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In Cameroon, two species of *Pantecphylus* Karsch, 1891 (Insecta: Orthopteroidea: Ensifera: Pseudophyllidae) are distributed

Abstract - In the genus *Pantecphylus* Karsch, 1891 (Orthopteroidea: Ensifera: Pseudophyllidae), a second species, *P. kamerunus*, is described from Cameroon, differing in the shape of *fastigium verticis* in both sexes, in male subgenital plate, length of cerci and *plectrum* from the genus type. Both species, *P. kamerunus* sp.n. and *P. cerambycinus* Karsch, 1891, were characterized by a spiny pronotum bearing large warty prozonal elevation with two strong spines, as generic character. The rounded and enlarged pronotal hind part bears 8-10 strong spines. Tegmina and alae are developed, but strongly modified, and not suitable for active flights over long distances. The body length of males varied between 17-22 mm in *P. cerambycinus* and 24-26 mm in *P. kamerunus,* and in females between 24-32 mm in *P. cerambycinus*, and 23-31 mm in *P. kamerunus*. In Cameroon, both species inhabit the same region. For identification, a key to the species was added.

Zusammenfassung - *In Kamerun sind zwei* Pantecphylus-*Arten verbreitet.*

Aus Kamerun wird eine zweite Art des Genus *Pantecphylus* Karsch, 1891 (Orthopteroidea: Ensifera: Pseudophyllidae) beschrieben, die in beiden Geschlechtern von *P. cerambycinus* in der Form des *Fastigium verticis*, der Struktur der männlichen Subgenitalplatte, der Cercus- und *Plectrum*-Länge differiert. Beide Arten sind charakterisiert durch ein dorniges, Warzen tragendes Pronutum, das eine starke prozonale Erhebung mit zwei nach außen ragenden starken Dornen als Genus-Charakter aufweist. Das gerundete und verbreiterte Metanotum besitzt am Hinterrand 8-10 Stacheln. Vorder- und Hinterflügel sind voll entwickelt, aber so modifiziert, daß kein aktiver Flug über lange Strecken möglich sein wird. Die Körperlänge variiert bei Männchen von *P. cerambycinus* zwischen 17-22 mm, bei Weibchen zwischren 24-31 mm. Für *P. kamerunus* wurden Werte zwischen 24-26 mm für Männchen und 23-31 mm für Weibchen ermittelt. Beide Arten leben in Kamerun in den selben Gebieten. Für die Identifizierung der Arten wird ein Schlüssel angegeben.

(*) In respectable memory of the well-known Orthopterologist Professor Marcello La Greca, Catania.

Riassunto - *Descrizione di una seconda specie del genere* Pantecphylus *Karsch in Cameroon.*

Viene descritta una seconda specie appartenente al genere *Pantecphylus* Karsch, 1891 (Orthopteroidea: Ensifera: Pseudophyllidae) presente in Camerun, che si differenzia da *P. cerambycinus* per la conformazione del *fastigium verticis* in ambedue i sessi, per la piastra subgenitale maschile, la lunghezza dei cerci e del *plectrum*. Ambedue le specie sono caratterizzate da pronoto provvisto di spine, con un forte infossamento dell'area pronotale, con 2 robuste spine, proprie del genere. La regione posteriore del pronoto, rotondeggiante ed allargata, è provvista di 8-10 spine ben sviluppate. Tegmina ed ali posteriori pure ben sviluppate ma fortemente modificate, ragion per cui risultano non idonee al volo per lunghe distanze. La lunghezza del corpo del maschio è di 17-22 mm in *P. cerambycinus* e 24-26 mm in *P. kamerunus*; nella femmina è di 24-32 mm in *P. cerambycinus* e 23-31 mm in *P. kamerunus*. Ambedue le specie vivono nel medesimo areale. E' fornita una chiave dicotomica di classificazione.

Key words: *Pantecphylus cerambycinus*, *Pantecphylus kamerunus*, Orthopteroidea Ensifera Pseudophyllidae, Cameroon.

INTRODUCTION

The genus *Pantecphylus* was introduced by Karsch (1891) to accomodate a single species of Pseudophyllidae, *P. cerrambycinus* Karsch, 1891 from Africa. By the time of the original description two specimens, one female and one male, were available, collected in different regions of Cameroon by various persons. The female was deposited as type in the Humboldt Museum of Natural History of Berlin. The male was originally stored in the collection of Dr Heinrich Dohrn, Stettin, and later moved to the Museum and Institute of Zoology, Polish Academy of Science, Warsaw (Liana 1999).

Further references to the genus until recently are very scarce. Some morphological data were added by Griffini (1909) who described a second species in the genus, *P. major* from French Congo. About a hundred years later, Heller (1996) studied two males of the genus (misidentified as *P. cerambycinus)* from East Zaire and reported on two types of stridulatary mechanisms for communication and defence.

During the last century, more than hundred specimens of the genus were collected in Africa and preserved in various European museums but not studied. The type species of the genus was still unsuffient known, until Schmidt & Stelzer (2004) studied the morphological structures of the male stridulatary organs. For the study, six specimens from the Natural History Museum London could be identified as true *P. cerambycinus*. Many others were misidentified. These findings encouraged the author to revise the old Latin description of Karsch (1891) and to describe a new species, named *P. kamerunus*, from Cameroon (Fig. 1).

