posterior edge distinctly punctate-marginate (Fig. 15B). Shagreen of metasternum, coxal plates and sternites stronger than on dorsal surface, not coarse; pubescence uniform up to a denser patch on apex of anal sternite, hairs about as long as on clypeus. — Penultimate funicular segment of antenna (segment 7) twice as long as broad in males, slightly broader in females, last funicular segment slightly longer than broad in both sexes. — Aedeagus 0,4 mm long with free-standing apical portion of penis 0,14 mm. Aedeagus asymmetric at base where it is 0,07 mm broad, 0,09 mm at median dilation; from there triangular, slightly shouldered in middle, apex narrowly truncate (Figs 10A–B, 18C). Aperture of ductus ejaculatorius evenly elongate ovate (Fig. 18D).

Length 1,10–1,45 mm, breadth 0,75–0,90 mm.

**DISTRIBUTION.** South Africa: southwestern Cape, Natal and Transvaal; Namibia, Zimbabwe (Fig. 6).

**TYPE MATERIAL.** Lectotype ♂ and paralectotype ♀: designated and dissected by Endrödy-Younga (1961*b*); C.T.-L.P. (Cape Town, Louis Péringuey), and *Calyptomerus capicola* Typ. in Péringuey's handwriting and a later label: published as *capensis*.

**MATERIAL EXAMINED.** Type specimens and 54 ♂♂ (38 dissected), 67 ♀♀ and 187 additional specimens.

**Localities:** SOUTH AFRICA: *southwestern Cape Province:* 1 Struisbaai, 34° 46' S, 20° 03' E, 28.8.1983; groundtraps 60 days with meat bait, leg. Endrödy-Younga & Penriith, E-Y: 1989; 1 Hawequas Mt., 33° 34' S, 19° 08' E, 5.11.1973, sifted litter, leg. Endrödy-Younga, E-Y: 202; 1 Matjiesfontein, 1893, leg. E. Simond; 126 Cederberg mountains, jeep track 1130 m, 32° 28' S, 19°

14' E, 7.11.1983, sifted mountain marsh shore, leg. Endrödy-Younga, E-Y: 2055. *Northwestern Cape Province:* 74 Richtersveld Mt., Omsberg Water, 28° 27' S, 17° 10' E, 23.9.1991, shore washing, leg. Endrödy & Klimaszewski, E-Y: 2796; 9 *idem*, but river stones, E-Y: 2791. *Southern Natal:* 1 Weza For. Station, Impetyene Forest, 30° 37' S, 29° 42' E, 26.11.1989, shorewashing in forest, leg. Endrödy-Younga & Klimaszewski, E-Y: 2719. *Natal Drakensberg mountains:* 4 Oqalweni Forest, x.1960, humus, leg. N. Leleup, Z.A.: 26; *northern Transvaal:* 102 Roberts Drift on Vaal River, 27° 02' S, 29° 02' E, 8.10.1973, flood debris sifted, leg. Endrödy-Younga, E-Y: 190; 10 Waterberg, Haak-doringboom farm, 24° 11' S, 27° 50' E, 13.2.1976, flood debris, leg. A. Strydom, E-Y: 1039. **NAMIBIA:** 1 Naukluft Mt. & Park, 24° 16' S, 16° 15' E, 26.10.1974, shorewashing, leg. Endrödy-Younga, E-Y: 431. **ZIMBABWE:** 3 Umtali, Melsetter, 1700 m, ii.1969, R. Mussard.

**ECOETHOLOGY.** This species shows a definite affinity to shorelines. Six of nine samples with habitat data were collected by shore-washing or from flood debris. Only two samples of five specimens were sifted from forest litter, and one sample with one specimen was collected in a groundtrap. No specimens were collected at a light or by flight intercept traps.

**Months recorded:** August, October, November and February.

***Clambus clavatus spec. nov.*, Figs 10C–D, 11**

Small, black, with evenly-spaced, rather long but inconspicuous pubescence. Hairs dark but shiny, about as long as distance between their insertions, denser on head, more widely spaced on elytra. Lateral angle of head behind posterior margin of eye; genal margin strongly bent towards apex. Posterior horizontal plate of metasternum markedly reduced in middle, here about one-quarter of lateral length. Anterior margin sharply and simply crested, posterior edge smooth. Ventral pubescence longer than dorsally, uniform. Penis flat, broad, apex broadly and deeply incised.

Lateral angle of head behind posterior margin of eye. Genal margin straight to posterior third of eye, there angularly bent towards apex, thus apex appearing almost truncate. Gena narrowest in anterior half of eye. Integument smooth and shiny with hardly discernible trace of shagreen and very fine basal punctures of hairs. Hairs rather long, dark and shiny, as long as one-half the diameter

of eye, on vertex as widely spaced as the length of a hair, denser but not longer on clypeus. — Anterior lateral angle of pronotum more narrowly rounded than posterior angle, lateral margin straight in a short anterior section. Integument and pubescence as on vertex. — Elytra about as long as broad, broadest near humeri, from there evenly arcuately tapering to apex, thus more elongate in appearance. Sutural profile evenly arcuate, moderately convex. Integument similar to that of pronotum, hairs also of similar length but more widely spaced, distance between their insertions twice the length of hairs. — Posterior horizontal plate of metasternum in middle about one-quarter of lateral length. Anterior transverse crest sharp and broad, particularly in middle, here almost as broad as flat posterior portion. Posterior edge not punctate-marginate. Ventral pubescence even, hairs longer than on dorsal surface and about as dense as on clypeus. Integument as on dorsal surface but basal punctures of hairs distinct on coxal plates. — Dissected specimens brachypterous with outstretched wings hardly longer than elytra. — Last two funicular segments of antenna (segments 7 and 8) of equal length, but penultimate segment somewhat narrower, both diamond-shaped, angularly broadest near middle. — Aedeagus 0,34 mm long with free-standing portion of penis 0,13 mm. Penis virtually symmetric, from narrow base (0,03 mm) gradually expanding to parallel-sided and deplanate apical half with a breadth of 0,08 mm. Apex symmetrically incised. Fused parameres slightly asymmetric (Fig. 10C–D). Some variation in shape of penis in dorsoventral view.

