

**Three new species of the genus *Heterocylindropsis* Fagel, 1955  
from Tanzania (Coleoptera, Staphylinidae: Osoriinae)**

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**Abstract** – *Heterocylindropsis dentatus* sp. n., *H. tanzaniae* sp. n. and *H. mahunkai* sp. n. are described from Tanzania. A key to the species of *Heterocylindropsis* Fagel, 1955 is provided. With 30 figures.

**Key words** – Africa, Tanzania, new species, Osoriini, endogaeon fauna

## INTRODUCTION

The genus *Heterocylindropsis* was described by FAGEL (1955) for two endogaeon species from Africa that are characterized by the absence of eyes and tetramerous tarsi. Later, FAGEL (1957) and COIFFAIT (1977) described two further species. The drawings of the protibiae already published by FAGEL (1955) show that the genus is placed in the subtribe Osoriini (see HERMAN 2001). In 2014, I got series of three blind Osoriinae species via György Makranczy collected in Tanzania (East Africa) by the late Sándor Mahunka (Hungarian Natural History Museum, Budapest). A detailed study revealed that the specimens are blind and have tetramerous tarsi. This combination of characters shows that the species belong to the genus *Heterocylindropsis* Fagel, 1955. In the present study the three new species are described and a key to the species of the genus is provided.

## MATERIAL AND METHODS

The material studied is deposited in the Hungarian Natural History Museum, Budapest (HNHM) and one paratype of each species also in my collection (UIC). For the photographs of the species, a Makroskop M 420 (Wild Herbrugg) was used in combination with a digital camera (Leica EC3). CombineZ5 (HADLEY 2006) was used to optimise depth of focus. Length was measured in the middle of tagmata: head from clypeus to posterior edge, pronotum from anterior to poste-

rior edge along midline, elytra from anterior edge at shoulders to posterior edge; width at the widest part of tagmata (head width includes eyes). In the measurement of total length, the abdominal intersegmental space is subtracted.

## DESCRIPTION OF NEW SPECIES

### **Heterocylindropsis dentatus** sp. n.

(Figs 1–2, 15–16)

*Type material* – Holotype, male: Tanzania: Tanga reg., Kwamsambia For. Res. 10 km S. Kwamkoro, 1050 m, sifting litter, No. 105, 10.II.1987, leg. S. Mahunka & A. Zicsi (HNHM). Paratypes (2): same locality as holotype, but Berlese sample, No. 103, 10.II.1987, leg. S. Mahunka & A. Zicsi (1 female, HNHM, 1 male, UIC).

*Diagnosis* – The species is easy to distinguish from all other species of the genus by the dentate posterior margin of the elytra.

*Description* – Length: 1.4–1.5 mm. Colouration: light yellowish brown, legs and antennae light yellow.

Head: 0.24 mm long, 0.26 mm wide; sides between base of antennae and neck nearly parallel, only slightly curved; at base of antennae narrowed to anterior edge of clypeus in concave curve; anterior edge of clypeus convex; sparse setiferous punctation moderately fine; interstices between punctures at least as wide as puncture diameters; partly wider up to twice as wide as puncture diameters; setae long, yellow, as long as interstices between punctures; net-like microsculpture distinct; meshes mostly isodiametric and as wide as diameter of punctures; laterally with similar punctation and microsculpture than on vertex; surface matt.

Antennae (Fig. 2) as long as head and half of pronotum combined; antennomere 1 rectangular, thick, elongate, 2.5 times as long as wide; antennomere 2 conical, twice as long as its apical width, slightly thinner than 1; antennomere 3 approximately quadrate, smaller than apical width of antennomere 2; width of following antennomeres increasing; antennomeres 4 and 5 still quadrate; 7 to 9 approximately twice as wide as long; antennomere 10 thicker, only 1.5 times as wide as long; antennomeres 5 to 10 with short setae at apex.

Pronotum: 0.25 mm long, 0.27 mm wide; widest at anterior angles; sides slightly convergent to obtuse posterior angles; lateral margin fine, from anterior angles to posterior angles widened; setiferous punctation moderately fine and dense; on average, interstices between punctures twice as wide as puncture diameters; setae approximately as long as interstices between punctures; with impunctate midline; at posterior margin with transverse row of short setae; isodiametric microsculpture coarse and deep; surface matt.

