

**Study of the genus *Orphinus* Motschulsky, 1858.
Part 1 - descriptions of six new species
and neotype designation from the Afrotropical Region
(Coleoptera: Dermestidae: Megatominae)**

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Taxonomy, descriptions, new combination, new species, neotype, Coleoptera, Dermestidae, Megatominae, *Orphinus*, Afrotropical Region

Abstract. The following six new species *Orphinus* (*Orphinus*) *alinae* sp. nov. (Swaziland), *Orphinus* (*Orphinus*) *livingstonei* sp. nov. (South Africa), *Orphinus* (*Orphinus*) *mauricepici* sp. nov. (Tanzania), *Orphinus* (*Orphinus*) *mulanjensis* sp. nov. (Malawi), *Orphinus* *angolensis* sp. nov. (Angola) and *Orphinus* (*Orphinus*) *tsavoensis* sp. nov. (Kenya) are described, illustrated and compared with similar species. The species *Orphinus fouqueti* Pic, 1937 is newly combined as *Phradonoma fouqueti* (Pic, 1937) comb. nov. and neotype is designated here.

INTRODUCTION

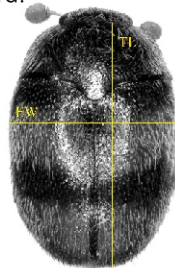
The dermestid genus *Orphinus* Motschulsky, 1858 recently contains 127 species worldwide (Háva, 2018, 2020), from the Afrotropical Region 17 species are known belonging to the nominotypical subgenus (Háva 2016, Kadej & Háva 2016). Six new species are described here from Swaziland, South Africa, Angola, Malawi, Tanzania and Kenya.

MATERIAL AND METHODS

The size of the beetles or of their body parts can be useful in species recognition and thus, the following measurements were made:

TL total length - linear distance from anterior margin of pronotum to apex of elytra.

EW elytral width - maximum linear transverse distance.



The following collections codes are used:

HNHM Hungarian Natural History Museum, Budapest, Hungary;

JHAC Jiří Háva, Private Entomological Laboratory & Collection, Únětice u Prahy, Prague-West, Czech Republic;

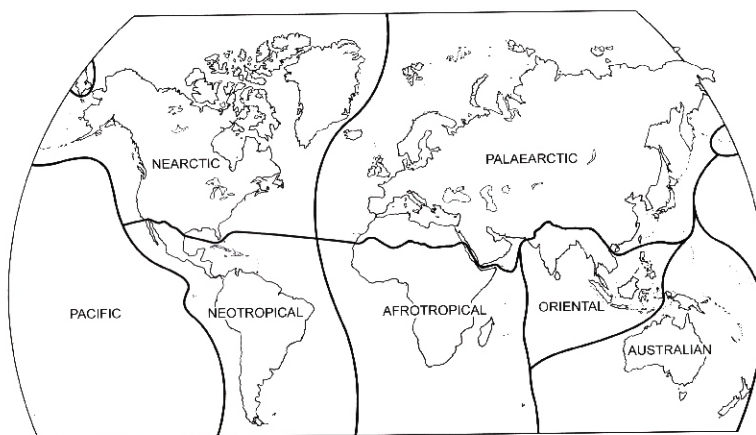
MNHN Muséum National d'Histoire Naturelle, Paris, France;

TMSA Transvaal Museum, Museum of Natural History, Pretoria, South Africa.

Specimens of the presently described species are provided with red, printed labels with the texts as follows: "HOLOTYPE [or PARATYPE, respectively] *name of taxon* sp. nov. Jiří Háva det. 2020".

Nomenclature and systematic in this paper follow Háva (2015).

Geographic Regions follow the Palaearctic Catalogue (Map. 1).



Map. 1. The limits of geographic Regions.

TAXONOMY

Orphinus (Orphinus) alinae sp. nov.

(Figs. 1-3)

Type material. Holotype (♂): Swaziland, 2 km N Loyengo, 26°33'S 31°11 E, 25.x.1994, (JHAC).

Description. Body measurements (mm): TL 2.1 EW 1.3. Body dark brown on dorsal surfaces, dark brown on ventral surfaces; small and oval (Fig. 1). Head coarsely punctate, with short, recumbent, brown setation. Palpi brown; setation on mentum denser. Eye very large, with brown microsetae. Ocellus on frons present. Antennae brown with yellow setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 2). Antennal fossa circular. Pronotum on the disc punctate like head, densely foveolate posteriorly, with short, recumbent, brown setation. Scutellum triangular, without setation. Elytra finely punctate, with short, brown, recumbent setation; cuticle dark brown, each elytron with three isolated, circular, orange spots covered by yellow setation (Fig. 1). Legs brown, with light brown setation. Mesosternum coarsely punctate laterally, otherwise finely punctate, covered with light brown, short, recumbent setation. Abdominal visible ventrites brown, coarsely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation. Aedeagus as in Fig. 3.