The present paper aims on a revised description of *P. cerambycinus* as type spe-

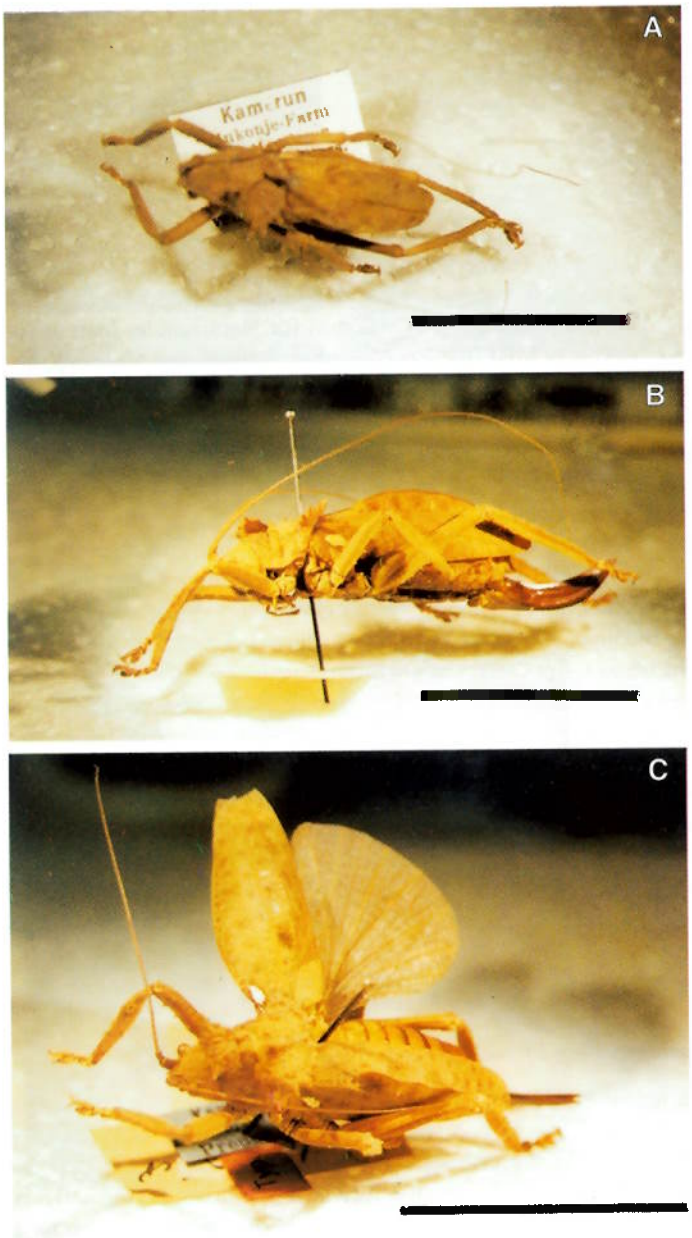

Fig. 1 - *Pantecphylus kamerunus* sp. n., male (A) and female (B), both Mus. Hamburg, and *P. cerambycinus*, female-type (C), Mus. Berlin, showing the main generic characters. Scale bar: 3 cm.

cies of the genus (typus generis), to study the variability of characters within species, to give a new outline of the differentiating characters to separate *P. kamerunus* sp. n., as second species found in Cameroon.

MATERIAL AND METHODS

For the investigation, all individuals collected in Cameroon and near to the border of the country and preserved in The Natural History Museum London (BNMH), the Institut royal des Sciences naturelles de Belgique, Departement d'Entomologie, Bruxelles (Coll. R. I. Sc. N. B.), the Museum für Naturkunde, Institut für systematische Zoologie, Berlin (ZMB), the Zoologisches Institut und Museum der Universität Hamburg (Mus. Hamburg), and the Museum für Naturkunde, 2. Zoologische Abteilung, Wien (Mus. Vienna) were exammined. Totally, 20 individuals were studied. From the African Museum Tervuren, where no *Pantecphylus* specimen was preserved from Cameroon, the locations of the sampling sites were received by the geographical coordinates, determined by an internal database.

For each individual, species-characteristic body parts were prepared and photographed. For viewing the stridulatory structures, the hind wings had to be carefully prepared under water. For drying-up in straight position, a small glass slide was used for stretching the alae, which are normally distorted. Thus, both sides of the right and left ala could be examined. Measurements taken include the length of body, elytron (tegmen), thorax, and hind femur to characterize the specimens. For further comparison, the size of charateristic abdominal body parts was calculated after magnification. Some difficulties occurred, when the inner organs were removed from the individuals, and, by this, some external parts were damaged and could not be used.

Drawings were made using a drawing apparatus with a WILD binocular microscope. Photographs were taken by means of a STEMI 2000 C binocular (ZEISS) and a photocamera (MINOLTA) on KODAK-chrome EPY 64 film material.

RESULTS

General charaterization of both species

Antenna uniformly brown, longer than body, inclusively tegmina (Fig. 1), often broken; inserting in front of compound eyes, base roundly elevated (Figs. 2B, 4D, 5A); bases of antennae not touching another (ventral view); scape large bearing short and strong spine most distally, directing forwards and inwards (Fig. 2B); pedicel pear-shaped; little shorter than third segment (funicel); fourth segment about half as long as latter (Figs. 2C, 4D).

Pronotum saddle shaped, spiny and warty, divided into three parts by transverse sulci (Figs. 2E, 4D); metazona longer than pro- + mesozona, prozonal protruding ele-

