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The genus *Manota* Williston (Diptera: Mycetophilidae) in the Congo basin with description of five new species

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Abstract

The *Manota* species in the Congo basin are reviewed and 17 species are recorded. The following five new species are described: *M. grootaerti* sp. n., *M. peltata* sp. n., *M. peltigera* sp. n., *M. reclinata* sp. n., and *M. wittei* sp. n. New records of the following species are presented: *M. freerki* Hippa & Kurina, 2012, *M. issongo* Matile, 1972, *M. kibaleensis* Hippa & Kurina, 2012, *M. lachaisei* Matile, 1972, *M. mabokeensis* Matile, 1972, *M. mazumbaiensis* Söli, 1993, *M. petiolata* Hippa & Kurina, 2012, *M. pilosa* Hippa & Kurina, 2012, *M. relicina* Hippa & Kurina, 2012, *M. senticosa* Hippa & Kurina, 2012 and *M. teocchii* Matile, 1972. *Manota issongo* is redescribed, including detailed illustration of the male hypopygium. The number of Afrotropical *Manota* species is increased to 56.

Key words: Diptera, Mycetophilidae, *Manota*, new species, Afrotropical region, Congo

Introduction

Despite active study during the last decade, continual discovery of new species in the genus *Manota* Williston (type-species *M. defecta* Williston) continues to increase. Originally known from only a few species in temperate regions, including just a single species in Europe (e. g. Jaschhof *et al.* 2011), the diversity of *Manota* species reaches its maximum in tropical areas of the World. Today more than 200 species are known worldwide (Hippa & Kurina 2013 and references therein). In addition to taxonomic study, with description of dozens of new species annually, an attempt has also been made to address the phylogenetic relationships of the genera of Manotinae, including *Manota*, based on both morphological (Hippa *et al.* 2005) and molecular (Ševčík *et al.* 2013) characters. In the Afrotropical region, the present knowledge on diversity of *Manota* species is summarised by Hippa & Kurina (2012), including a key to the species. The distribution and origin of the 51 previously described species are displayed in Figure 1. However, there are still a number of territories with no, or very little, data. One of these is the mid-equatorial region, including the huge territory of today's Democratic Republic of Congo (DRC), where no *Manota* species has been previously recorded.

We studied a collection of *Manota* material from DRC, and describe a number of new species and present new records of previously described species.

Material and methods

The examined material was obtained from two sources. The majority of the specimens were from pinned Sciaroidea material in the Royal Museum for Central Africa, Tervuren, Belgium. One hundred and nineteen specimens were collected by collaborators of the scientific missions to (1) Garamba National Park (on labels as P.N.G.; mission H. de Saeger), (2) Upemba National Park (on labels as P.N.U.; mission G. F. de Witte) and (3) Albert National Park (on labels as P.N.A.; coll. P. Vanschuytbroeck & V. Hendrickx). For collecting details see De

Saeger (1954), De Witte (1966) and <http://www.apncb.be/missions>. Additionally, ethanol preserved material of 15 specimens was collected by P. Grootaert during recent expeditions to Yangambi National Park and surroundings. All collecting localities (Fig. 1) belong to the savanna biome (cf. Saeger 1954: fig. 1) except Yangambi NP, which lies in the Equatorial rainforest area.

For detailed study, most of the specimens were slide-mounted. In the case of micro-pinned specimens, they were first kept in a high humidity relaxing chamber. When the specimen became pliable, the wings were detached, step wise dehydrated, and mounted under a coverslip in Euparal. The rest of the body was removed from the micro pin, macerated in 10% warm potassium hydroxide (KOH), washed in distilled water, and then also step wise dehydrated in ethanol. After detaching the hypopygium, the remaining body was mounted under a separate coverslip next to the wings. The hypopygium was mounted in Euparal between two pieces of coverslip, which allowed study from both sides under a compound microscope. These preparations were attached to the same microscope slide as the wings and body by two strips of adhesive tape across their edges, and are easily detached when needed. In the case of ethanol preserved specimens the hypopygia were detached, macerated and mounted as described above. The other parts of the body were not macerated, but, after dehydration, were mounted in Euparal so that they are lying on their side. Some of the pinned specimens were identified, without any special mounting, under a stereomicroscope with high magnification. Others had only their hypopygia detached, macerated and washed as described above, and then were studied in glycerine and preserved as glycerine preparations in small polyethylene micro-vials attached to the same pin as the rest of the specimen (see also Kurina *et al.* 2011). The exact label data, including codes of pinned material from RMCA, and the current preservation method are referred to for each specimen in the material examined sections. All species are supplied with a reference to the corresponding collecting location(s) on Figure 1.



FIGURE 1. Number of *Manota* species known to occur in countries of the Afrotropics, with number of endemic species noted in parentheses. Collecting localities in DRC: **A** Garamba National Park (P.N.G. on labels), **B** Kona on Itimbiri river, **C** Yangambi National Park, **D** Albert National Park (P.N.A. on labels), **E** Upemba National Park (P.N.U. on labels).

The verbal descriptions of the hypopygium should only be taken as rough guidelines to interpret the drawings. The morphological terminology follows mainly Söli *et al.* (2000) while the term “parasegment” is used in accordance with Jaschhoff & Hippa (2005). The terminology of the hypopygium follows Hippa and Papp (2007) except for the tegmen, which is here called the aedeagus. The latter terminology is also explained in Figs 2 and 5. The midtibial organ is an area of tightly placed setae basoventrally on the midtibia (Jaschhoff & Jaschhoff 2010). The hind tibial organ is a similar area apicoventrally on the hind tibia (Jaschhoff *et al.* 2011). Wing length was measured from wing base to wing tip. Description of colour was made from specimens on slides under a stereomicroscope. Illustrations were made with the aid of a drawing tube attached to a Leitz Diaplan compound microscope. The slide mounting, and identification of the specimens that were not slide-mounted, was done under a Leica S8APO stereomicroscope and a compound microscope Leica DM 6000 B.

The material is deposited in the following institutions: Royal Museum for Central Africa, Tervuren, Belgium (RMCA), Royal Belgian Institute of Natural Sciences, Brussels, Belgium (IRSNB), Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences (former Institute of Zoology and Botany), Tartu, Estonia (IZBE).

New species

Manota grootaerti sp. n.

Figs 1 (location C), 2 A–D

Male. Colour. Head brown, face somewhat paler. Antenna light brown, scape and pedicel paler. Clypeus yellow, mouthparts pale yellowish. Thorax yellow, medial part of scutum and scutellum somewhat darker. Legs yellowish, apical fourth of hind femur infuscated. Wing slightly infuscated; haltere yellow with dark brown knob. Abdomen with tergites dark brown, sternites yellow, dark brown basally and apically. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 as in Fig. 2 A. Palpomere 3 of maxillary palpus with apicomedial thumb-like extension, with 4 apically curved sensilla; palpomere 4 with parasegment; palpomere 5 ca. 1.4 times longer than palpomere 4. Nine strong postocular setae. **Thorax.** Anepisternum with 35 setae; anterior basalare non-setose; preepisternum 2 non-setose; laterotergite non-setose; metepisternum with 14 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R₁ meeting C within the basal half of the costa; the sclerotized part of M₂ not extending to the level of the tip of R₁; wing length 1.6 mm. **Hypopygium,** Figs 2 B, C, D: Sternite 9 half the length of gonocoxite, lateral margin sharply delimited, posterior margin transverse, anterior margin deeply incised, the setae similar to the ventral setae of gonocoxite. Ventromedial margin of gonocoxite simple, convex; the ventral setosity of gonocoxite unmodified. Parastylar lobe subtriangular, with 2 setae on the anterior half. Paraapodemal lobe distinct, in Fig. 2 C obscured by the medial margin of gonocoxite. Dorsal medial margin of gonocoxite simple, convex, forming a rounded posteromedial angle with the posterior margin, the posterolateral part simple; at the posteromedial angle, on the ventral side, there is a conspicuous aggregation of small setae. At the posterior margin of gonocoxite, on a more ventral level, there is a long finger-like lobe bearing two apical setae. The dorsal setosity of gonocoxite generally similar to the ventral, but the posteriormost setae very long. Two juxtagonostylar setae present, both rather unmodified megasetae arising from a common sigmoid basal body, which is as long as the megasetae. Gonostylus about half the length of gonocoxite, clavate in outline, with a heel-like basomedial angle and a narrow subapical medial lobe bearing two strong setae at the apex; the ventral setae of gonostylus similar to those on gonocoxite, the apical setae long, the dorsal side of gonostylus non-setose. Aedeagus subtriangular, with distinct lateral shoulders, the apex curved ventrad. Hypoproct extending posteriorly just over the base of the gonostylus, the ventral setae (sternite 10) forming a medial group of ca. 10 setae on each half. Cerci medially separate, simple, the setae confined to the apical and apicomedial margin, the longest ones as long as the subapical width of cercus.