Sexual dimorphism. Female unknown.

Differential diagnosis. The new species is externally very similar to *Orphinus* (*O.*) *sexmaculatus* Arrow, 1915 but differs from it by the small terminal antennomere and structure of male genitalia.

Etymology. Patronymic, dedicated in memory of my tragically deceased girlfriend Alina P. (*1990-†2019).



Figs. 1-4. *Orphinus* (*O.*) *alinae* sp. nov.: 1- habitus, dorsal aspect; 2- antenna of male; 3- male genitalia; 4- *Orphinus* (*O.*) *sexmaculatus* Arrow, 1915, antenna of male.

***Orphinus* (*Orphinus*) *livingstonei* sp. nov.**

(Figs. 5-7)

Type material. Holotype (♂): S.Afr., S. Cape Mt., Matjijfontein M., 33.16S - 20.30E / 25.10.1978, E.Y. 1478, ground traps, 39 days, leg. Endrödy-Younga / ground traps with meat bait, (TMSA). Paratypes: (1 ♂): S Africa, 25 km W Pretoria, Saartijesnek, 25°46'S 27°64'E, 22-24.11.1997, Sv. Bily leg., (JHAC); (1 ♂): RSA, North West prov., Bothaville Vaal riv., R-504, 27.11.2002, M. Snížek lgt., (JHAC).

Description. Body measurements (mm): TL 2.1 EW 1.3. Body brownish-black on dorsal surfaces, dark brown on ventral surfaces; small and oval (Fig. 5). Head black, coarsely punctate, with short, recumbent, brown setation. Palpi brown; setation on mentum denser. Eye very large, with brown microsetae. Ocellus on frons present. Antennae brown with yellow setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 6). Antennal fossa circular. Pronotum black discally, lateral margins dark brown, on the disc punctate like head, densely foveolate posteriorly, with short, recumbent, brown setation. Scutellum triangular, without setation. Elytra finely punctate, with short, brown, recumbent setation; cuticle brownish-black, each elytron with one transverse isolated, orange spot not reaching suture and one orange spot apically, covered by yellow setation (Fig. 5). Legs brown, with light brown setation. Mesosternum coarsely punctate laterally, otherwise finely punctate, covered with light brown, short, recumbent setation. Abdominal visible ventrites dark brown, coarsely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation. Aedeagus (Fig. 7).

Sexual dimorphism. Female unknown.

Variability. Body measurements (mm): TL 2.0-2.1 EW 1.2-1.3.



Figs. 5-7. *Orphinus* (*O.*) *livingstonei* sp. nov.: 5-habitus, dorsal aspect; 6-antenna of male; 7- male genitalia.

Differential diagnosis. The new species visually very similar to *O.* (*O.*) *rusumoensis* Háva & Herrmann, 2003 and *O.* (*O.*) *zomba* Háva & Herrmann, 2002 but differs from them by the elytral colour patterns, structure of antennae and male genitalia.

Etymology. Patronymic, dedicated to Scottish missionary, doctor and traveller David Livingstone (*1813-†1873).

***Orphinus* (*Orphinus*) *tsavoensis* sp. nov.**
(Figs. 8-10)

Type material. Holotype (♂): Kenya, Tsavo Nat. Park (east), Aruba Lodge env., Satao camp, cca 50 km N of Voi, 3°22.57'S 38°57.46'E, 4-5.1.2011, J. Háva lgt., (JHAC).