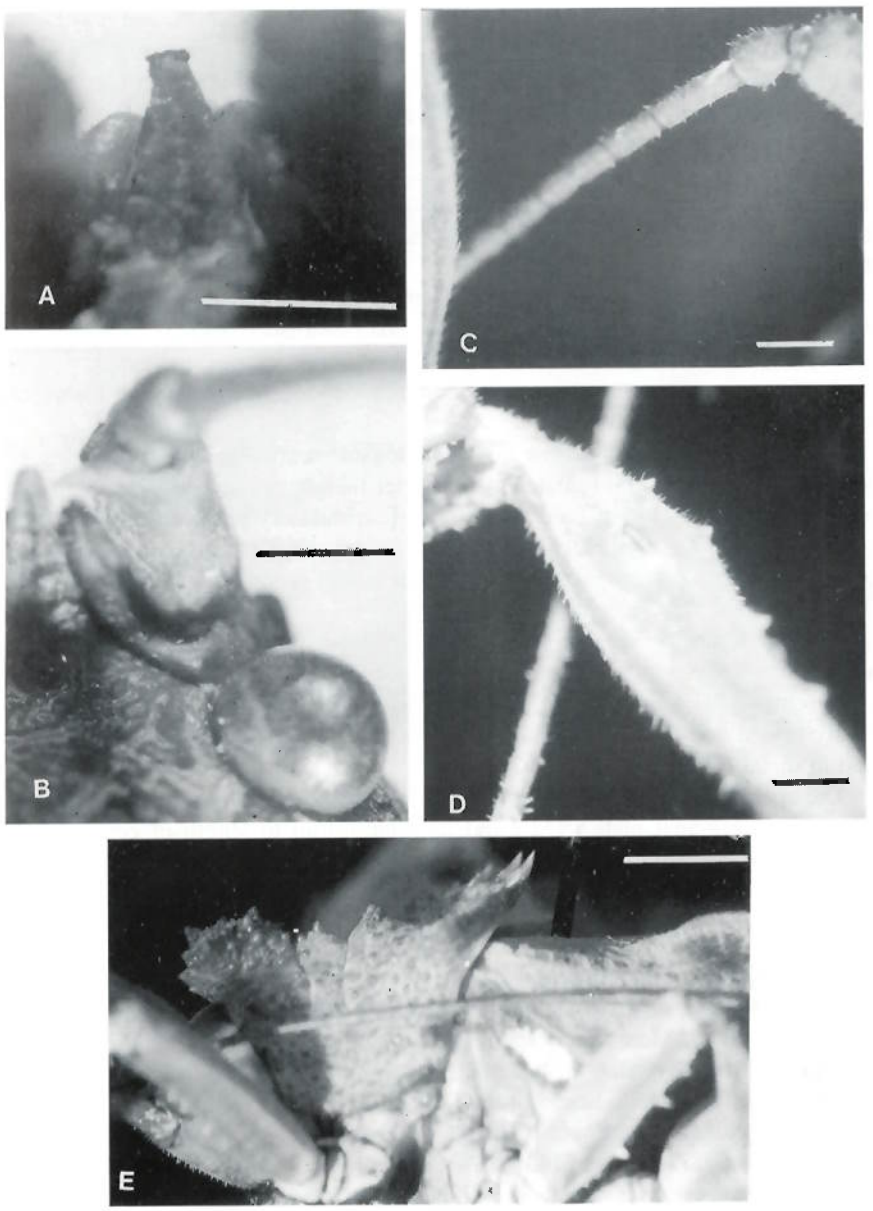

Fig. 2 - *Pantecphylus cerambycinus* Karsch, 1891. A: *fastigium verticis* of female Lo 08, B-E: female type (ZMB); B: *fastigium verticis* and elevated base of antenna in front of complex eye; C: proximal segments of antenna; D: fore femur showing split-shaped opening of auditorial foramen; E: saddle-shaped pronotum, proximal part of tegmen and mid femur, left lateral view. Scale bar: 1 mm.

vation differently sized, sulcated in midline, covered with warts accumulated sometimes two spiny humps directing forwards, bearing two long and strong spines directing obliquely up-, a bit fore-, and outwards; mesozona short and restricted, two upright warty humps on disc; hind part laterally keeled and vaulted upwards, metazona rounded and dilated, raising up to behind, near hind sulcus on disk again two upright warty humps, almost forming a square with those on mesozona, hind margin bearing eight, sometimes ten, grey-brown spines, almost equally sized (4 or 5 pairs), outest strongest; paranotal spine brown and more slender, directing straight outwards on either side.

Fore and mid femora roundly spuare-shaped and marginated; hind femur flattened with deep longitudinal furrow outside; coxa and trochanter of fore leg bearing short spine; tibiae always short-haired; auditorial foramen mussel-shaped, with split-forming opening (Fig. 2D). Spination specimen dependent. Four tarsal limbs, crawled limb bearing large pulvillus.

Tegmina (elytra) grey-brown and tent-shaped, normally left overlapping right, covering fan-shaped and infumated alae, shorter than tegmina; alae bearing strengthened anal veins, dorsally covered with rows of stridulatory pegs in both sexes; either tegmen characterized by brilliant white spot on proximal costal area. In female one, and in male two mechanisms are available for sound production (Schmidt & Stelzer, 2004).

Abdomen dark-brown, often ringed, and ridged on distal half of tergites; distal tergites constricted and telescopically movable.

In female, SGP divided into two lateral-isometric parts by ovipositor, either part distally tipped and proximally rounded; ovipositor robust and upcurved, slightly serrated in distal fourth (Figs. 3A, 6C).

The species are mainly characterized by the shape of *fastigium verticis*, spination of femora, supra-anal plate (SAP) and its relationship to length of cerci, length of plectrum, and specially by the sclerotized subgenital plate (SGP) of male.

Redescription of P. cerambycinus *Karsch, 1891*

1891 - Karsch, Berl. Entomol. Z. 36: 100, t 3, f. 11 a-b, (♂♀)
1895 - Brunner v. W., Pseudophyllinae, Wien:.98, t 4, f. 41, (♂♀)
1906 - Bolivar, Mem. Soc. espan. Hist. nat. (*Pantecphyllus*)
1906 - Kirby, Syn. Cat. Orth. 2: 310
1908 - Griffini, Mem. Soc. Entomol. Belg. XV: 46
1912 - Sjostedt, Ark. Zool. 7/37: 21
1943 - Ebner, Zool- Anz. 143: 262
1954 - Chopard, Mem. Inst. Fr. Afr. Noire 40/2: 54 (♂♀)
1954 - Beier, Rev. Pseudophyllidae, Madrid:. 273, f. 156 (♂♀)
1957 - Beier, Rev. Zool. Bot. Afr. 55: 60, (♂♀)
1960 - De Jong, Zool. Verh. Rijksmus. nat. Hist. Leiden 45: 59, f. 11,e-g (♂♀)
1962 - Beier, Tierreich: 232, f. 160, (♂♀)

