

A new genus and species of dung beetle from southern Namibia (Coleoptera: Scarabaeidae: Scarabaeinae)

A.V. Frolov^{1,2} & C.H. Scholtz^{1*}

¹Department of Zoology and Entomology, University of Pretoria, Pretoria, 0002 South Africa

²Laboratory of Insect Systematics, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab., 1, St Petersburg 199034, Russia

Recently a peculiar dung beetle was collected in the southern Namib Desert, Namibia. It resembles members of two other unusual southwest African endemic genera *Byrrhidium* Harold and *Namakwanus* Scholtz & Howden but has a suite of characters that indicate generic uniqueness although probable relatedness to the others. Since *Byrrhidium* and *Namakwanus* are currently placed in the tribe Canthonini, the group traditionally considered to be the most ancient and basal of the ball-rolling dung beetles (Hanski & Cambefort 1991), the obvious placement of the new genus would be there too. However, the Canthonini are doubtfully monophyletic (Scholtz & Howden 1987). To compound the matter, many of the African canthonine genera are monotypic and probably represent relictual elements of otherwise extinct lineages. Although most African canthonines are restricted to the temperate regions of southern Africa and the eastern highlands of central and south-central Africa, a number of unusual, and mostly monotypic genera occur along the west coast of southern Africa (Fig. 10). These are possibly relicts of post-Miocene milder climatic intervals that have interrupted otherwise hyperaridity along the coastal strip (Pickford & Senut 1999). The new genus probably falls into the same category.

Scanning electron micrographs were taken with a JEOL 840 electron microscope; specimens were cleaned in 10 % KOH solution, critical-point dried, and then sputter-coated with gold.

Dicranocara gen. n.

Type species: *Dicranocara deschodti* sp. n.

Description

Medium-sized, black beetles (Figs 1, 2).

Head with clypeus with two long horns, separated by a rectangular depression. Clypeogenal sutures feebly visible. Labrum with strongly sclerotized apical part (Figs 4, 5) protruding

beyond anterior margin of clypeus. Mandibles with relatively short and wide incisor lobe (Fig. 6). Basal part of galea with a strongly sclerotized process directed medially (Fig. 7). Labium with sclerotized medial margins of glossae bearing a number of scale-shaped denticles (Fig. 8). The modification of the mouthparts mentioned above is probably a morphological adaptation for feeding on hard food.

Pronotum convex, with subparallel sides, width twice greater than length. Lateral and anterior margins of pronotum bordered; base not bordered, slightly sinuate laterally. Scutellum not visible from above. Elytra fused along sutural margins, without humeral umbones; each elytron with 10 feebly marked striae, intervals flat. Metathoracic wings absent.

Anterior tibia with short, conical spur and two outer teeth, margin basad of teeth serrate. Anterior tarsus present, short. Apical part of anterior tibia setose dorsally. Lateral margins of middle and hind tibiae curved.

Pygidium slightly convex, without keels. Metathorax smooth, mesothorax with sparse punctures with indistinct margins. Abdominal sternites with lateral depressions; medially sternite 6 as wide as sternites 1–5 together. Aedeagus: parameres symmetrical, with setose apices.

Diagnosis. This genus shares a number of apparently apomorphic characters (modified mouthparts, symmetrical parameres, fused elytra, winglessness) with *Byrrhidium* and *Namakwanus* but can be separated from the former by the shape of the pronotum and from the latter by the anterior tibiae with two teeth; it also differs from both genera in the shape of the aedeagus (Scholtz & Howden 1987).