Female unknown.

Discussion. Following the key by Hippa & Kurina (2012), this species runs to couplet 26, as both the laterotergite and preepisternum 2 are non-setose. The structure of the male hypopygium is, however, different from that of the two species included in this couplet, viz. *M. natalensis* Jaschhoff & Mostovski, 2006 and *M. furcata* Söli, 1993. The two juxtagonostylar megasetae of *M. grootaerti* sp. n. are rather unmodified, arising from a common

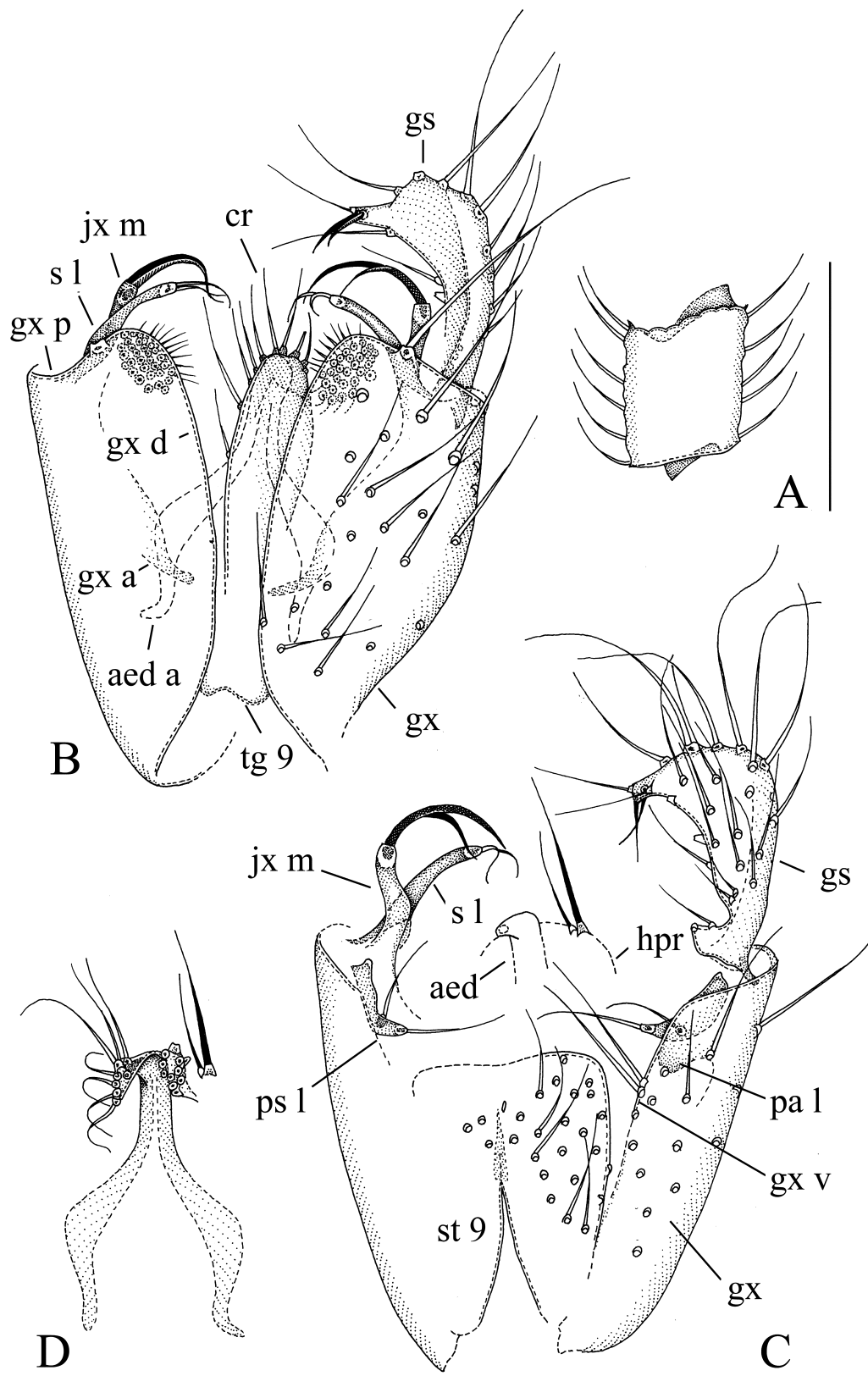


FIGURE 2. *Manota grootaerti* sp.n. (holotype). **A.** Antennal flagellomere 4, lateral. **B.** Hypopygium, dorsal. **C.** Hypopygium, ventral. **D.** Aedeagus and hypoproct, ventral. Scale 0.1 mm. aed = aedeagus, aed a = aedeagal apodeme, cr = cercus, gs = gonostylus, gx = gonocoxite, gx a = gonocoxal apodemes, gx d = dorsomedial margin of gonocoxite, gx p = dorsal posterior margin of gonocoxite, gx v = ventromedial margin of gonocoxite, hpr = hypoproct, jx m = juxtagonostylar megasetae, pa l = paraapodemal lobe, ps l = parastylar lobe, sl = setigerous lobe on posterodorsal margin of gonocoxite, st 9 = sternite 9, tg 9 = tergite 9.

sigmoid basal body, while *M. natalensis* and *M. furcata* have one of them either bowl-like, or forked, respectively (cf. Hipa 2008: figs 11A–C, Söli 1993: fig. 5 B). *Manota grootaerti* **sp. n.** has the gonostylus with a heel-like basomedial angle, and a narrow subapical medial lobe bearing two strong setae at the apex, while the other two species have a rather unmodified but clavate gonostylus. The parastylar lobe is subtriangular in *M. grootaerti* **sp. n.** (subquadrate and large in *M. natalensis*, undescribed for *M. furcata*). The third palpomere of *M. natalensis* lacks curved apical sensilla, while *M. grootaerti* **sp. n.** has four sensilla (unknown for *M. furcata*).

Etymology. The species is named after Dr. Patrick Grootaert (IRSNB), collector of the type material.

Types. *Holotype*. Male, DEMOCRATIC REPUBLIC OF CONGO, Yangambi NP, 0°49'31" N 24°31'54" E, sample No 32032, sweeping, 12.vi.2012, leg. P. Grootaert (on slide, IRSNB).

Manota peltata **sp. n.**

Figs 1 (location C), 3 A–E

Male. **Colour.** Head brown, face somewhat paler. Antenna including scape and pedicel light brown, two apical flagellomeres paler. Clypeus and mouthparts pale yellowish. Thorax yellow, medial part of scutum and scutellum somewhat darker. Legs yellowish, apical fourth of hind femur infuscated. Wing hyaline; haltere yellow with dark brown knob. Abdomen dark brown, except tergites laterally and sternites yellow. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 Fig. 3 A. Palpomere 3 of maxillary palpus with apicomedial thumb-like extension, with 5 apically curved sensilla; palpomere 4 with parasegment; palpomere 5 ca. 1.6 times longer than palpomere 4. Nine strong postocular setae. **Thorax.** Anepisternum with 29 setae; anterior basalare with 4 setae; preepisternum 2 non-setose; laterotergite with 12 setae; metepisternum with 19 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R₁ meeting C within the basal half of the costa; the sclerotized part of M₂ extending to the level of the tip of R₁; wing length 1.7 mm. **Hypopygium,** Figs 3 B–E: Sternite 9 large, posteriorly extending to the middle of gonostylus, anterolaterally fused with gonocoxite, the posterior free part semielliptical, anterior margin with a small medial incision, the setae similar to ventral setae of gonocoxite. Parastylar lobe rather weakly sclerotized, anteriorly not clearly separated from gonocoxite, subtriangular, with 1 seta at apex and with rather conspicuous microtrichia (not drawn in Fig. 3 C). Paraapodemal lobe not identifiable. The ventral setosity of gonocoxite unmodified. Dorsomedial margin of gonocoxite indistinct, with membranous parts, which are difficult to observe; dorsal posterior part of gonocoxite forming an oblique lobe, bearing rows and groups of nonflattened setae. At the dorsal medial margin of gonocoxite, on more ventral level with 2 megasetae arising from large basal bodies. One juxtagonostylar seta present: a strong conical megaseta arising from a slender basal body, which is as long as the seta. Otherwise the dorsal setosity of gonocoxite unmodified, similar to the ventral one. Gonostylus ca. two thirds of the ventral length of gonocoxite, apically bilobed, without prominent strong setae, with unmodified setae ventrally and largely non-setose dorsally. Aedeagus elongate subtriangular, without distinct lateral shoulders, the apex curved ventrad. Hypoproct large, posteriorly extending to the middle of gonostylus, the ventral setae (sternite 10) mostly placed antero-laterally, ca. 30 on each half. Cerci medially separate, the setae distributed almost to the base of cercus.

