

**A new species of the genus *Cyrtonion*  
(Coleoptera: Hydrophilidae: Megasternini)  
from the Democratic Republic of the Congo**

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**Abstract.** *Cyrtonion moto* sp. nov. is described from northeastern part of the Democratic Republic of the Congo. The species is compared with the remaining two representatives of the genus, *C. ghanense* Hansen, 1989 and *C. sculpticolle* (Régimbart, 1907). Distributions of all three species of the genus *Cyrtonion* Hansen, 1989 are mapped and discussed.

**Key words.** Coleoptera, Hydrophilidae, Sphaeridiinae, Megasternini, *Cyrtonion*, new species, taxonomy, distribution, Afrotropical region

### Introduction

Within the mainland part of the Afrotropical region (i.e. excluding Madagascar, Mascarenes, Seychelles and Cape Verde Islands), the tribe Megasternini is represented by 17 genera containing more than 90 described species (HANSEN 1999, HEBAUER 2006, FIKÁČEK 2007). Among these taxa, the *Megasternum* group of genera, i.e. the group of genera characterized by large antennal grooves of prosternum reaching laterally pronotal margins, is especially diverse in tropical Africa. This diversity especially concerns the external morphology, which is quite unusual within the otherwise largely externally-uniform representatives of the tribe. Eight genera are presently recognized in Afrotropical region, of which the last three are endemic: *Emmidolium* Orchymont, 1937, *Tectosternum* Balfour-Browne, 1958, *Megasternum* Mulsant, 1844, *Pachysternum* Motschulsky, 1863, *Cryptopleurum* Mulsant, 1844, *Cyrtonion* Hansen, 1989, *Cercillum* Knisch, 1921, and *Pyretus* Balfour-Browne, 1950. The actual diversity of this group of genera is much higher, as many taxa remain undescribed and some very distinct morphological groups of species are recently classified within the broadly understood genera *Cryptopleurum* and *Pachysternum* (M. Fikáček, unpubl. data). In comparison, the following number of genera of this group are known from the remaining zoogeographic regions: four in Palearctic as well as Nearctic regions, three in Oriental region including west-Pacific islands, two in Neotropical region and one in Australian region.

Morphologically, the genus *Cyrtonion* includes very distinct taxa within the *Megasternum* group of genera (see e.g. HANSEN 1989, 1991). Although the first species belonging today to this genus, *C. sculpticolle* (Régimbart 1907), was described in 1907 by RÉGIMBART (1907), the separate generic status of *Cyrtonion* was not recognized until HANSEN (1989) described the genus during the description of a second species, *C. ghanense* Hansen, 1989. The generic status of *C. sculpticolle* and differential diagnoses of both species were subsequently discussed by FIKÁČEK (2006). Except for these papers, the species were mentioned only by BALFOUR-BROWNE (1958) and HEBAUER (2006), who provided additional faunistic data, but without referring to any studied material. Therefore, until now, only rare records of these two, probably very closely related, species were known from the western part of equatorial Africa.

During my stay in Musée royal de l'Afrique centrale in Tervuren in 2007, I studied a large series of Megasternini belonging to the *Megasternum* group of genera for a prepared phylogenetic study on this group. Among the material examined, I found two specimens belonging to an undescribed species of the genus *Cyrtonion* and extending the distribution of the genus much further eastwards. This new species is described in this paper along with the summary of all material of the genus *Cyrtonion* known to me. From these data, the discussion on the distribution of the genus is based.

### Material and methods

Genitalia of both specimens of the new species and a portion of other specimens listed below were examined and placed on a plastic card below the beetle in water-soluble dimethyl hydantoin formaldehyde resin (DMHF). In the holotype of *C. moto* sp. nov., the aedeagus could not be cleaned in lactic acid and median lobe could not be separated from the tegmen, because the aedeagus was originally dissected and attached to the label by a glue hard-to-dissolve in any dissolvent tried. For that reason, I did not risk the damage of the aedeagus and include here only the drawing of the whole aedeagus and the detail of the apex of the median lobe. The figures of male genitalia were traced from photographs prepared with Nikon TS100 light microscope and Olympus SZX9 binocular microscope. Habitus photo of *C. ghanense* was taken using the latter microscope and subsequently adapted in Adobe Photoshop 7.0 partly using the procedures described at Darci Kampschroeder's www-sites at <http://nhm.ku.edu/illustration/>. The distribution of tropical rain forests was adopted from <http://explorin-gafrica.matrix.msu.edu/images/africavegetation.jpg>, which corresponds with maps provided e.g. by OSBORNE (2000) and WHITMORE (2006). When the labels attached to the specimen did not contain any habitat data, the vegetation type of the locality and its altitude were checked using GoogleEarth or the information provided on <http://www.africarevealed.com/>.