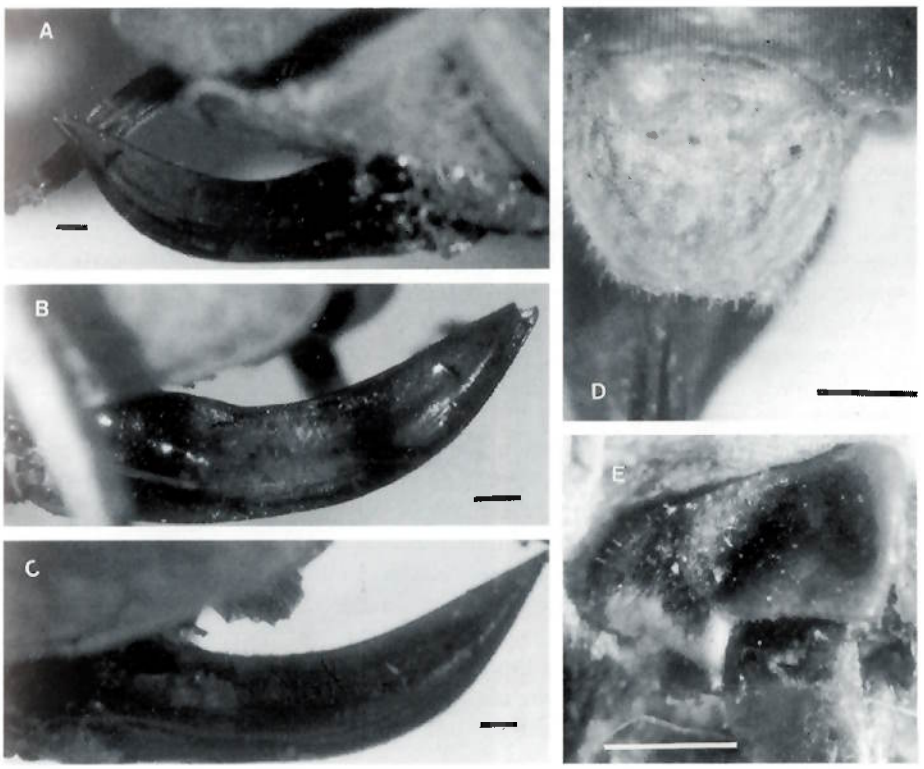

Fig. 3 - *Pantecphylus cerambycinus* Karsch, 1891. A-C: variation of ovipositor (Lo 08, Lo 09, Lo 12) (lateral view); D: SAP of Lo 09 (dorsal view); E: right SGP/2 of Lo 09 (ventral view). Scale bar: 1 mm.

1963 - Beier, Orthopterorum Catal. 5, Tettigoniidae, Subfam. Pseudophyll.: 74
1997 - Otte, Orthoptera Species File Nr. 7; Pseudophyllidae: 213
1999 - Liana, Bull. Mus. Inst. Zool. PAS, suppl. Ann. Zool. Warszawa 2: 56 (♂).
2004 - Schmidt & Stelzer, Entomol. Gener. 27(1): 40-42 (♂).

MATERIAL EXAMINED: 1♀, type, Cameroon, Barombi-Stat. [04°39' N, 9°24' E]. Preuss, S. leg., Mus. Berlin; 1♂, Coll. Brunner v. W., Kamerun, Staudinger leg. (Mus. Vienna); 2♂ (Lo 06, Lo 07) and 1♀ (Lo 08), Cameroon: Bitye-Ja-RRiver, VI-VII 1909, dry season, [03°01' N, 12°22' E], 1♂ (Lo 13), Cameroon: Mt. Balmayo, VI 1965 [03°54' N, 12°31' E]; 1♀ (Lo 12), Cameroon: Efulen, 20.IX.1925, H.L.Weber leg., [02°46' N, 10°43' E]; 1♀ (Lo 09), Cameroon: Batouri District, 24.III.1934, F.G. Merfield leg. [04°26' N, 14°22' E] (BNHM).

FEMALE: BODY length (mm) 24-32, pronotum 8-11, tegmen 18-27, (width 8.5-9.5), fore femur 8.5, middle femur 8.5, hind femur 13-15, hind tibia 13-14.

Head: *fastigium verticis* prolonged, slightly furrowed above, conical, at tip rounded, surpassing bases of antennae (Fig. 2A, B), almost as large as elevated base of antenna (ratio 6:5); scape twice as large and long as pear-shaped pedicel (Fig. 2C); space between scapes, directed forwards, slightly wider than one scape large.

Pronotum: prozonal elevation relatively low; four humps symmetrically and trapezoidly arranged on disc; paranotal front margin steeply and hind margin weakly increased (Fig. 2E), distance between tips of large prozonal spines 9 mm (in type), protuberance depressed in midline; hind margin of metazona upraised, with 10 brown spines in type, in others 8 spines.

Tegmen rounded at tip, five large radial cells (in type); alae fan-shaped and slightly distorted, dark anal strengthened veins, not reaching distal ala margin, ala one fifth shorter than tegmen (Fig. 1E).

Spination of legs: fore femora marginated and somewhat rounded above, with 3 ventro-anterior spines and 2 ventro-posterior warty elevations, fore tibia enlarged (Fig. 2D), two dorsal rows of 4 spines, exteriorly bigger than interiorly; 2 small ventro-posterior spines distally arranged; mid femur more rounded with 3 ventro-anterior spines; mid tibia, above two rows of 4 spines; hind femur below, 10 spines distally accumulated; hind tibia above, two rows of spines, exteriorly 5-6, interiorly 6-8 spines; pulvilli 3/4 as long as crawled limb.

Abdomen light brown; tergites brown, distal half dark ringed and ridged.

SAP light brown to sandy-brown, rounded behind, slightly haired, a bit larger than long (Fig. 3D); measurements: width / length (mm): 2.07 / 1.93 in type, 2.86 / 2.65 in Lo 08, 2.79 / 2.40 in Lo 09.

Cercus length 1.96 mm in type, 2.06 mm in Lo 09, slightly incurved at distal half, in situ reaching hind margin of SAP (Fig. 3D).

SGP destroyed by removing inner organs in type, in Lo 09, SGP/2 length 2.5 mm, distal poimted part larger than proximal part, latter to outwards about straightly decreased, longest part near ovipositor (Fig. 3E).

