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New species and new records of *Manota* Williston (Diptera, Mycetophilidae) from Thailand, with a key to the Oriental and Palaearctic species

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Abstract

The following new species are described: *Manota aquila, M. falcata, M. flammula* and *M. subcollina*. The following are reported as new species for the Thailand fauna: *M. calcarata* Hippa, *M. clausa* Hippa, *M. curvata* Hippa, *M. duplex* Hippa, *M. fera* Hippa, *M. ferrata* Hippa, *M. horrida* Hippa, *M. perangulata* Hippa & Ševčík, *M. pollex* Hippa, and *M. transversa* Hippa. New records within Thailand are given of the following species: *M. aconcinna* Hippa, *M. acutangula* Hippa, *M. ancylochaeta* Hippa, *M. biunculata* Hippa, *M. dentata* Hippa & Papp, *M. epigrata* Hippa, *M. globigera* Hippa, *M. heptacantha* Hippa, *M. inflata* Hippa, *M. mirifica* Hippa & Papp, *M. oligochaeta* Hippa, *M. ovata* Hippa, *M. pectinata* Hippa, *M. pellii* Hippa, *M. perlobata* Hippa, *M. perpusilla* Hippa, *M. planilobata* Hippa, *M. plusiochaeta* Hippa, *M. roslii* Hippa, *M. simplex* Hippa, *M. subferrata* Hippa, *M. submirifica* Hippa, *M. tetrachaeta* Hippa, *M. ulu* Hippa, and *M. vesicaria* Hippa. Male genitalia of *M. aconcinna* Hippa are redescribed. The number of the known Oriental species of *Manota* is now 84, of which 56 are recorded from Thailand. A key to the Oriental and Palaearctic species is given.

Key words: Diptera, Mycetophilidae, *Manota*, Oriental region, Palaearctic region, Thailand, new species, key

Introduction

The species composition of *Manota* Williston (type species *M. defecta* Williston) in the Oriental region, including Taiwan, has been intensively studied during the recent years and the number of species has raised from one (Senior-White 1922) to 80 (Papp 2004, Hippa 2006, 2007, 2008, 2009, Hippa & Papp 2007, Hippa & Ševčík 2010). This is approximately half of the described world fauna which at present stands at 169 species. Only one species is common with the Australian region (Hippa & Papp 2007). None of the five species described from the eastern part of the Palaearctic region (Ševčík 2002, Papp 2004, Hippa & Kjærandsen 2010) have been recorded from the Oriental region, but species that occur in both regions are found in southern Japan (Hippa, Kjærandsen & Saigusa, in preparation).

Within Thailand, Papp *et al.* (2006) reported on a collection of *Manota* from which Hippa & Papp (2007) recorded the first 17 species. Since this time further studies have been undertaken on material of Sciaroidea collected in the Thailand National Parks by the Thailand Inventory Group for Entomological Research (TIGER) (www.sharkeylab.org). This material raised the number of Thailand *Manota* to 42 (Hippa 2008, 2009). In 2009 and 2010 additional material collected by the TIGER project was studied and among the ca. 150 *Manota* specimens, four new species were discovered, 10 species were new for the Thailand fauna, and a number of new National Park records were noted within Thailand.

A key to the Oriental and Palaearctic species of *Manota* was published in 2006 (Hippa 2006) but since then the number of species in the Oriental region has increased from 28 to 84 and, as such, it may be difficult to navigate among the multitude of species without an updated key. The aim of this paper is to describe the new species and publish new Thailand records as well as to give a new key to the Oriental species of *Manota*. As with the previous key, the Palaearctic species are included, because most of the latter occur in the transition zone between regions. This paper is also an opportunity to present the complete and correct characters of the thoracic chaetotaxy in the descriptions of some Oriental species.

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Material and methods

The material was preserved in ethanol. A percentage of the specimens were identified without any special mounting under a stereomicroscope in alcohol, within which they still are preserved. In most cases the abdomen or only the apical part of it was detached from specimen and macerated in warm concentrated potassium hydroxide (KOH). In most cases the hypopygium was also detached beyond segment 8. After washing in water and dehydration in stages of increasing concentrations of alcohol, these parts of the abdomen were placed for a few seconds in clove oil (eugenol). These were then mounted in "Euparal" between two pieces of coverslip, which allowed the specimens to be studied from both sides under a compound microscope. These preparations are now attached to normal microscope slides by two strips of adhesive tape across their edges and are easily detached when needed. Other parts of the body were not macerated, but after dehydration were mounted as such they were in "Euparal" so that they are lying on their side. A few specimens were mounted in latter way without any dissecting, usually in thick layer of "Euparal" so that they were kept undamaged and can be easily remounted.

The descriptions of the hypopygium should only be taken as rough guidelines to interpret the drawings. The medial parts of the hypopygium are movable in relation to the gonocoxa and gonostylus so that their extension posteriod may vary between different mounts.

The morphological terminology follows mainly Søli *et al.* (2000). The terminology of hypopygium follows Hippa and Papp (2007) except for the tegmen which is here called aedeagus. The latter terminology is also explained in Figs. 1, 2 and 3. The mid tibial organ is an area of tightly placed setae basoventrally on middle tibia (Jaschhof & Jaschhof 2010). The setae marking the reduced sections of M, A1 and A2 are not included in descriptions because observing them is often uncertain.

Illustrations were made with the aid of a drawing tube attached to a Leitz Diaplan compound microscope. The identification of the not slide-mounted specimens was made under Wild M5 stereomicroscope.

The material is deposited in Queen Sirikit Botanic Garden, Chiang Mai (QSBG) and the Swedish Museum of Natural History, Stockholm (SMNH).

For a map of Thailand showing the National Parks, see at http://sharkeylab.org/tiger/db.php?app=tiger&function=sites. The codes (T####) in the locality data are collecting event ID numbers in the TIGER database.

Descriptions of the new species

***Manota aquila* sp. n.**
Figs. 1 A, B, C

Male. **Colour**. Head dark brown, clypeus slightly paler brown. Antenna unicolorous dark brown. Mouthparts pale yellowish. Thorax unicolorous dark brown. Legs pale yellowish brown. Base of coxa 3, apices of all coxae, all trochanters and base of femur 1 infuscated and femur 2 and 3 dark brown. Wing brownish with a darker brownish patch at costal margin; haltere pale yellowish, without a darker knob. Abdomen unicolorous dark brown. Setae and trichia dark, largely pale on palpus and basal part of coxae. **Head**. Antennal flagellomere 4, Fig. 1 A. Palpomere 3 of maxillary palpus with apicomesial thumb-like extension but without apically expanded curved sensilla; palpomere 4 without parasegment; palpomere 5 1.6 times longer than palpomere 4. Ca. 10 strong postocular setae on each side. **Thorax**. Anepisternum nonsetose, anterior basalare nonsetose, preepisternum 2 nonsetose, laterotergite setose, with 2–4 setae, episternum 3 setose, with 4 setae. **Legs**. Middle tibial organ lacking. **Wing**. Similar to fig. 1 B in Hippa & Ševčík (2010): R1 meeting C just on the apical half of the costal margin, sclerotized part of M2 basally extending nearly to level of r-s; wing length 1.8 mm. **Hypopygium,** Figs. 1 B and C. Sternite 9 about one half of ventral length of gonocoxa, lateral margin sharply demarcated, slightly convex, posterior margin deeply v-shaped notched, anterior margin with deep incision, setae similar to ventral setae of gonocoxa. Ventral mesial margin of gonocoxa simple, posteriorly roundly curved laterad. Parastylar lobe almost as long as gonocoxa and directed posteriad, with a row of setae apicomesially. Paraapodemal lobe indistinct. Dorsal mesial margin of gonocoxa simple, at middle united with a broad setose posteriorly directed thumb-like lobe. No apical apophysis dorsally at apical margin of gonocoxa. Two juxtagonostylar setae present: a curved megaseta and a thinner seta arising from a flattened, winded very long basal body, which is ca. four times as long as megaseta. Gonostylus elongated, evenly broad, ca. 4 times longer than broad, almost as long as gonocoxa, with a narrow subbasal apically strong and long

setose lobe at the mesial margin; ventral setae rather short, setae at the mesial and lateral margin on the apical half of gonostylus very long, dorsal side nonsetose, setae on mesial margin do not form a conspicuous fringe. Aedeagus subtriangular, without distinct lateral shoulders, apex curved ventrad. Hypoproct posteriorly not reaching middle of gonostylus, medially not distinctly divided into two halves, with ca. 20 ventral setae. Cerci medially united except for apical parts.

Female unknown.

Discussion. *Manota aquila* is very similar to *M. forceps* and *M. subforceps*, but can be distinguished from both e.g. by following characters: 1) sternite 9 has a deep v-shaped posteromedial cleft cutting the sternite almost completely into two halves, while in the two other species the posterior margin is convex or at most slightly notched, 2) there is a narrow apically setose lobe at the mesial margin of the gonostylus, while in the two other species the mesial margin has only a slight convexity subbasally (*M. forceps*) or submedially (*M. subforceps*) and 3) the haltere is unicolorous yellowish instead of having a yellowish stem and a blackish knob. Further, in the single specimen of *M. aquila* the laterotergite has a few setae, while in the two known specimens of *M. forceps* and the single known specimen of *M. subforceps* the laterotergite is nonsetose. I suspect that specimens of *M. aquila* with nonsetose laterotergite do occur.

Etymology. The name is Latin, *aquila*, dark-coloured, referring to the general dark colouration of the fly.

Types. *Holotype.* Male, THAILAND, Phitsanulok, Thung Salaeng Luang NP, dry evergreen forest, 1650.277'N 10052.917'E, 486 m, Malaise trap 25.iii–1.iv.2007, Pongpitak & Pranee & Sathit leg., T2391 (in QSBG).

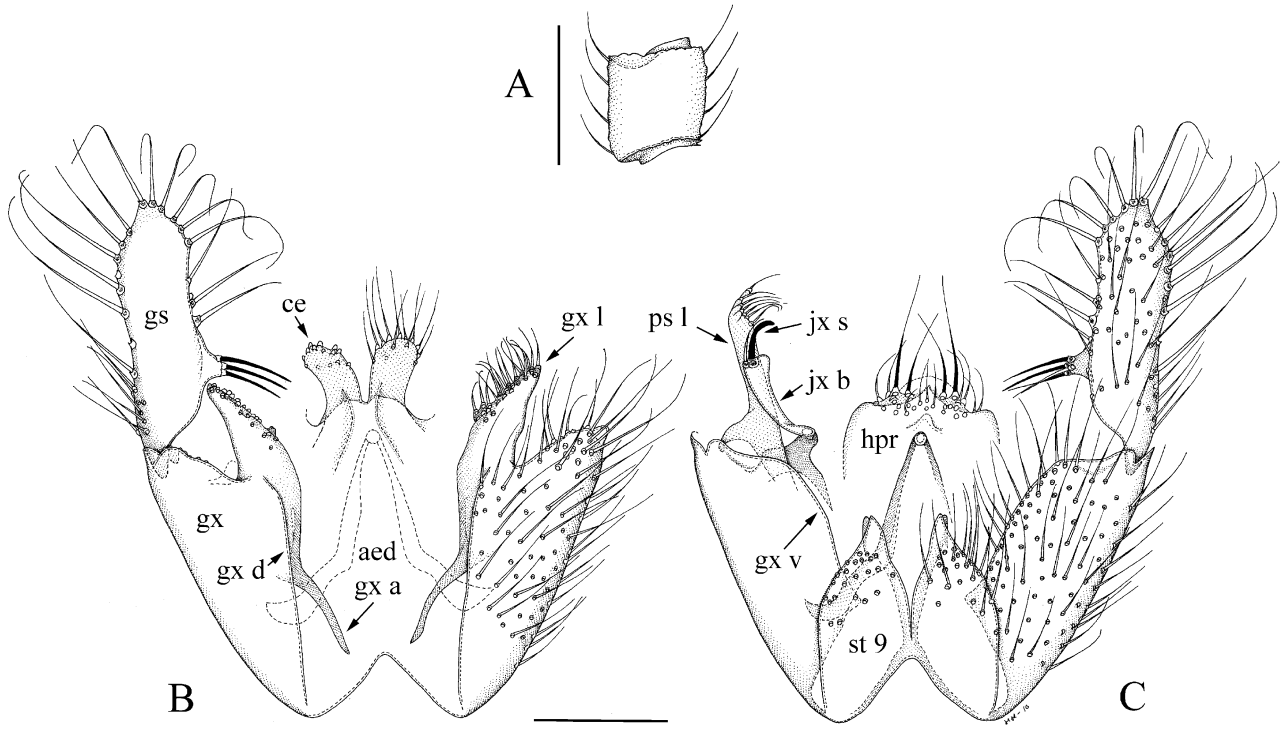

FIGURE 1. *Manota aquila* **sp. n.** (holotype). **A.** Antennal flagellomere 4, lateral view. **B.** Hypopygium, dorsal view. **C.** Hypopygium, ventral view. Scale 0.10 mm. aed = aedeagus, ce = cercus, gs = gonostylus, gx = gonocoxa, gx a = gonocoxal apodeme, gx d = dorsal mesial margin of gonocoxa, gx l = lobe at dorsal mesial margin of gonocoxa, gx v = ventral mesial margin of gonocoxa, hpr = hypoproct, jx s = juxtagonostylar setae, jx b = basal body of juxtagonostylar setae, ps l = parastylar lobe, st 9 = sternite 9.