Length 1,05–1,10 mm, breadth 0,70 mm.

**DISTRIBUTION.** South Africa: between the Indian Ocean coast and the Drakensberg mountains (30–1300 m) from central Natal to the Transkei (Fig. 11).

**MATERIAL EXAMINED.** 11 ♂ (10 dissected) and 17 ♀, all in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 12 paratypes: S. Afr., Natal Midlands, Doreen Clarck N. R. (Nature Reserve), 1100 m, 29° 34' S, 30° 17' E, 8.12.1989, forest floor litter, leg. Endrödy-Younga & Klimaszewski, E-Y: 2750; 1 *idem*, but 11.12.1989, E-Y: 2759; 1 *idem*, but Karkloof For., 1300 m, 29° 18' S, 30° 13' E, 5.12.1989, forest, logs and bark, leg. Endrödy-Younga & Klimaszewski, E-Y: 2746. Transkei, 1 Ntsubane For., 31° 27' S, 29° 44' E, 25.11.1988, forest floor litter, leg. Endrödy-Younga, E-Y: 2579; 1 *idem*, but 24.1.1988, rotten *Cussonia* fruit, E-Y: 2577; 3 *idem*, but 25.11.1987, fungi and for. litter, E-Y: 2537; 5 N. Transkei, Port

St. Jones [Johns], 31° 33' S, 29° 32' E, 24.11.1987, indig. forest litter, leg. Endrödy-Younga, E-Y: 2533; 1 *idem*, but groundtraps with banana bait 8 days, E-Y: 2535; 1 Transkei coast, Dwesa For. Res., 32° 17' S, 28° 50' E, 28.2.1985, groundtraps with meat bait 7 days, leg. Endrödy-Younga, E-Y: 2165.

**ECOETHOLOGY.** All collecting sites are in mesic indigenous forest with dense canopies. The collecting dates reflect only the timing of fieldwork and adult activity must cover at least the summer rainfall period between October and March.

**ETYMOLOGY.** The Latin adjective *clavatus*, -a, -um = split, referring to the bilobate apex of the penis.

***Clambus priscus* Endrödy-Younga, Figs 4D, 10E–F, 13, 14B, 16D, 18A–B**

*Clambus priscus* Endrödy-Younga, 1961b: 320.

Closely related and very similar to *C. capensis*. Last two funicular segments of antenna (segments 7 and 8) shorter, penultimate segment as long as broad, last funicular segment much broader than long. Genal margin not angularly bent in front of lateral angle of head, but sometimes arcuate in varying degrees. Aedeagus narrower, with asymmetric bilateral median dilations. Characters not repeated below are similar to those of *C. capensis*.

Genal margin along eye arcuate before reaching lateral angle of head though never quite straight as in *C. capensis*, varies from a slight to very distinct preapical bend, or angle itself is broadly rounded (Figs 4D, 16D). There is marked variation, even within the same sample, and it is therefore only of use in identifying typical (most) specimens. — Penultimate funicular segment of antenna (segment 7) pearl-shaped, as long as broad in males, slightly longer and cylindrical in females. Last funicular segment (segment 8) one-third broader than long, triangular in both sexes. — Aedeagus 0,47 mm long with free-standing apical portion of penis 0,19 mm. Narrow apical portion of penis emerges from broader, parallel-sided basal portion (breadth of base 0,08 mm, apical portion 0,04 mm), apex narrow, slightly spatulate (Fig. 10 E–F). Aperture of ductus ejaculatorius drop-shaped, strongly tapering towards base (Fig. 18A–B).

Length 1,20–1,50 mm, breadth 0,80–0,95 mm.

**DISTRIBUTION.** South Africa: southwestern Cape (Fig. 13).

TYPE MATERIAL. Holotype ♂: 'Capland,' in Natural History Museum, Budapest. The specimen was recently reexamined.

MATERIAL EXAMINED. 22 ♂♂ (16 dissected) and 17 ♀♀. Apart from holotype, all specimens in Transvaal Museum, Pretoria.

*Localities:* SOUTH AFRICA: *southwestern Cape Province:* 1 Bains Kloof, 33° 30' S, 18° 10' E, 8.11.1973, grassnetting, leg. Endrödy-Younga, E-Y: 221; 2 Rysputstrand, 34° 36' S, 20° 19' E, 30.9.1984, ground and vegetation, leg. Endrödy-Younga, E-Y: 2130; 17 Pearly Beach, 5 km NE, 34° 38' S, 19° 33' E, 27.8.1983, groundtraps 63 days, 16 banana, 1 meat bait, leg. Endrödy-Younga, E-Y: 1984; 1 Arniston, inland, 34° 39' S, 20° 13' E, 29.8.1983, groundtraps with faeces bait 59 days, leg. Endrödy-Younga, E-Y: 1995; 4 Struisbaai, 34° 47' S, 20° 03' E, 28.8.1983, groundtraps 60 days with meat (3) and banana (1) bait, leg. Endrödy-Younga, E-Y: 1987; 3 *idem*, but 34° 46' S, 20° 03' E, traps with faeces bait, E-Y: 1989.