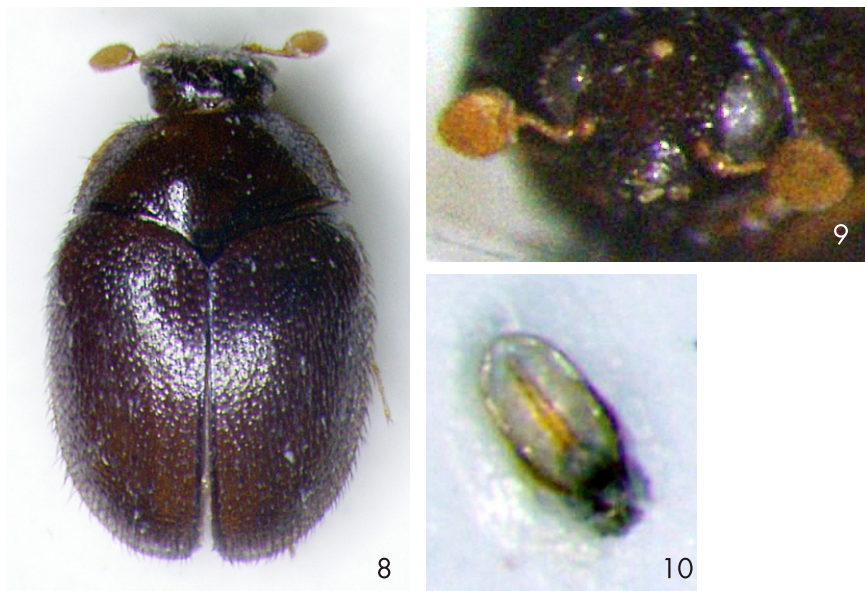
Description. Body measurements (mm): TL 1.9 EW 1.4. Body dark brown on dorsal surfaces, dark brown on ventral surfaces; small and oval (Fig. 8). Head finely punctate, with short, recumbent, light brown setation. Palpi brown; setation on mentum denser. Eye very large, with brown microsetae. Ocellus on frons present. Antennae light brown with brown setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 9). Antennal fossa circular. Pronotum on the disc punctate like head, densely foveolate posteriorly, with short, recumbent, light brown setation. Scutellum triangular, without setation. Elytra brown, finely punctate, with short, light brown, recumbent setation (Fig. 8). Legs brown, with light brown setation. Mesosternum coarsely punctate laterally, otherwise finely punctate, covered with light brown, short, recumbent setation. Abdominal visible ventrites brown, finely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation. Aedeagus (Fig. 10).

Sexual dimorphism. Female unknown.

Differential diagnosis. The new species visually very similar to *O. (O.) jiri* Háva, 2001 and *O. (O.) katerina* Háva, 2001 but differs from them by the unicolorous brown body, without patterns or spots and structure of antennae and male genitalia.

Bionomics. The holotype specimen collected on antelope borns.

Etymology. Topomymic, named after the type locality - Tsavo National Park.



Figs. 8-10. *Orphinus (O.) tsavoensis* sp. nov.: 8-habitus, dorsal aspect; 9-antenna of male; 10-male genitalia.

***Orphinus (Orphinus) mauricipici* sp. nov.**

(Figs. 11-14)

Type material. Holotype (♂): Tanganyika: Usa River, 3900 feet, coll. Dr. J. Szunyoghy / light trap, 1.xii.1965-31.i.1966, (HNHM). Paratypes: (2 ♂♂): the same data but 15.ix.-25.xi.1965, (1 HNHM, 1 JHAC); (1 ♂): „Tanzania centr., Selous Game env., 1-14.vii.1997, M. Malucha lgt.“, (JHAC).

Description. Body measurements (mm): TL 2.4 EW 1.3. Body brown on dorsal surfaces, brown on ventral surfaces; small and parallel (Fig. 11). Head coarsely punctate, with short, recumbent, brown setation. Palpi brown; setation on mentum denser. Eye extremely large, with brown microsetae. Ocellus on frons present. Antennae brown with yellow setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 13). Antennal fossa circular. Pronotum on the disc punctate like head, densely foveolate posteriorly, with short, recumbent, brown setation. Scutellum triangular, without setation. Elytra parallel, finely punctate, with short, brown, recumbent setation; cuticle brown, each elytron with two small isolated spots, covered by yellow setation (Figs. 11-12). Legs brown, with light brown setation. Mesosternum

coarsely punctate laterally, otherwise finely punctate, covered with light brown, short, recumbent setation. Abdominal visible ventrites brown, finely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation. Aedeagus (Fig. 14).

Sexual dimorphism. Female unknown.

Differential diagnosis. The new species visually very similar to *O. (O.) conjunctus* Pic, 1937 but differs from it by the elytral patterns and structure of antennae. *O. (O.) kenyensis* Kalík, 1965 differs from the new species by the longly triangular termial antennomere and structure of male genitalia.

Variability. Body measurements (mm): TL 2.4-2.7 EW 1.3-1.4.

Etymology. Patronymic, dedicated to French entomologist Maurice Pic (*1866-†1957).