Ovipositor red-brown to almost black, upcurved in distal half, poorly serrated near tip, length / width (mm): 14.5 / 3.5 in type, 15.2 / 3.04 in Lo 08, 12.2 / 2.5 in Lo 09, 17.8 / 3.6 in Lo 12 (width measured at distance 1/3 from base) (Fig. 3A-C).

MALE: length of body (mm) 17-22, pronotum 7-8, tegmen 13-18, hind femur 8.5-11; (vertex pathological, male stored in Mus. Vienna).

Head: fastigium verticis conical, furrowed above, surpassing elevated bases of antennae (viewed from above) (Fig. 4D), on side round- angularly shaped, like cone, rounded at tip, slightly broader than elevated base of antenna (ratio 6:5); distance between scapes slightly wider than one scape large.

Pronotum: metazona little longer than pro- + mesozona, prozonal protruding elevation relatively low, sulcated in midline, hind margin bearing 8 brown spines, outest strongest, as long as brown paranotal spine more slender (Fig. 4D).

Tegmen rounded at tip, left elytra overlapping right, cubital-anal region enlarged, 1.5 mm wide at plectrum region, plectrum 0.71 mm long in Lo 06; only two enlarged cells at radial area; alae rounded, one fifth shorter than tegmen, infumated and distorted, bearing strengthened anal veins with stridulatory pegs, not reaching distal margin of ala (Schmidt & Stelzer, 2004).

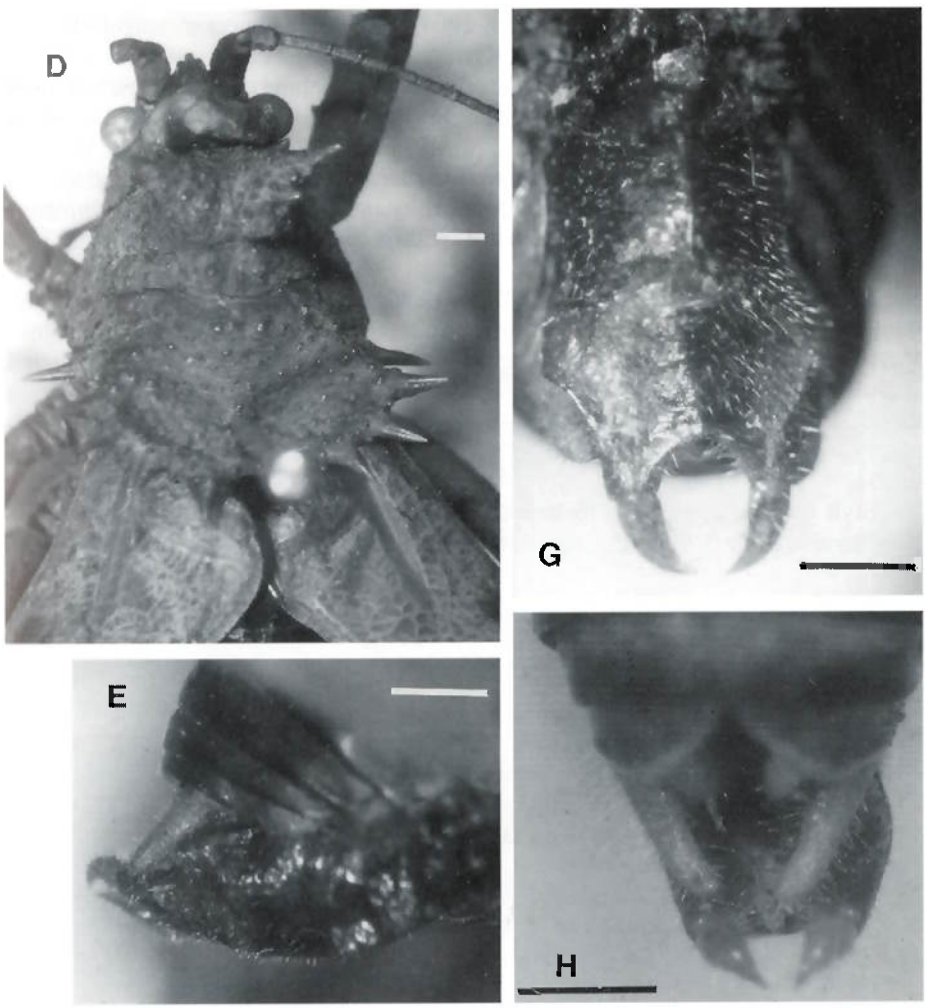

Fig 4 - *Pantecphylus cerambycinus* Karsch, 1891, male. D: head, spiny pronotum and bases of tegmina; *fastigium verticis* prolonged (dorsal view) (Mus. Vienna); E: SGP upraised to behind and cercus (lateral view) (Mus. Vienna); G: SGP and styli, hind margin weakly excised (ventral view) (Mus. Vienna); H: hind part of abdomen showing cerci and hind margin of last tergite; SAP folded back (dorsal view) (Lo 07). Scale bar: 1 mm.

Spination of legs: fore femur with 3 ventro-anterior and 2-3 minute ventro-posterior spines; fore tibia with 2-4 small dorsal and 2 small ventral spines, the latter moved towards apex; mid femur with 3-4 ventro-lateral spines; mid tibia with each 3-4 dorso-external and dorso-internal spines; hind femur below, 6-8 spines distally accumulated; hind tibia above, two rows of 6-7 spines; pulvilli 3/4 as long as crawled limb.

Abdomen: last five tergites constricted and telescopically movable, showing ridges on distal surface (Schmidt & Stelzer, 2004), last tergite almost rectangularly excised, largely light-brown lobated (Fig. 4H).

SAP sandy-grey, slightly haired, broadly rounded behind and a bit notched, often folded back (Fig. 4H), slightly larger than long (1.72 > 1.59-1.61 mm in Lo 06 and Lo 07).