Female unknown.

Discussion. Following the key by Hipa & Kurina (2012), this species runs to couplet 21 because of the 1) setose laterotergite, 2) setose anterior basalare, 3) ventral setae on the hypoproct scattered over the whole ventral surface, 4) preepisternum 2 non-setose, and 5) the dorsomedial margin of gonocoxite without flattened megasetae posteriorly, but with 2 unmodified posteriorly directed megasetae at more ventral level. Compared to the two species included in this couplet—*M. clinochaeta* Hipa, 2008 and *M. phyllochaeta* Hipa, 2008—*M. peltata* **sp. n.** has the parastylar lobe anteriorly fused with the gonocoxite, while it is conspicuously separate in the other two species. Furthermore, the gonostylus of *M. peltata* **sp. n.** is apically bilobed, but without deviating setae, similar to that of *M. clinochaeta*, while it is apically tapering with a basal widening in *M. phyllochaeta*. In addition to the previously named two species, *M. peltata* **sp. n.** is also similar to *M. teocchii* Matile, 1972, in having two megasetae at the dorsomedial margin of the gonocoxite, but see discussion by Hipa (2008: p. 3). The sternite 9—anterolaterally fused with gonocoxite but posteriorly well delimited and extended—groups this new species with three more Afrotropical species, viz. *M. foliolata* Hipa & Kurina, 2012, *M. pinnulata* Hipa & Kurina, 2012 and *M. peltigera* **sp. n.**

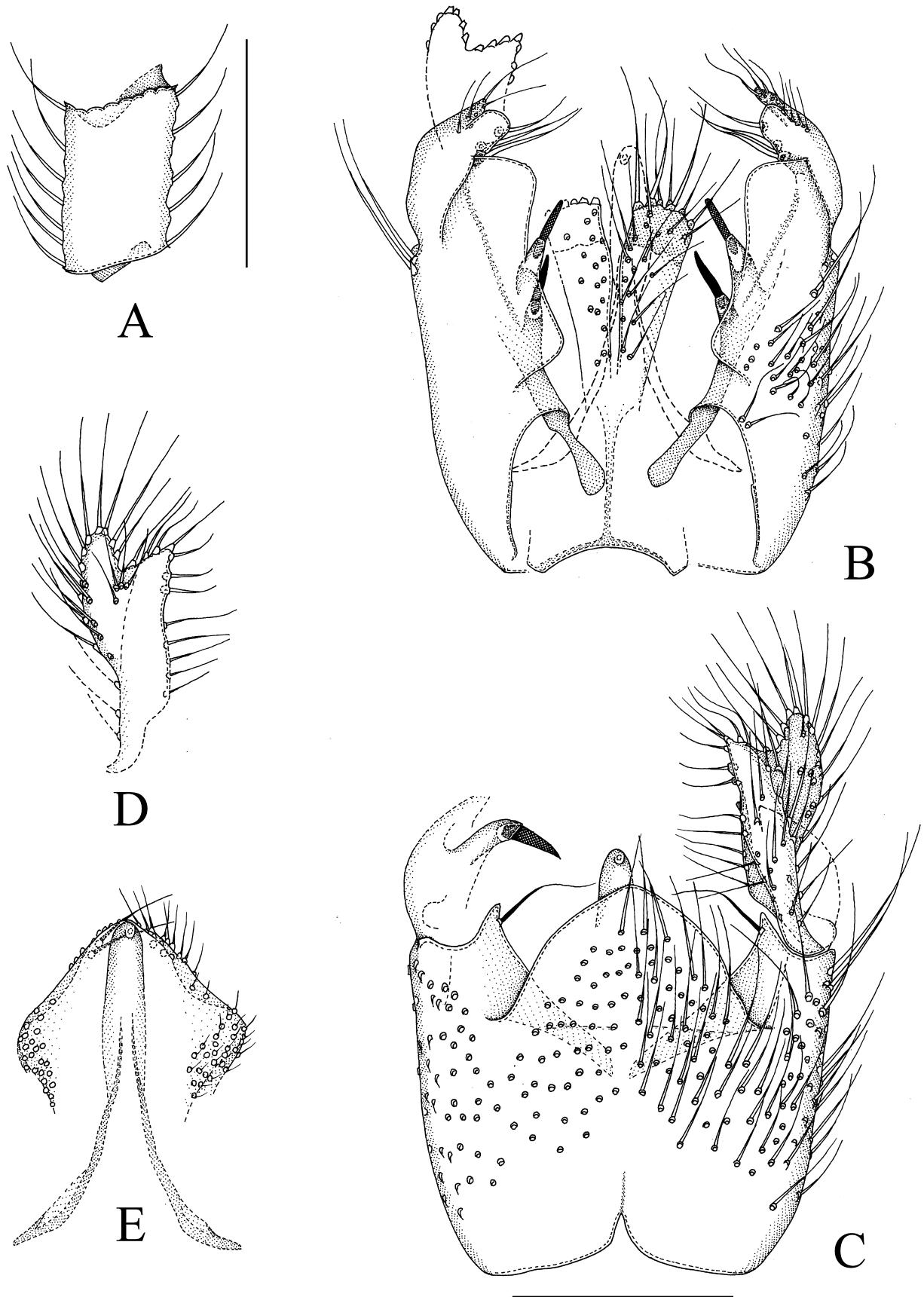


FIGURE 3. *Manota peltata* sp. n. (holotype). **A.** Antennal flagellomere 4, lateral. **B.** Hypopygium, dorsal. **C.** Hypopygium, ventral. **D.** Gonostylus, dorsal. **E.** Aedeagus and hypoproct, ventral. Scale 0.1 mm.

Etymology. The name is Latin, *peltata*, meaning “with a little shield”, referring to the shield-like posterior part of sternite 9.

Types. *Holotype*. Male, DEMOCRATIC REPUBLIC OF CONGO, Yangambi NP, mono Gilbertio Gil 4, sample No 33012, sweeping, 27.v.2013, leg. P. Grootaert (on slide, IRSNB).

***Manota peltigera* sp. n.**

Figs 1 (locations A, C), 4 A–I

Male. **Colour.** Head brown, face paler. Antenna light brown, two apical flagellomeres paler. Clypeus yellow, mouthparts pale yellowish. Thorax yellow, medial part of scutum and scutellum brownish. Legs yellowish, basal fourth and ventral side of apical fifth of midfemur, apical fourth of hind femur, and mid- and hind trochanter infuscated. Wing slightly infuscated; haltere yellow with dark brown knob. First two abdominal segments dark brown, succeeding segments with tergites dorsally dark brown, laterally yellow and sternites yellow with apical brown bands. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 Fig. 4 A. Palpomere 3 of maxillary palpus with apicomedial thumb-like extension, with 4 apically curved sensilla; palpomere 4 with parasegment; palpomere 5 ca. 1.6 times longer than palpomere 4. Number of strong postocular setae 9. **Thorax.** Anepisternum with 30–38 setae; anterior basalare with 7–8 setae; preepisternum 2 non-setose; laterotergite with 20–24 setae; metepisternum with 15–16 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R_1 meeting C within the basal half of the costa; the sclerotized part of M_2 extending to the level of the tip of R_1 ; wing length 2.0 mm. **Hypopygium,** Figs 4 B–I: Sternite 9 longer than the ventral length of gonocoxite, posteriorly extending to the middle of gonostylus, laterally fused with gonocoxite except for the posterior third, posterior margin convex, anterior margin without a medial incision, the setae similar to ventral setae of gonocoxite. The ventral setosity of gonocoxite unmodified. Parastylar lobe submembranous, subtriangular, anteriorly fused with gonocoxite, with 1 seta at apex. Paraapodemal lobe not identifiable. Dorsal medial margin of gonocoxite simple, mostly membranous and with membranous lobes the exact character of which is difficultly discernible; the postero-lateral part forming a curved lobe with a few setae and a row of 5–7 flame-shaped flat megasetae at the medial margin. Otherwise the dorsal setosity of gonocoxite unmodified, similar to the ventral one. At the dorsal medial margin of gonocoxite, there are 3 megasetae arising from separate submembranous basal bodies, two close to each other in a more dorsal level, one in a more ventral level, the great vertical distance of the latter from the two others results in the mutual position of the megasetae appearing greatly variable depending on the angle of view (Figs 4 B, F and G). One juxtagonostylar seta present, this is a flattened apically bifurcate megaseta arising from a curved basal body, which is much longer than the megaseta. Gonostylus slightly less than half of the ventral length of gonocoxite, subtriangular, widening from base to apex, with a short postero-lateral lobe, the ventral side setose with one seta conspicuously longer than the others, dorsal side almost non-setose, the posteromedial marginal area on the dorsal side with three, the apical margin with two and the apex of the apicolateral lobe with two stronger setae deviating from the other setosity. Aedeagus elongate subtriangular with concave sides, without lateral shoulders, the apex curved ventrad. Hypoproct large, posteriorly extending beyond the apex of gonostylus, the ventral setae scattered, indistinctly divided into a more anterior and more posterior groups, totally ca. 50 on each half. Cerci medially separate, the setae distributed through the whole length of cercus, the longest setae about four times longer than the subapical width of cercus.