Manota falcata sp. n.

Figs. 2 A–E

Male. **Colour**. Head pale brown, frons, vertex and dorsal part of occiput darker brown. Antennal scapus, pedicellus and one or two basal flagellomeres pale brown, the rest of flagellum darker brown. Mouthparts pale yellowish.

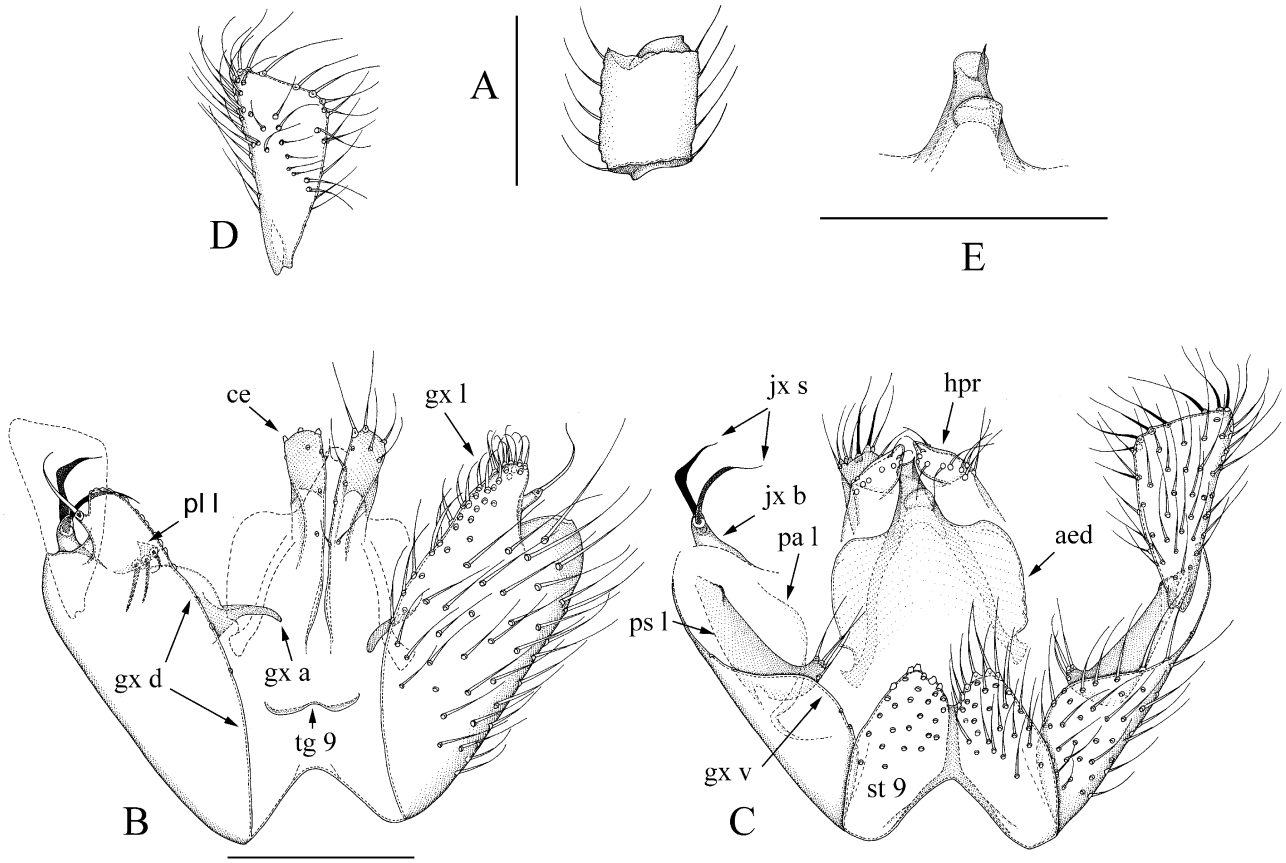

FIGURE 2. *Manota falcata* **sp. n.** (holotype). **A.** Antennal flagellomere 4, lateral view. **B.** Hypopygium, dorsal view. **C.** Hypopygium, ventral view. **D.** Gonostylus, dorsal view. **E.** Apical part of aedeagus, ventral view. Scale 0.10 mm. aed = aedeagus, ce = cercus, gs = gonostylus, gx = gonocoxa, gx a = gonocoxal apodeme, gx d = dorsal mesial margin of gonocoxa, gx l = lobe at dorsal mesial margin of gonocoxa, gx v = ventral mesial margin of gonocoxa, hpr = hypoproct, jx s = juxtagonostylar setae, jx b = basal body of juxtagonostylar setae, pa l = paraapodemal lobe, pl l = plate-like lobe, ps l = parastylar lobe, st 9 = sternite 9, tg 9 = tergite 9.

Thorax pale brown, posterodorsally brown, ventral part of preepisternum 2 paler than the other parts of pleura. Legs pale yellowish, femur 3 infuscated on apical third, in some specimens also weakly at base and tibia 3 infuscated at base. Wing unicolorous greyish-brown; haltere pale yellowish-brown with blackish knob. Abdominal tergites dark brown, sternites pale brown. All the setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer setae and trichia. **Head**. Antennal flagellomere 4, Fig. 2 A. Palpomere 3 of maxillary palpus with apicomesial thumb-like extension, with 4–5 apically expanded curved sensilla; palpomere 4 with parasegment, palpomere 5 ca. 1.5 times longer than palpomere 4. Number of strong postocular setae 9–12. **Thorax**. Anepisternum setose, with 25–37 setae, anterior basalare setose, with 5–8 setae, preepisternum 2 setose, with 19–29 setae, laterotergite nonsetose, episternum 3 setose, with 8–10 setae. **Legs**. Middle tibial organ lacking. **Wing**. R1 meeting C well on the basal half of the costal margin; the sclerotized part of M2 basally extending to the level of the tip of R1, wing length 1.4–1.6 mm. **Hypopygium,** Figs. 2 B–E: Sternite 9 about half the ventral length of gonocoxa, lateral margin sharply delimited, posterior margin with a v-shaped medial notch, anterior margin deeply incised, the setae similar to the adjacent ventral setae of gonocoxa. Ventral mesial margin of gonocoxa simple, sigmoid. Parastylar lobe in anterior-posterior direction very long, ca. 4 times longer than broad, the anterior end curved mesiad, with 3–5 setae, all on the curved anterior part. Paraapodemal lobe large, well exposed in ventral view. Dorsal mesial margin of gonocoxa simple, subapically with a broad thumb-like lobe with numerous setae at the mesial margin and a long seta arising from a large basal body at the lateral margin; the latter covering a plate-like more ventral lobe with 3–4 ventrally directed setae. Two juxtagonostylar setae present, one rather unmodified megaseta, the other one a geniculate megaseta, both arising from a common basal body which is ca. one third of the length of the setae. Gonostylus simple, elongate, the mesial margin angularly convex so that the gonostylus is widest at ca. apical third, the ventral side evenly covered with rather short setae, the setae at the mesial margin not much different from the

ventral ones except for a few a little thicker ones on apical part, the setae on the dorsal side rather short, unmodified, placed in an oblique stripe. Aedeagus with strong lateral shoulders, the broad basal part unusually long, the narrow apical third with a small transverse lobe at the middle, the apex directed posteriad, asymmetrical. Hypoproct posteriorly extending to middle of gonostylus, in Fig. 2 C unusually extruded posteriad, without a crescent-shaped plate posteriorly, the posterodorsal setae many, not especially strong, ventrally with ca. 10 fine setae in an oblique stripe on each half. Cerci mesially separate.

Female unknown.

Discussion. *Manota falcata* is similar to *M. mirifica* and *M. submirifica,* but is distinguished by having the anterior end of the parastylar lobe curved mesiad and by having the mesial margin of the gonostylus angularly convex instead of being straight. The three species differ from the very similar *M. aconcinna, M. chi, M. collina, M. clavulosa, M. indahae, M. planilobata, M. seducta* and *M. subcollina* by having the parastylar lobe in the anterior-posterior direction unusually long and the aedeagal apex asymmetrical.

Etymology. The name is Latin, *falcata,* sickle-shaped, referring to the shape of the parastylar lobe.

Types. *Holotype.* Male, THAILAND, Surat Thani, Khao Sok NP, Bang Huaraed, 854.555'N 9830.522'E, 122 m, Malaise trap 14–21.x.2008, Pongphan leg., T3403 (in QSBG).

Paratypes. **2 males** with same data as holotype except 21–28.x.2008, T3404 and 4–21.xi.2008, T3406 (in QSBG). **1 male** with same data except Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, T3399 (in QSBG and SMNH). **1 male**, THAILAND, Nakhon Si Thammarat, Namtok Yong NP, Road to Khao Mhen,150 m from Nern499, 816.959'N 9939.149'E, 499 m, Malaise trap 27.viii–3.ix.2008, Samnaokan, S. leg., T3534 (in QSBG).

***Manota flammula* sp. n.**

Figs. 3 A, B, C

Male. **Colour**. Head pale brown, frons, vertex and dorsal part of occiput dark brown, ventral part of vertex darker than face. Mouthparts pale yellowish. Antenna brown, scapus and pedicellus slightly paler than flagellum, two apical flagellomeres slightly paler than the others. Thorax pale brown, scutum, scutellum and mediotergite medially darker, preepisternum 2 paler yellowish ventrally. Legs pale yellowish, apices of coxae 2 and 3 and their trochanters infuscated, colour of more distal part of leg 3 not known. Wing unicolorous greyish-brown; haltere yellowish-brown with dark brown knob. Abdomen brown, sternites 1–4 paler yellowish-brown. All setosity pale, the thicker setae seeming darker than the finer setae and trichia. **Head**. Antennal flagellomere 4, Fig. 3 A. Palpomere 3 of maxillary palpus with apicomesial thumb-like extension, with 4 apically expanded curved sensilla; palpomere 4 with parasegment, palpomere 5 ca. 1.6 times longer than palpomere 4. Number of strong postocular setae 9. **Thorax**. Anepisternum setose, with 30 setae, anterior basalare setose, with 10 setae, preepisternum 2 nonsetose, laterotergite setose, with 13 setae, episternum 3 setose, with ca. 10 setae. **Legs**. Middle tibial organ lacking. **Wing**. R1 meeting C well on the basal half of the costal margin; the sclerotized part of M2 basally extending to the level of the tip of R1, wing length 1.6 mm. **Hypopygium,** Figs. 3 B and C: Sternite 9 laterally fused with gonocoxa, extending posteriorly as far as the ventral posterior margin of gonocoxa, anterior margin with a shallow incision, the setae similar to ventral setae of gonocoxa. Parastylar lobe subquadrangular, with 2–3 setae at posterior margin. Paraapodemal lobe not identifiable. Dorsal mesial margin of gonocoxa sinuous, subapically with a stout, blunt megaseta. At the dorsal mesial margin of gonocoxa, on more ventral level, a plate-like lobe with ca. 15 blunt megasetae at its posterior margin. One juxtagonostylar seta present: a flattened flame-shaped megaseta arising from a stout basal body which is ca 1.5 times longer than the megaseta. Gonostylus rather small, bipartite, with a broad basal part and a narrow apicolateral lobe-like part, with a few rather short unmodified setae ventrally, largely nonsetose dorsally except for the many setae apically on the apicolateral lobe, the mesial margin with three prominent strong setae. Aedeagus elongate subtriangular, without distinct lateral shoulders, the apex curved ventrad. Hypoproct large, posteriorly extending nearly as far as the apex of gonostylus, with ca. 25 scattered setae on each half. Cerci mesially separate.