The following codens of collection are used:

- ANIC Australian National Insect Collection, Canberra, Australia (A. Slipinski);
- HNHM Hungarian Natural History Museum, Budapest, Hungary (Gy. Szél);
- FHPC Franz Hebauer collection, Plattling (Germany);
- IRSN Insitute royal des sciences naturelles de Belgique, Bruxelles, Belgium (P. Limbourg, P. Grootaert);
- MRAC Musée royal de l'Afrique centrale, Tervuren, Belgium (M. de Meyer);
- NMPC National Museum, Praha, Czech Republic;
- ZSMC Zoologische Staatssammlung, München, Germany (M. Baehr).

## Taxonomy

### *Cyrtionion moto* sp. nov.

(Figs. 1-2, 6)

**Type locality.** Democratic Republic of the Congo, Ituri prov., Moto, 3°10'N 29°30'E, 790 m a.s.l.

**Type material.** HOLOTYPE: ♂, 'MUSÉE DU CONGO / Haut Uelé [= upper Uelé riv.]: Moto / 1920 / L. Burgeon // Pachysternum / sculpticolle Rég. / J. Balfour-Browne det. 1953' (MRAC). PARATYPE: 1 ♀, 'MUSÉE DU CONGO / Haut Uelé [= upper Uelé riv.]: Moto / -X-XI-1920 / L. Burgeon' (MRAC).

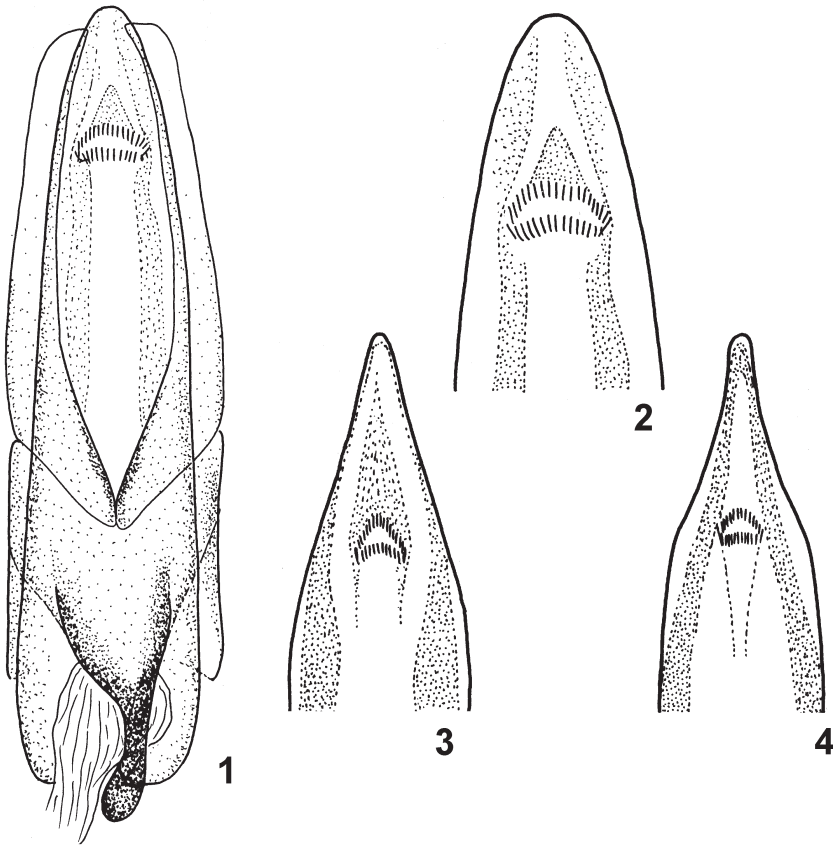
**Description.** Body broadly oval, maximum width in anterior 0.3 of elytra; elytra highly convex in lateral view; pronotum more convex than elytra, not forming continuous curve with them in lateral view. Length of holotype: 2.7 mm; width of holotype: 1.7 mm.