Female unknown.

Discussion. *Manota peltigera* sp. n. is very similar to *M. pinnulata* Hippa & Kurina, 2012, which it also runs to in the Afrotropical key (Hippa & Kurina 2012). However, it differs in details of the male hypopygium as follows: 1) the juxtagonostylar megaseta is apically bifurcate with pointed apices, while it is apically flattened and expanded in *M. pinnulata*, 2) megasetae on the crescent-shaped lobe at dorsal margin of gonocoxite are equally sized and rather unmodified with pointed apices, while they are flat, scale-like and distally gradually enlarging in *M. pinnulata*, 3) the two more dorsal megasetae at the dorsomedial margin of gonocoxite arising from separate short basal bodies, while they arise from a common basal body, which is as long as the megasetae in *M. pinnulata*, 4) the ventral single megaseta at the dorsal medial margin of gonocoxite arising from a basal body which is as long as the megaseta, while the basal body is twice as long as the megaseta in *M. pinnulata*, 5) gonostylus with a postero-lateral lobe (absent in *M. pinnulata*), and 6) the posterior convex part of sternite 9 is clearly protruding

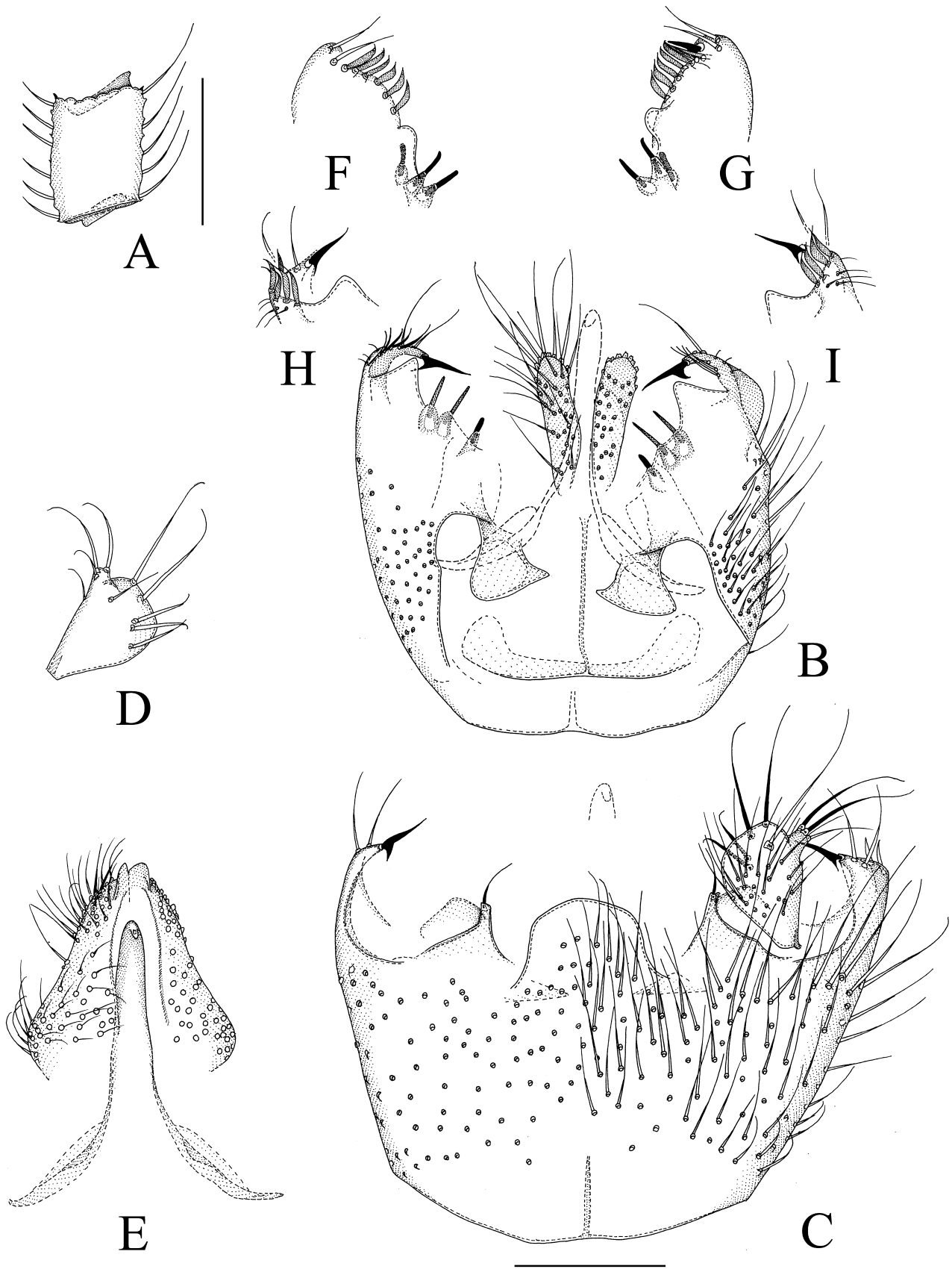


FIGURE 4. *Manota peltigera* sp. n. (A, B, C, D, E, H, I holotype, F, G paratype). A. Antennal flagellomere 4, lateral. B. Hypopygium, dorsal. C. Hypopygium, ventral. D. Gonostylus, dorsal. E. Aedeagus and hypoproct, ventral. F, G, H and I. Posterolateral part of gonocoxite, dorsal. Sale 0.1 mm.

more than that of *M. pinnulata*. The shape of sternite 9 groups *M. peltigera* **sp. n.** with *M. foliolata* Hippa & Kurina, 2012 and *M. peltata* **sp. n.** from which it differs in having 6 flattened megasetae at the dorsomedial margin of the gonocoxite (3 in *M. foliolata* or absent in *M. peltata* **sp. n.**).

Etymology. The name is Latin, *peltigera*, meaning “bearing a little shield”, referring to the shield-like posterior part of sternite 9.

Types. *Holotype.* Male, DEMOCRATIC REPUBLIC OF CONGO (Congo Belge), P.N.G./Miss. H.De Saeger/II/hc/8, 12-XII-1951/Rec. H.De Saeger. 2902 (on slide, RMCA).

Paratype. DRC, Yangambi NP, primaeval mixed forest, sample No 33015, sweeping, 27.v.2013, leg. P. Grootaert (1♂ on slide, IRSNB).

