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DESCRIPTION OF A NEW SPECIES OF *COLOPHON* FROM SOUTH AFRICA (Coleoptera, Lucanidae)

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The genus *Colophon* Gray, 1832 is endemic of the Cape mountains in South Africa and includes 14 apterous species. The genus was created by Gray in 1832 for the single species *C. westwoodi* Gray, 1832; a second species was described by Westwood (1855), then the genus was studied by Barnard (1929, 1932a, 1932b), who described 10 species, and recently revised by Endrödy-Younga (1988), who added two new species. The 14 known species of *Colophon* can be separated in two evolutionary lineages: plesiomorfic - characterized by the aedeagus with symmetrical parameres and the anal sternite rounded posteriorly, and apomorphic - with the aedeagus of asymmetrical type and the anal sternite asymmetrical at the apical margin, forming a narrow process laterally of the median line (Endrödy-Younga 1988). The plesiomorphic lineage includes *C. stokoei* Barnard, 1929, *C. eastmani* Barnard, 1932, *C. haughtoni* Barnard, 1929, and *C. cameroni* Barnard, 1929; the apomorphic one *C. cassoni* Barnard, 1932, *C. berrisfordi* Barnard, 1932, *C. neli* Barnard, 1932, *C. primosi* Barnard, 1929, *C. westwoodi* Gray, 1832, *C. barnardi* Endrödy-Younga, 1988, *C. thunbergi* Westwood, 1855, *C. whitei* Barnard, 1932, *C. montisatris* Endrödy-Younga, 1988, and *C. izardi* Barnard, 1929.

Thanks to the kindness of Mr. Colin R. Owen (Somerset West, South Africa) I had the opportunity of studying a small collection of stag beetles he collected in the Riversdale Mountains, Cape Province, and of verifying the presence of a new species of *Colophon*, described here.

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Colophon o w e n i n. sp.

MATERIAL EXAMINED. Holotypus: 1 ♂, South Africa, Cape province, Riversdale Mt., East side, 23.XII.1990, legit C. R. Owen, deposited in the Museo Zoologico "La Specola", University of Florence (coll. nr. MZUF 10082)(1) Paratypes: 1 ♀, South Africa, same locality and collector, I.1994, in the Museo Zoologico "La Specola", University of Florence (coll. nr. MZUF 10084); 1 ♂, South Africa, same data as the holotype, in coll. K. Werner, Germany; 5♂♂, 3♀♀, South Africa, same data as the holotype, in coll. C. R. Owen (South Africa); 1 ♀, South Africa, same locality and collector, 7.I.1992, in coll. C. R. Owen.

DESCRIPTION. Male (holotypus). Length (including mandibles): 25.3 mm. Maximum width (at pronotum): 12.5 mm. Mandibles length: 3.0 mm.

Body strongly convex, completely black, dull (fig. 1).

Head broadly oblong, canthi almost parallel, anterior angles obtuse. Surface longitudinally elevated at inner margins of eyes, elevations slanting slightly inward from frons towards base; frons slightly concave, clypeus produced and bilobed, elevated over labrum. Surface densely and irregularly punctate, integument matt. Mandibles short, regularly arcuate (fig. 6); dorsal process entirely absent, ventral process large, with apex forward pointing, acute-angled. Apex of main arms flattened, bifid, a little larger in the right mandible than in the left one. Mentum about as long as wide, with anterior margin bilobed (fig. 7). Pregular sulcus not deep. Antennae without any distinctive features.

Pronotum evenly convex tranversely, entirely marginate, with a submarginal lateral depression near lateral angles. Pronotum widest at posterior third of length, sides regularly rounded, contracted posteriorly; base slightly concave. Disc smooth and matt, with scattered small punctures at lateral and anterior margins.

Elytra about as long as pronotum, but narrower than the widest part of this latter. Humeral angles rectangular, narrowly rounded and flattened. Disc convex, suture not elevated, submarginal depression broad and corrugated; surface entirely smooth, with two vestigial subhumeral straight costae.