Elytra: 0.19 mm long, 0.25 mm wide; widest at posterior angles; slightly convergent to shoulders; shoulders shortly angled; posterior margin with two large teeth; one close to suture; one close to posterior angles; with similar setiferous punctation as pronotum; on average, interstices between punctures twice as wide as diameter of punctures; yellow setae at least as long as interstices between punctures; isodiametric microsculpture coarse and deep; meshes wider than diameter of punctures; surface matt.

Abdomen slightly divergent posteriad, widest at segment 7; with similar setiferous punctation and microsculpture as forebody; surface matt.

Legs with 4 tarsomeres; basal 3 tarsomeres short, last tarsomere longer than basal 3; protibia with 4 long spines at outer edge; posterior face with long setae.

Aedeagus (Fig. 1) with thick and long basal lobe; apical lobe in nearly rectangular angle to basal lobe; sinuate in front of acute apex; endophallus formed by two differently thick coils, one thick coil and one thin coil; coiling conversely; paramera thick, oval.

*Etymology* – The species name is derived from the same Latin word meaning dentate and refers to the dentate posterior margin of the elytra.

### ***Heterocylindropsis tanzaniae* sp. n.**

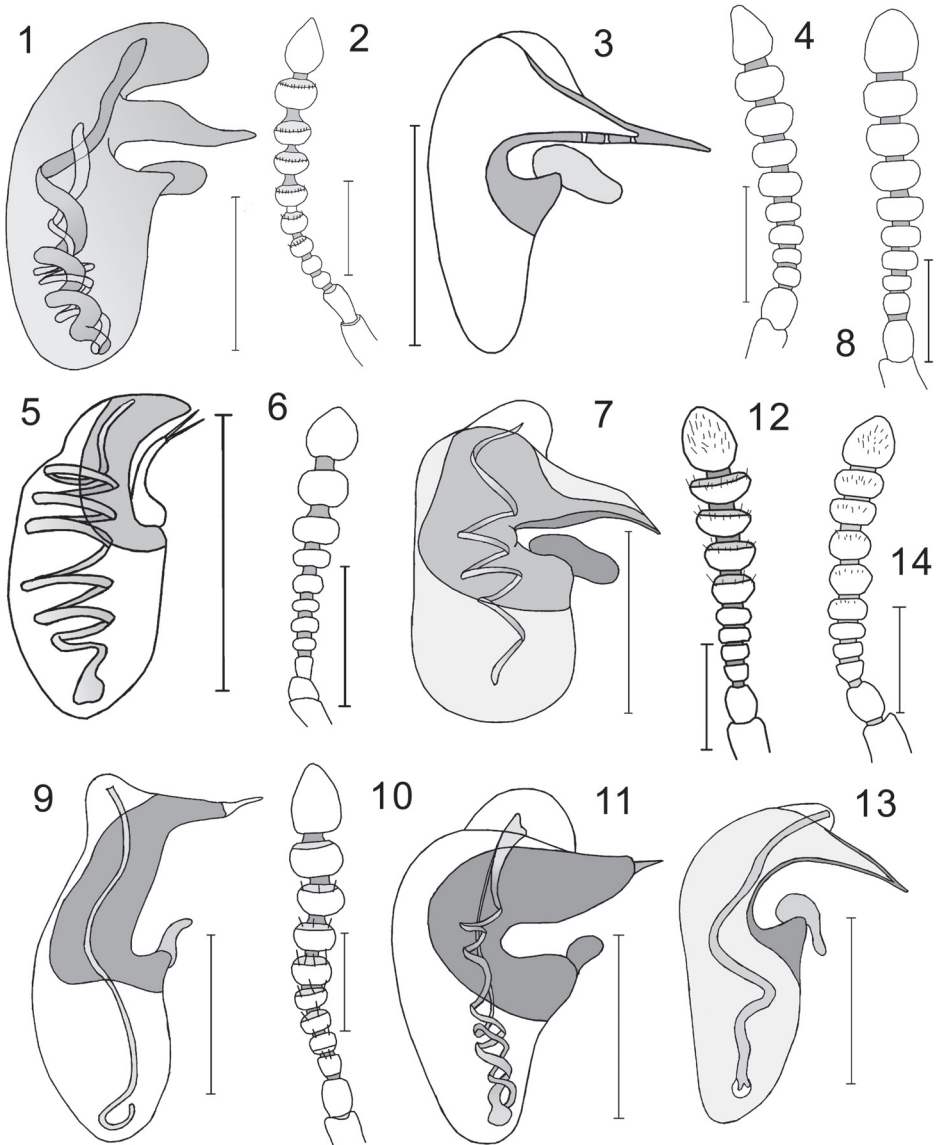
(Figs 3–4, 17–18)