ECOETHOLOGY. This species inhabits sandy coastal and sub-coastal areas in the southernmost parts of the western Cape Province. A single specimen was collected in coastal mountains (Bain's Kloof). Most of the specimens were captured in baited groundtraps.

*Months recorded:* August, September and November.

### ***Clambus phallus spec. nov.***

Lateral angle of head level with posterior margin of eye, genal margin distinctly arcuate in front of angle. Posterior horizontal plate of metasternum markedly reduced in middle, here about one-fifth of lateral length; anterior margin finely crested, posterior edge distinctly punctate-marginate. Shiny dark brown to almost black, entire dorsal surface evenly set with short semi-erect, shiny bristles. Segments 7 and 8 of antenna (last two funicular segments) shorter and distinctly broader than in *C. capensis*. Segment 7 broader than long in males, as broad as long in females. Segment 8 twice as broad as long in males, slightly narrower in females. Both segments distinctly longer than broad in *C. capensis*. Segment 8 is broadest in middle, diamond-shaped in *C. phallus*, but broadest near apex, triangular in *C. priscus*.

Closely related and in habitat requirements very similar to *C. capensis* and *C. priscus*. All characters not repeated here are similar to those of *C. capensis*.

The species is composed of two subspecies that differ only in their aedeagi.

ETYMOLOGY. *Phallus*, -i, masculine latinized noun of the Greek *fallos*, meaning erect penis, and refers to the shape of the aedeagus of this species.

### ***Clambus phallus phallus*, Figs 12A–B, 13**

Aedeagus 0,33 mm long with free-standing apical portion of penis 0,1 mm. Penis 0,045 mm broad at apex of paramere, 0,05 mm at its preapical dilation and 0,03 mm at its truncate apex, angularly bent in middle in lateral view and not evenly arcuate as in *C. phallus litoralis*. Paramere 0,08 mm broad at its base and 0,04 mm at its broadly and obliquely truncate apex; long sensory setae well spaced (Fig. 12A–B).

Length 1,15–1,28 mm, breadth 0,75–0,88 mm.

DISTRIBUTION. South Africa: middle part of southern Cape coastal region (Fig. 13).

MATERIAL EXAMINED. 3 ♂♂ (all dissected) and 11 ♀♀, all in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 9 paratypes: S. Afr., S. Cape, Harkerville Forest, 34° 04' S, 23° 10' E, 7.12.1976, (dry) elephant dung (in forest), leg. Endrödy-Younga, E-Y: 1300; 3 *idem*, Tsitsikama (forest), Lottering, 33° 56' S, 23° 40' E, 12.12.1977, forest floor litter, leg. Endrödy-Younga, E-Y: 1419.

### ***Clambus phallus litoralis subsp. nov.*, Figs 12C–D, 13**

Aedeagus 0,33 mm long with free-standing apical portion of penis 0,1 mm. Penis at apex of paramere 0,05 mm broad and 0,04 mm at its broadly truncate apex, evenly tapering to a minute preapical contraction. The deplanate penis evenly and more strongly arcuate dorsoventrally away from paramere. Paramere narrower, 0,07 mm at base, roundly truncate apex also narrower; two pairs of sensory setae set closer to each other (Fig. 12C).

Length 1,20 mm, breadth 0,78 mm.

DISTRIBUTION. South Africa: Atlantic coast of the western Cape (Fig. 13).

MATERIAL EXAMINED. 3 ♂♂ (all dissected) and 2 ♀♀, all in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 3 paratypes: S. Afr., W. Cape Prov., Lambertsbaai, dunes, 32° 05' S, 18° 24' E, 30.7.1989, litter under bushes, leg. Endrödy-Younga & Klimaszewski, E-Y: 2619.

ECOETHOLOGY. The habitat of this subspecies is the white coastal sands on the southern outskirts of Lambertsbaai, in vegetation litter accumulated in thin layers under clumps of small bushes.

ETYMOLOGY. Latin adjective *litoralis*, -e, = shore-living.

REMARKS. A single male collected 29 km north of Clanwilliam (31° 47' S, 18° 43' E, 29.8.1989, general collecting, leg. Endrödy-Younga & Klimaszewski, E-Y: 2675) has an evenly arcuate penis as in *C. p. litoralis* but the apex is slightly dilated instead of contracted. It might represent an intermediate form between *C. p. phallus* and *C. p. litoralis*, although much closer to the latter subspecies (Fig. 12D).

***Clambus silvaticus spec. nov.***, Figs 11, 12E–F, 14D, 16C

Genal margin angularly bent at posterior margin of eye to lateral angle of head that is situated far behind eye; genal margin slightly indented or emarginate, thus apex minutely produced. Posterior horizontal plate of metasternum markedly reduced in middle, here one-quarter of lateral length; anterior margin finely crested, posterior edge punctate-marginate. Penis deplanate, from broader base reduced in middle to narrower apical portion with broadly rounded apex; apex of penis double-bent in lateral view. General habitus with pubescence resembling that of *C. capensis*.