(1) According to a recent agreement between the Department of Human and Animal Biology of "La Sapienza" University in Rome (Editor of *Fragmenta entomologica*), the Biosystematics Interest Group of the Entomological Society of South Africa, the National Collection of Insects, Pretoria and the Transvaal Museum, Pretoria, the male holotype of *Colophon oweni* n. sp. is now deposited in the collections of the Transvaal Museum, Pretoria.

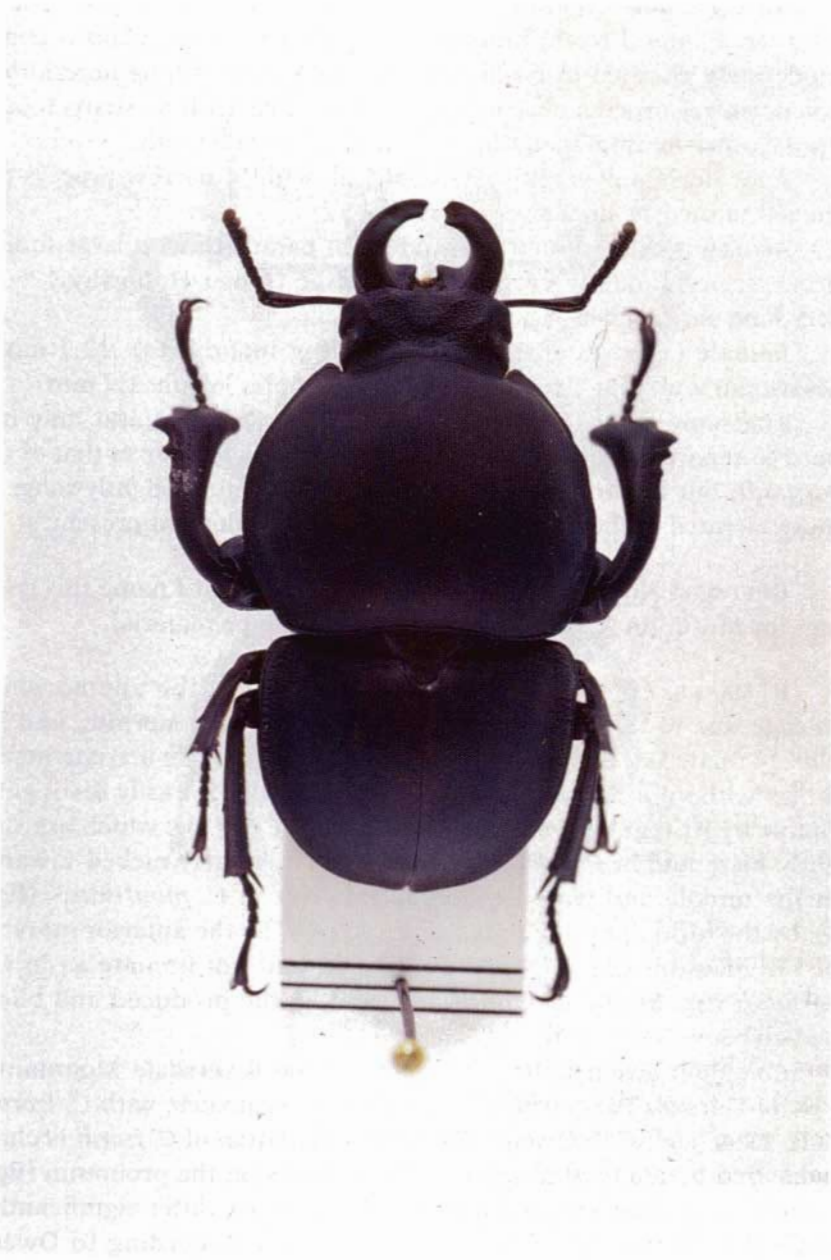


Fig. 1 – Habitus of *Colophon oweni* n. sp. (paratypus ♂).