*Type material* – Holotype, male: Tanzania, Morogoro reg., Kimboza For. Res., Ruvu River, Berlese sample, 4.II.1987, leg. S. Mahunka & A. Zicsi, No. 44 (HNHM). Paratypes (4): same data as holotype (2 females, HNHM, 1 female, UIC); Tanga reg. Kwamsambia For. Res., 10 km S. Kwamkoro, 1050 m, sifting litter, No. 105, 10.II.1987, leg. S. Mahunka & A. Zicsi (1 female, HNHM).

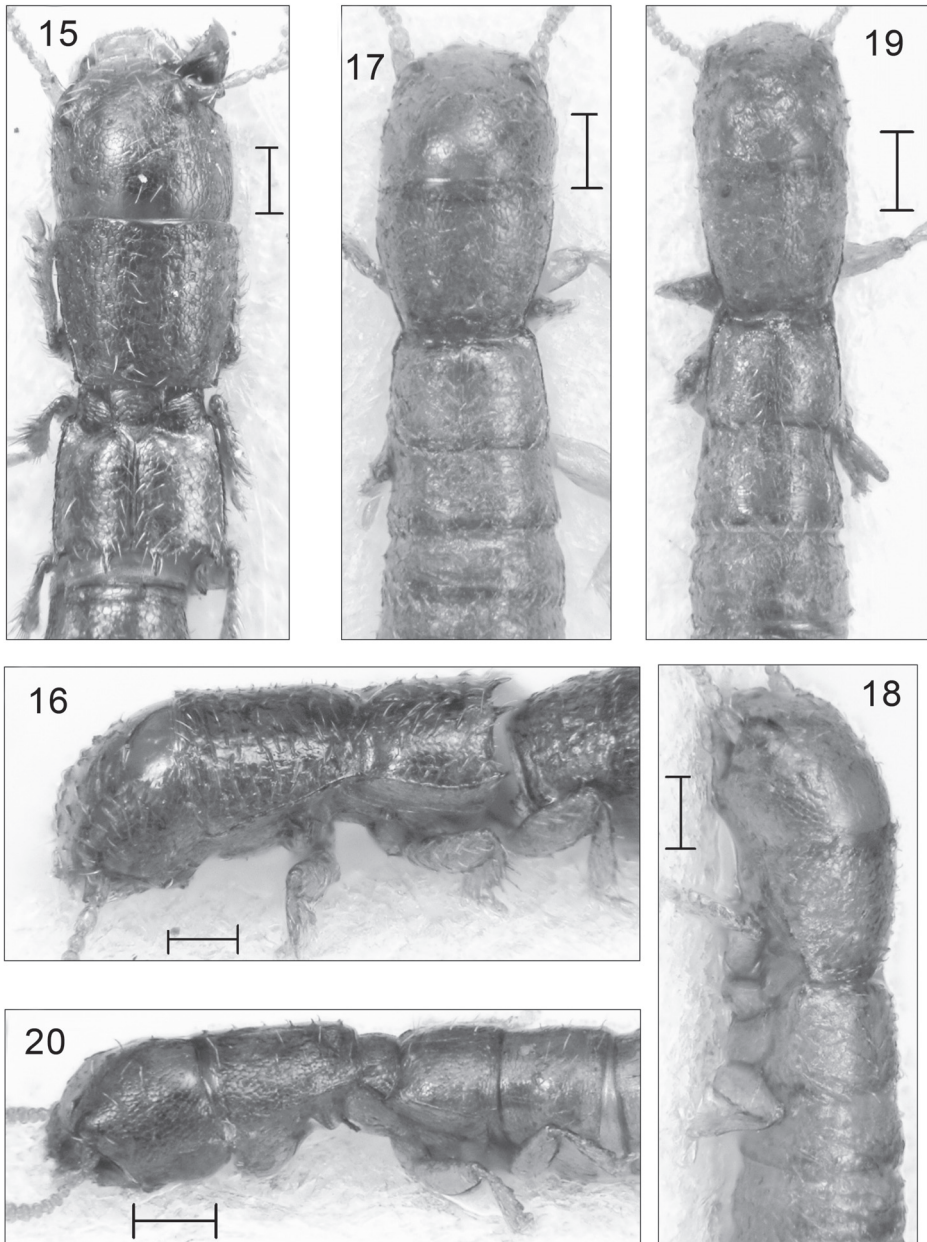
*Diagnosis* – Together with *H. mahunkai* sp. n., it is one of the smallest species of the genus. It is only slightly longer than *H. mahunkai*. It can be distinguished from that species by the slightly longer elytra and the slightly sinuate lateral margin of the pronotum. Furthermore, the aedeagus is considerably different from *H. mahunkai*. In contrast to *H. mahunkai*, the aedeagus of *H. tanzaniae* is angled between basal and apical lobe in nearly rectangular angle. The apical lobe is long with acute apex. The paramera are thick.