Cercus length 1.33 –1 .37 - 1.46 mm (Lo 13, Lo 06, Mus. Vienna, related to body length), shorter than SAP, sometimes covered by latter, yellow to light-brown, strongly haired, rhombic and slightly incurved, with brown tooth at apex incurved (Figs. 4E,H).

SGP length 2.65 < 2.86 mm in Lo 07 and 2.88 mm in male storted in Mus. Vienna, long-haired, raised up behind, brown-black sclerotized; proximal part basically almost straight to a bit roundly excised in midth (in Lo 07), rounded below and keeled, slightly longer than, or as long as, distal part, a bit keeled and pressed-in, the latter broadest and concavely rounded at base, constricted behind; hind margin weak-concavely rounded, depth of excision 0.58, 0.62, 0.69 mm (Lo 06, Lo 07, Lo 13) (Fig. 4E,G).

Styli roundly constricted to acute tip incurved, longer than depth of SGP excision, length 0.72, 0.73, 0.85, 0.88 mm (Lo 13, Mus. Vienna, Lo 07, Lo 06), grey-brown, long-haired (Fig. 4G).

Distribution: Cameroon.

Description of Pantecphylus kamerunus *sp. n.*

MATERIAL EXAMINED: 1♂, holotype, 3♀ paratypes, Cameroon: Mukonje-Farm, R. Rohde leg.[04°37' N, 9°30' E] (Coll. R. I. Sc. N. B., no. Brux 01-04); 1♂, 1♀, Kamerun: Mukomje-Farm, near Mundame at Mungo river, R. Rhode leg., vend. 25.XI.1904 (Mus. Hamburg); 1♀, French Cameroons: D'Ja Posten, 1-30.VII.1936, F: G. Merfield leg. [03°15'-25' N, 13°30'-32' E] (BNHM, Lo 10); 1♀, French Cameroons: Ebolowa, H.C. Wing leg. [02°54' N, 11°09' E] (BNHM, Lo 11); 1♀, S Nigeria: Oban District, P.A. Talbot leg. [05°20' N, 08°35' E] (BNHM, Lo 05)).

MALE: body length (mm) 23-26 mm, pronotum 7.5-8, tegmen 14-17, hind femur 10-11.5.

Head: *fastigium verti*cis short, not surpassing lobes of antennae (ratio 8:5) (Fig. 5A), furrowed above; distance between antennae slightly wider than scape large.

Pronotum: prozonal protuberance sulcated in midline; hind margin with 8-9 brown spines, outest strongest; brown paranotal spine longer and more slender than spines on hind margin.

In tegmen, cubital-anal region narrowed, plectrum length 1,35 mm, left elytra

overlapping right; alae shorter than tegmina, fan-shaped and distorted, infumated, bearing strong anal veins and rows of pegs for stridulation.

Spination of legs: fore femur with 2 ventro-anterior spines, some minute spines on tibia; mid femur with 3-4-(5) ventro-lateral spines; mid tibia with 2-4 small dorsal and 3 small ventral spines; hind femur below, 7 spines distally accumulated; hind tibia above, two rows of 6-7 spines, below, 3 small spines; pulvilli 3/4 as long as crawled limb.

Abdomen brown-grey, last 4-5 tergites constricted and telescopically movable, distally dark ringed; last tergite concave-angularly rounded, hind border of lobes bright brown (Fig. 5D).

SAP hind border rounded, yellow-brown, folded back.

Cercus length 2,35 mm, light brown to yellow, conical, shorter than SAP, in situ reaching base of SGP incision, distal part slightly incurved with dark tooth most distally, long and strongly haired (Fig. 5B, D).

SGP length 3.19 mm (in midth) to 3.66 mm (at side), at base concavely angulated (0.47 mm deep), dark-brown sclerotized, long-haired, proximal part longer than

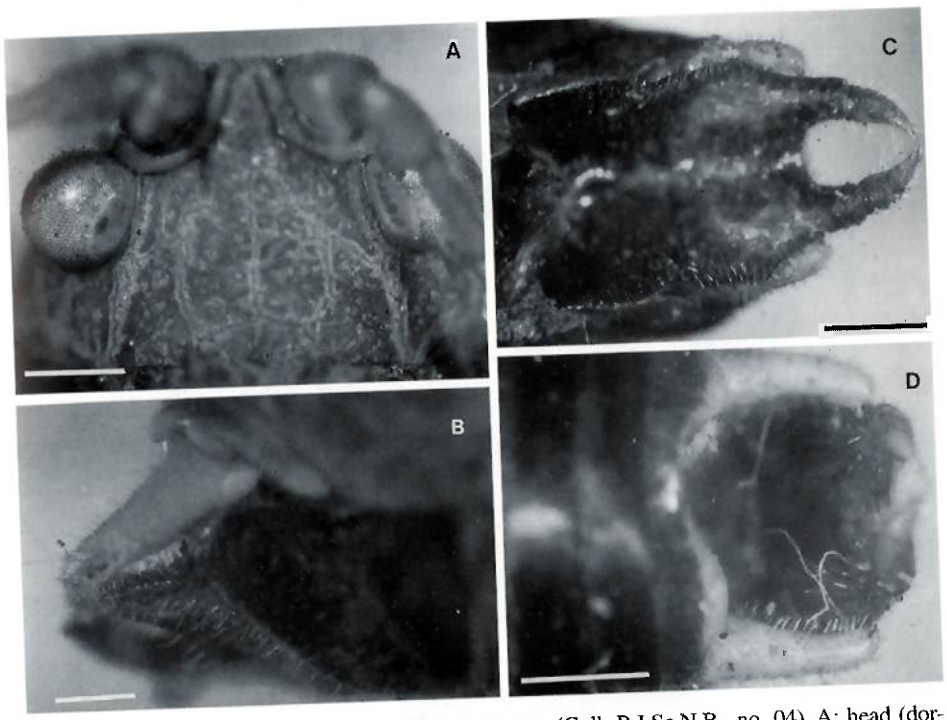

Fig. 5 - *Pantecphylus kamerunus* sp. n., male holotype, (Coll. R.I.Sc.N.B., no. 04). A: head (dorsal view), showing left complex eye, bases of antennaa bordering short *fastigium verticis*; B: SGP and cercus long-haired (right lateral view); C: SGP and haired styli like forceps (ventral view); D: tip of abdomen, showing hind margin of last tergite, cerci and styli (dorsal view). Scale bar: 1 mm.

distal one; basically round-angularly excised, proximal part rounded below and keeled, distal part pressed-in, flattened and punctured, slightly upraised, prolonged and constricted to behind, hind margin circularly excised (Fig. 5C).