Female unknown.

Discussion. *Manota flammula* is similar to *M. obtecta* known also from Thailand, and can be mixed only with it. *M. flammula* can be distinguished by the following characters: 1) the parastylar lobe is broad, subquadrangular,

not narrow and sickle-shaped and it bears 2–3 setae instead of ca. 8, 2) the megaseta subapically at the dorsal mesial margin of gonocoxa is cylindrical and evenly broad, not flat and expanding towards the apex, 3) the juxtagonostylar seta is a flat flame-shaped megaseta, not a strong usual seta, and it is arising from a basal body which is longer than the seta instead of one which is less than half the length of the seta and 4) the apicolateral appendix to the gonostylus is larger, about half the length of the broad basal part, instead of being only about one fourth of it.

Etymology. The name is Latin, *flammula*, a little flame, referring to the flame-shaped juxtagonostylar megaseta.

Types. *Holotype*. Male, THAILAND, Lampang, Chae Son NP, entrance the Mea Khun-Mae Mon, 1849.989'N 9928.445'E, 452 m, Malaise trap 1–8.viii.2007, Bunruen Kwunnui & Acharaporn Sukpeng leg., T2848 (in QSBG).

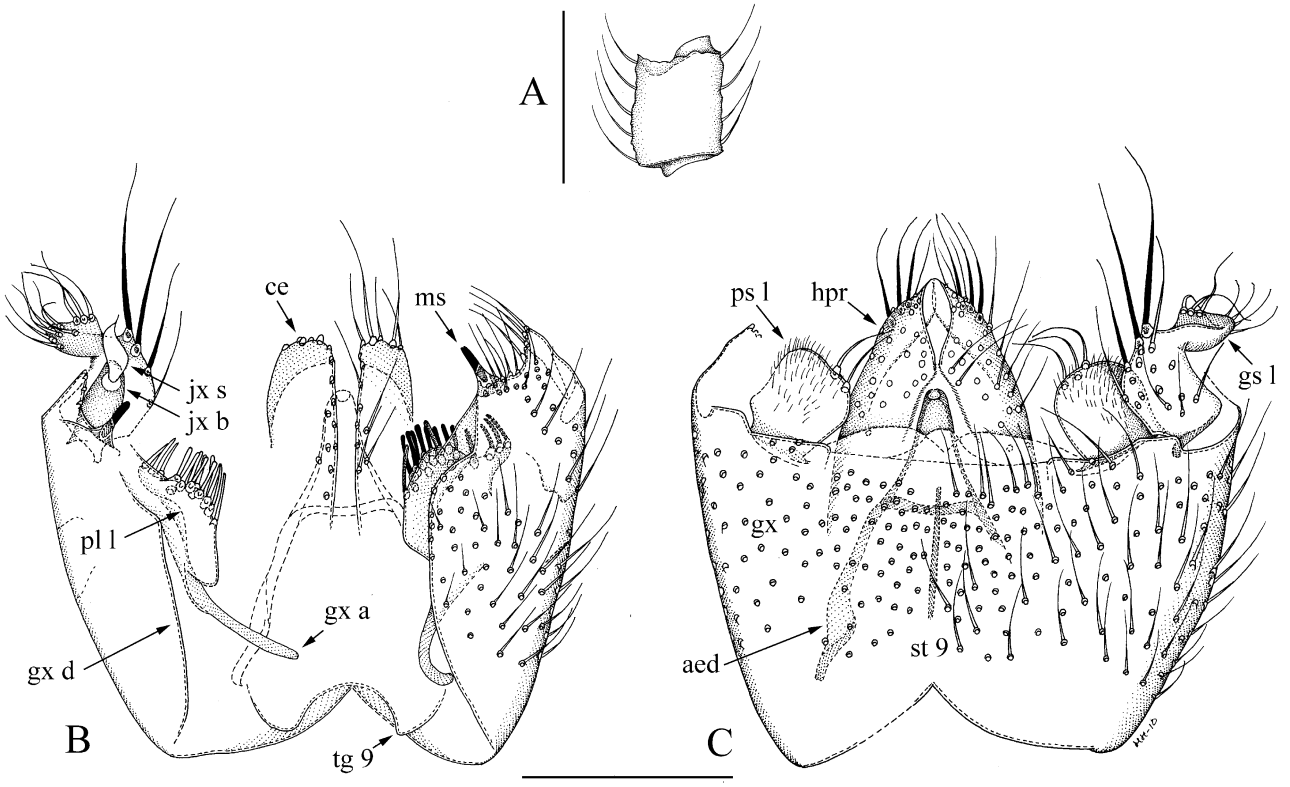

FIGURE 3. *Manota flammula* **sp. n.** (holotype). **A.** Antennal flagellomere 4, lateral view. **B.** Hypopygium, dorsal view. **C.** Hypopygium, ventral view. Scale 0.10 mm. aed = aedeagal apodeme, ce = cercus, gs l = apicolateral lobe of gonostylus, gx = gonocoxa, gx a = gonocoxal apodeme, gx d = dorsal mesial margin of gonocoxa, gx l = lobe at dorsal mesial margin of gonocoxa, gx v = ventral mesial margin of gonocoxa, hpr = hypoproct, jx s = juxtagonostylar megaseta, jx b = basal body of juxtagonostylar setae, ms = megaseta at dorsal mesial margin of gonocoxa, pl l = plate-like lobe, ps l = parastylar lobe, st 9 = sternite 9, tg 9 = tergite 9.

***Manota subcollina* sp. n.**
Figs. 4 A, B, C

Male. **Colour**. Head pale brown, frons, vertex and dorsal part of occiput darker brown. Antenna brown, scapus, pedicellus, flagellomere 1 and flagellomere 14 a little paler than the other parts. Mouthparts pale yellowish, but palpomeres 3, 4 and 5 broken off. Thorax brown, ventral part of preepisternum 2 paler yellowish. Legs pale yellowish, trochanters 2 and 3 indistinctly and the base of femur 2 and 3 slightly infuscated, apical third of femur 3 infuscated. Wing weakly bicolorous being paler yellowish brow basally and darker greyish brown apically, similar to *M. collina* (Hippa 2009: fig. 1 E); haltere yellowish-brown with dark brown knob. Abdominal tergites dark brown, sternites pale brown. All the setosity pale, yellowish or brownish, the thicker setae seeming darker than the finer setae and trichia. **Head**. Antennal flagellomere 4 not seen in lateral or mesial direction in the single specimen, apparently about 1.5 times longer than broad. Palpomeres 3–5 of the maxillary palpus broken off on both sides in the single

specimen. Number of strong postocular setae 10. **Thorax**. Anepisternum setose, with ca. 40 setae, anterior basalare setose, with 6 setae, preepisternum 2 setose, with 32 setae, laterotergite nonsetose, episternum 3 setose, with ca. 3 setae. **Legs**. Middle tibial organ lacking. **Wing**. Length 1.9 mm. **Hypopygium,** Figs. 4 A, B and C: Sternite 9 about one-half of the ventral length of gonocoxa, lateral margin sharply delimited, posterior margin deeply emarginated, anterior margin deeply incised, the setae similar to the ventral setae of gonocoxa but slightly longer at the posterior margin. Ventral mesial margin of gonocoxa simple. Parastylar lobe large, subtriangular, the apex directed mesiad, with ca. 10 setae. Paraapodemal lobe distinct and well exposed in ventral view. Dorsal mesial margin of gonocoxa simple, subapically with a broad thumb-like lobe with numerous setae at the mesial margin and a long seta arising from a large basal body at the lateral margin. Ventro-mesially from the latter a plate-like lobe with ca 8 thick megaseta-like setae. Two juxtagonostylar setae present, one of these a very strong but otherwise unmodified seta, the other a strong curved megaseta, without a distinct common basal body. Gonostylus simple, mesial margin angularly convex, the setae on the ventral side evenly distributed, rather long, subapically with a few stronger setae at the mesial margin, the marginal setae on the apical half of gonostylus long, on the dorsal side with a few long lateral and subapical mesial setae and a longitudinal patch of shorter setae associated with several slightly tuberculate areas on the surface of gonostylus. Aedeagus elongate subtriangular, without prominent lateral shoulders, the apex straight, not bent ventrad. Hypoproct posteriorly extending near the middle of gonostylus, each side dorsally with 4 conspicuously strong setae and ventrally with a mesial row of 3 very strong setae and ca. 5 weak setae in a more lateral position. Cerci medially separate.

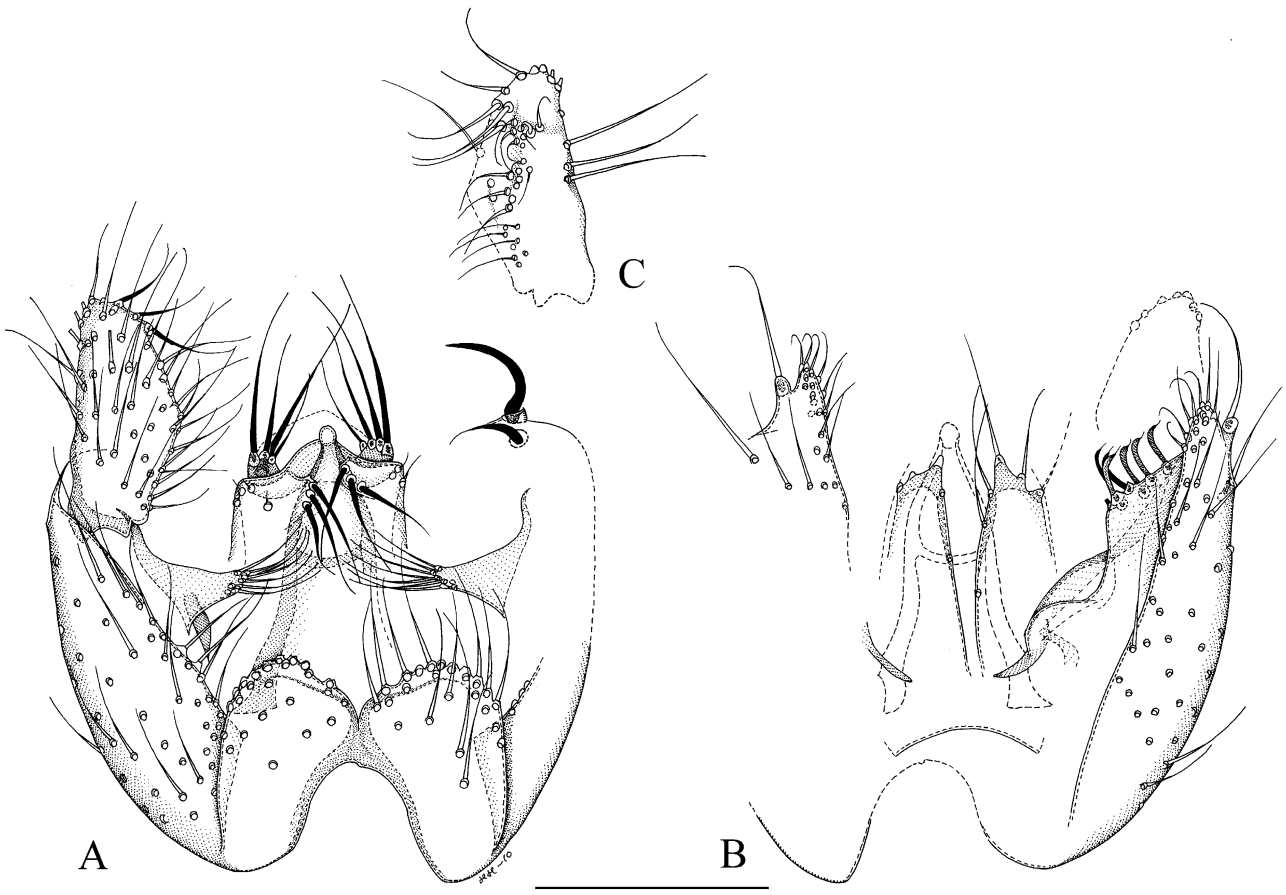

FIGURE 4. *Manota subcollina* **sp. n.** (holotype). **A.** Hypopygium, ventral view. **B.** Hypopygium, dorsal view. **C.** Gonostylus, dorsal view. Scale 0.10 mm.