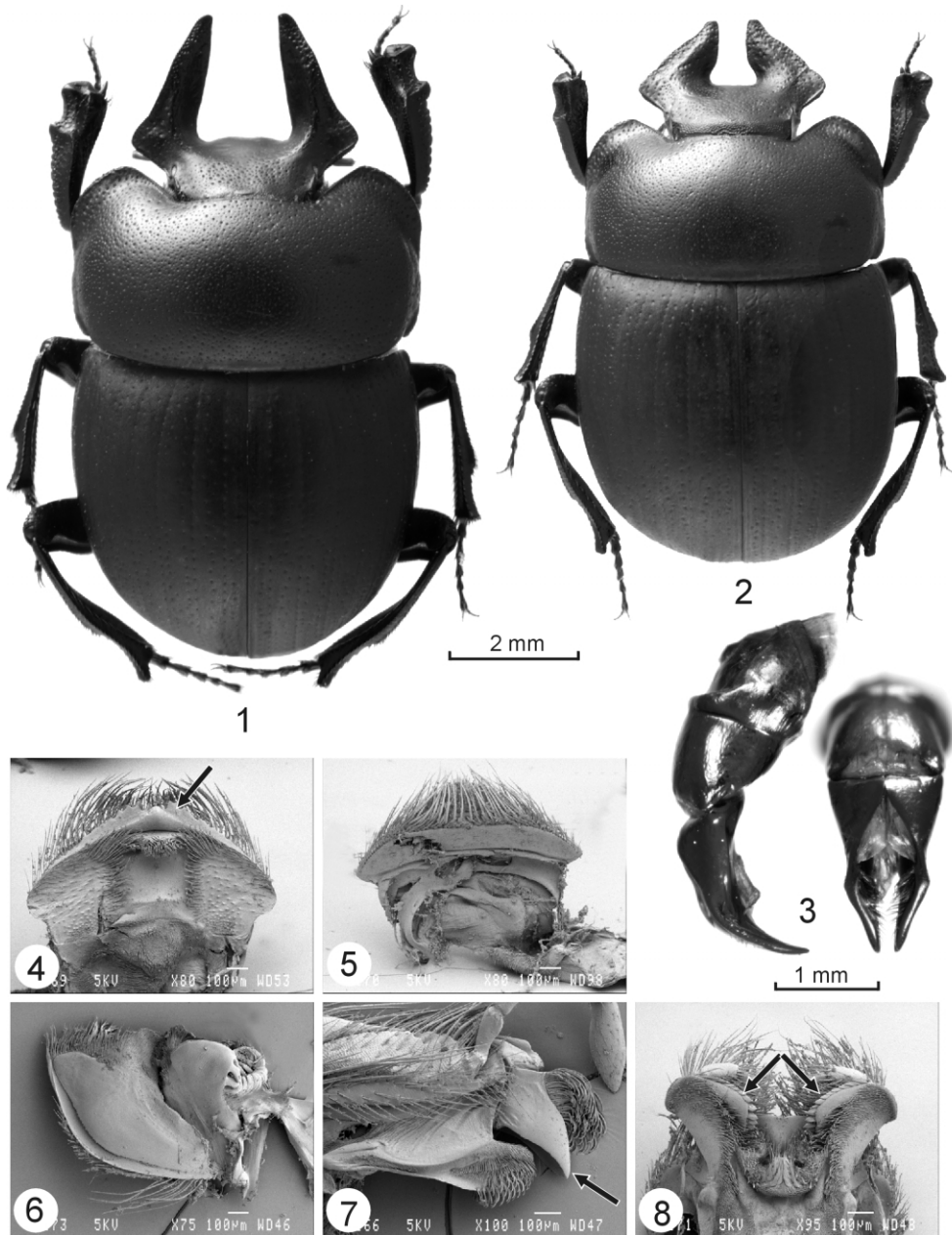
Etymology. From Greek *dikranon* (pitchfork) and *kara* (head). The gender is feminine.

Dicranocara deschodti sp. n., Figs 1–10

Description

Holotype, male (Fig. 1). Body length 10.5 mm, width 5.8 mm. Dorsal surface of body matt,

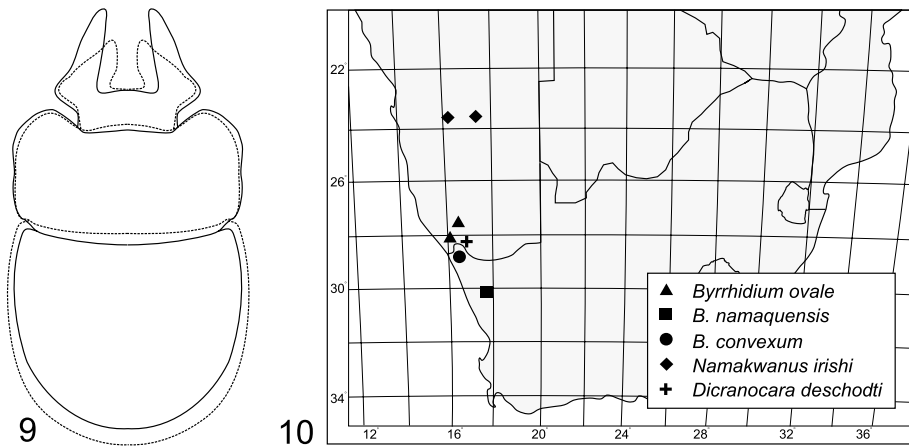
*To whom correspondence should be addressed.
E-mail: chscholtz@zoology.up.ac.za