*Description* – Length: 1.2 mm. Colouration: light yellowish brown; legs and antennae still lighter yellow.

Head: 0.17 mm long, 0.24 mm wide; approximately parallel-sided, clypeus semicircular; without emargination at base of antennae; setiferous punctation moderately dense and deep; interstices between punctures at least twice as wide as diameter of punctures; setae at least as wide as interstice between punctures; net-like microsculpture coarse; meshes of microsculpture wider than diameter of



**Figs 1–14.** Aedeagus (1, 3, 5, 7, 9, 11, 13) and antenna (2, 4, 6, 8, 10, 12, 14): 1–2 = *Heterocylindropsis dentatus* sp. n., 3–4 = *H. tanzaniae* sp. n., 5–6 = *H. mahunkai* sp. n., 7–8 = *H. kahuziensis* Fagel, 1955, 9–10 = *H. luberensis* Fagel, 1955, 11–12 = *H. mwengensis* Fagel, 1955, 13–14 = *H. wernerii* Coiffait, 1977. Scale bar: 0.1 mm



Figs 15–20. Dorsal (15, 17, 19) and lateral aspect (16, 18, 20): 15–16 = *Heterocylindropsis dentatus* sp. n., 17–18 = *H. tanzaniae* sp. n., 19–20 = *H. mahunkai* sp. n. Scale bar: 0.1 mm

punctures; surface moderately shiny; laterally with same punctation and microsculpture as on vertex.

Antenna (Fig. 4) as long as head and half of pronotum combined; antennomere 1 rectangular, thick; antennomere 2 oval, nearly as thick as 1, slightly longer than wide; antennomere 3 smaller than preceding, approximately one third wider than long; following antennomeres increasing in width; antennomere 6 nearly three times wider than long; antennomere 10 thicker, only one third wider than long.

Pronotum: 0.21 mm long, 0.24 mm wide; widest at anterior angles; sides convergent to posterior angles, shortly sinuate in front of posterior angles; lateral margin finer at anterior angles than at posterior angles; setiferous punctation similar as on head; interstices between punctures at least twice as wide as puncture diameters; with impunctate midline; net-like microsculpture coarse; meshes slightly smaller than puncture diameters; surface moderately matt.