Female unknown.

Discussion. *Manota subcollina* is similar to *M. collina* known from Thailand. It is distinguished by the narrow transverse subtriangular parastylar lobe instead of a broad, rounded one, and by the shape of the gonostylus which is not parallel sided subquadrangular as in *M. collina*, but has the mesial margin angularly convex, which makes the gonostylus broader at the middle than at the ends. The two species differ in many other characters, but they are dif-

ficult to quantify: in *M. subcollina* the hypoproct has the dorsal and the ventro-mesial setae stronger and the ventro-lateral setae weaker, the juxtagonostylar megaseta is strongly curved, but not angulate, the setae on the lobe at the dorsal mesial margin of gonocoxa are stronger and the aedeagus is narrower. *M. subcollina* and *M collina* are similar to *M. aconcinna, M. chi, M. clavulosa, M. falcata, M. indahae, M. mirifica, M. planilobata, M. seducta* and *M. submirifica*. Among them, *M. subcollina* and *M. collina* are the only species with a bicolorous wing and *M. subcollina* the only species with a transverse subtriangular parastylar lobe.

Etymology. The name is Latin and formed from the specific epithet of *M. collina* by the prefix *sub-*, somewhat, referring to the similarity of the two species.

Types. *Holotype*. Male, THAILAND, Nan Doi, Phu Kha NP, Office 13, 1912.605'N 1015.074'E, 1371 m, Malaise trap 1–8.xii.2007, Charoen & Nikom leg., T3273 (in QSBG).

New records

Manota aconcinna Hippa, 2008

Figs. 5 A, B, C

Records. 1 male, Petchaburi, Kaeng Krachan NP, Panernthung/km27/water pump, 1249.151'N 9922.483'E, 950 m, Malaise trap 8–15.viii.2008, Sirichai & Chusak leg., T4350 (in QSBG).

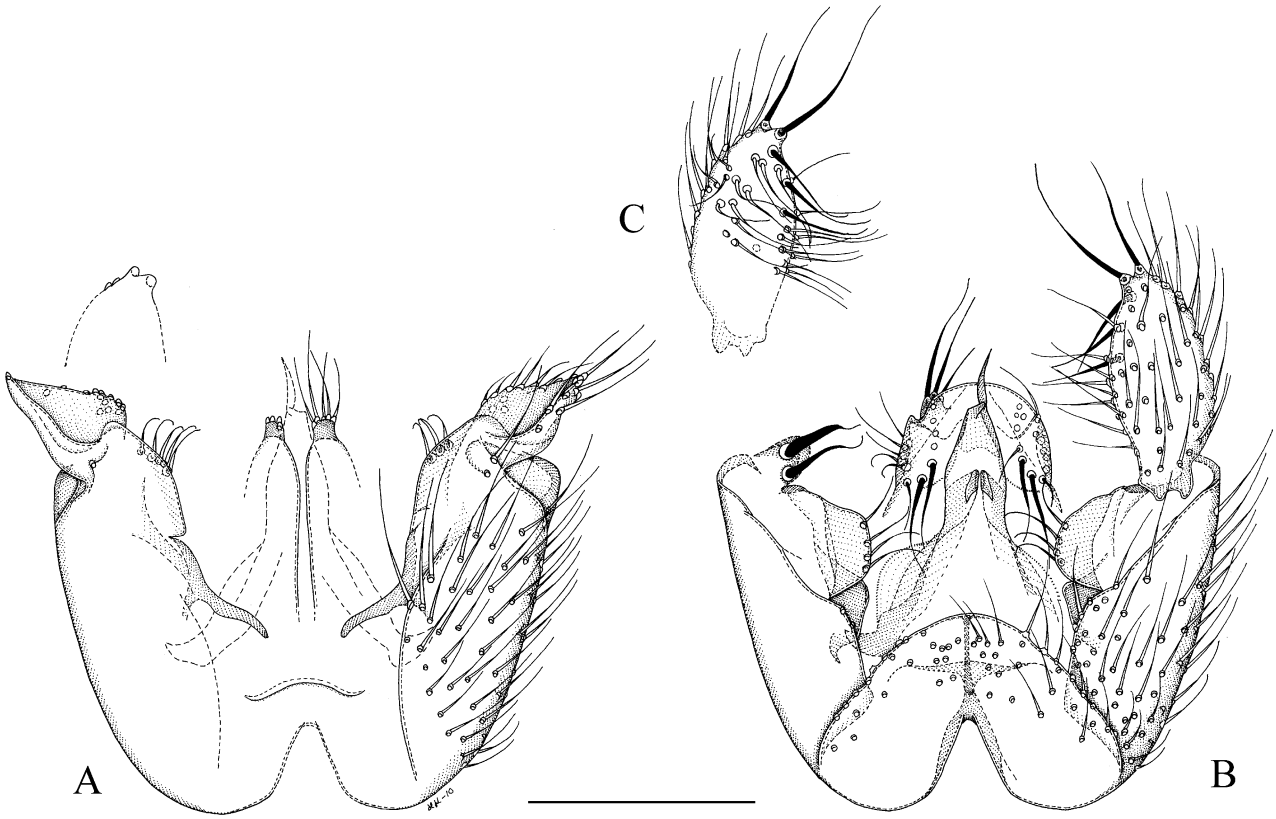

FIGURE 5. *Manota aconcinna* Hippa (Thailand). **A.** Hypopygium, dorsal view. **B.** Hypopygium, ventral view. **C.** Gonostylus, dorsal view. Scale 0.10 mm.

Remarks. The species is only known from Thailand. The earlier records are from Pa Hin Ngam NP, Chaiyaphum, Doi Inthanon NP, Chiang Mai (Hippa 2008), Thung Salaeng Luang NP, Phitsanulok, Phu Kradueng NP, Loei, Thung Salaeng Luang NP, Phetchabun, Khao Yai NP, Nakhon Nayok and Nakhon Ratchasima (Hippa 2009).

The hypopygium of *Manota aconcinna* may appear differently in different mounts (Figs. 5 A, B, C; Hippa 2008: figs. 2 B, C, D). The claw-like lobes ventrally on the aedeagus (Fig. 5 B) may be difficult to observe and were not noted in the original description (Hippa 2008). In this respect the species is similar to *M. chi* (Hippa 2009:

fig. 4 C). Further, the lobes posterodorsally on the gonocoxa may seemingly differ greatly (Fig. 5 A, Hippa 2008: fig. 2 B).

Manota acutangula Hippa, 2006

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist centre, 1429.972'N 9853.035'E, Malaise trap 18–25.ix.2008, Somboon & Daorueng leg., T3443 (in QSBG). **1 male**, Prachuab Khiri Khan, Khao Sam Roi Yot NP, Laem Sala beach, 1212.234'N 1000.767'E, Malaise trap 6–13.vii.2008, Amnad & Yai leg., T3012 (in QSBG). **1 male**, Petchaburi, Kaeng Krachan NP, km33/helipad, 1250.177'N 9920.688'E, 735 m, Malaise trap 4–11.xii.2008, Sirichai leg., T4393 (in QSBG).

Remarks. The species was previously recorded from several National Parks in Thailand: Nam Nao NP, Phetchabun, Doi Inthanon NP, Chiang Mai (Hippa 2008) and Phu Kradueng NP, Loei, Khao Kho NP, Phetchabun, Thung Salaeng Luang NP, Phetchabun, Khao Yai NP, Nakhon Nayok and Nachon Ratchasima (Hippa 2009). Outside Thailand the species is known from Pahang and Selangor, Malaysia (Hippa 2006, 2008).

Manota ancylochaeta Hippa, 2008

Records. 1 male, Phetchabun, Khao Kho NP, view point at Klump stream, 1639.12'N 1017.81'E, 246 m, Malaise trap 26.ix–2.x.2006, Somchai Chachumnan & Saink Singtong leg., T597 (in QSBG). **1 male**, Petchaburi, Kaeng Krachan NP, Panernthung/km27/water pump, 1249.151'N 9922.483'E, 950 m, Malaise trap 8–15.viii.2008, Sirichai & Chusak leg., T4350 (in QSBG).

Remarks. The species was earlier recorded from the following Thailand National Parks: Khao Kho NP, Phechabun, Khao Yai NP, Nakhon Nayok (Hippa 2008) and Pa Hin Ngam NP, Chaiyaphum, Phu Phan NP, Sakon Nakhon, Phu Kradueng NP, Loei and Khao Yai NP, Nakhon Nayok (Hippa 2009). The record from Doi Inthanon NP, Chiang Mai (Hippa 2008) belongs to *M. epigrata* (Hippa 2009). Outside Thailand *M. ancylochaeta* is recorded from Pahang, Malaysia (Hippa 2009).

Manota biunculata Hippa, 2007

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG).

Remarks. In Thailand the species was earlier previously recorded from Thung Khai Botanic Garden, Trang Province (Hippa & Papp 2007). In addition it is known from New Guinea (Hippa 2007).

Manota calcarata Hippa, 2006

Records. 2 males, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 20–27.i.2009, Pongphan leg., T3911 (in QSBG). **3 males** with same data except Malaise trap 21–28.x.2008, T3400 (in QSBG).

Remarks. The species was previously only known by the type material from Pahang, Malaysia (Hippa 2006).

Manota clausa Hippa, 2006

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist center, 1429.972'N 9853.035'E, Malaise trap 2–9.x.2008, Chatchawan & Boonkam leg., T3445 (in QSBG). **1 male**, Nakhon Si Thammarat, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG).

Remarks. The species was previously recorded from Pahang, Malaysia (Hippa 2006) and Brunei (Hippa & Ševčík 2010).

Manota curvata Hippa, 2006

Records. 1 male, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 21–28.x.2008, Pongphan leg., T3400 (in QSBG).

Remarks. The species was previously recorded from Pahang and Selangor, Peninsular Malaysia (Hippa 2006, 2008) and Sabah, Borneo, Malaysia and Aceh, Sumatra, Indonesia (Hippa & Ševčík 2010).

Manota dentata Hippa & Papp, 2007

Records. 2 males, Kanchanaburi, Khuean Srinagarindra NP, Tourist centre, 1438.136'N 9859.837'E, 210 m, Malaise trap 11–18.vii.2008, Somboon & Chatchawan leg., T3432 (in QSBG). **1 male** with same data except Pan trap 17–18.viii.2008, Chatchawan & Boonkam leg., T3434 (in QSBG). **1 male** with same data except Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist centre, 1429.972'N 9853.035'E, Malaise trap 2–9.x.2008, Chatchawan & Boonkam leg., T3445 (in QSBG). **1 male**, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 2–9.ix.2008, U-prai, K. leg., T3546 (in QSBG). **1 male** with same data except Malaise trap 9–16.ix.2008, T3547 (in QSBG). **2 males** with same data except Malaise trap 16–23.ix.2008, T3548 (in QSBG). **1 male**, Petchaburi, Kaeng Krachan NP, Pa La-U/Waterfall/Ficus tree, 1232.154'N 9928.098'E, Malaise trap 19–26.ix.2008, Akaradate & Thongbai leg., T4516 (in QSBG).