***Manota reclinata* sp. n.**

Figs 1 (location B), 5 A–D

Male. **Colour.** Head brown, face somewhat paler. Antenna light brown, scape and pedicel somewhat darker. Clypeus yellow, mouthparts pale yellowish. Thorax dark yellow, medial part of scutum and scutellum somewhat darker. Legs yellowish, ventral part of midfemur at base and apical third of hind femur infuscated. Wing slightly infuscated; haltere yellow with dark brown knob. Abdominal segments 1 and 2 dark brown with sternites lighter. Succeeding segments with tergites dorsally brown and laterally yellow, and sternites yellow with brownish apical margins. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 similar to that of *M. peltigera* **sp. n.** (Fig. 4 A). Palpi missing in the holotype. Ten strong postocular setae. **Thorax.** Anepisternum with 43 setae; anterior basalare with 1 seta; preepisternum 2 with 18 setae; laterotergite non-setose; metepisternum with 25 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R₁ meeting C within the basal half of the costa; the sclerotized part of M₂ hardly extending to the level of the tip of R₁; wing length 2.0 mm. **Hypopygium,** Figs 5 A–D: Sternite 9 about half the ventral length of gonocoxite, lateral margin sharply delimited, posterior margin broad, medially deeply notched, anterior margin deeply incised, the setae similar to the ventral setae of gonocoxite, those medially at posterior margin very long. Ventral medial margin of gonocoxite simple, sigmoid; ventral setosity of gonocoxite unmodified. Parastylar lobe elongate quadrangular, oblique, with ca. 7 setae at medial margin. Paraapodemal lobe distinct, in Fig. 5 B partly covered by the parastylar lobe. Dorsal medial margin of gonocoxite simple; posterolaterally with a short lobe with a few apical setae, which are stronger than other setae of the gonocoxite. Between the dorsal posterior margin of gonocoxite and the juxtagonostylar megasetae there is a double lobe, the dorsal part of which bears numbers of fine setae and the ventral part a row of strong curved setae. Otherwise the dorsal setosity of gonocoxite is unmodified, similar to the ventral one. Two juxtagonostylar setae present, both flattened apically rounded megasetae, arising from a long common basal body. Gonostylus large, flattened, elongate quadrangular in outline, the basomedial angle appearing as an elongated subtriangular lobe, the ventral setae similar to those on gonocoxite, the setae at the apex forming a fringe of longer more lateral and shorter more medial setae, the dorsal side of gonostylus non-setose but the basomedial lobe with an area of strong short setae. Aedeagus small, short subtriangular, without distinct lateral shoulders, the apodemes curved posteriad, the apex curved ventrad. Hypoproct posteriorly extending to the basal part of gonostylus, the ventral setae fine (sternite 10), forming a medial longitudinal stripe of ca. 20 setae on each half. Cerci medially separate, the short setae confined to the apex.

Female unknown.

Discussion. *Manota reclinata* **sp. n.** is similar to *M. clurina* Hippa & Kurina, 2012, which it also runs to in the key to Afrotropical species. The species are distinguished by details of the male hypopygium. *Manota reclinata* **sp. n.** has: 1) posterior margin of sternite 9 notched (broad and transverse in *M. clurina*), 2) parastylar lobe elongate quadrangular (bilobed in *M. clurina*), 3) dorsal part of gonocoxite posterolaterally with a lobe bearing 5–6 very prominent setae (setae are just slightly deviating from other setosity of gonocoxite in *M. clurina*), 4) the two juxtagonostylar megasetae flattened and somewhat geniculate (one of the flattened juxtagonostylar megasetae is club-shaped in *M. clurina*), 5) the basomedial elongated subtriangular lobe of gonostylus as long as the basal width of gonostylus (this lobe is narrow and shorter than the basal width of gonostylus in *M. clurina*) and the cerci apically evenly rounded (subapically constricted in *M. clurina*).

Etymology. The name is Latin, *reclinata*, meaning “reclined”, referring to the juxtagonostylar megasetae, which are directed obliquely backwards, towards the base of hypopygium.

Types. *Holotype*. Male, DEMOCRATIC REPUBLIC OF CONGO, Kona on Itimbiri river, sample No 30038, 2°02'32.97"N, 22°47'26.09"E, sweeping, 13.v. 2010, leg. P. Grootaert (on slide, IRSNB).

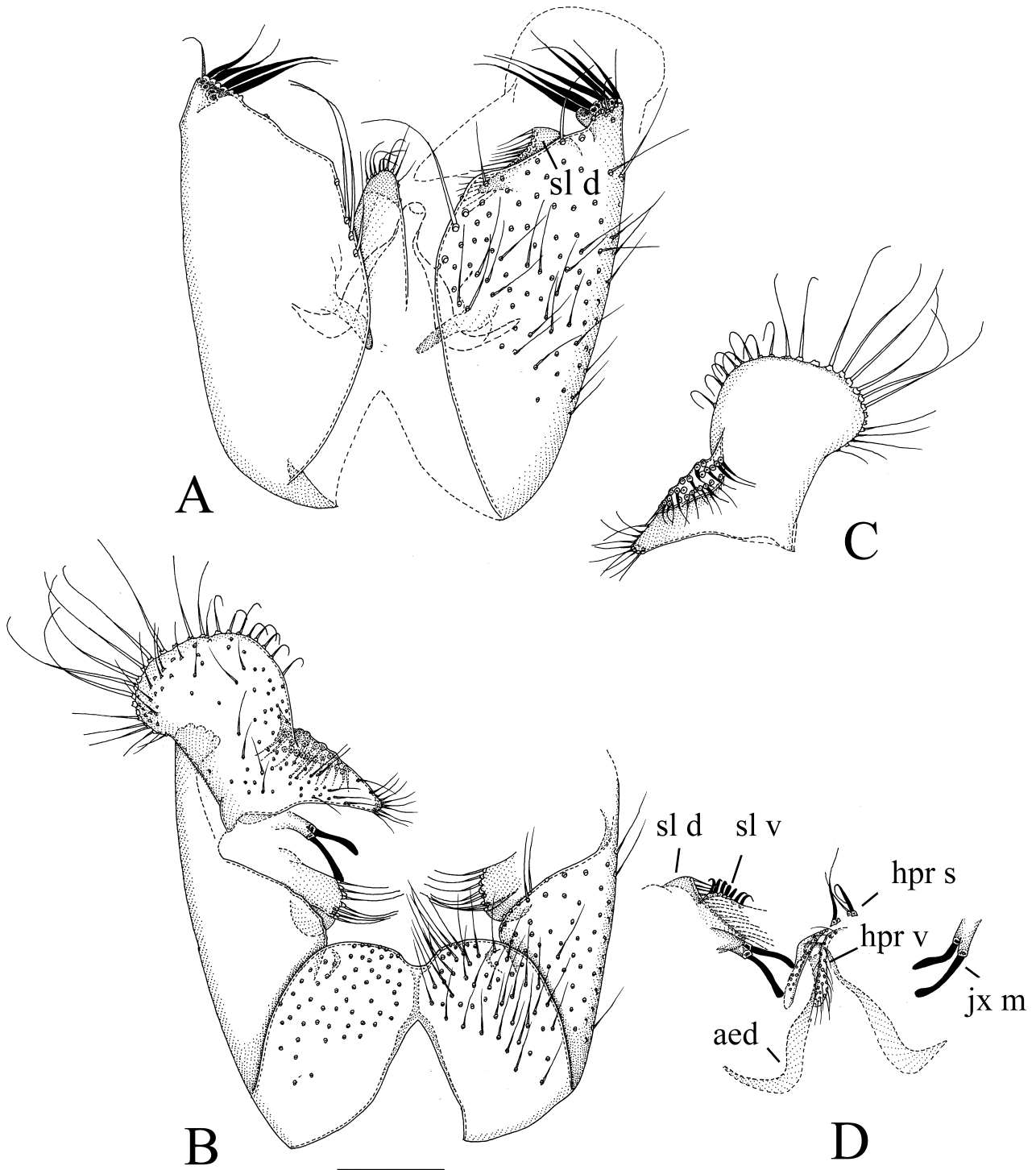


FIGURE 5. *Manota reclinata* sp. n. (holotype). **A.** Hypopygium, dorsal. **B.** Hypopygium, ventral. **C.** Gonostylus, dorsal. **D.** Juxtagonostylar megasetae, lobes dorsal of the juxtagonostylar megasetae, aedeagus and hypoproct, ventral. Scale 0.1 mm. aed = aedeagus, hpr s = setae on posterior margin of hypoproct, hpr v = ventromedial part of hypoproct (sternite 10), jx m = juxtagonostylar megasetae, sl d = dorsal part of a setigerous lobe located dorsally of the juxtagonostylar megasetae, sl v = ventral part of a setigerous lobe located dorsally of the juxtagonostylar megasetae.

***Manota wittei* sp. n.**

Figs 1 (location E), 6 A–E

Male. **Colour.** Head brown, face somewhat paler. Antenna light brown. Clypeus light brown, mouthparts pale yellowish. Thorax pale brown, medial part of scutum and scutellum seem darker. Legs yellowish, extreme base of hind coxa and apical fourth of hind femur infuscated. Wing slightly infuscated; haltere yellow with dark brown knob. Abdomen light brown, tergites seem dorsally darker. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 Fig. 6 A. Palpomere 3 of maxillary palpus with apicomedial thumb-like extension, with 4 apically curved sensilla; palpomere 4 with parasegment; palpomere 5 ca. 1.7 times longer than palpomere 4. Nine to eleven strong postocular setae. **Thorax.** Anepisternum with 67–74 setae; anterior basalar non-setose; preepisternum 2 with 16–21 setae; laterotergite non-setose; metepisternum with 29–41 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R_1 meeting C within the basal half of the costa; the sclerotized part of M_2 not extending to the level of the tip of R_1 ; wing length 2.5–2.8 mm. **Hypopygium,** Figs 6 B–E: Sternite 9 half the length of gonocoxite, lateral margin sharply delimited, posterior margin rounded, anterior margin deeply incised, the setae similar to the ventral setae of gonocoxite. Ventral medial margin of gonocoxite simple, shallowly sigmoid; the ventral setosity unmodified. Parastylar lobe elongate subtriangular, with 2 setae on the anterior half. Paraapodemal lobe distinct. Dorsal medial margin of gonocoxite simple, convex. Posterolateral part forming an oblique setose lobe. On the ventral side of the latter, there is a finger-like lobe bearing three apical setae. The dorsal setosity of gonocoxite generally similar to the ventral one. Two juxtagonostylar setae present, both rather unmodified megasetae arising from a common basal body, which is longer than the megasetae. Gonostylus about one third of the length of gonocoxite, oval in outline, with a narrow apicomedial lobe that bears two strong apical setae; the ventral setae of gonostylus similar to those on gonocoxite, the lateral and apical setae conspicuously long, the dorsal side of gonostylus non-setose. Aedeagus subtriangular, with distinct lateral shoulders, the apex curved ventrad. Hypoproct extending posteriorly to the middle of gonostylus, the ventral setae (sternite 10) forming a medial longitudinal stripe of ca. 6 setae on each half. Cerci medially separate, simple, the setae confined on the apical part, the longest of them as long as the subapical width of cercus.