Elytra: 0.16 mm long, 0.22 mm wide, widest at posterior angles; sides slightly convergent to shoulders; shoulder obtuse and indistinct; posterior angles widely rounded; setiferous punctation denser than on pronotum, but as deep as on pronotum; interstices only slightly wider than puncture diameters; setae slightly longer than interstices between punctures; net-like microsculpture coarse; meshes wider than puncture diameters; surface moderately matt.

Abdomen with dense setiferous punctation; punctation much denser than on forebody; interstices between punctures distinctly smaller than puncture diameters; net-like microsculpture denser than on forebody; surface less shiny than that of forebody.

Protibia with 4 spines on outer edge; posterior face with 3 to 4 thick setae.

Aedeagus (Fig. 3) with apical lobe placed in rectangular angle to basal lobe; apical lobe thick, triangular; ending in acute apex; 3 sensillae on inner edge of apical lobe; paramera thick, oval.

*Etymology* – The species name refers to the country where it was found.

### ***Heterocylindropsis mahunkai* sp. n.**

(Figs 5–6, 19–20)

*Type material* – Holotype, male: Tanzania: Tanga reg., Kwamsambia For. Res., 10 km S Kwamkoro, 1050 m, sifting litter, 10.II.1987, leg. S. Mahunka & A. Zicsi, No. 105 (NHMB). Paratypes (11): same data as holotype (6, HNHM, 1, UIC), same locality as holotype, but Berlese sample, 10.II.1987, leg. S. Mahunka, & A. Zicsi, No. 103 (1 male, 3, HNHM).

*Diagnosis* – *H. mahunkai* sp. n. is the smallest species of the genus. The pronotum is quadrate and not wider than long as that of *H. tanzaniae* sp. n.. Moreover, the aedeagus is smoothly curved between basal and apical lobe. The apical lobe is

considerably shorter than that of *H. tanzaniae* and the apex is obtusely rounded. In contrast to *H. tanzaniae* the endophallus is coiled.

*Description* – Length: 1.0–1.1 mm. Colouration: Light yellowish brown; legs and antennae light yellow.

Head: 0.18 mm long, 0.19 mm wide; approximately parallel-sided; clypeus semicircular; setiferous punctation moderately dense and deep; interstices between punctures at least twice as wide as puncture diameters; setae at least as wide as interstices between punctures; net-like microsculpture coarse; meshes of microsculpture wider than puncture diameters; surface moderately shiny; laterally with same punctation and microsculpture as on vertex.

Antenna (Fig. 6) only slightly longer than head; antennomere 1 thick, approximately rectangular; antennomere 2 oval, only slightly narrower than 1, convergent to apex, one third thicker than conical 3; following antennomeres extremely increasing in width; antennomere 4 as wide as 3, but twice as wide as long; antennomere 6 nearly three times as wide as long; following antennomeres thicker; antennomere 10 only one third wider than long.

Pronotum: 0.19 mm long, 0.19 mm wide; widest at anterior angles, continuously convergent to posterior angles; posterior angles obtuse; lateral margin fine, finer at anterior angles than at posterior angles; in dorsal aspect, covered close to anterior angles; setiferous punctation similar as on head; interstices between punctures at least twice as wide as puncture diameters; with impunctate midline; net-like microsculpture coarse; meshes wider than puncture diameters; surface moderately matt.

Elytra: 0.14 mm long, 0.17 mm wide; widest at posterior angles; sides continuously convergent to shoulders; shoulders obtuse and indistinct; posterior angles widely rounded; setiferous punctation denser than on pronotum, but as deep as on pronotum; interstices only slightly wider than puncture diameters; setae slightly longer than interstices between punctures; net-like microsculpture coarse; meshes wider than puncture diameters; surface moderately matt.

Abdomen slightly widened from segment 3 to 7; setiferous punctation dense; punctation denser than on pronotum; interstices between punctures smaller than puncture diameters; net-like microsculpture dense and coarse; surface moderately matt.