Remarks. The species was previously only known by the type material from Khao Pu-Khao Ya NP and Nam Tok Nam Pan Forest Park, Trang Province, Thailand (Hippa & Papp 2007).

Manota duplex Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG). **1 male**, Surat Thani, Khao Sok NP, Bang Huaraed, 854.555'N 9830.522'E, 122 m, Malaise trap 9–16.xii.2008, Pongphan leg., T3892 (in QSBG).

Remarks. Only the type material from Pahang, Malaysia had previously been recorded (Hippa 2006).

Manota epigrata Hippa, 2009

Records. 1 male, Phetchabun, Khao Kho NP, Thanthip waterfall, 1639.087'N 1017.777'E, 210 m, Malaise trap 19–26.ix.2006, Somchai Chachumnan & Saink Singtong leg., T595 (in QSBG). **1 male**, Ubon Ratchathani, Pha Taem NP, irrigation area west of Huay Pok forest unit, 1537.321'N 10536.982'E, 419 m, Malaise trap 13–20.x.2006, T723 (in QSBG).

Remarks. The species was previously recorded from Doi Inthanon NP, Chiang Mai, Nam Nao NP and Thung Luang NP, Petchabun, Khao Kho NP, Phetchabun, Pan Hin Ngam NP, Chaiaphum, and Thung Salaeng Luang NP, Phitsanulok (Hippa 2009). It has not been recorded outside Thailand.

Manota fera Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG).

Remarks. Only the type material from Selangor, Malaysia, is previously known (Hippa 2006).

Manota ferrata Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, Road to Khao Mhen, 150 m from Nern499, 816.959'N 9939.149'E, 499 m, Malaise trap 27.viii–3.ix.2008, Samnaokan;S. leg., T3534 (in QSBG). **1 male** with same data except, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG).

Remarks. The species was previously recorded from Pahang and Selangor, Malaysia (Hippa 2006, 2008) and Brunei (Hippa & Ševčík 2010).

Manota globigera Hippa, 2006

Records. 1 male, Chiang Mai, Doi Inthanon NP, checkpoint 2, 1831.559'N 9829.941'E, 1700 m, Malaise trap 30.viii–6.ix.2006, Y. Areeluck leg., T238 (in QSBG). **1 male**, Kamphaeng Phet, Mae Wong NP, Chong Yen, 165.968'N 996.472'E, 1306 m, Malaise trap 1–8.x.2007, Chumpol Piluk & Aram Inpuang leg., T2816 (in QSBG). **1 male**, Nakhon Nayok, Khao Yai NP, Office, 1424.619'N 10122.778'E, pan trap 9.vii.2006, Pong Sandao leg., T138 (in QSBG).

Remarks. There are two earlier records from Doi Inthanon NP, Chiang Mai (Hippa 2008, 2009). Outside Thailand the species is known only by the type material from Selangor, Malaysia (Hippa 2006).

Manota heptacantha Hippa, 2006

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Behind tourist centre, 1438.155'N 9859.85'E, 210 m, Malaise trap 4–11.ix.2008, Somboon & Daorueng leg., T3423 (in QSBG). **1 male** with same data except, Khuean Srinagarindra NP, Chong Kraborg, 1429.972'N 9853.035'E, 210 m, Malaise trap 28.viii–4.ix.2008, Boonnam & Phumarin leg., T3430 (in QSBG). **1 male** with same data except Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist centre, 1429.972'N 9853.035'E, Malaise trap 18–25.ix.2008, Somboon & Daorueng leg., T3443 (in QSBG). **1 male**, Mae Hong Son, Namtok Mae Surin NP, walkway top of reservoir, 1920.893'N 9759.005'E, Malaise trap 27.i–3.ii.2008, Kaewmanee, J. leg., T3484 (in QSBG). **1 male** with same data except Malaise trap 10–17.ii.2008, T3486 (in QSBG).

Remarks. The species was previously recorded from Nam Tok Nam Pan Forest Park, Trang (Hippa & Papp 2007). Outside Thailand it is known from Pahang and Selangor, Malaysia (Hippa 2006, 2008).

Manota horrida Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, TV aerial, 814.262'N 9948.289'E, 966 m, Malaise trap 15–22.ix.2008, Paiboon leg., T3540 (in QSBG). **1 male**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG). **2 males** with same data except Malaise trap 21–28.x.2008, T3400 (in QSBG). **1 male** with same data except Malaise trap 16–23.xii.2008, T3889 (in QSBG).

Remarks. The species was previously recorded from Selangor, Peninsular Malaysia (Hippa 2006) and Sabah, Borneo, Malaysia (Hippa & Ševčík 2010).

Manota inflata Hippa, 2008

Records. 1 male, Chanthaburi, Khao Khitchakut NP, Prabaht unit/20m to the bridge, 1249.23'N 1029.16'E, 222 m, Malaise trap 2–9.x.2008, Suthida & Charoenchai leg., T3959 (in QSBG). **1 male**, Kanchanaburi, Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist center, 1429.972'N 9853.035'E, Malaise trap 2–9.x.2008, Chatchawan & Boonkam leg., T3445 (in QSBG). **1 male** with same data except Malaise trap 30.ix–7.x.2007,

Areerat Kumkhun leg., T2813 (in QSBG). **1 male**, Phetchabun, Khao Kho NP, view point at Klump stream, 1639.12'N 1017.81'E, 246 m, Malaise trap 12–19.ix.2006, Somchai Chachumnan & Saink Singtong leg., T591 (in QSBG). **1 male** with same data except Malaise trap 26.ix–2.x.2006, Somchai Chachumnan & Saink Singtong leg., T597 (in QSBG). **1 male**, Sakon Nakhon, Phu Phan NP, Kam Hom waterfall at Haew Sin chai, 177.415'N 1041.179'E 347 m, Malaise trap 22–30.ix.2006, Sailom Tongboonchai leg., T619 (in QSBG).

Remarks. The species was recorded from several National Parks: Doi Inthanon NP, Chiang Mai, Pa Hin Ngam NP, Chaiyaphum, Khao Yai NP, Nakhon Ratchasima, Thung Salaeng Luang NP, Phetchabun and Phitsanulok, and Phu Phan NP, Sakon Nakhon (Hippa 2008, 2009). There are no records outside Thailand. *Manota bilobata* Papp from Taiwan although very similar, was not mentioned in the original description. For distinguishing characters, see the key.

Manota mirifica Hippa & Papp, 2007

Records. 2 males, Phitsanulok, Thung Salaeng Luang NP, moist evergreen forest, 1650.641'N 10052.894'E, 557 m, Malaise trap 25.viii–1.ix.2006, Pongpitak Pranee leg., T572 (in QSBG). **2 males**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG). **2 males** with same data except 21–28.x.2008, T3400 (in QSBG). **1 male** with same data except 28.x–4.xi.2008, T3401 (in QSBG). **1 male** with same data except 4–11.xi.2008, T3402 (in QSBG). **1 male** with same data except, Khao Sok NP, Bang Huaraed, 854.555'N 9830.522'E, 122 m, Malaise trap 21–28.x.2008, T3404 (in QSBG). **2 males** with same data except 4–11.xi.2008, T3406 (in QSBG). **1 male** with same data except, Khao Sok NP, Klong Mog Unit, 853.725'N 9839.025'E, 87 m, Malaise trap 17–24.vii.2008, Pongphan leg., T3070 (in QSBG). **2 males** with same data except 4–11.xi.2008, T3410 (in QSBG). **2 males** with same data except 13–20.i.2009, T3918 (in QSBG).

Remarks. Only the type material from Thung Khai Botanic Garden, Phatthalung Wildlife Breeding Research Centre and Khao Chong Botanic Garden, Trang, was previously known (Hippa & Papp 2007).

M. oblonga Hippa, 2008

Records. 2 males, Nan, Doi Phu Kha NP, Office 14, 1912.488'N 1014.907'E, 1375 m, Malaise trap 8–15.xii.2007, Charoen & Nikom leg., T3278 (in QSBG).

Remarks. The species is only known from Thailand. The earlier records were from Doi Inthanon NP, Chiang Mai, Nam Nao NP, Phetchabun and Phu Ruea NP, Loei (Hippa 2008, 2009).

Manota oligochaeta Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG). **2 males**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 16–23.xii.2008, Pongphan leg., T3889 (in QSBG).

Remarks. Hippa & Papp (2007) recorded the species from Khao Chong Botanic Garden, Khao Pu-Khao Ya NP and Thung Khai Botanic Garden, Trang. Hippa (2008, 2009) gave new records from Khao Kho NP, Phetchabun, Khao Yai NP, Nakhon Nayok and Nakhon Ratchasima, Nam Nao NP, Phetchabun and Thung Salaeng Luang NP, Phechabun and Phitsanulok. Outside Thailand the species is known from Pahang and Selangor, Malaysia (Hippa 2006, 2008).

Manota ovata Hippa, 2006

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist centre, 1429.972'N 9853.035'E, Malaise trap 18–25.ix.2008, Somboon & Daorueng leg., T3443 (in QSBG). **1 male**, Nakhon Si Thammarat, Namtok Yong NP, Road to Khao Mhen, 150m from Nern499, 816.959'N 9939.149'E, 499 m,

Malaise trap 10–17.ix.2008, Charnarwut, C. leg., T3543 (in QSBG). **1 male** with same data except 27.viii–3.ix.2008, Samnaokan, S. leg., T3534 (in QSBG). **1 male** with same data except 1–8.x.2008, T4228 (in QSBG). **2 males** with same data except 12–19.xi.2008, T4251 (in GSBG). **2 males**, Petchaburi, Kaeng Krachan NP, Panernthung/km27/water pump, 1249.151'N 9922.483'E, 950 m, Malaise trap 8–15.viii.2008, Sirichai & Chusak leg., T4350 (in QSBG). **1 male**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG).

Remarks. Earlier records in Thailand were from Khao Chong Botanic Garden, Trang (Hippa & Papp 2007), and Khao Yai NP, Nakhon Nayok, Thung Salaeng Luang NP, Phechabun and Khao Yai NP, Nakhon Ratchasima (Hippa 2008, 2009). Outside Thailand the species is known from Selangor, Malaysia (Hippa 2006).

Manota pectinata Hippa, 2006

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Chong Kraborg, 1429.972'N 9853.035'E, 210 m, Malaise trap 15–22.viii.2008, Wasanchai leg., T3428 (in QSBG). **4 males**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 16–23.xii.2008, Pongphan leg., T3889 (in QSBG). **1 male**, Ubon Ratchathani, Pha Taem NP, Huay Pok waterfall, 1537.321'N 0536.982'E, 419 m, Malaise trap 27.x–3.xi.2006, Pornthip Tonsu leg., T730 (in QSBG).

Remarks. In Thailand the species was previously recorded from Khao Chong Botanic Garden, Ban Liphang and Khao Chong Botanic Garden, Trang (Hippa & Papp 2007), Doi Inthanon NP, Chiang Mai, Thung Luang NP, Phitsanulok, and Nam Nao NP, Phetchabun (Hippa 2008, 2009). Outside Thailand the species is known from Pahang and Selangor, Penisular Malaysia (Hippa 2006), Sabah, Borneo, Malaysia and Sulawesi, Indonesia (Hippa & Ševčík 2010).

Manota pellii Hippa, 2008

Records. 1 male, Chiang Mai, Doi Chiang Dao, WS Nature Trail, 1924.187'N 9855.312'E, 491 m, Malaise trap 28.viii–4.ix.2007, Songkrant Jagsu & Apichat Watwanich leg., T2831 (in QSBG).

Remarks. Previous records of this species are from Khao Yai NP, Nakhon Nayok and Nakhon Ratchasima and Thung Salaeng Luang NP, Phetchabun (Hippa 2008, 2009). The species has not been recorded outside Thailand.