Figs. 11-14. *Orphinus (O.) mauricepici* sp. nov.: 11-habitus, dorso-lateral aspect; 12-habitus, lateral aspect; 13-antenna of male; 14-male genitalia.

***Orphinus (Orphinus) mulanjensis* sp. nov.**

(Figs. 15-17)

Type material. Holotype (♀): Malawi South Reg., Mount Mulanje, xi.1981, R. Jocqué / Lichenya Plateau, 2000 m., 4/9.xi.1981, (JHAC).

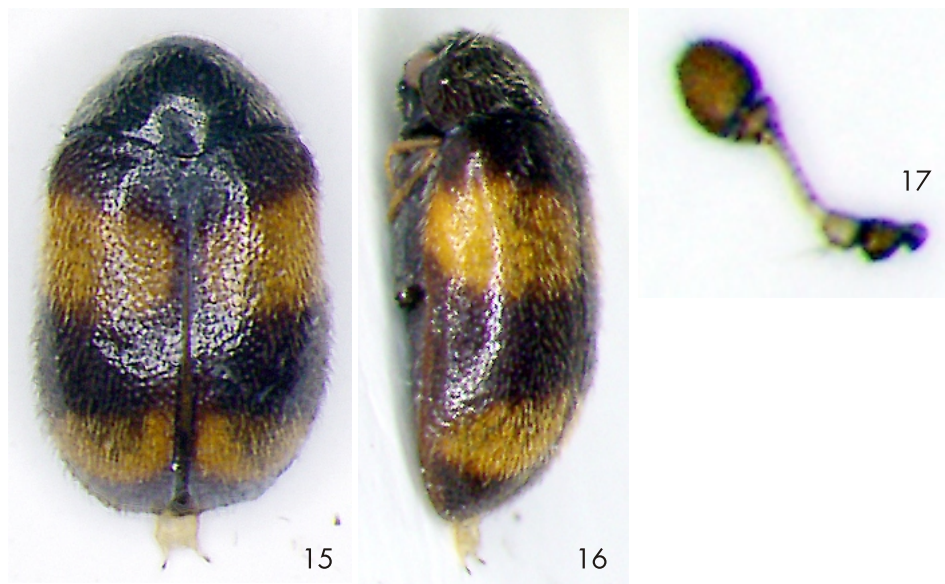
Description. Body measurements (mm): TL 2.4 EW 1.5. Body brown on dorsal surfaces, dark brown on ventral surfaces; small and oval, maximum breadth in apical part (Fig. 15). Head coarsely punctate, with long, recumbent, whitish setation. Palpi brown; setation on mentum denser. Eye very large, with brown microsetae. Ocellus on front present. Antennae brown with

yellow setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 17). Antennal fossa circular. Pronotum on the disc punctate like head, densely foveolate posteriorly, with long, recumbent, whitish setation. Scutellum triangular, without setation. Elytra finely punctate, with short, brown, recumbent setation; cuticle brownish-black, each elytron with two transverse, yellowish-orange fasciae, anterior fascia not reaching suture, posterior reaching suture, covered by yellow setation (Figs. 15-16). Legs brown, with light brown setation. Mesosternum coarsely punctate laterally, otherwise finely punctate, covered with whitish-yellow, short, recumbent setation. Abdominal visible ventrites brown, coarsely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation.

Sexual dimorphism. Male unknown.

Differential diagnosis. The new species visually very similar to *O. (O.) zomba* Háva & Herrmann, 2002 but differs from it by the broad body form in apical part, long whitish setation on head and pronotum, elytral spots and structure of antennae.

Etymology. Toponymic, named after the type locality - Mount Mulanje.



Figs. 15-17. *Orphinus (O.) mulanjensis* sp. nov.: 15- habitus, dorsal aspect; 16- habitus, lateral aspect; 17- antenna of female.