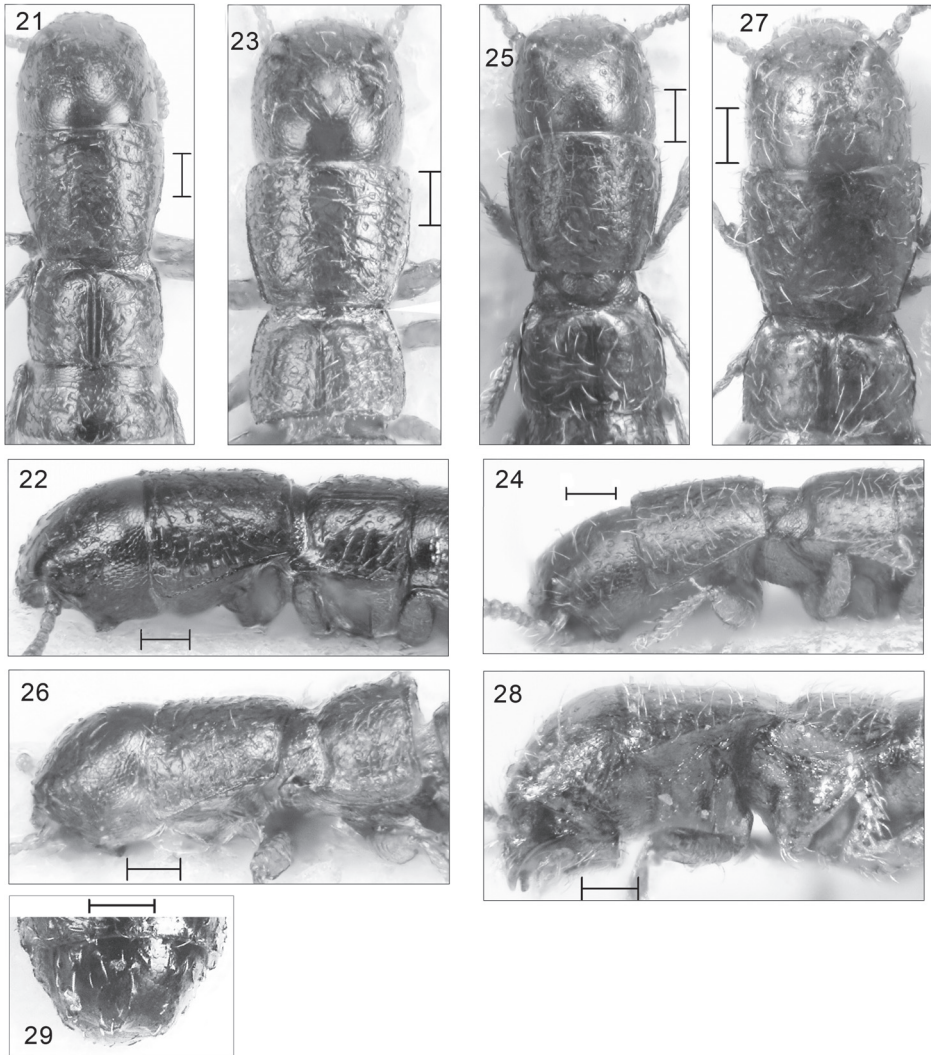
Protibia with 4 spines at outer edge; apical spine not in line with basal spines; few long setae on posterior face.

Aedeagus (Fig. 5) with thick basal lobe; apical lobe short, angle between basal and apical lobe obtuse; endophallus with several dense coils; paramera elongate with two setae at apex.

*Etymology* – The species is named in honour of one of the collectors, Dr S. Mahunka.

KEY TO THE SPECIES OF *HETEROCYLINDROPSIS*

- 1 Small species, smaller than 1.7 mm (Figs 15–20) ..... 2  
 – Larger species, longer than 1.7 mm (Figs 21–28) ..... 6  
 2 Elytra with spines at posterior margin (Figs 15–16) ..... *H. dentatus* sp. n.  
 – Elytra without spines at posterior margin ..... 3



**Figs 21–28.** Dorsal (21, 23, 25, 27) and lateral aspect (22, 24, 26, 28): 21–22: *Heterocylindropsis kahuziensis* Fagel, 1955, 23–24 = *H. luberensis* Fagel, 1955, 25–26 = *H. mwengensis* Fagel, 1955, 27–28 = *H. weneri* Coiffait, 1977. – **Fig. 29.** Last abdominal tergite of *H. luberensis* Fagel, 1955.