Manota perangulata Hippa & Ševčík, 2010

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 2–9.ix.2008, U-prai, K. leg., T3546 (in QSBG). **1 male** with same data except 16–23.ix, T3548 (in SMNH).

Remarks. The species has previously only been recorded from Borneo (Hippa & Ševčík 2010).

Manota perlobata Hippa, 2008

Records. 1 male, Chiang Mai, Doi Inthanon NP, checkpoint 2, 1831.559'N 9829.941'E, 1700 m, Malaise trap 2–9.viii.2006, Y. Areeluck leg., T127 (in QSBG). **2 males**, Kamphaeng Phet, Mae Wong NP, Chong Yen, 165.968'N 996.472'E, 1306 m, Malaise trap 1–8.x.2007, Chumpol Piluk & Aram Inpuang leg., T2816 (in SMNH and QSBG).

Remarks. All the previous records in Thailand are from Doi Inthanon NP, Chiang Mai (Hippa 2008, 2009). Outside of Thailand, the species is only known from Burma (Hippa 2008).

Manota perpusilla Hippa, 2006

Records. 1 male, Chanthaburi, Khao Khitchakut NP, Campground/Prabaht Unit, 1248.852'N 1029.204'E, 99 m, Malaise trap 1–7.vii.2008, Suthida & Charoenchai leg., T2983 (in QSBG). **1 male**, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 26.viii–2.ix.2008, U-prai, K. leg., T3535 (in QSBG).

Remarks. In Thailand the species was previously recorded from Thung Khai and Khao Chong Botanic Gardens, Trang (Hippa & Papp 2007), and Khao Yai NP, Nakhon Nayok and Nakhon Ratchasima (Hippa 2009). In addition, it has been recorded from Pahang and Selangor, Malaysia (Hippa 2006, 2008) and Aceh, Sumatra, Indonesia (Hippa & Ševčík 2010).

Manota planilobata Hippa, 2008

Records. 1 male, Kamphaeng Phet, Mae Wong NP, Chong Yen, 165.968'N 996.472'E, 1306 m, Malaise trap 3–10.ix.2007, Chumpol Piluk & Aram Inpuang leg., T2812 (in QSBG). 2 males with same data except 1–8.x.2007, T2816 (in QSBG).

Remarks. The species is only known from Thailand. The earlier records are from Doi Inthanon NP, Chiang Mai (Hippa 2008) and Thung Salaeng Luang NP, Phetchabun (Hippa 2009).

Manota plusiochaeta Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 26.viii–2.ix.2008, U-prai, K. leg., T3535 (in QSBG). **3 males**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG). **2 males** with same data except 21–28.x.2008, T3400 (in QSBG). **3 males** with same data except 20–27.i.2009, T3911 (in QSBG).

Remarks. There are earlier Thailand records from Khao Pu-Khao Ya NP, Phattalung Wildlife Breeding Research Centre and Thung Khai Botanic Garden, Trang (Hippa & Papp 2007). Outside Thailand the species has been recorded from Selangor (Hippa 2006) and Pahang (Hippa 2008), Malaysia.

Manota pollex Hippa, 2006

Records. 1 male, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 16–23.xii.2008, Pongphan leg., T3889 (in QSBG).

Remarks. The species was previously only recorded from Pahang (Hippa 2008) and Selangor (Hippa 2006) Malaysia.

Manota roslii Hippa, 2006

Records. 1 male, Chiang Mai, Doi Chiang Dao WS, behind water reservoir, 1924.328'N 9855.237'E, 549 m, Malaise trap 31.vii–7.viii.2007, Songkrant Jagsu & Apichat Watwanich leg., T2806 (in QSBG). **2 males**, Kanchanaburi, Khuean Srinagarindra NP, Chong Kraborg, 1429.972'N 9853.035'E, 210 m, Malaise trap 28.viii–4.ix.2008, Boonnam & Phumarin leg., T3430 (in QSBG). **2 males** with same data except 4–11.ix.2008, T3431 (in QSBG). **1 male** with same data except 2–9.x.2008, T3453 (in QSBG). **1 male** with same data except, Khuean Srinagarindra NP, Huai Mae Kamint/50m/SW of Tourist centre, 1429.972'N 9853.035'E, Malaise trap 18–25.ix.2008, Somboon & Daorueng leg., T3443 (in QSBG). **1 male** with same data except, Huai Mae Kamint/500m/W of HQ, 1429.972'N 9853.035'E, Malaise trap 18–25.ix.2008, Chatchawan & Boonkam leg., T3447 (in QSBG). **1 male** with same data except, Khuean Srinagarindra NP, Tourist centre, 1438.136'N 9859.837'E, 210 m, Pan trap 18–19.viii.2008,

Chatchawan & Boonkam leg., T3435 (in QSBG). **1 male**, Phetchabun, Khao Kho NP, mixed deciduous forest at Klump stream, 1639.257'N 1017.945'E, 186 m, Malaise trap 12–19.ix.2006, Somchai Chachumnan & Saink Singtong leg., T590 (in QSBG). **1 male** with same data except Khao Kho NP, view point at Klump stream, 1639.12'N 1017.81'E, 246 m, Malaise trap 12–19.ix.2006, Somchai Chachumnan & Saink Singtong leg., T591 (in QSBG). **1 male** with same data except 26.ix–2.x.2006, T597 (in QSBG). **1 male**, Phitsanulok, Thung Salaeng Luang NP, mixed deciduous forest (Gang Sopa waterfall), 1652.464'N 10049.665'E, 501 m, Malaise trap 28.x–4.xi.2006, Pongpitak Pranee leg., T769 (in QSBG). **1 male** with same data except, Moist evergreen forest, 1650.641'N 10052.894'E, 557 m, Malaise trap 25.viii–1.ix.2006, T572 (in QSBG).

Remarks. There are several previous Thailand records: Nam Tok Nam Pan Forest Park, Trang (Hippa & Papp 2007), Doi Inthanon NP, Chiang Mai (Hippa 2008) and Khao Yai NP, Nakhon Ratchasima and Thung Salaeng Luang NP, Phitsanulok (Hippa 2009). Outside Thailand the species has been recorded from Kelantan, Pahang and Selangor, Malaysia (Hippa 2006, 2008).

Manota simplex Hippa, 2006

Records. 1 male, Chiang Mai, Doi Chiang Dao, WS Pha Tang unit, 1924.978'N 9854.886'E, 526 m, Malaise trap 30.ix–7.x.2007, Songkran & Apichart leg., T3177 (in QSBG). **3 males**, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 16–23.ix.2008, U-prai, K. leg., T3548 (in QSBG). **1 male**, Phetchabun, Nam Nao NP, Forest check point, 1643.687'N 10133.754'E, 924 m, Malaise trap 13–20.xi.2006, Noopean Hongyothi leg., T1019 (in QSBG). **1 male**, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG). **1 male** with same data except 21–28.x.2008, T3400 (in QSBG).

Remarks. In Thailand the species was previously recorded from Khao Yai NP, both Nakhon Nayok and Nakhon Ratchasima (Hippa 2008, 2009). Outside Thailand the species has been recorded from Sabah (Hippa & Ševčík, 2010) and Selangor, Malaysia (Hippa 2006).

Manota subferrata Hippa, 2009

Records. 1 male, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 16–23.xii.2008, Pongphan leg., T3889 (in QSBG).

Remarks. Only the type material from Nam Nao NP, Phetchabun, was earlier known (Hippa 2009).

Manota submirifica Hippa, 2008

Records. 1 male, Surat Thani, Khao Sok NP, Headquarter, 854.896'N 9831.81'E, 115 m, Malaise trap 14–21.x.2008, Pongphan leg., T3399 (in QSBG).

Remarks. Only the holotype from Doi Inthanon NP, Chiang Mai, was earlier known (Hippa 2008).

Manota tetrachaeta Hippa, 2009

Records. 1 male, Kamphaeng Phet, Mae Wong NP, Chong Yen, 165.968'N 996.472'E, 1306 m, Malaise trap 1–3.xii.2007, Chumpol Piluk & Aram Inpuang leg., T2822 (in QSBG). **1 male**, Loei, Phu Ruea NP, Nern Wibaak ditch, 1729.907'N 10120.483'E, 1196 m, Malaise trap 19–26.viii.2006, Nukoonchai Jaroenchai leg., T530 (in QSBG).

Remarks. Only the holotype from Doi Inthanon NP, Chiang Mai, was earlier known (Hippa 2008).

Manota transversa Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 9–16.ix.2008, U-prai, K. leg., T3547 (in QSBG); **1 male** with same data except 16–23.ix.2008, T3548 (in QSBG).

Remarks. Only the type material from Selangor, Malaysia was earlier known (Hippa 2006).

Manota ulu Hippa, 2006

Records. 1 male, Nakhon Si Thammarat, Namtok Yong NP, Behind campground lavatory, 810.434'N 9944.508'E, 80 m, Malaise trap 9–16.ix.2008, U-prai, K. leg., T3547 (in QSBG).

Remarks. There are two earlier Thailand records, from Khao Chong Botanic Garden and Nam Tok Nam Pan Forest Park, Trang (Hippa & Papp 2007). Outside Thailand the species has been recorded from Selangor, Malaysia (Hippa 2006) and Aceh, Sumatra, Indonesia (Hippa & Ševčík 2010).

Manota vesicaria Hippa, 2009

Records. 1 male, Kanchanaburi, Khuean Srinagarindra NP, Chong Kraborg, 1429.972'N 9853.035'E, 210 m, Malaise trap 11–18.ix.2008, Boonnam & Phumarin leg., T3450 (in QSBG). **1 male**, Phitsanulok, Thung Salaeng Luang NP, moist evergreen forest, 1650.641'N 10052.894'E, 557 m, Malaise trap 25.viii–1.ix.2006, Pongpitak Pranee leg., T572 (in QSBG).

Remarks. Only the type material from Thung Salaeng Luang NP, Phitsanulok, was earlier known (Hippa 2009).

Notes on the pleural chaetotaxy of some Oriental *Manota*

Hippa & Papp (2007) did not observe the chaetotaxy of preepisternum 2 while describing *M. bifida*, *M. dentata*, *M. mirifica*, *M. occulta* and *M. secreta*. In all of these species it is setose. Furthermore, they described *M. bifida* to have anterior basalare nonsetose even if it is setose. Hippa (2008) described *M. cristata* to have the anterior basalare nonsetose, but it is setose and *M. fimbriata* to have preepisternum 2 setose even though it is nonsetose. Further, in *M. forceps* (Hippa & Papp 2007) preepisternum 2 is nonsetose (already noted by Hippa & Ševčík 2010) and in *M. globigera* (Hippa 2006) anterior basalare is nonsetose, not setose (already noted by Hippa 2008).

Key to the Oriental and Palaearctic species of *Manota*

Some species are keyed out at several places due to variation in the characters used, in some cases also due to a suspicion that variation may occur or because the used characters are not known with certainty. Couplet 60 is reached in two ways for the case the characters in couplet 56 are misinterpreted.