Anterior tibia regularly arcuate inwards, dilated in apical half, with three lateral teeth; inner apical angle produced. Ventral crest moderately elevated in basal half, gradually diminishing anteriorly; apico-ventral process absent (fig. 3). Mesotibia with a sharp tooth on the outer margin; metatibia with a small medial tooth.

Anal sternite distinctly asymmetrical, with a narrow process to the left of median line in ventral view.

Aedeagus of asymmetrical type; right paramere with large inner process; permanently everted internal sac (sensu Holloway 1960) very long and slender (fig. 9).

Female (allotypus). Length (including mandibles): 22.9 mm. Maximum width (at elytra): 12.6 mm. Mandibles length: 1.9 mm.

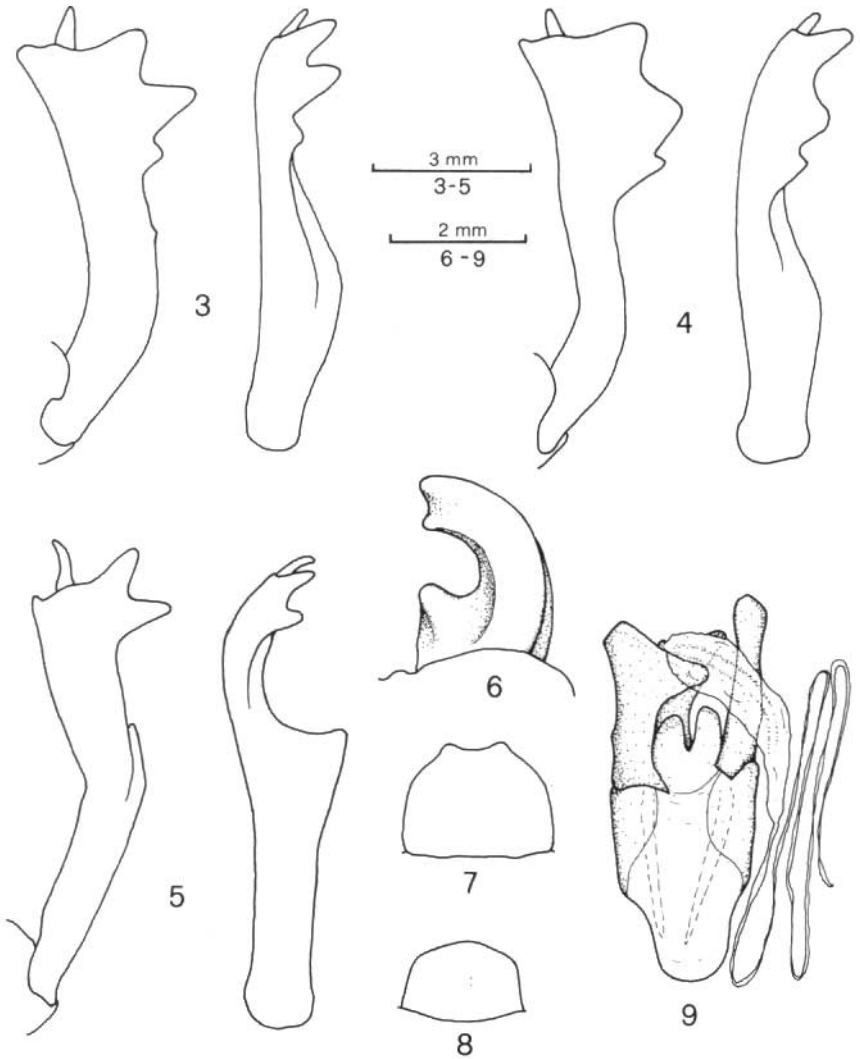
The females of *Colophon* are very homogeneous and may be hard to separate. The female of *C. oweni* n. sp. is similar to that of *C. barnardi*, but has frons more elevated, and mentum slightly longer, more elevated in the middle; subhumeral costal element present.