Straight genal margin of head angularly bent at level of posterior margin of eye, section behind about as long as one-third the diameter of eye, slightly indented or emarginate before minutely produced apex, thus angle is situated far behind posterior margin of eye (primary character). Integument shiny with indistinct traces of shagreen, basal punctures of hairs hardly discernible. Hairs of vertex shorter, pointing inward, becoming gradually longer towards clypeus and anteriorly directed; on clypeus recumbent and length up to one-half the diameter of eye. — Anterior lateral angle of pronotum more narrowly rounded than posterior angle, lateral margin evenly arcuate from behind anterior angle into posterior margin. Pubescence radiating from a centre in front of middle of disc, hairs shorter than on clypeus. Shagreen and basal punctures of hairs as indistinct as on head. — Elytra only slightly longer than broad (36:33), evenly arcuate both in dorsal and lateral views. Integument and pubescence as on

pronotum. — Posterior horizontal section of metasternum markedly reduced in middle, here about one-quarter of lateral length. Anterior margin evenly and finely crested, posterior edge distinctly punctate-marginate. Disc together with coxal plates longitudinally flat, densely, evenly and rather sharply shagreened, basal punctures of hairs very fine. Evenly set hairs as long as on clypeus, sternites transversely shagreened with similar pubescence. — Antennal segments 7 and 8 slightly broader than long, but segment 8 larger and triangular. First club segment cup-shaped, as long as broad (Fig. 16C). — Aedeagus 0,38 mm long with free-standing apical portion of penis 0,12 mm. Penis 0,07 mm broad at apex of paramere, narrower under paramere and somewhat asymmetric. (Figs 12E–F, 14D).

Length 1,10–1,30 mm, breadth 0,74–0,80 mm.

DISTRIBUTION. South Africa: eastern part, between Natal Midlands and southeastern Cape, east of the Drakensberg mountains (Fig. 11).

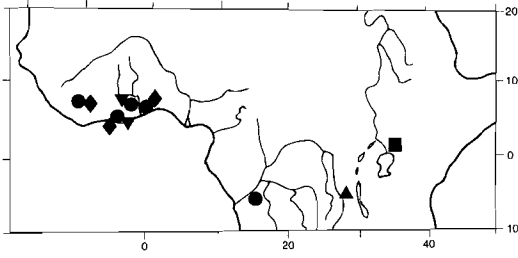
MATERIAL EXAMINED. 11 ♂♂ (all dissected) and 7 ♀♀, all in Transvaal Museum, Pretoria.

Holotype ♂, allotype ♀ and 6 paratypes: S. Afr., (southern) Natal, Weza, Ingeni Forest, 30° 32' S, 29° 41' E, 18.11.1989, bushbuck excrement, leg. Endrödy-Younga & Klimaszewski, E-Y: 2690. Other paratypes: 1 *idem*, but 23.11.1989, sifted grass, forest, E-Y: 2714; 3 Natal Midlands, Karkloof Forest, 1300 m, 29° 18' S, 30° 13' E, 5.12.1989, sifted forest litter, leg. Endrödy-Younga & Klimaszewski; E-Y: 2745; 4 (eastern) Cape, Amatole (Mt.), Isidenge For. St., 32° 41' S, 27° 16' E, 14.11.1987, indigenous for. litter, leg. Endrödy-Younga, E-Y: 2511; 1 SE Cape Prov., Alexandria For. St., 33° 43' S, 26° 23' E, 6.12.1987, indigenous forest litter, leg. Endrödy-Younga, E-Y: 2555; 1 Transkei, S. coast, Dwesa Forest St., 32° 17' S, 28° 50' E, 3.3.1985 shorewashing in forest, leg. Endrödy-Younga, E-Y: 2181.

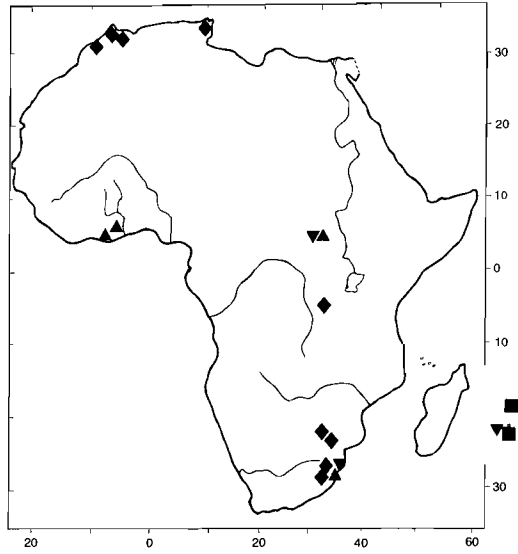
ECOETHOLOGY. All collecting sites were in dense and high-canopy indigenous forest at different altitudes (100–1300 m) and at different distances from the coast, from coastal forest (Dwesa) to the foothills of the Drakensberg mountains (Karkloof).

*Months recorded:* November and December, mainly due to the timing of collecting trips.

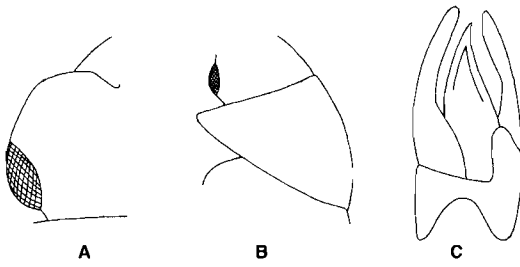
ETYMOLOGY. Latin adjective *silvaticus*, -a, -um = forest dweller, referring to the habitat of the species.