1. Anepisternum nonsetose 2
- Anepisternum setose 10
2. Preepisternum 2 (katepisternum) setose; anterior margin of sternite 9 straight; the dorsal mesial margin of gonocoxa with a fringe of long setae (Hippa 2008: fig. 11 B) . . . . . *M. fimbriata* Hippa [Oriental: Peninsular Malaysia]
- Preepisternum 2 (katepisternum) nonsetose; anterior margin of sternite 9 medially incised; the dorsal mesial margin of gonocoxa without a fringe of long setae 3
3. R joining C well on the basal half of the costal margin of wing (similar to Hippa & Ševčík 2010: fig. 1 A), gonostylus divided into two subequal lateral and mesial lobes (Hippa & Ševčík 2010: figs. 10 B, C) . . . . . *M. radula* Hippa & Ševčík [Oriental: Brunei]
- R joining C at the middle of the costal margin of wing (e.g. Hippa & Ševčík 2010: 1 B, C), gonostylus one-lobed or with a small lobe at the mesial margin (Figs. 1 B, C) or with a curved finger-like lobe basolaterally (Hippa 2009: figs. 2 B, D). 4
4. Laterotergite nonsetose 5

- Laterotergite setose 8
5. Middle and hind femur yellow, parastylar lobe shorter than broad, nonsetose. . *M. unifurcata* Lundström [Palaearctic: Europe]
- Middle and hind femur dark brown/black, parastylar lobe several times longer than broad, apically setose 6
6. Sternite 9 posteromedially deeply cleft, gonostylus with a narrow lobe mesially on its basal half (Fig. 1 A, B) . . . . . *M. aquila* sp. n. [Oriental: Thailand]
- Sternite 9 posteromedially only slightly notched, gonostylus without a lobe mesially on its basal half 7
7. Parastylar lobe narrowing from base to apex, apically with a narrow sickle-shaped appendix beyond the setae; gonostylus broadest at its basal third (Hippa & Papp 2007: figs. 6 A, B). . . . . *M. forceps* Hippa & Papp [Oriental: Thailand]
- Parastylar lobe evenly broad, without an appendix beyond the setae, gonostylus broadest near its middle (Hippa & Ševčík 2010: fig. 13 A, B) . . . . . *M. subforceps* Hippa & Ševčík [Oriental: Sumatra]
8. Middle and hind femur dark brown/black; sternite 9 posteromedially deeply cleft, gonostylus with a narrow lobe subbasally at the mesial margin (Figs. 1 A, B) . . . . . *M. aquila* sp. n. [Oriental: Thailand]
- Middle and hind femur yellow, sternite 9 posteromedially entire, with a small posteromedial knob, gonostylus without a lobe at the mesial margin 9
9. Gonostylus with a basolateral finger-like lobe curving mesiad over the dorsal side (Hippa 2009: figs. 2 B, D) . . . . . *M. avita* Hippa [Oriental: Thailand]
- Gonostylus simple (Hippa & Ševčík 2010: figs. 11 B, C) . . . . . *M. sinepollex* Hippa & Ševčík [Oriental: Sumatra)]
10. Preepisternum 2 (katepisternum) nonsetose or with at most 3 setae 11
- Preepisternum 2 (katepisternum) setose, with at least 10 setae 24
11. Laterotergite nonsetose, sternite 9 laterally separated from gonocoxa, with a distinct lateral margin (Papp 2004: figs.. 21, 23) 12
- Laterotergite setose, sternite 9 laterally fused with gonocoxae 13
12. Gonostylus broadening towards the apex, with 4 megasetae at the apical part of the mesial margin (Papp 2004: figs. 23, 24, 25) . . . . . *M. meilingae* Papp (Oriental: Taiwan)
- Gonostylus tapering towards the apex, without megasetae in any position (Papp 2004: figs. 20, 21) . . . . . *M. delyorum* Papp [Palaearctic: Korea]
13. Sternite 9 laterally separated from gonocoxa by a distinct long margin anteriorly extending to the base of gonocoxa, the hypopygium giving a ventrally open impression (Hippa & Papp 2007: fig. 7 B) . . . . . *M. inusitata* Hippa & Papp [Oriental: Thailand)]
- Sternite 9 laterally fused with gonocoxa, without a lateral margin, the hypopygium giving a ventrally closed impression (e.g. Fig. 3 C). 14
14. Gonostylus deeply V-shaped two-lobed, the lobe at dorsal mesial margin of gonocoxa with 3+1 long megasetae (Hippa 2006: figs. 6 B, C) . . . . . *M. biloba* Hippa [Oriental: Peninsular Malaysia]
- Gonostylus one-lobed or with a lobe-like appendix apically (e.g. Figs. 3 B, C) 15
15. Gonocoxa posterolaterally with unusually long setae, the longest ones of which being almost as long as gonocoxa (Hippa 2006: fig. 7 E) . . . . . *M. ulu* Hippa [Oriental: Penisular Malaysia, Sumatra, Thailand]
- Gonocoxa posteriorly with normal setae, the longest ones being at most one third of the length of gonocoxa 16
16. Dorsal mesial margin of gonocoxa subapically with one to three megasetae or setae deviating from the other marginal setosity (not to be mixed with the juxtagonostylar setae or setae on a separate lobe ventrally from the dorsal mesial margin) (e.g. Fig. 3 A, Hippa 2006: figs. 7 B, C) 17
- Dorsal mesial margin of gonocoxa subapically without megasetae or strong setae deviating from the other marginal setosity 19
17. The dorsal mesial margin of gonocoxa subapically with one to three slender megasetae which are apically attenuated, often appearing flame-shaped (Hippa 2006: figs. 7 B, C) . . . . *M. simplex* Hippa [Oriental: Borneo, Peninsular Malaysia, Thailand]
- The dorsal mesial margin of gonocoxa subapically with one stout apically rounded megaseta 18
18. The juxtagonostylar seta megaseta-like, flat and flame-shaped, its basal body longer than the megaseta; parastylar lobe with 2–3 setae (Figs. 3 B, C) . . . . . *M. flammula* sp. n. [Oriental: Thailand]
- The juxtagonostylar seta seta-like, not flattened, its basal body shorter than the seta; parastylar lobe with ca. 8 setae (Hippa 2009: figs. 7 B, C). . . . . *M. obtecta* Hippa [Oriental: Thailand]
19. The setae/megasetae on the lobe at the dorsal mesial margin of gonocoxa in a single straight longitudinal marginal row . . 20
- The setae/megasetae on the lobe at the dorsal mesial margin of gonocoxa in a curved transverse partly double row or in an unarranged group. 22
20. The number of megasetae ca. 7 (Hippa 2006: fig. 6 F) . . . . *M. heptacantha* Hippa [Oriental: Peninsular Malaysia, Thailand)]
- The number of megasetae ca. 10 21
21. The megasetae stout, blunt; length of gonostylus ca. 2.5 times the length of gonocoxa (Hippa & Papp 2007: figs. 5 A, B) . . . . *M. dentata* Hippa & Papp [Oriental: Thailand]
- The megasetae slender, sharp; length of gonostylus ca. 4 times the length of gonocoxa (Hippa 2008: figs. 20 B, C) . . . . . *M. subdentata* Hippa [Oriental: Peninsular Malaysia]
22. The narrow apical part of aedeagus shorter than the broad basal part; the dorsal mesial margin of gonocoxa subapically with a hyalinous finger-like lobe (Hippa 2008: figs. 8 B, C). . . . . *M. confixa* Hippa [Oriental: Borneo]
- The narrow apical part of aedeagus longer than the broad basal part; the dorsal mesial margin of gonocoxa without subapical finger-like lobe 23
23. The megasetae on the lobe at the dorsal mesial margin of gonocoxa evenly broad, apically abruptly cut; parastylar lobe with two setae (Hippa 2008: figs. 14 B, C). . . . . *M. juncta* Hippa [Oriental: Peninsular Malaysia]

- The megasetae on the lobe at the dorsal mesial margin of gonocoxa narrowing from base to sharp apex; parastylar lobe with 4 or more setae (Hippa 2006: fig. 8 B, C) . . . . . *M. clausa* Hippa [Oriental: Borneo, Peninsular Malaysia]
24. Laterotergite setose 25
- Laterotergite nonsetose 36
25. Aedeagus apically with long lateral lobes making ca. one third of the total length of aedeagus (Hippa & Papp 2007: figs. 4 A, B) . . . . . *M. bifida* Hippa & Papp [Oriental: Borneo, Thailand]
- Aedeagus apically simple 26
26. Aedeagus with a short broad basal part and a long rod-like median part which posteriorly is expanded into a broader apical part (Hippa 2006: fig. 3 B) . . . . . *M. spadix* Hippa [Oriental: Peninsular Malaysia]
- Aedeagus subtriangular in shape 27
27. Cerci medially separate, each cercus with a long mesial margin 27
- Cerci medially fused, posteriorly separated by a notch which is narrower than the width of the free apical part of each cercus 31
28. Gonostylus apically with megasetae (Hippa & Papp 2007: figs. 7 A, B) . . . . . *M. inusitata* Hippa & Papp [Oriental: Thailand)]
- Gonostylus without megasetae in any position 29
29. Gonostylus elongate oval, ca. 2.5 longer than broad, simple, with a fringe of ca. 15 long setae along the ventral mesial margin (Hippa 2006: fig. 5 B) . . . . . *M. ovata* Hippa [Oriental: Peninsular Malaysia, Thailand]
- Gonostylus nearly parallel-sided, at least 3 times longer than broad, with a narrow setose apicomesial lobe (Hippa 2006: fig. 5 E) or with a subapical mesiodorsal crest bearing a row of setae, the mesial margin with only a few long setae (Hippa & Papp 2007: fig. 1 A, B) 30
30. Gonostylus with a narrow setose apicomesial lobe, without a mesiodorsal subapical crest bearing a row of setae (Hippa 2006: fig. 5 E) . . . . . *M. angustata* Hippa [Oriental: Peninsular Malaysia)]
- Gonostylus with a subapical mesiodorsal oblique crest bearing a row of setae, without a subapical setose lobe (Hippa & Papp 2007: fig. 1 A, B) . . . . . *M. biunculata* Hippa [Oriental/Australasian: Papua New Guinea, Thailand]
31. Gonostylus deeply bilobed, each lobe with two megasetae, parastylar lobe large, extending far mesiad from the ventral mesial margin of gonocoxa (Hippa 2008: figs. 12 B, C) . . . . . *M. index* Hippa [Oriental: Peninsular Malaysia]
- Gonostylus unilobed or with a lobe-like appendix apically, without megasetae in any position, parastylar lobe small, partly concealed under the ventral mesial part of gonocoxa, often difficult to distinguish as a separate sclerite 32
32. The small rounded lobe on the dorsal mesial margin of gonocoxa with a long thick seta which conspicuously deviates from the other dorsal setosity of gonocoxa (Hippa 2006: figs. 4 B, D) 33
- The small rounded lobe on the dorsal mesial margin of gonocoxa without a long thick seta which conspicuously deviates from the other dorsal setosity of gonocoxa 34
33. Number of juxtagonostylar setae 1: a flat Y-shaped megaseta . . . . . *M. pollex* Hippa [Oriental: Peninsular Malaysia]
- Number of juxtagonostylar setae 2: a flat apparently branched megaseta the detailed character of which is unknown and a rather normal seta placed on its anterior side (Hippa 2006: fig. 4 B) . . . . . *M. yongi* Hippa [Oriental: Peninsular Malaysia]
34. The setae on the parastylar lobe very thick, much thicker than the adjacent setae on the ventral side of gonocoxa (Hippa & Papp 2007: fig. 2) . . . . . *M. roslii* Hippa [Oriental: Peninsular Malaysia, Thailand]
- The setae on the parastylar lobe thin, similar to the adjacent setae on the gonocoxa (Hippa & Papp 2007: figs. 9 A, B, 10 B, C) 35
35. Gonostylus twice longer than broad, apically attenuated and slightly bilobed (Hippa & Papp 2007: fig. 9 A, B) . . . . . *M. occulta* Hippa & Papp [Oriental: Thailand]
- Gonostylus ca. 2.5 times longer than broad, the apical half evenly broad with no indication of being bilobed (Hippa & Papp 2007: fig. 10 A, B) . . . . . *M. secreta* Hippa & Papp [Oriental: Thailand]
36. Anterior basalare setose, with at least 2 setae 37
- Anterior basalare nonsetose 55
37. Gonostylus geniculate, the apical mesiad bent part bilobate (Hippa 2008: figs. 18 B, C) . . . . . *M. perlobata* Hippa [Oriental: Burma, Thailand]
- Gonostylus straight, unilobate 38
38. Parastylar lobe lacking; cerci medially fused, posteromedially separated by a low notch the depth of which is less than the width of the free apical part of cercus (Hippa & Ševčík 2010: figs. 15 A, B) . . . . *M. pappi* Hippa [Oriental: Borneo, Thailand]
- Parastylar lobe present; cerci separate, with a long free mesial margin each 39
39. Gonostylus with blunt-ended megasetae on apical half 40
- Gonostylus without blunt-ended megasetae on apical half, if there are strong setae deviating from the other setosity they are attenuating to a long fine apex 42
40. Gonostylus broadening from base to apex, the apical width ca. twice the subbasal width (Papp 2004: figs. 23, 24, 25) . . . . . *M. meilingae* Papp [Oriental: Taiwan]
- Gonostylus apically as broad as or narrower than subbasally 41
41. The number of gonostylar megaseta ca. 4, placed as a claw-like group at the apex of gonostylus (Hippa 2009: figs. 3 B, C) . . . . . *M. chaelapex* Hippa [Oriental: Thailand)]
- The number of gonostylar megasetae ca. 30, placed in ventral, lateral and dorsal longitudinal rows (Hippa & Kjærandsen 2010: figs. 8, 9) . . . . . *M. tunoae* Hippa & Kjærandsen [Palaearctic: Japan]
42. Gonostylus with a longitudinal comb-like row of 5 closely placed strong setae subbasally at its ventral mesial margin (Hippa 2008: Fig. 10 c, Hippa & Kjærandsen 2010: figs. 2, 3) 43
- Gonostylus without a comb-like row of setae ventrally on its basal part 44