DERIVATIO NOMINIS. It is with great pleasure that I name this species for Mr. Colin R. Owen, who collected the type material.

REMARKS. *Colophon oweni* n. sp. belongs to the apomorphic lineage due to its asymmetrical aedeagus and anal sternite, and is closely related to *C. barnardi* and *C. montisatris* by its arcuate mandibles without a dorsal process. The new species is easily distinguishable by its regularly arcuate anterior tibiae (fig. 3), which are slightly bisinuate in *C. barnardi* (fig. 4) and angularly nicked inward in the middle and with angled ventral crest in *C. montisatris* (fig. 5); by the bifid apex of its mandibles (fig. 6), by the anterior margin of the mentum (fig. 7) which is bilobed and not arcuate as in *C. barnardi* (fig. 8) and *C. montisatris*, and by the produced and bilobed clypeus.

Colophon oweni n. sp. was found in the Riversdale Mountains east of Garcia's Pass where this species is sympatric with *C. izardi* (XII. 1990, legit C.R. Owen). The latter population of *C. izardi* is characterized by the total absence of the red dots on the pronotum (fig. 2); otherwise their external morphology does not differ significantly from that of the typical form of the species. According to Owen (pers. comm.) this black form of *C. izardi* does not live on the west side of Tradouw's Pass (Endrödy-Younga 1988): specimens collected there are *C. thunbergi*.

Fig. 2 – Habitus of *Colophon izardi* black form.



Figs 3-9 – Male anterior tibiae in *Colophon* species (dorsal and lateral view): *C. oweni* n. sp. (3), *C. barnardi* (4), *C. montisatris* (5). Right mandible of *C. oweni* n. sp. (6). Mentum of *C. oweni* n. sp. (7) and *C. barnardi* (8). Aedeagus of *Colophon oweni* n. sp.

The placement of the genus *Colophon* in one of the Lucanidae subfamilies is not possible at present. Parry (1864), Didier & Séguy (1953), Brinck (1956) and Benesh (1960) included the genus in the subfamily Chiasognathinae, with other south American genera, while Holloway (1960) and Endrödy-Younga (1988) excluded it from that subfamily and placed it in the Lucaninae, mainly on the basis of the male genitalia structure.

The systematic position of the genus has recently been discussed by Scholtz & Endrödy-Younga (1994) on the basis of larval characters. They concluded that "... *Colophon* larvae ... share no unequivocal apomorphic characters with any other group... "; "... *Colophon* is a non-lucanine, but it cannot be placed with certainty in any other subfamily either".

Scholtz & Endrödy-Younga (1994) discussed the particular way of life of the *Colophon* larvae, which were found in humus-rich soil in mountain areas. This agrees well with what has been observed in different species of *Sphaenognathus* Buquet from the Andes (Onore & Bordón 1990; Bartolozzi et al. 1992; Bartolozzi & Onore 1993; Onore 1994). As well, the South American species of *Sphaenognathus* live in mountain areas, and their larvae are found in the soil. However, while adult *Colophon* are apterous, all the *Sphaenognathus* species are able to fly.

ACKNOWLEDGEMENTS. I am grateful to Mr. Colin R. Owen (S. Africa) and Mr. Karl Werner (Germany) for having allowed me to study the material in their possession; I also wish to thank Mr. Saulo Bambi (Dept. of Animal Biology, University of Florence) for the pictures of the new species, and Ms. Sarah Whitman (Zoological Museum, University of Florence) for having checked the English text.