Female unknown.

Discussion. Following the key by Hippa & Kurina (2012), the species runs to couplet 28 because of the non-setose laterotergite, setose preepisternum 2, and gonocoxite with a finger-like lobe posterodorsally that is situated dorsally from juxtagonostylar setae. However, all nine Afrotropical species with this lobe have one (viz. *M. maboceansis* Matile, *M. dissidens* Hippa & Kurina, *M. freerki* Hippa & Kurina, *M. toomasi* Hippa & Kurina, *M. redunda* Hippa & Kurina), or two (viz. *M. comata* Hippa & Kurina, *M. pedicellata* Hippa & Kurina, *M. relicina* Hippa & Kurina, *M. petiolata* Hippa & Kurina) apical setae on it, while *M. wittei* sp. n. has three. The general outline of the gonostylus and rather unmodified juxtagonostylar setae (except in *M. maboceansis*) also groups *M. wittei* with the nine above species. Within the group, *M. wittei* sp. n. particularly resembles *M. pedicellata*, but can easily be distinguished by the length of the cercal setae, which are as long as the subapical width of cercus, while they are as long as the cercus itself in *M. pedicellata*.

Etymology. The species is named after G.F. de Witte (1897–1980), the head of the scientific exploration trips to the Upemba National Park in Congo (1946–1949).

Types. *Holotype.* Male, DEMOCRATIC REPUBLIC OF CONGO (Congo Belge) P.N.U./Riv Kagoma (affl. Lusinga)/12-VII-1945/ G.F.de Witte: 213-220 (on slide, in RMCA).

Paratypes. same as holotype (3♂ on slides, 2♂ pinned with hypopygium in glycerine, IZBE; 2♂ pinned, 8♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Lusinga (riv.Dipidi)/12-VI-1945/ G.F.de Witte: 109-115 (3♂ on slides, 3♂ pinned with hypopygium in glycerine, IZBE; 4♂ on slides, 4♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Lusinga (riv.Dipidi)/12-VI-1945/ G.F.de Witte: 110 (1♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Riv. Mitoto (affl. Lusinga)/9-VII-1945/ G.F.de Witte: 196 (2♂ on slides, RMCA); DRC (Congo Belge), P.N.U./Lusinga (riv.Kafwe)/5-VI-1945/ G.F.de Witte: 78-79 (1♂ on slide, RMCA); DRC (Congo Belge), P.N.U./Gorges de la Pelenge (1.150m) 10 14-VI-1947/ Miss. G.F.de Witte: 483a (1♂ on slide, RMCA); DRC (Congo Belge), P.N.U./Riv. Kamituno (affl. Lusinga)/10-VII-1945/ G.F.de Witte: 201 (3♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Riv. Kipangaribwe (affl. Lusinga) /2-VII-1945/ G.F.de Witte: 178 (1♂ pinned with hypopygium in

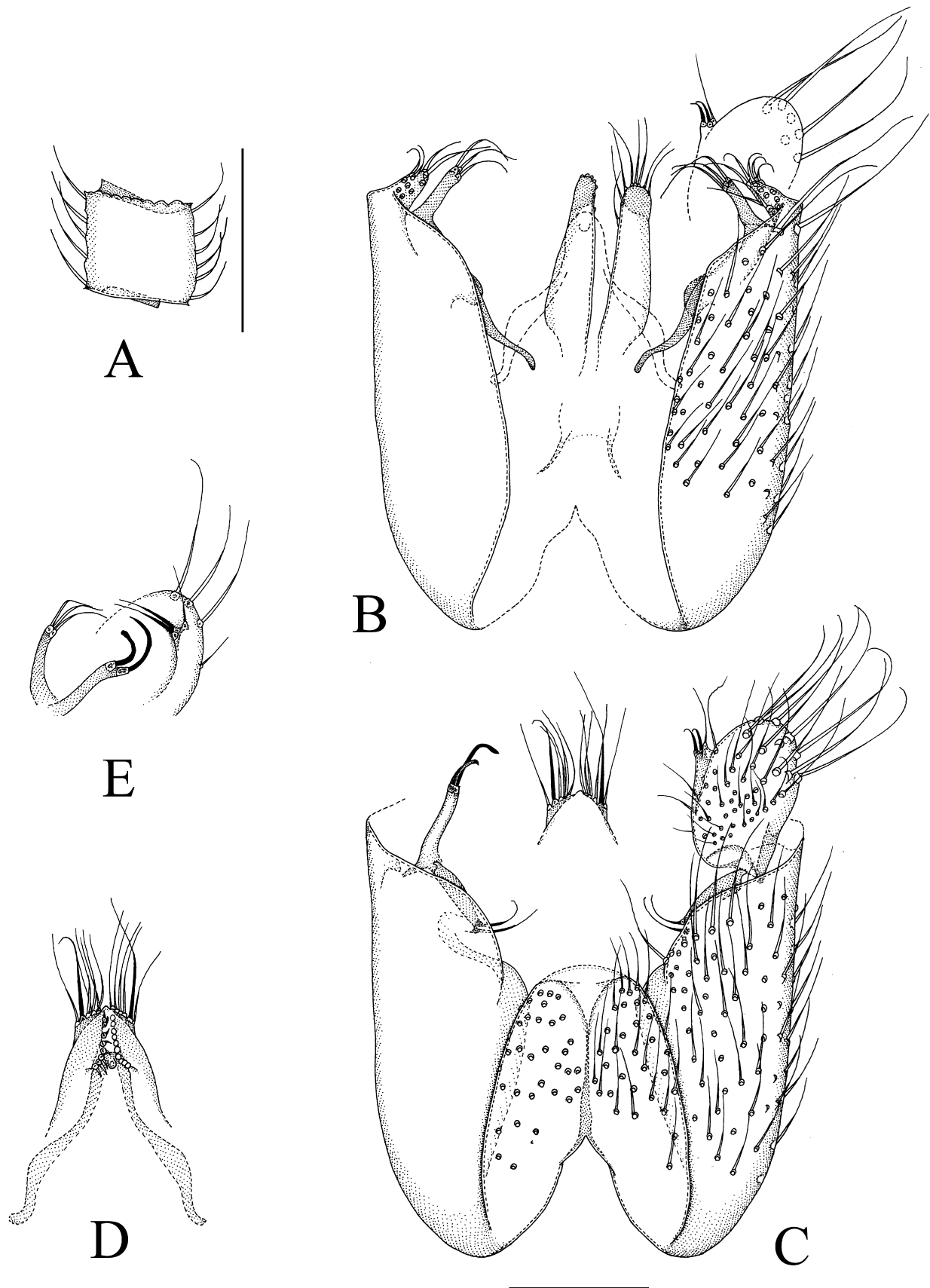


FIGURE 6. *Manota wittei* sp. n. (holotype). **A.** Antennal flagellomere 4, lateral. **B.** Hypopygium, dorsal. **C.** Hypopygium, ventral. **D.** Aedeagus and hypoproct, ventral. **E.** Gonostylus, juxtagonostylar megasetae and the setigerous lobe on the posterodorsal margin of gonocoxite, dorsomedial. Scale 0.1 mm.

glycerine, RMCA); DRC (Congo Belge), P.N.U./Riv. Kipangaribwe (affl. Lusinga) /3-VII-1945/ G.F.de Witte: 179-180 (1♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Riv. Kipaagaribwe (affl. Lusinga)/6-VII-1945/ G.F.de Witte: 188, 193 (2♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Lusinga (Karungawa)/6-VI-1945/ G.F.de Witte: 82 (1♂ pinned with hypopygium in glycerine, RMCA); DRC (Congo Belge), P.N.U./Riv. Kamituno (affl. Lusinga) /10-VII-1945/ G.F.de Witte: 201 (1♂ pinned with hypopygium in glycerine, 1♂ pinned, RMCA).