Scale bar: 0.1 mm



- 3 Pronotum as wide as long (Fig. 19), endophallus with dense coils (Fig. 5) ..... **H. mahunkai** sp. n.  
 – Pronotum wider than long; endophallus without or with elongate coils ..... 4
- 4 Smaller, 1.2 mm long, punctation of pronotum finer and sparser, interstices between punctures at least twice as wide as diameter of punctures (Fig. 17) ..... **H. tanzaniae** sp. n.  
 – Longer, 1.5–1.6 mm long, punctation of pronotum deeper and denser, interstices between punctures as wide as or shorter than diameter of punctures ..... 5
- 5 Endophallus with double helix (Fig. 11) ..... *H. mwengensis* Fagel, 1969  
 – Endophallus with elongate coils (Fig. 13) ..... *H. werneri* Coiffait, 1977
- 6 Last tergite without pair of short carinae, elytra longer, pronotum only 1.4 times as long as elytra, pronotum slightly sinuate in front of posterior angles, angles nearly rectangular (Fig. 21) ..... *H. kahuziensis* Fagel, 1955  
 – Last tergite with pair of short carinae (Fig. 29), elytra shorter, pronotum 1.6 times as long as elytra, pronotum not sinuate in front of posterior angles, angles obtuse (Fig. 23) ..... *H. luberensis* Fagel, 1955

## DISCUSSION

The distribution of the genus *Heterocylindropsis* seems to be restricted to Central Africa from the western range of the Rift Valley up to the Indian Ocean. Whereas the species described by FAGEL (1955, 1969) and COIFFAIT (1977) are only known from the eastern Rift Valley, the newly described species occur further eastern (Fig. 30). Therefore, it is assumed that more species can be expected in the regions and, in particular, between these two regions. Most of them are collected by sifting litter or by Berlese extraction. Regarding their lack of eyes, the species certainly follow an endogaeic life in the upper layer of the soil. Most of them were found in forest litter or in litter of transitional habitats between

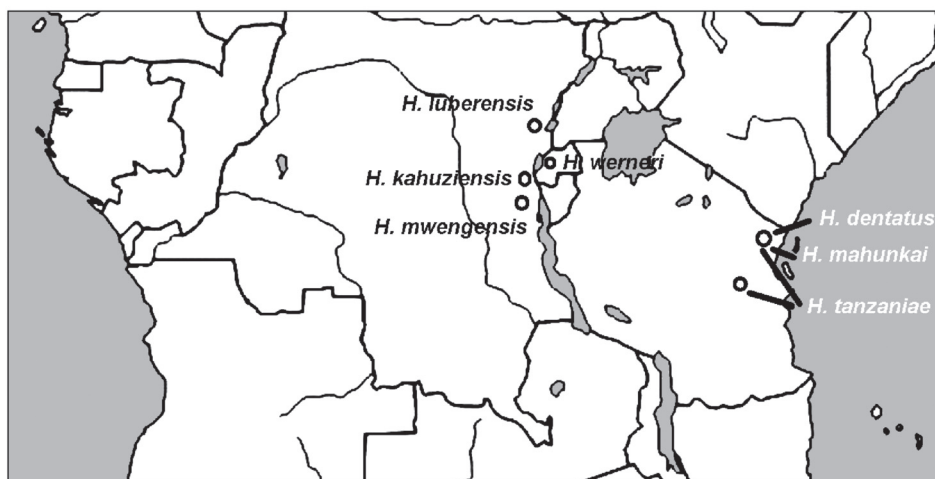


Fig. 30. Map of Central Africa with distribution of the genus *Heterocylindropsis* Fagel, 1955

forests and savannah; only one (*H. kahuziensis*) was found in savannah humus. This indicates that the species are not only restricted to montane forests, but can be also expected in the wide savannah areas between them. They certainly demand thick litter layers and it would be interesting to look more extensively in their vertical distribution. More detailed studies of deeper soil layers may reveal further species of the genus.

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