**Coloration.** Dorsal and ventral body surface dark reddish brown, elytra slightly paler than pronotum. Ventral side of head, lateral portions of prosternum, legs, antennae and mouthparts reddish.

**Head.** Clypeus with dense, moderately coarse setiferous punctation, interstices without microsculpture; anterior margin narrowly rimmed, angulate with straight median part in male, only indistinctly angulate in female. Frons divided from clypeus by complete transverse ridge connecting antennal bases. Surface with dense coarse setiferous punctation, interstices narrow, without microsculpture. Eyes rather small, interocular distance 6× larger than width of one eye. Mentum with anterior margin indistinctly concave medially, with rather deep narrow cleft sublaterally; surface with dense and coarse punctation posterolaterally and sculpture consisting of transverse ridges in median portion. Antenna with 9 antennomeres, scapus ca. as long as antennomeres 2-5 combined; antennal club elongate, antennomere 9 blunt at apex. Maxillary palpomeres 2-4 subequal in length, palpomere 2 widened apically.

**Prothorax.** Pronotum with deflexed lateral portions (those portions seen in ventral view); dorsal portion slightly explanate laterally, with two high submedian bulges divided by narrow ridge, false lateral margins bisinuate laterally. Dorsal surface with rather dense, coarse setiferous punctation, interstices without microsculpture; punctures becoming smaller and sparser on pronotal bulges. Posterior part of pronotum without defined transverse row of coarser punctures. Prosternum with large antennal grooves reaching deflexed parts of pronotum; median portion of prosternum plate-like with deep posterior median cleft; plate distinctly divided from lateral parts, finely carinate medially, bearing sparse punctures and rugose microsculpture.

**Mesothorax.** Preepisternal elevation in form of subpentagonal plate widely contacting anteromedian portion of metaventricle; surface with rather sparse, moderately coarse punctation, interstices without microsculpture. Cavities for reception of procoxae deep, reaching preepisternal elevation. Elytra with 10 punctate striae; lateral parts of elytra deflexed. Interval punctation of elytra very fine and sparse consisting of setiferous scar-like punctures; punctural series consisting of rather coarse, shallow, sparsely distributed punctures. Intervals highly convex, bearing higher and wider bulges on following positions: interval 2 (between series 1 and 2) – short bulge on anterior 0.4, long bulge in whole posterior 0.5; interval 3 – short bulge on elytral base; interval 4 – short high bulge at midlength, short smaller bulge subapically; interval 5 – short bulge in anterior 0.4; interval 6 – short bulge subapically; interval 7 – short bulge at elytral base and in posterior 0.6; interval 9 – short low bulge at elytral base;



Figs. 1-4. Aedeagophores of *Cyrtion* Hansen, 1989 species. 1-2 – *C. moto* sp. nov., holotype; 3 – *C. ghanense* Hansen, 1989, paratype; 4 – *C. sculpticolle* (Régimbart, 1907), paratype. 1 – aedeagus; 2-4 – apical portion of the median lobe.

intervals 8 and 10 lacking bulges. Epipleuron narrow in anterior 0.4, becoming very narrow posteriorly of metathorax, then narrowing towards elytral apex.

**Metathorax.** Median part of metaventrte without defined pentagonal median area, divided from lateral portions by very distinct and complete femoral lines going arcuately from metacoxal attachments to anterolateral corners of metaventrte; median portion (mesally of femoral lines) with coarse but rather sparse punctation, interstices without microsculpture; lateral portions (laterally of femoral lines) with much denser punctation consisting of punctures similar to those on median portion, interstices dull, but without distinct microsculpture. Anterolateral ridge absent, anterolateral part of median portion of metaventrte neither divided by ridge nor concave. Hind wings completely developed.

**Legs** short, tibiae ca. as long as femora and coxae combined; anterior tibiae slightly flattened, widened at apex, with outer margin in shape of continuous curve.

**Abdomen.** Ventrite 1 carinate medially, bearing coarse punctation; ventrites 2-5 ecarinate, with punctation consisting of smaller punctures than on ventrite 1. Interstices of ventrites 1-5 without microsculpture.

**Male genitalia** (Figs. 1-2). Parameres ca. as long as phallobase, gradually narrowing from base to blunt, membranous apex. Phallobase wide, 1.6× longer than wide, lateral parts partly reduced, posteriorly bearing long slightly asymmetrical manubrium. Median lobe wide and long, widest basally, ca. 4× longer than wide, continuously narrowing from base to apex; apex bluntly rounded; corona situated in apical 0.15.