***Orphinus (Orphinus) angolensis* sp. nov.**

(Figs. 18-20)

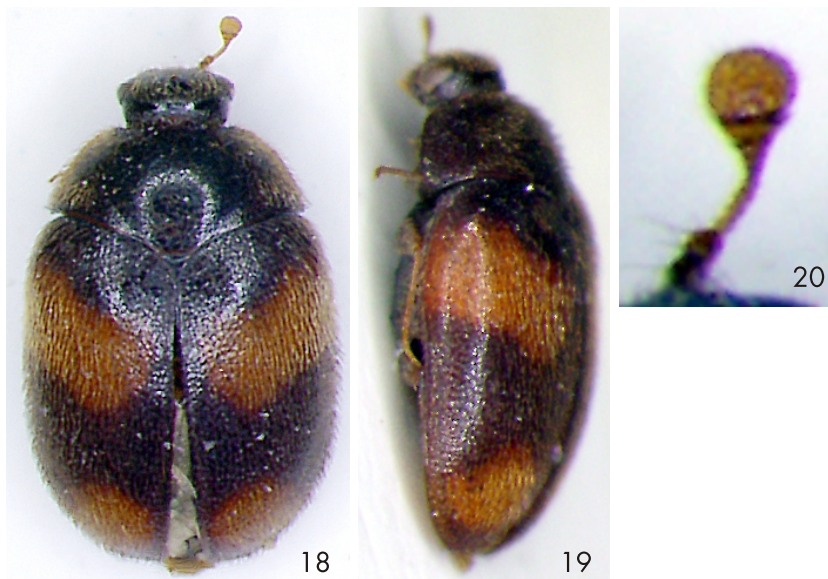
Type material. Holotype (♀): ANGOLA, Huila: Humpata, 15.02'S 13.24'E, sous écorce, 23.ix.1949, A. B. Machado, (JHAC).

Description. Body measurements (mm): TL 2.6 EW 1.8. Body dark brown on dorsal surfaces, dark brown on ventral surfaces; small and oval (Fig. 18). Head coarsely punctate, with short, recumbent, brown setation. Palpi brown; setation on mentum denser. Eye very large, with brown microsetae. Ocellus on frons present. Antennae brown with yellow setae, with 11 antennomeres, antennal club with two antennomeres, terminal antennomere large, circular (Fig. 20). Antennal fossa circular. Pronotum on the disc punctate like head, densely foveolate posteriorly, with short, recumbent, brown setation. Scutellum triangular, without setation. Elytra finely punctate, with short, brown, recumbent setation; cuticle dark brown, each elytron with one transverse, orange fascia from humeri to near suture and one orange spot apically, covered by yellow setation (Figs. 18-19). Legs brown, with light brown setation. Mesosternum coarsely punctate laterally, otherwise finely punctate, covered with light brown, short, recumbent setation. Abdominal visible ventrites brown, coarsely punctate, with short, recumbent, light brown setation. Pygidium dark brown with light brown setation.

Sexual dimorphism. Male unknown.

Differential diagnosis. The new species visually very similar to *O. (O.) zomba* Háva & Herrmann, 2002 and *O. (O.) mulanjensis* sp. nov. but differs from them by the elytral orange patterns and structure of antennae.

Etymology. Toponymic, named after the type locality - state Angola.



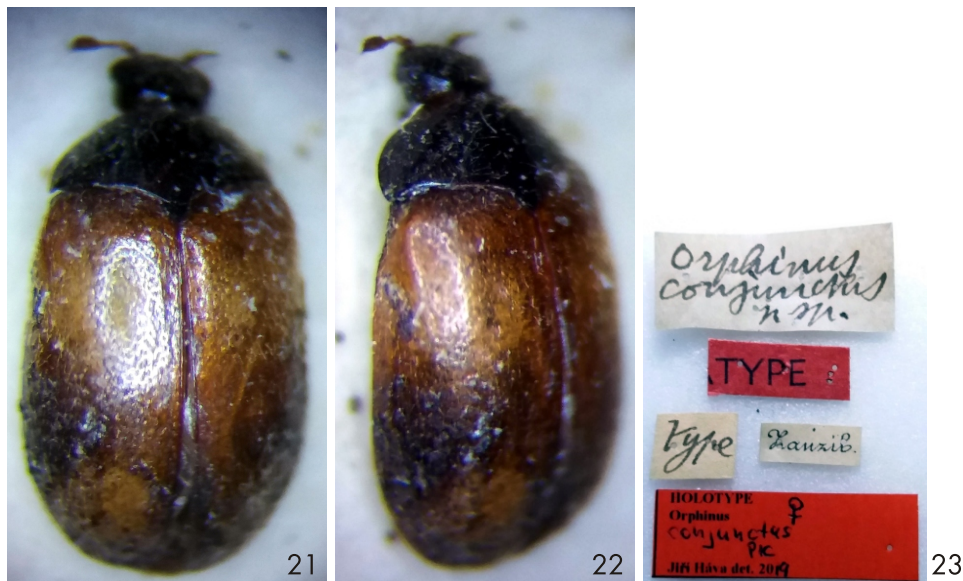
Figs. 18-20. *Orphinus (O.) angolensis* sp. nov.: 18-habitus, dorsal aspect; 19-habitus, lateral aspect; 20-antenna of female.