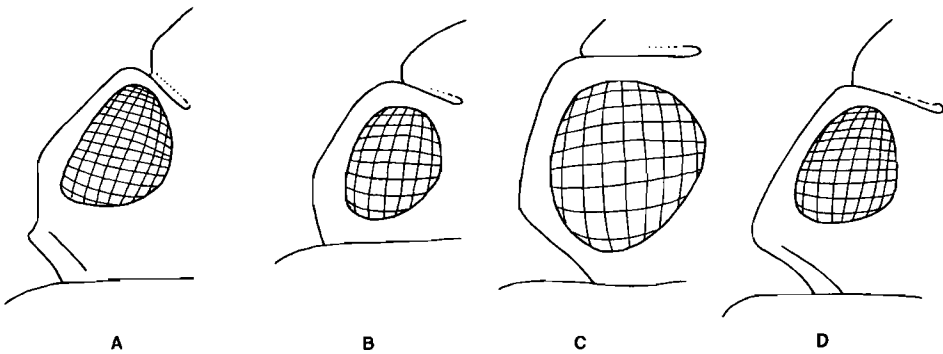
**Fig. 1**  
Distribution of *Clambus* species in the Ethiopian Region. ▲ = *C. splendens splendens*; ▼ = *C. splendens palmae* subsp. nov.; ● = *C. pygmaeus*; ◆ = *C. variolosus*; ■ = *C. elgonicus*.



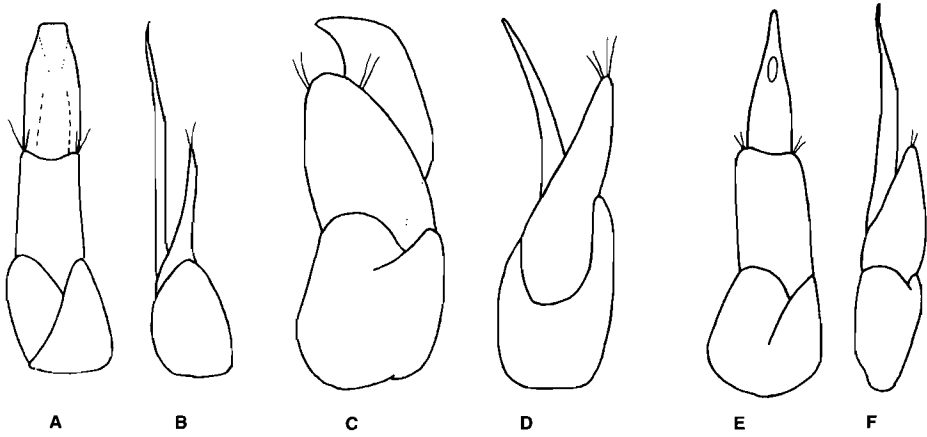
**Fig. 2**  
African distribution of *Clambus* species. ▲ = *C. desaegeri*; ▼ = *C. hastatus*; ◆ = *C. minutus*; ■ = *C. vinsoni*.



**Fig. 3**  
*Calypotermes dubius*. A = immarginate eye; B = triangular lateral angle of pronotum; C = aedeagus in ventral view.

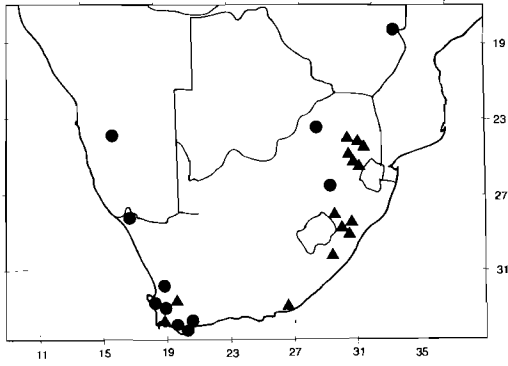


**Fig. 4**  
Lateral angles of head in *Clambus* species. A = *C. hastatus*; B = *C. desaegeri*; C = *C. minutus*; D = *C. priscus*.



**Fig. 5**

Aedeagi of *Clambus* species alternately in ventral and lateral views. A-B = *C. simsoni*; C-D = *C. variolosus*; E-F = *C. natalensis* spec. nov.

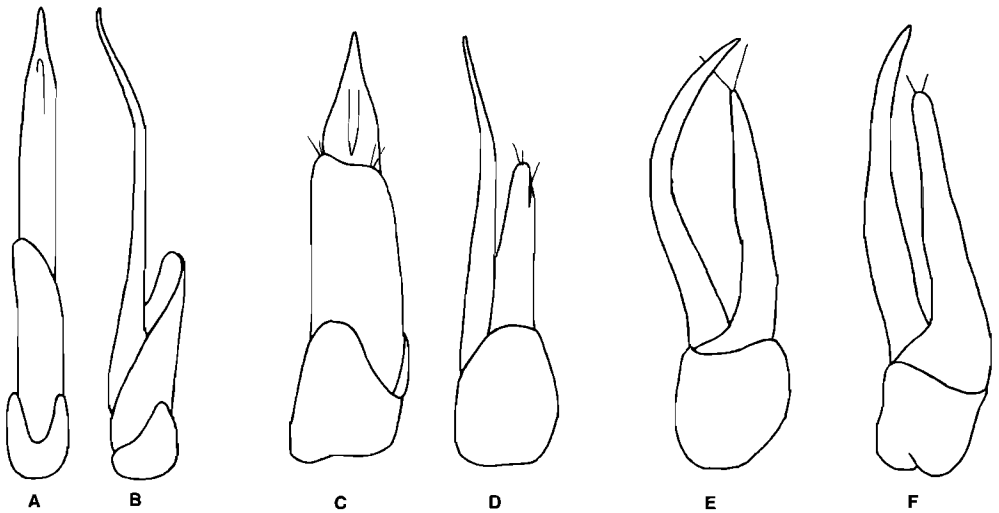


**Fig. 6**

Distribution of *Clambus* species in Southern Africa. ▲ = *C. simsoni*; ● = *C. capensis*.