**Variation.** The shape of anterior margin of clypeus is angulate in male holotype, but only indistinctly angulate in female paratype. In the paratype, elytral intervals including bulges are slightly lower than in the holotype. No other variation was observed.

**Differential diagnosis.** The species is externally very similar to both remaining *Cyrtonion* species, but can be easily distinguished by the wider aedeagus with rounded apex of the median lobe (in contrast, median lobe is pointed apically in *C. ghanense* and *C. sculpticolle*).

**Etymology.** The species name refers to the village name, where both type specimens were collected. It stands as a noun in apposition.

**Bionomics.** No habitat information is available.

**Distribution.** Democratic Republic of the Congo; the species is known only from the type locality (see Fig. 6).

### *Cyrtonion ghanense* Hansen, 1989

(Figs. 3, 5-6)

*Cyrtonion ghanense* Hansen, 1989: 262.

*Cyrtonion ghanense*: HANSEN (1999): catalogue; HEBAUER (2006): catalogue; FIKÁČEK (2006): taxonomy.

**Type material examined.** PARATYPE: ♂, 'Ghana E. R. / Mt. Atewa / rainforest / R. W. Taylor, 17-20 Oct 68 // ANIC / Berlese No. 126 // PARATYPE / *Cyrtonion / ghanense* / M. Hansen.' (ANIC).

**Additional material examined.** CAMEROON: SUD-OUEST, Bakingili, 20 m a.s.l., 13.vi.1984, J. A. Di Giulio lgt., 1 ♂ (FHPC). GHANA: ASHANTI PROV., Kumasi, Bobiri Forest Reserve [= ca. 30 km E of Kumasi, 2.5 km of Kubeasi], 2-3.i.1966, S. Endrödy-Younga lgt., 3 ♂♂ 2 ♀♀, 15 spec. (ZSMC, NMPC). REPUBLIC OF THE CONGO: LEKOUYOU, Sibiti, IRHO [= Institut de recherches pour les huiles et les oléagineux], rain forest, sifted fallen oilpalm fruits, 25.xi.1963, Endrödy-Younga lgt., 2 ♂♂ 3 ♀♀ (HNHM, NMPC); BOUENZA, without more detailed geographic data, catarract, sifted in float, 30.xi.1963, Endrödy-Younga lgt., 1 ♂ (HNHM).

**Differential diagnosis.** The species is externally identical with *C. sculpticolle* and *C. moto* sp. nov. From the latter species, it differs by pointed apex of the median lobe (Fig. 3). In contrast to *C. sculpticolle*, the median lobe is slightly wider in *C. ghanense*, lateral sides of the apical part of the median lobe are more or less straight and the apex is more sharply pointed.

**Variation.** Rather wide variation concerning the size, coloration and development of the pronotal and elytral bulges was found in the series from Bobiri Forest Reserve (Ghana). The size of the beetles (body length × width) can vary from 2.0×1.3 mm to 2.5×1.6 mm irrespective to the sex. Pronotal and elytral bulges are usually higher and more conspicuous in larger specimens. Coloration of the dorsal side varies from black (paratype specimen examined) to brown. Male genitalia including the apical part of the median lobe show no variation in all specimens examined.

**Distribution.** So far known from Ghana, Cameroon and the Republic of the Congo (Fig.6).

***Cyrtonion sculpticolle* (Régimbart, 1907)**

(Figs. 4, 6)

*Cryptopleurum sculpticolle* Régimbart, 1907: 61.*Pachysternum sculpticolle*: BALFOUR-BROWNE (1958): generic placement revised; HANSEN (1999): catalogue; HEBAUER (2006): catalogue.*Cyrtonion sculpticolle*: FIKÁČEK (2006): generic placement revised.

**Type material examined.** PARATYPE: ♂, 'Is. Fernando Poo [= Equatorial Guinea, Bioko island] / Basile [= Pico Basilé Mt. env.] / 400-600 m. s. m. / VIII-IX. 1901 / L. Fea // sculpticolle // Cotype // Coll. A. d'Orchymont // Cryptopleurum / sculpticolle / Rég. / d'Gestro det. 1921 // paratype' (IRSN).

**Differential diagnosis.** The species is externally identical with *C. ghanense* and *C. moto* sp. nov. From the latter species, it differs by pointed apex of the median lobe. From *C. ghanense*, it can be distinguished by narrower median lobe with concave lateral sides on its apical part (Fig. 4).