RIASSUNTO

Viene descritta *Colophon oweni*, una nuova specie di Coleoptera Lucanidae del Sud Africa, rinvenuta sui monti Riversdale, nella provincia del Capo. Il nuovo taxon viene illustrato e comparato con gli affini *C. barnardi* Endrödy-Younga e *C. montisatris* Endrödy-Younga, da cui si differenzia principalmente per la forma delle mandibole, del mentum e delle protibie. Viene anche illustrata una forma ad elitre nere, non maculate, di *Colophon izardi*.

SUMMARY

Colophon oweni, a new species of Coleoptera Lucanidae from South Africa is described. The new taxon is compared to the closely allied *C. barnardi* Endrödy-Younga and *C. montisatris* Endrödy-Younga, from which it differs in the shape of the mandibles, mentum and protibiae. A black form of *Colophon izardi* Barnard, 1929 is also illustrated.

REFERENCES

BARNARD, K. H. 1929. A study of the genus *Colophon* Gray. Trans. R. Soc. S. Afr., 18: 163-182.

BARNARD, K. H. 1932a. The *Colophon*. J. Mountain Club. S. Afr., 34: 19-22.

BARNARD, K. H. 1932b. The rediscovery of *Colophon thunbergi* Westw. with descriptions of further new species of the genus. Stylops, 1: 169-174.

BARTOLOZZI, L. & G. ONORE. 1993. Observations on biology and behaviour of *Sphaenognathus oberon* Kriesche (Coleoptera: Lucanidae). The Coleopterists Bull., 47(2): 126-128.

BARTOLOZZI, L., H. E. BOMANS, G. ONORE. 1992. Contributo alla conoscenza dei Lucanidae dell'Ecuador (Insecta, Coleoptera). Frustula Entomol. (n. s.), 14 (1991): 143-246.

BENESH, B. 1960. Coleopterorum Catalogus. Pars 8. Lucanidea. (Ed. sec.). Junk Ed., The Hague, 178 pp.

BRINCK, P. 1956. Coleoptera, Lucanidae. In: South African animal life, 3: 304-335.

DIDIER, R. & E. SÉGUY. 1953. Catalogue illustré des Lucanides du Globe. Texte. Encycl. ent. (A), 27: 1-223.

ENDRÖDY-YOUNGA, S. 1988. Evidence for the low-altitude origin of the Cape mountain biome derived from the systematic revision of the genus *Colophon* Gray (Coleoptera, Lucanidae). Ann. S. Afr. Mus., 96(9): 359-424.

GRAY, G. R. 1832. New species of insects of all orders. In: Griffith, E. & E. Pidgeon (Eds) The Animal Kingdom, arranged by the Baron Cuvier in Conformity with its Organization, and Notices of New Genera and Species. The Class Insecta. Vol. I. Whittaker, Treacher & Co., London, 570 pp.

HOLLOWAY, B. A. 1960. Taxonomy and phylogeny in the Lucanidae (Insecta - Coleoptera). Rec. Dom. Mus., 3(4): 321-365.

ONORE, G. 1994. Description of the immature stages of six species of *Sphaenognathus*, with comparative notes on phylogeny and natural history (Insecta: Coleoptera: Lucanidae). Annls Carnegie Mus., 63(19): 77-99.

ONORE, G. & C. BORDÓN. 1990. Observaciones sobre las larvas de *Sphenognathus nobilis* Parry (Coleoptera: Lucanidae). Rev. For. Venez., 24(34): 97-98.

PARRY, F. J. S. 1864. A catalogue of lucanoid Coleoptera, with illustrations and descriptions of various new and interesting species. Trans. Ent. Soc. London (3)2: 1-113.

SCHOLTZ, C. H. & S. ENDRÖDY-YOUNGA. 1994. Systematic position of *Colophon* Gray (Coleoptera: Lucanidae), based on larval characters. African Entomology, 2(1): 13-20.

WESTWOOD, J. O. 1855. Descriptions of some new Species of Exotic Lucanidae. Trans. Ent. Soc. (n. s.), 3: 197-221.