Stylus length 0.77 mm, dark brown, at base robust and rounded, strongly constricted to acute tip, slightly longer than depth of SGP excision, long-haired, slightly upraised and incurved.

FEMALE: body length (mm) 23-31, pronotum 8-11, tegmen 20-24, hind femur 12-15, ovipositor 14-16.

Head and thorax similar to male; fastigium verticis not surpassing bases of antennae (ratio 8:5 in Lo 10 and Lo 11), sometimes not reaching front margin of elevated bases, (Fig. 6A); distance between scapes as wide as one scape large; mouthparts light brown and black bordered (Mus. Hamburg).

Pronotum slightly saddle-shaped, prozonal protuberance sulcated in midline, distance between tips of outraised spines 9.5 mm in Lo 10, hind margin bearing 8-9 brown spines, outest strongest; paranotal spine longest, brown and more slender.

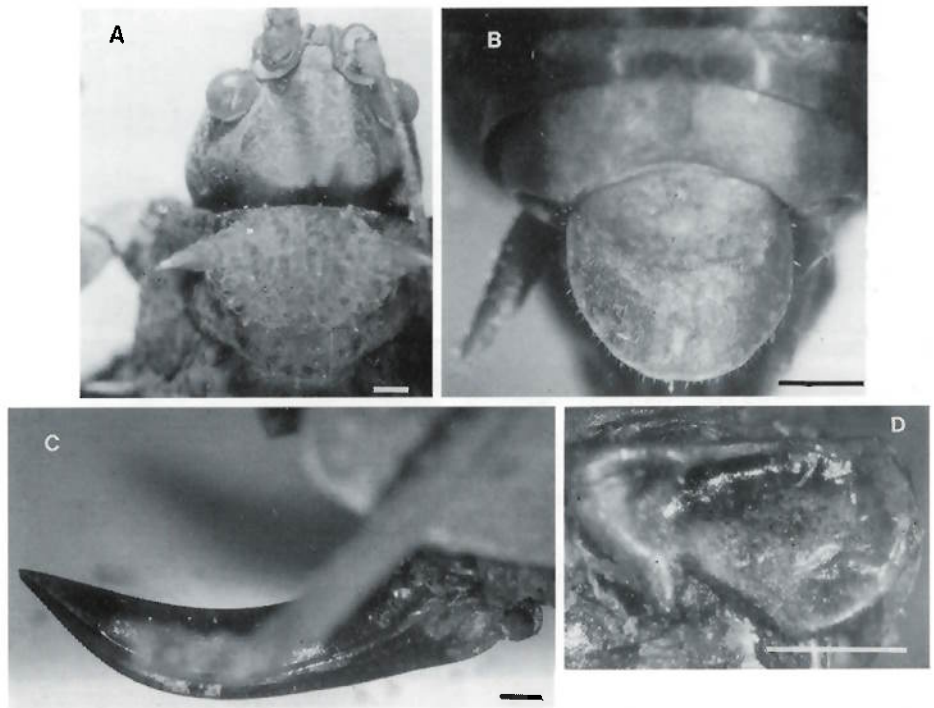

Fig. 6 - *Pantecphylus kamerunus* sp. n. female A: head and pronotum of Lo 10 (dorsal view); B: SAP and cercus of Lo 10 (dorsal view); C: ovipositor of Lo 11 (right lateral view); D: SGP/2 of Lo 10, right part (ventral view). Scale bar: 1 mm.

Alae slightly shorter than tegmina, infumated and distorted, bearing strengthened anal veins with stridulatory pegs.

Spination of legs: fore femur with 3 ventro-anterior spines; fore tibia with 2 small dorsal spines, exteriorly and interiorly, 3 small ventral spines moved towards apex; mid femur with 4(+1)ventral spines, exteriorly; mid tibia above, 4 spines on inner and 4 small ones on outer margin; hind femur below, 7-(9) spines, more distally arranged; hind tibia above with two rows of 6-7 or 8-10 spines, below, 3 small spines; pulvilli 2/3 as long as crawled limb.

SAP light brown, rounded behind like plate, slightly larger than long and sometimes notched (2.95 > 2.56 mm in Lo 11, 2.75 > 2. 59 mm in Lo 10), slightly haired (Fig. 6 B).

Cerci constricted and slightly incurved at tip, conical, shorter than SAP (length 2.28 mm in Lo 10), strongly haired, light brown (Fig. 6 B).

SGP divided into two lateral-isometric parts by ovipositor; each half 2.67 mm long, 1.71 (1.76) mm large in Brux 01, 2.44 mm long and 1.37 (1.04) mm large in Lo 10, 2.29 mm long and 1.16 (1.25) mm large in Lo 11, consisting of rounded proximal and tipped distal part (data for latter in parenthesis) (Fig. 6 D).

Ovipositor brown-black, distal half upcurved, length 13.9 mm and width 2.7 mm in Lo 11 (Fig. 6 C), in Brux 01, length / width: 15.8 / 3.6 mm.

Distributiom: Cameroon - S Nigeria.