**Variation.** Unknown.

**Distribution.** This species is so far known only from the type series collected on Bioko Island (Fig. 6). HANSEN (1999) mentioned it also for Guinea, referring to the paper by BALFOUR-BROWNE (1958) concerning the hydrophiloid fauna of Mt. Nimba Reserve. However, there are no data referring to Guinea in the latter paper. I have found only two specimens from the Democratic Republic of the Congo identified as *Pachysternum sculpticolle* by J. Balfour-Browne in 1953 in the collection of MRAC. These specimens belong to *C. moto* sp. nov. described above.

**Key to *Cyrtonion* species**

- 1a. Median lobe of the aedeagus rounded apically. Aedeagus and median lobe rather wide (Fig. 1). ..... ***C. moto* sp. nov.**
- 1b. Median lobe of the aedeagus pointed apically. Aedeagus and median lobe narrower (see FIKÁČEK 2006, Fig. 17). ..... 2
- 2a. Lateral margins of the apical part of the median lobe straight, apex more sharply pointed (Fig. 3). ..... ***C. ghanense*** Hansen, 1989
- 2b. Lateral margins of the apical part concave, apex more obtuse (Fig. 4). ..... ***C. sculpticolle*** (Régimbart, 1907)

**Discussion**

The genitalia of both hitherto known species of the genus are very similar and it was therefore hard to conclude until now, whether the unusual morphology of the phallobase (with partly reduced lateral parts) and male sternite 9 (with completely reduced median part) considered as diagnostic for the genus by FIKÁČEK (2006) are really usable for delimiting the genus. *Cyrtonion moto* sp. nov. exhibits all diagnostic characters of the genus discussed by the latter author and by HANSEN (1989). For that reason, the genital characters as well as the remaining external characters (bulged pronotum, elytra with small bulges on the intervals) are confirmed here as diagnostic for *Cyrtonion*.



Fig. 5. *Cyrtionion ghanense* Hansen, 1989, Ghana (Bobiri Forest Reserve), dorsal habitus (2.0 mm).

The external morphology of all known *Cyrtionion* species is apparently identical (as in Fig. 5) and the species differs only by the morphology of the aedeagus. The separate specific status of *C. sculpticolle* and *C. ghanense* was questioned by ФИКАЧЕК (2006), because the species differ only slightly by the shape of the apex of the median lobe. For this study, I have examined a larger series of the *C. ghanense* from Ghana (the locality is situated quite close to the type locality of the species) and a male from a locality in Cameroon situated on the coast opposite to the Bioko Island (ca. 50 km from nearest Bioko coast and 75 km from the type locality of *C. sculpticolle*). The aedeagophores of these specimens of *C. ghanense* are identical to each other as well as to the material from the Republic of Congo. Therefore, the shape of the apical part of the median lobe seems to be constant among specimens and populations. However, the study of larger series from Bioko Island is still needed to confirm the separate status of *C. sculpticolle*. On the other hand, the genitalia of *C. moto* sp. nov. are perfectly distinct from the remaining two species of the genus.

Little is known about the habitat preferences and distribution of the genus. Based on the label data, some specimens were collected in rain forest areas by sifting of the rotting plant matter. Also the remaining localities lay in the areas of tropical rain forest. All specimens were collected in the elevations from sea level to 800 m a.s.l. From these limited data, it can be concluded that *Cyrtionion* species likely inhabit the leaf litter of the lowland rain forests. This is confirmed also by mapping of the known localities on the known distribution of rain forests in Africa (Fig. 6).

The genus *Cyrtionion* is confirmed for these countries so far: Cameroon, the Democratic Republic of the Congo, Equatorial Guinea (Bioko Is.), Ghana and the Republic of the Congo.



Fig. 6. Known distribution of the species of the genus *Cyrtonion* Hansen, 1989. Green area covers distribution of evergreen rain forest.

Except of this, HANSEN (1999) incorrectly listed it for Guinea (see Distribution under *C. sculpticolle*), and HEBAUER (2006) mentioned it also for Rwanda and Burundi (*C. sculpticolle*), without listing the material examined. As the genus is very easy-to-distinguish from other Megasternine genera, Hebauer's records almost certainly concern the genus *Cyrtonion*, but the species identification needs confirmation as it is highly probable that they concern a different species than *C. sculpticolle*.

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