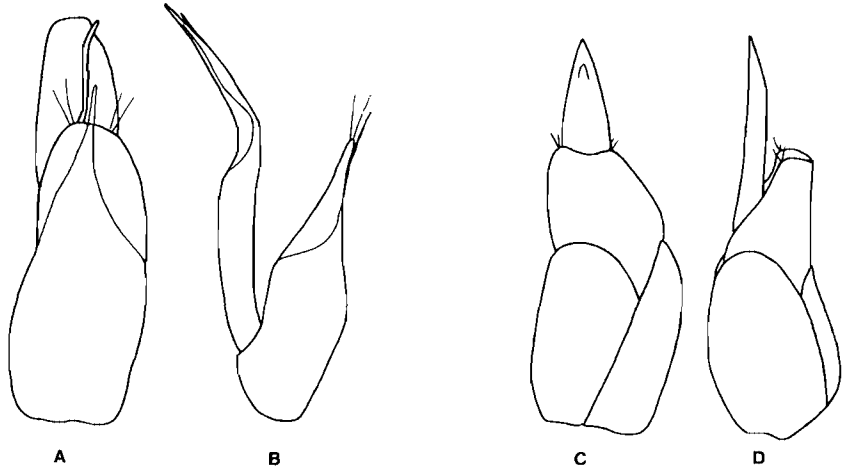
**Fig. 7**

Aedeagi of *Clambus* species. A-B = *C. hastatus*; C-D = *C. elgonicus*; E = *C. pygmaeus*; F = *C. desaegeri*. A and C in ventral view, B, D, E, F in lateral view.



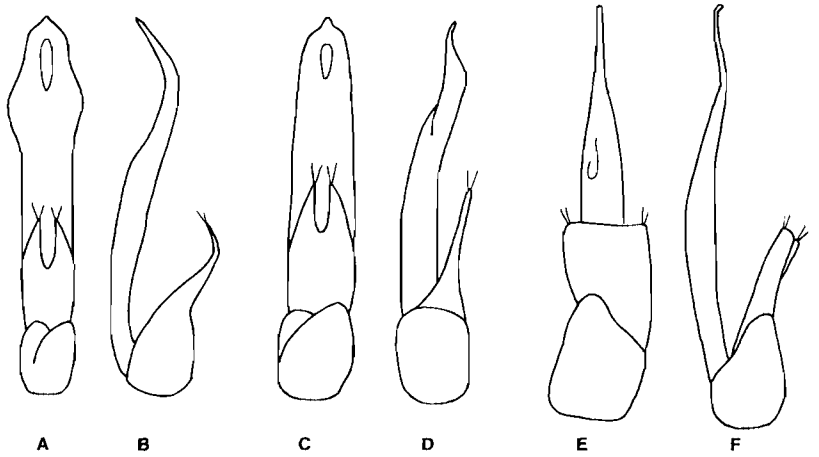
**Fig. 8**

Aedeagi of *Clambus* species alternately in ventral and lateral views. **A-B** = *C. minutus*; **C-D** = *C. ndumu* spec. nov.



**Fig. 9**

Aedeagi of *Clambus* species alternately in ventral and lateral views. **A-B** = *C. splendens splendens*; **C-D** = *C. splendens palmae* subsp. nov.; **E-F** = *C. vinsoni*.



**Fig. 10**

Aedeagi of *Clambus* species alternately in ventral and lateral views. **A-B** = *C. capensis*; **C-D** = *C. clavatus* spec. nov.; **E-F** = *C. priscus*.

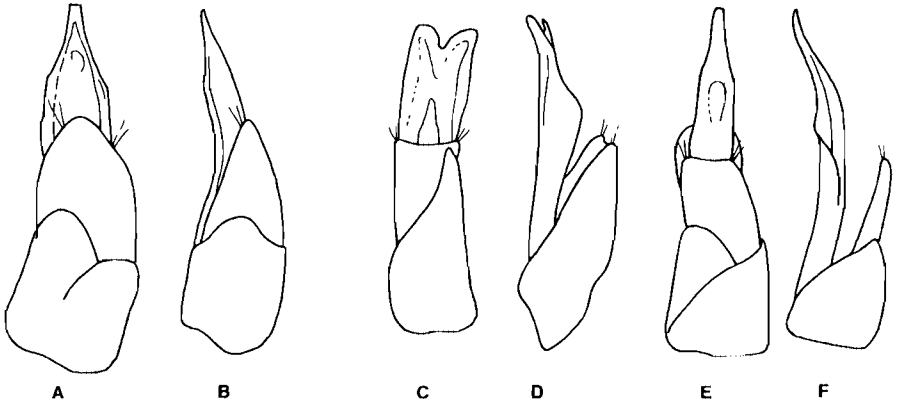


Fig. 11

Distribution of *Clambus* species restricted to the eastern parts of South Africa. ■ = *C. natalensis* spec. nov.; ◆ = *C. ndumu* spec. nov.; ▲ = *C. silvaticus* spec. nov.; ● = *C. clavatus* spec. nov..