KEY TO THE SPECIES

The two species distributed in Cameroon can be identified by following characters:

A. In both sexes, fastigium verticis short, not surpassing elevated bases of antennae; male SGP deep-concavely rounded at base, plectrum length about 1.35 mm, cercus length in male 2.35, in female 2,28 mm. . . . . *kamerunus*

B. In both sexes, fastigium verticis prolonged, surpassing elevated bases of antennae; male SGP at base almost straight to little concavely rounded, length of plectrum about 0.7 mm, cercus length in male 1.33-1.46, in female 1.96-2.06 mm . . . . . *cerambycinus*

DISCUSSION

P. cerambycinus was the only known species of the genus *Pantecphylus* Karsch described from Cameroon until this study was carried out. In genus type, both sexes show a prolonged fastigium verticis, as mentioned by KARSCH (1891), surpassing the elevated valves of antennal bases. On disc of pronotum, four upright humps are present, almost forming a square. For identification, the shape of the strongly scleroti-

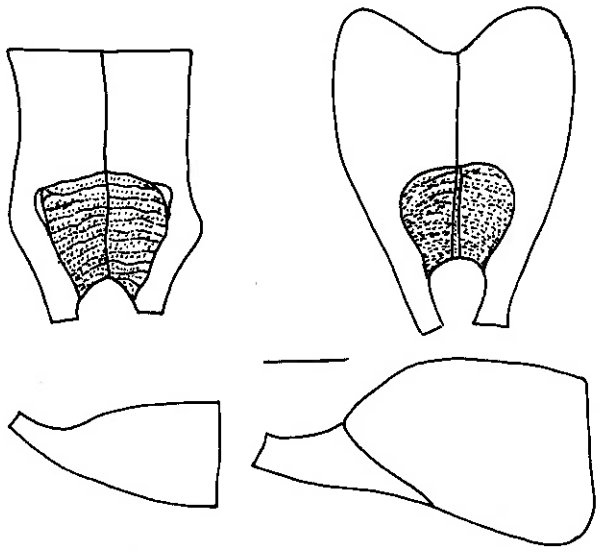

Fig. 7 - Male subgenital plate (SGP) of both *Pantecphylus* species distributed in Cameroon. Scale bar: 1 mm.

zed male SGP with round-sickle-shaped, movable styli was most important (Schmidt & Stelzer, 2004). In *P. cerambycinus*, the male SGP is relatively short, and at base almost straight as viewed in Fig. 3E. The male SAP is normally folded back covering the anus. Then, it was difficult to identify its shape. In individuals, which defecated during dying, the SAP was spread and the structure became visible. The shape of the cerci was genus specific, but their size and relationship to SAP length varied between species. The same was found in plectrum using for male stridulation.

Studying all specimens which were collected in Cameroon and preserved in European museums, in several individuals of both sexes the *fastigium verticis* was not prolonged and did not surpass the elevated bases of antennae. In males of such specimens; the SGP was concavely rounded at base, strongly differing from that of the genus type species (Fig. 7). Furthermore, the individuals had longer cerci in both sexes. Additionally, the plectrum of *P. kamerunus* male was found to be about double as long as in *P. cerambycinus*, indicating that both species produce different songs for communication.

There is no doubt that *P. kamerunus* is a new, not described species from Cameroon, then the type material of both *Pantecphylus* species was collected in almost

Table 1 - Comparison of specific characteristics of P. cerambycinus *Karsch, 1891 and* P. kamerunus *sp. n.; quotient ant / scape: distance between antennae to width of scape.*

Species	*P. cerambycinus* Karsch	*P. kamerunus* sp. n.
MALE	grey	light-grey
Body length (mm)	17-22	23-26
Tegmen (mm) 13-18	14-17	
Fastigium verticis, shape	prolonged	short, not surpassing elevated bases of antennae
Quotient ant/scape	>	>
Width fastigium / antennal base	6:5	8 : 5
Plectrum length (mm)	0.71	1.35
Paranotal spinebrown	brown	
Last tergite excision	rectangular	angularly rounded
SGP base	almost straight	deep-concavely incised
proximal to distal part	> - =	>
excision of hind margin (mm)	0.58, 0.62, 0.69	0.70
Styli length	0.72, 0.73, 0.85, 0.88	0.77
colour	grey-brown	dark brown
shape	roudly constricted	roundly constricted
SAP width - length (mm)	1.72 > 1.59- 1.61	folded back
haired	slightly	?
Cercus length (mm)	1.33, 1.37, 1.46	2.35
FEMALE	light-grey	light grey
Body length (mm)	24-32	23-31
Tegmen (mm)	18-27	20-24
Fastigium verticis shape	prolonged, surpassing elevated bases of antennae	short, not surpassing elevated bases of antennae
Quotient ant/scape	>	=
Width fastigium / antennal base	6 : 5	8 : 5
SGP/2 length (mm)	2.5	2.29,2.44, 2.67
SAP width - length (mm)	2.07/1.93, 2.86/2.65, 2.79/2.40	2.95/2.56, 2.75/2.59/
haired	slightly	slightly
Cercus length (mm)	1.96, 2.06	2.28
Ovipositor length/width (mm)	12.2/2.5, 14.5/3.5, 15.2/3.04, 17.8/3.6	13.9/2.7, 15.8/3.6

the same geographical region. Table 1 shows the taxonomically most important characters of both species.

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REFERENCES

GRIFFINI A., 1909 - Note sobra alcuni Phasgonouridae del Congo. - Ann. Soc. Entomol. Belgiquc, 53: 9-28.

HELLER K.-G., 1996 - Unsual abdomino-alary defensive stridulatory mechanism in the bush-cricket *Pantecphylis cerambycinus* (Orthoptera: Tettigonioidea: Pseudophyllidae). - Journ. Morph., 227: 81-86.

KARSCH F., 1891 - Beiträge zur Systematik der Pseudophylliden Afrikas. - Berlin entomol. Z., 36: 99-100.

LIANA A., 1999 - The type material of Pseudophyllidae (Orthoptera) in the Museum and Institute of Zoology PAS, Warsaw. - Bulletin of the Museum and Institute of Zoology PAS, supplement to Annales Zoologici Warszawa, No 2: 45-62.

SCHMIDT G.H., STELZER R., 2004 - Characterization of male structures, and the stridulatory organs of *Pantecphylus cerambycinus* Karsch (Ensifera, Tettigonioidea, Pseudophyllidae). - Entomologia Generalis, 27 (1): 37-48.

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