Figs 1–8. *Dicranocara deschodti*. 1–2, habitus: 1, male holotype; 2, female; 3, aedeagus of the holotype in lateral and dorsal views; 4–5, labrum: 4, ventral view, 5, dorsal view; 6, left mandible, dorsal view; 7, left maxilla, dorsal view; 8, labium, dorsal view.

punctate, with minute setae (setae abraded on disc of pronotum and elytra). Colour black without metallic tint, anterior parts of sides of pronotum, tarsi, and apical parts of tibiae reddish. Head (except for anterior part of clypeus between horns)

and pronotum densely and irregularly punctate. Elytral intervals sparsely punctate (punctures separated by a few puncture diameters). Parameres with strongly sclerotized, tapering apices curved downwards (Fig. 3).



Figs 9–10. 9, Body outline illustrating sexual dimorphism in *Dicranocara deschodti* (solid line = male, dashed line = female); 10, distribution map of the *Byrrhidium* group of genera.

Paratypes (18♂, 14♀). Body length (with clypeal horns) in males 9–12 mm, greatest width between 5–6.1 mm, in females 9–10 mm and 5.5–6 mm. Otherwise the variation between specimens of either sex is very slight. Females differ from males in proportions of the body: pronotum narrower than elytra (in males pronotum as wide as elytra) and relatively longer than in males, clypeal horns approximately twice shorter with distance between them about three times smaller (Fig. 10). Pubescence of body surface is obsolete in most specimens, apparently due to abrasion.

Type material. Holotype ♂: NAMIBIA, Boom River, 27°59'S 17°03'E, 10.x.2002, C. Deschodt (State Museum, Windhoek – SMWN). 32 paratypes: 8♂, 7♀ with same data (2♂, 2♀ in SMWN; 2♂, 2♀ in National Insect Collection, Plant Protection Research Institute, Pretoria – SANC; 3♂, 2♀ in University of Pretoria, Pretoria; 1♂, 1♀ in Muséum National d'Histoire Naturelle, Paris); 5♂, 7♀ from the same locality but collected on 30.iii.2003 by Scholtz & Frolov (2♂, 4♀ in Transvaal Museum, Pretoria – TMSA; 1♂, 1♀ in Zoological Institute, St Petersburg; 2♂, 2♀ in Natural History Museum, London); 1♂, Boom River, kloof W, 22 km N of Orange River,

27°50'S 17°00'E, 30.xii.1998, C. Deschodt (SANC); 4♂, Upper Boom River, 27°52'S 17°00'E, 4.iv.2002, E. Holm & M. Gebhardt (2 in TMSA and 2 in SMWN).

The beetles were collected in hyrax (*Procapra capensis*) dung middens between large boulders on the riverbank. Most of the specimens were collected dead and damaged (lacking some legs, antennae or mouthparts). In addition to the type series the following remains were examined: one male and one female without head and one male without head and pronotum collected by Holm and Gebhardt along with the four paratypes.

Etymology. The species is named for Christian Deschodt (Pretoria) who collected the first specimen known to us.

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REFERENCES

- HANSKI, I. & CAMBEFORT, Y (Ed.). 1991. *Dung Beetle Ecology*. Princeton University Press, Princeton.
- PICKFORD, M. & SENU, B. 1999. Geology and palaeobiology of the Namib Desert, southwestern Africa. *Geological Survey of Namibia. Memoir* 18: 1–155.
- SCHOLTZ, C. & HOWDEN, H. 1987. A revision of the African Canthonina (Coleoptera, Scarabaeidae, Scarabaeinae). *Journal of the Entomological Society of Southern Africa*. 50(1): 75–119.