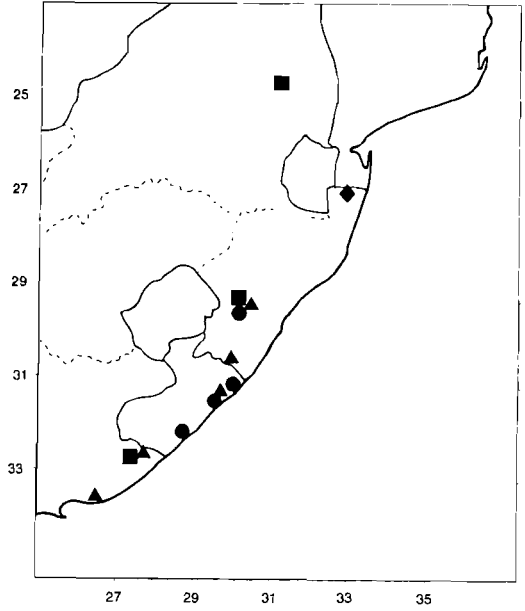


Fig. 12

Aedeagi of *Clambus* species. *Clambus phallus* spec. nov.: A-B = *C. p. phallus*, C = *C. p. litoralis* subspec. nov. (in semilateral view); D = an intermediate between *C. p. litoralis* and *C. p. phallus*; E-F = *C. silvaticus* spec. nov. A, C, D, E in ventral view, B, F in lateral view.

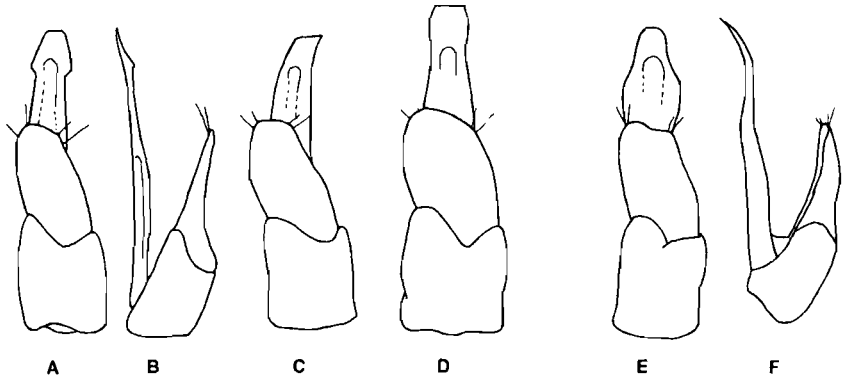
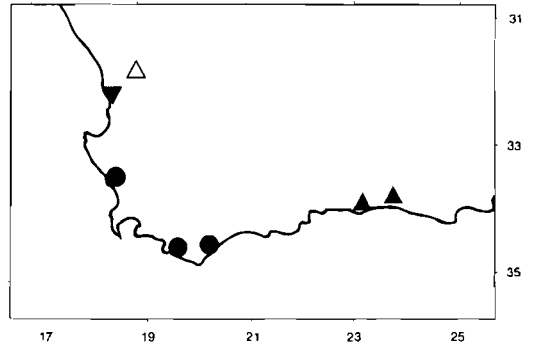
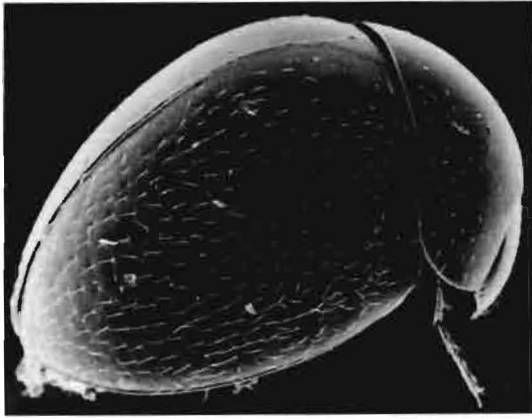


Fig. 13

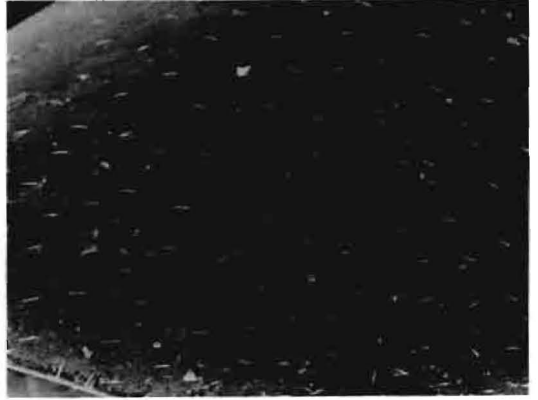
Distribution of *Clambus* species restricted to the southwestern Cape. ● = *C. priscus*; *C. phallus* spec. nov.: ▲ = *C. p. phallus*, ▼ = *C. p. litoralis* subspec. nov.; ◻ = intermediate between the two subspecies.







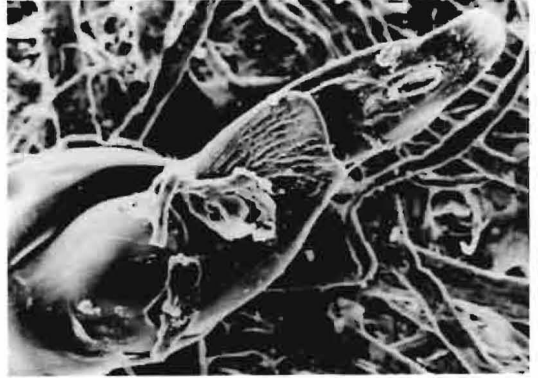
A



B



C



D

Fig. 14

*Clambus* species. A = *C. simsoni*; B = *C. priscus*, elytral pubescence; C = *C. splendens palmae* subsp. nov., aedeagus; D = *C. silvaticus* sp. nov., aedeagus.