Redescription

Manota issongo Matile, 1972

Figs 1 (location A), 7 A–D

Male. **Colour.** Head brown, face somewhat paler. Antenna light brown. Clypeus yellow, mouthparts pale yellowish. Thorax pale brown, medial part of scutum and scutellum somewhat darker. Legs yellowish, apical fourth of hind femur infuscated. Wing slightly infuscated; haltere pale brown with darker brown knob. Abdomen pale brown, tergites medially darker brown, sternites paler than tergites. All setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer ones. **Head.** Antennal flagellomere 4 Fig. 7 A. Palpomere 3 of maxillary palpus with apicomedial thumb-like extension, with 4 apically curved sensilla; palpomere 4 with parasegment; palpomere 5 ca. 1.6 times longer than palpomere 4. Nine or ten strong postocular setae. **Thorax.** Anepisternum with 52–59 setae; anterior basalare non-setose; preepisternum 2 with 15–18 setae; laterotergite non-setose; metepisternum with 25–34 setae. **Legs.** Mid- and hind tibial organs absent. **Wing.** R₁ meeting C within the basal half of the costa; the sclerotized part of M₂ not extending to the level of the tip of R₁; wing length 2.0–2.2 mm. **Hypopygium,** Figs 7 B, C, D: Sternite 9 about two thirds of the length of gonocoxite, lateral margin sharply delimited, posterior margin transverse, shallowly concave, anterior margin deeply incised, the setae similar to the ventral setae of gonocoxite. Ventral medial margin of gonocoxite simple, concave; the ventral setosity of gonocoxite unmodified. Parastylar lobe subtriangular, with 2 setae on the anterior half. Paraapodemal lobe distinct even if not visible in Fig. 7 C. Dorsal medial margin of gonocoxite simple, convex, forming a rounded postero-medial angle with the posterior margin, the postero-lateral part simple; at the postero-medial angle, on the ventral side, there is a weak lobe with a conspicuous aggregation of fine setae. At the posterior margin of gonocoxite, on a more ventral level, there is a long finger-like lobe bearing one apical seta. The dorsal setosity of gonocoxite generally similar to the ventral one, but there is a very long seta at the posterior margin. Two juxtagonostylar setae present, both rather unmodified megasetae arising from a common basal body which is as long as the megasetae. Gonostylus nearly as long as gonocoxite, elongate crescent-shaped in outline, with a heel-like basomedial angle; the ventral setae of gonostylus similar to those on gonocoxite, those at the apical margin longer, the apex of gonostylus with two very long setae, the dorsal side of gonostylus largely non-setose except for the lateral margin which bears a row of very long setae, at the middle of the medial margin of gonostylus, just on the dorsal side, there are two short curved setae which deviate from the other gonostylar setosity. Aedeagus subtriangular, with distinct lateral shoulders, the apex curved ventrad. Hypoproct posteriorly extending to the base of the gonostylus, the ventral setae (sternite 10) forming a medial group of ca. 20 setae on each half. Cerci medially separate, simple, the setae confined on the apical margin, the longest ones slightly longer than the subapical width of cercus.

Discussion. After being described and illustrated from one male specimen from Maboké, Central African Republic (Matile 1972), the species was not recorded since. We have not studied the holotype but the original drawing (cf. Matile 1972: fig. 5) is sufficiently detailed to determine conspecificity without any doubt. Because the thoracic setosity was not known, Hippa & Kurina (2012) did not include the species in the Afrotropical key, but discussed it briefly. *Manota issongo* runs to couplet 22 because of: 1) the non-setose laterotergite, 2) setose preepisternum 2, and 3) the gonocoxite with a finger-like lobe posterodorsally that is situated dorsally from the juxtagonostylar setae, and bears one apical seta. *Manota issongo* belongs to a group of five very similar Afrotropical species included in this couplet, viz. *M. mabookenensis*, *M. dissidens*, *M. freerki*, *M. toomasi* and *M. redunca*, but is distinguished from the others in having the gonostylus: 1) with two extremely long apical setae, and 2) the dorsal side with two short curved setae that deviate from the other gonostylar setosity. In addition, at the

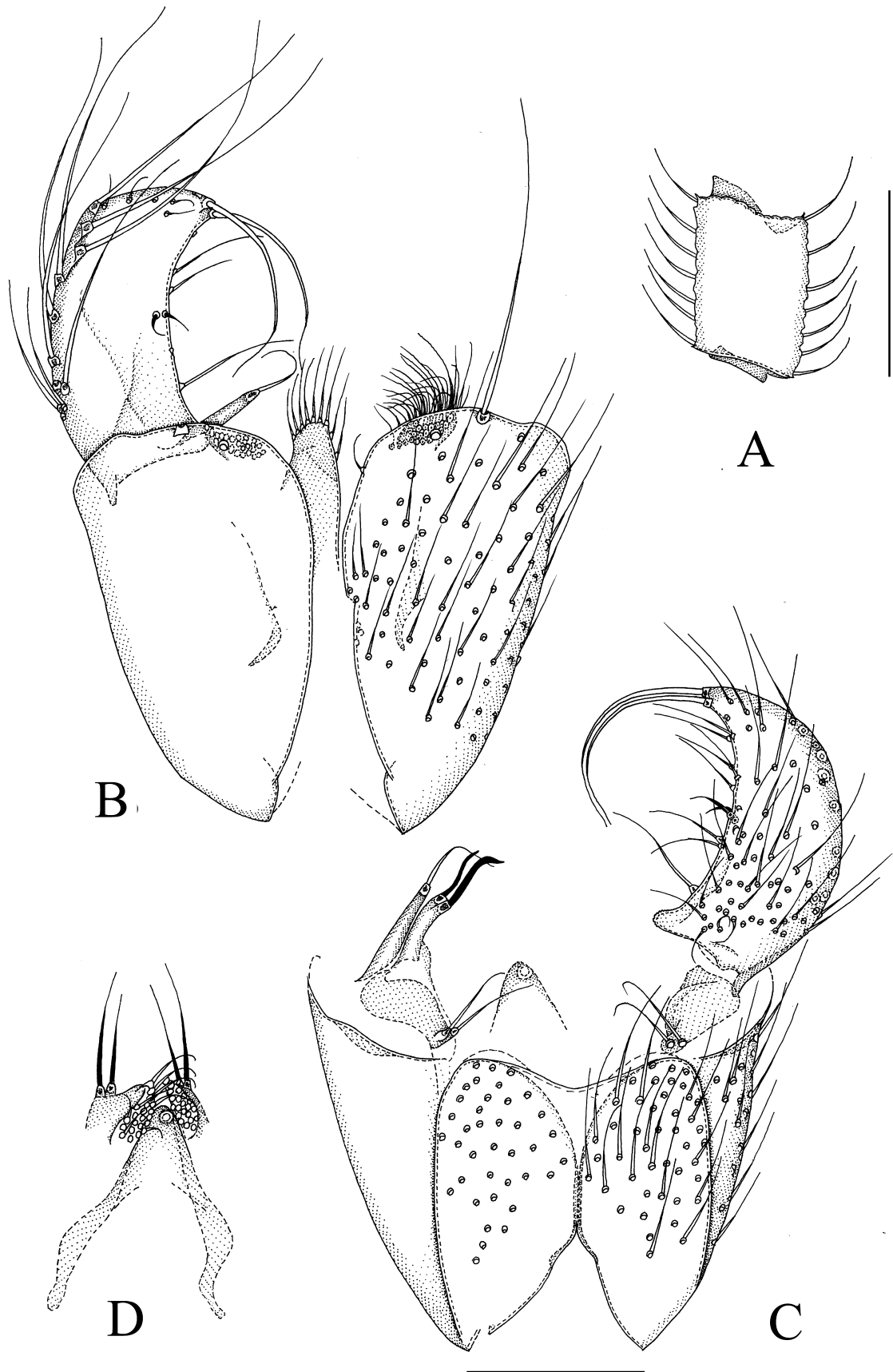


FIGURE 7. *Manota issongo* Matile. **A.** Antennal flagellomere 4, lateral. **B.** Hypopygium, dorsal. **C.** Hypopygium, ventral. **D.** Aedeagus and hypoproct, ventral. Scale 0.1 mm.

postero-medial angle, on the dorsal side of gonocoxite, is a weak lobe with a conspicuous aggregation of fine setae that is missing in case of other species of the group.