***Orphinus (Orphinus) conjunctus* Pic, 1937**

(Figs. 21-23)

Type material. Holotype (♀): Zanzib. / Type / TYPE / *Orphinus conjunctus* n sp / HOLOTYPE ♀ *Orphinus conjunctus* Pic, Jiří Háva det. 2019, (MNHN).

Distribution. Species known from Botswana, Tanzania: Zanzibar.



Figs. 21-23. *Orpinus* (*O.*) *conjunctus* Pic, 1937 (holotype): 21- habitus, dorsal aspect; 22- habitus, dorso-lateral aspect; 23- labels.

***Phradonoma fouqueti* Pic, 1937 comb. nov.**

Orpinus Fouqueti Pic, 1937: 6.

Type material. Holotype (specimen missing and lost): Kari, 2.1914 / ex Fouquet / Fouqueti n sp / Type / TYPE, (MNHN).

Material examined: Senegal, 70 km W Tambacounda, 13°57.4'N 14°15.9'E, 29.6.2004, M. Halada lgt., 2 ♂♂, J. Háva det.

One of them here designated as Neotype (MNHN), with printed, red label: „NEOTYPE, *Orpinus fouqueti* Pic, J. Háva design. 2020” and white printed label „*Phradonoma fouqueti* (Pic), J. Háva det. 2020. Second specimen labelled: „*Phradonoma fouqueti* (Pic), J. Háva det. 2020 / „compared with Neotype”, (JHAC).

Remarks. According to original description (described from Senegal) and recently collected material, the species does not belong to genus *Orpinus* but according to antennae and anterior tibiae with spines along shaft it belongs to genus *Phradonoma*. The species *Orpinus fouqueti* Pic, 1937 is removed from genus *Orpinus* and newly combined as *Phradonoma fouqueti* (Pic, 1937) comb. nov.

LIST OF AFROTROPICAL ORPHINUS SPECIES

Genus *Orpinus* Motschulsky, 1858

Subgenus *Orpinus* s. str.

O. aethiops Arrow, 1915
O. africanus Pic, 1927
O. alinae sp. nov.

Angola, Cameroon, Mauritius, Nigeria
 Congo, Nigeria
 Swaziland

<i>O. angolensis</i> sp. nov.	Angola
<i>O. apicebrunneus</i> Háva, 2003	Ghana
<i>O. binotatus</i> Pic, 1937	Comores Is., Madagascar, Reunion, Tanzania: Zanzibar
<i>O. conjunctus</i> Pic, 1937	Botswana, Tanzania: Zanzibar
<i>O. demeyeri</i> Háva, 2003	Congo
<i>O. fulvipes</i> (Guérin-Ménéville, 1838)	Annobon Is., Congo, Ghana, Ivory Coast, Kenya,
= <i>O. congoanus</i> (Pic, 1950)	Madagascar, Mauritius, Nigeria, Reunion, Seychelles, Sierra Leone, South Africa, Tanzania, (cosmopolitan)
<i>O. holusai</i> Háva, 2016	Ghana
<i>O. incognitus</i> Háva, 2003	Angola
<i>O. jiri</i> Háva, 2001	Kenya
<i>O. katerina</i> Háva, 2001	Kenya
<i>O. kenyensis</i> Kalík, 1965	Kenya
<i>O. livingstonei</i> sp. nov.	South Africa
<i>O. mauricepici</i> sp. nov.	Tanzania
<i>O. mulanjensis</i> sp. nov.	Malawi
<i>O. rusumoensis</i> Háva & Herrmann, 2003	Rwanda
<i>O. sexmaculatus</i> (Arrow, 1915)	Congo, South Africa, Tanzania, Zimbabwe
<i>O. tanzanicus</i> Kadej & Háva, 2016	Tanzania
<i>O. tsavoensis</i> sp. nov.	Kenya
<i>O. wagneri</i> Háva & Herrmann, 2003	Rwanda
<i>O. zomba</i> Háva & Herrmann, 2002	Malawi, Tanzania, Zambia

ACKNOWLEDGEMENTS. I am very grateful to Miloslav Rakovič (Czech Republic) for the revision of the English manuscript. The paper was supported by the Ministry of Agriculture of the Czech Republic, institutional support MZE-RO0118.

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Published: 30. 11. 2020