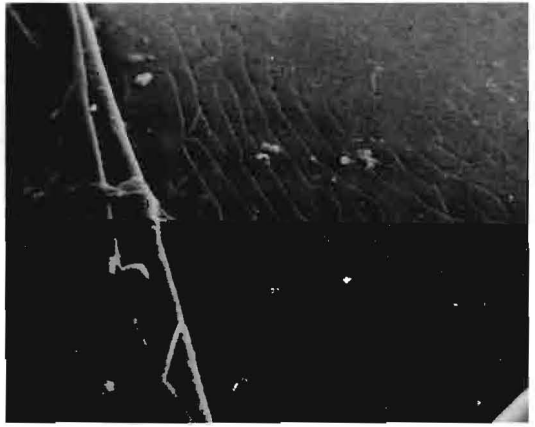
A



B



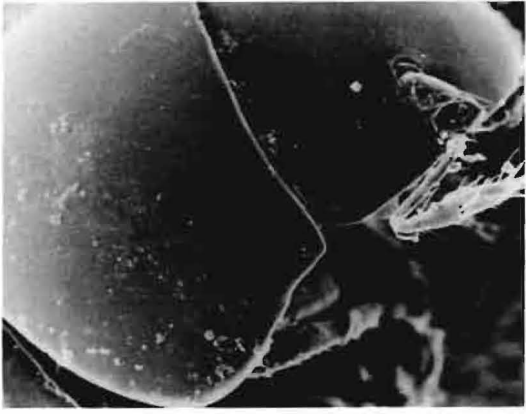
C



D

Fig. 15

Horizontal plate of the metasternum in *Clambus* species. A = *C. ndumu* spec. nov.; B = *C. capensis*; C = *C. pygmaeus*; D = *C. splendens palmae* subsp. nov.



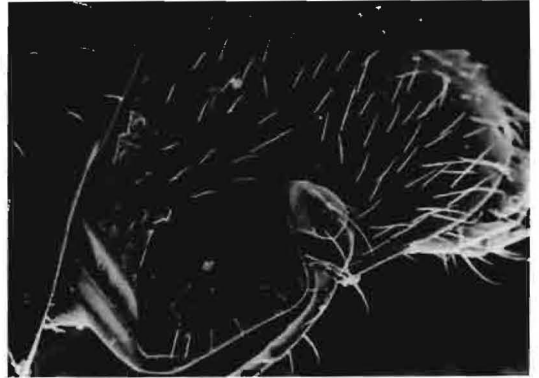
A



B



C



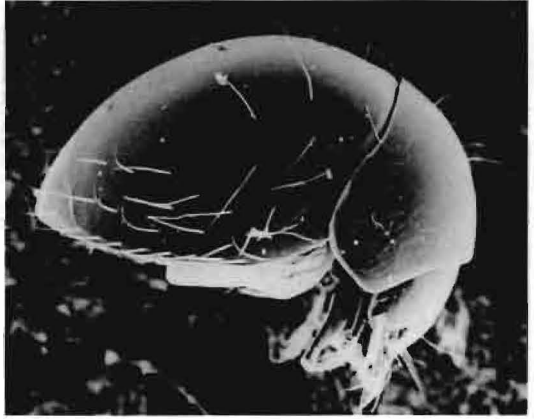
D

Fig. 16

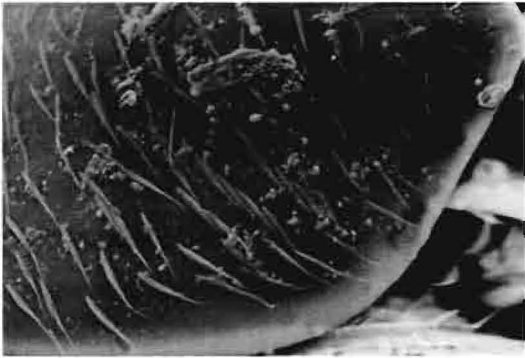
*Clambus* species. A = *C. splendens palmae* subsp. nov., lateral margin of pronotum; B = *C. capensis*, lateral angle of head; C = *C. silvaticus* spec. nov., antenna; D = *C. priscus*, head.



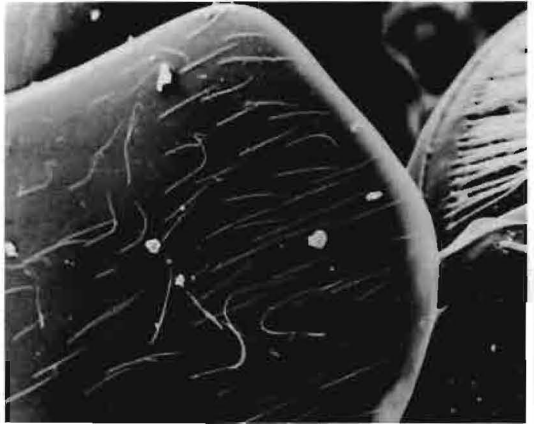
A



B



C



D

**Fig. 17**

Vestiture in two *Clambus* species. A, C = *C. pygmaeus*; B, D = *C. desaegeri*. A and C = dorsal setation; B and D = hairs of lateral lobes of pronota.



A



B



C



D

Fig. 18

Aedeagi in *Clambus* species. A-B = *C. priscus*; C-D = *C. capensis*. A and C = aedeagi in ventral view; B and D = apertures of ductus ejaculatorius.

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