Material examined. DRC (Congo Belge), P.N.G./Miss. H.De Saeger/PpK.12/d/9, 2-1-1952/Rec. H.De Saeger. 2972 (1♂ on slide, RMCA); same data except II/gd/17, 30-VI-1952/Rec. H.De Saeger. 3719 (1♂ on slide, RMCA); same data except II/le/8, 9-IX-1952/Rec. H.De Saeger. 4040 (2♂ on slides, 3♂ pinned, IZBE; 2♂ pinned with hypopygium in glycerine, 8♂ pinned, RMCA); same data except II/fd/17, 31-VIII-1951/Rec. H.De Saeger. 2341 (1♂ on slide, RMCA); same data except PpK/60/d/8, 18-XII-1951/Rec. H.De Saeger. 2925 (1♂ on slide, RMCA); same data except Pp.K.72, 27-VIII-1951/Rec. H.De Saeger. 2338 (1♂ on slide, RMCA); same data except II/dd/9, 7-VII-1952/Rec. H.De Saeger. 3758 (1♂ on slide, RMCA); same data except II/gc/9, 20-X-1951/Rec. H.De Saeger. 2651 (1♂ on slide, RMCA); same data except II/gc/8, 9-IX-1952/ H.De Saeger. 4042 (1♂ pinned with hypopygium in glycerine, 1♂ pinned, IZBE: 3♂ pinned, RMCA); same data except II/gd/8, 24-IX-1952/ H.De Saeger. 4085 (1♂ pinned with hypopygium in glycerine, RMCA); same data except II/fd/17, 13-VIII-1951/Rec. H.De Saeger. 2247 (1♂ pinned, RMCA); same data except II/fc/17, 25-IX-1951/Rec. H.De Saeger. 2471 (1♂ pinned, RMCA); same data except II/je/8, 15-X-1951/Rec. H.De Saeger. 2600 (1♂ pinned, RMCA); same data except II/gc/9, 20-X-1951/Rec. H.De Saeger. 2651 (3♂ pinned, RMCA); same data except II/Pp.K.52/d/9, 28-X-1951/Rec. H.De Saeger. 2679 (3♂ pinned, RMCA); same data except II/id/9, 31-X-1951/Rec. H.De Saeger. 2709 (1♂ pinned, RMCA); same data except II/hc/8, 12-XII-1951/Rec. H.De Saeger. 2902 (1♂ pinned, RMCA); same data except PpK.12/d/9, 2-I-1952/Rec. H.De Saeger. 2972 (1♂ pinned, RMCA); same data except II/id/9, 2-VII-1952/Rec. H.De Saeger. 3720 (1♂ pinned, RMCA); same data except II/dd/9, 7-VII-1952/Rec. H.De Saeger. 3758 (1♂ pinned, RMCA); same data except II/gc/9, 10-VII-1952/Rec. H.De Saeger. 3765 (2♂ pinned, RMCA); same data except PpK.8/9, 15-VII-1952/Rec. H.De Saeger. 3792 (1♂ pinned, RMCA); same data except II/jd/9, 16-VIII-1952/Rec. H.De Saeger. 3944 (1♂ pinned, RMCA); same data except II/fd/17, 27-VIII-1952/Rec. H.De Saeger. 3983 (1♂ pinned, RMCA); same data except PpK.9/g/9, 10-IX-1952/Rec. H.De Saeger. 4044 (1♂ pinned, RMCA); same data except II/gd/4, 18-IX-1952/Rec. H.De Saeger. 4077 (1♂ pinned, RMCA).

New records

If not otherwise stated, the following species are previously known only from their type locality in Kibale NP, Uganda (cf. Hippha & Kurina 2012).

Manota freerki Hippha & Kurina, 2012

Fig. 1 (location A)

Material examined. DRC (Congo Belge), P.N.G./Miss. H.De Saeger/II/hc/8, 12-XII-1951/Rec. H.De Saeger. 2902 (1♂ on slide, RMCA).

Manota ghanaensis Hippha & Kurina, 2012

Fig. 1 (location C)

Material examined. DRC, Yangambi NP, sample No 32032, sweeping 12.vi.2012, leg. P. Grootaert (1♂ on slide, IRSNB).

Remarks. The species is so far known only from the type locality in Ghana (Hippha & Kurina 2012)

Manota kibaleensis Hippha & Kurina, 2012

Fig. 1 (location C)

Material examined. DRC, Yangambi NP, mono Gilbertio Gil 4, Sample No 33012, sweeping 27.v.2013, leg. P. Grootaert (1♂ on slide, IRSNB).

***Manota lachaisei* Matile, 1972**

Fig. 1 (location A)

Material examined. DRC (Congo Belge), P.N.G./Miss. H.De Saeger/II/hc/8, 12-XII-1951/Rec. H.De Saeger. 2902 (1♂ on slide, RMCA).

Remarks. After being described from the Ivory Coast (Matile 1972) the species was subsequently recorded only from Uganda (Hippra & Kurina 2012).

***Manota maboqueensis* Matile, 1972**

Fig. 1 (locations C, D)

Material examined. DRC (Congo Belge), Kivu/Rutshuru (riv. Rutshuru) 100m. 3-VII-1935/ G.F.de Witte: 1676 (1♂ on slide, RMCA); DRC, Yangambi forest, Sample No 32033, sweeping 12.vi.2012, leg. P. Grootaert (1♂ on slide, in IRSNB).

Remarks. After being described from the Central African Republic (Matile 1972) the species was subsequently recorded from Uganda (Hippra 2008, Hippra & Kurina 2012).

***Manota mazumbaiensis* Söli, 1993**

Fig. 1 (locations B, C)

Material examined. DRC, Kona on Itimbiri river, sample No 30038, 02°02.004'N, 22°47.205'E, sweeping, 13.v.2010, leg. P. Grootaert (1♂ on slide, IRSNB); DRC, Yangambi forest, primeval mixed forest, sample No 33021, 30.v.2013, leg. P. Grootaert (1♂ on slide, IRSNB).

Remarks. The species was described from the Usambra Mountains in Tanzania (Söli 1993) and subsequently recorded from Ghana and Uganda (Hippra & Kurina 2012).

***Manota petiolata* Hippra & Kurina, 2012**

Fig. 1 (location D)

Material examined. DRC (Congo Belge), P.N.A., Secteur Tshiaberimu, Riv. Mbulikerere, affl. dr. Talia N, 2720 m, 26-28.viii.1953, P. Vanschuytbroeck & V. Hendrickx 4999-5005 (1♂ on slide, RMCA).

***Manota pilosa* Hippra & Kurina, 2012**

Fig. 1 (locations A, C)

Material examined. DRC (Congo Belge), P.N.G./Miss. H.De Saeger/II/eb/9, 13-III-1952/Rec. H.De Saeger. 3234 (1♂ on slide, RMCA); DRC (Congo Belge), P.N.G./Miss. H.De Saeger/Mabanga, 23-IX-1952/Rec. H.De Saeger. 4069 (1♂ on slide, RMCA); DRC, Yangambi NP, sample No 32032, sweeping 12.vi.2012, leg. P. Grootaert (1♂ on slide, IRSNB).

***Manota relicina* Hippra & Kurina, 2012**

Fig. 1 (location C)

Material examined. DRC, Yangambi NP, sample No. 32032, sweeping 12.vi.2012, leg. P. Grootaert (1♂ on slide, IRSNB); DRC, Yangambi NP, bamboo, sample No 33006, 25.v.2013, leg. P. Grootaert (1♂ on slide, IRSNB). DRC, Yangambi NP, primaeval mixed forest, sample No 33036, sweeping 3.vi.2013, leg. P. Grootaert (1♂ on slide, IRSNB).

***Manota senticosa* Hippra & Kurina, 2012**

Fig. 1 (location D)

Material examined. DRC (Congo Belge), P.N.A., Secteur Tshiaberimu, Riv. Mbulikerere, affl. dr. Talia N, 2720 m, 26-28.viii.1953, P. Vanschuytbroeck & V. Hendrickx 4999-5005 (1♂ on slide, RMCA).

***Manota teocchii* Matile, 1972**

Fig. 1 (location C)

Material examined. DRC, Yangambi NP, sample No. 32007, sweeping 8.vi.2012, leg. P. Grootaert (1♂ on slide, IRSNB); DRC, Yangambi, mono Gilbertio Gil 4, sample No. 33012, sweeping 27.v.2013, leg. P. Grootaert (1♂ on slide, IRSNB).

Remarks. The species was described from the Central African Republic (Matile 1972) and subsequently recorded from Uganda (Hippha & Kurina 2012).

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