43. Hypoproct (sternite 10) with two very long setae anteromesially on each side, these setae several times longer than the other ventral setae (Hippa 2008: Fig. 10 C) . . . . . *M. cristata* Hippa [Oriental: Thailand]
- Hyporoct (sternite 10) anteromesially with all the ventral setae short and similar (Hippa & Kjærandsen 2010: figs. 2, 3) . . . . . *M. satoyamanis* Hippa & Kjærandsen [Palaearctic: Japan]
44. Aedeagus apically nearly as broad as basally, subquadrangular, with prominent rounded ear-like apicolateral lobes (Hippa 2008: figs. 5 B, C) . . . . . *M. auriculata* Hippa [Oriental: Thailand]
- Aedeagus apically much narrower than basally, subtriangular, without ear-like apicolateral lobes 45
45. Parastylar lobe in anterior-posterior direction long, at least 3 times longer than broad, with at most ca. 6 setae on the mesial margin 46
- Parastylar lobe in anterior-posterior direction short, at most twice longer than broad, in the cases the length is nearly twice the width the number of setae is ca. 15 and they are widely distributed on the mesial part of the lobe 48
46. Parastylar lobe anteriorly curved mesiad, its setae on that curved part (Fig. 2 C) . . . . . *M. falcata* sp. n. [Oriental: Thailand]
- Parastylar lobe without anterior curvature mesiad, its setae along the mesial margin 47
47. Parastylar lobe a narrow stripe, ca. 10 times longer than broad; apical part of aedeagus directed posteriad; gonostylus without needle-like pale setae dorsally (Hippa & Papp 2007: fig. 8 B). . . . . *M. mirifica* Hippa & Papp [Oriental: Thailand]
- Parastylar lobe broader, ca. 3 times longer than broad; apical part of aedeagus curved ventrad, gonostylus with needle-like pale setae dorsally (Hippa 2008: fig. 21 C) . . . . . *M. submirifica* Hippa [Oriental: Thailand]
48. Aedeagus apically asymmetrical, with the left side longer than the right side, the left side appearing as a knife-like appendix (Fig. 5 B) . . . . . *M. aconcinna* Hippa [Oriental: Thailand]
- Aedeagus apically symmetrical, simple 49
49 The setae mesiodorsally on gonostylus fine, not deviating from the other gonostylar setosity 50
- Some, usually 3–6, of the mesiodorsal setae on the apical half of gonostylus strong, often elongate flame-shaped, sharply deviating from the other gonostylar setosity 52
50. The dorsal mesial margin of gonocoxa without an apical lobe (Hippa & Kjærandsen 2010: fig. 5); wing unicolorous yellowish; wing length 2.0 mm. . . . . *M. indahae* Hippa & Kjærandsen [Palaearctic: Japan]
- The dorsal mesial margin of gonocoxa apically with a thumb-like lobe (Hippa 2008: fig. 7 B); wing bicolorous, the basal part yellowish, the apical part darker greyish or brownish (Hippa 2009: fig. 1 E) 51
51. Parastylar lobe semicircular (Hippa 2008: fig. 7 C) . . . . . *M. collina* Hippa [Oriental: Thailand]
- Parastylar lobe subtriangular (Fig. 4 A) . . . . . *M. subcollina* sp. n [Oriental: Thailand]
52. Aedeagus apically tri-lobed, appearing as three parallel lamellae, ventral side of aedeagus subapically with a pair of posteriorly directed lamellae crossing in the middle line (Hippa 2008: Figs. 4 b, c) . . . . . *M. chi* Hippa [Oriental: Thailand]
- Aedeagus apically one-lobed, at most with a small apicolateral tooth, without ventral subapical lamellae 53
53 The outline of gonostylus elongate subquadrangular, with three strong setae at apicomesial margin, two at the apex and one at the apical third (Hippa 2008: figs. 19 B, C) . . . . . *M. planilobata* Hippa [Oriental: Thailand]
- The outline of gonostylus elongate oval, with 4 or 5 strong setae at the apicomesial margin 54
54. The strong setae at the apicomesial margin of gonostylus equal in length, hypoproct posterodorsally with a transverse comb-like row of 4 strong setae on each side, the setae medioventrally on hypoproct (sternite 10) fine, similar to other ventral setae of hypoproct (Hippa 2009: figs. 9 B, C) . . . . . *M. seducta* Hippa [Oriental: Thailand]
- The strong setae at the apicomesial margin of gonostylus diminishing in length towards the apex of gonostylus, hypoproct posterodorsally with one stronger seta only, the setae medioventrally on hypoproct (sternite 10) strong, claw-like, conspicuously deviating from the other ventral setae of hypoproct (Hippa 2008: figs. 6 B, C) . . . . . *M. clavulosa* Hippa [Oriental: Thailand)]
55. One of the two juxtagonostylar setae greatly expanded, flattened, complicated in structure; sternite 9 very broad, ca. three fourths of the width of hypopygium, with ca. 100 setae; gonocoxa apicodorsally with a posteriod directed long narrow hyalinous nonsetose lobe (Hippa 2009: figs. 8 B, C, D) . . . . . *M. prisca* Hippa [Oriental: Thailand]
- The juxtagonostylar setae simple, if flattened, then elongate parallel-sided in shape (Hippa 2006: fig. 13 B, Hippa 2008: fig. 16 B); sternite 9 ca. half the width of hypopygium or narrower, with at most ca. 50 setae; gonocoxa apicodorsally without a long hyalinous nonsetose lobe 56
56. The dorsal apical margin of gonocoxa simple, without any kind of setose or nonsetose lobe (the basal body of juxtagonostylar setae/megasetae, which often in mounts is near the gonocoxal margin, should not be mixed with the lobe in question; the number of the juxtagonostylar setae is two, at least one being a megaseta, and they arise from a smaller or large lobe-like basal body which is free from the dorsal gonocoxal margin in a more ventral level), the placement of the lobe varies between apicolateral and apicomesial 57
- The dorsal apical margin of gonocoxa with a posteriod or obliquely posteromesiad directed lobe bearing from one to numerous setae, in some cases the lobe may be rather inconspicuous and partly concealed under the more mesial part of the apical margin (e.g. Hippa 2006: figs. 16 D, E, 17 C, D) 61
57. Hypoproct ventrally, on each side, without an isolated row or double row of setae flanking the apex of aedeagus, either the whole ventral side of hypopygium is widely setose or the setosity is restricted to the posterior part 58
- Hypoproct (sternite 10) ventrally, on each side, with an isolated row or double row of setae, flanking the apex of aedeagus 61
58. Gonostylus with a large striated plate-like lobe on the mesial side, the lobe being as broad as the rest of the gonostylus; the juxtagonostylar setae equally sized megasetae; aedeagus not constricted at base (Ševčík 2002: figs. 1, 2, 3) . . . . . *M. chinensis* Ševčík [Palaearctic: China]
- Gonostylus without a large striated mesial lobe; juxtagonostylar setae unequal in size, one a shorter simple seta, the other a longer slightly flattened megaseta; aedeagus constricted near the base 59

59. Parastylar lobe distinct, directed posteromesiad, with ca. 4 apical setae; the lobe on the mesial side of the dorsal mesial margin of gonocoxa with blunt megasetae (Hippa 2006: fig. 13 B) . . . . *M. globigera* Hippa [Oriental: Peninsular Malaysia, Thailand]
- Parastylar lobe not distinct from the ventral mesial margin of gonocoxa; the lobe on the mesial side of the dorsal mesial margin of gonocoxa with long acute setae 60
60. The setae at the posteroventral and posterolateral margin of gonocoxa numerous and long, the longest ones ca. three fourths of the length of gonocoxa (Hippa 2008: fig. 16 C) . . . . . .*M. parvistylata* Hippa [Oriental: Peninsular Malaysia]
- The setae at the posteroventral and posterolateral margin of gonocoxa few and short, the longest ones less than half of the length of gonocoxa (Hippa & Ševčík 2010: fig. 5 C) . . . . . .*M. capillata* Hippa & Ševčík [Oriental: Sumatra]
61. The apicodorsal lobe of gonocoxa inconspicuous, partly covered by more mesial parts of the apical margin 62
- The apicodorsal lobe of gonocoxa conspicuous, fully exposed or only the basalmost part covered by the gonocoxal margin 64
62. Gonostylus apically with a row of long flat megasetae/setae (Hippa 2006: fig. 15 B) . . . . . *M. horrida* Hippa [Oriental: Borneo, Peninsular Malaysia, Thailand)]
- Gonostylus without flat megasetae apically 63
63. The ventral mesial margin of gonostylus on its basal half with a fringe of ca 10 long setae (Hippa 2006: fig. 17 B) . . . . . .*M. plusiochaeta* Hippa [Oriental: Peninsular Malaysia, Thailand]
- The ventral mesial margin of gonostylus on its basal half with a fringe of ca. 5 long setae Hippa 2006: fig. 16 D) . . . . . *M oligochaeta* Hippa [Oriental: Peninsular Malaysia, Thailand]
64. The apicodorsal lobe of gonocoxa cylindrical or elongate conical, not flattened, and resembling the basal body of the juxtagonostylar setae, in *M. anceps* the lobe is two-branched, composed of a longer and a shorter conical part and their common base is broad and can be regarded as flat, even in this case the lobe gives an impression of the juxtagonostylar setae (Hippa & Ševčík 2010: fig. 3 B) 65
- The apicodorsal lobe of gonocoxa flattened, dissimilar to the basal body of the juxtagonostylar setae 70
65. The apicodorsal gonocoxal lobe divided into a shorter and a longer branch, each with a strong apical seta (Hippa & Ševčík 2010: fig. 3 B) . . . . . *M. anceps* Hippa & Ševčík [Oriental: Sumatra]
- The apicodorsal gonocoxal lobe simple, with 1–4 apical setae 66
66. The apicodorsal gonocoxal lobe slightly constricted in the middle, with 3–4 setae at the apex; gonostylus curved, very long, ca 4 times longer than broad (Hippa 2006: fig. 15 E) . . . . . .*M. duplex* Hippa [Oriental: Peninsular Malaysia]
- The apicodorsal gonocoxal lobe evenly broad or elongate conical, with 1 seta at apex; gonostylus straight, at most ca. twice longer than broad 67
67. Gonostylus with a very long flattened seta at its basomesial angle, greatly deviating from other gonostylar setae (Hippa 2006: fig. 16 A; Hippa 2009: figs. 13 C, D) . . . . . *M. perpusilla* Hippa [Oriental: Peninsular Malaysia, Sumatra, Thailand]
- Gonostylus basomesially without setae deviating from other gonostylar setosity 68
68. Gonostylus with a comb-like row of very long setae subapically at the mesial margin, the setae nearly as long as the length of gonostylus, at these setae on the dorsal side of gonostylus a patch of tightly placed setae; paraapodemal lobe inflated; hypoproct without a row of setae flanking the apical part of aedeagus (Hippa 2009: figs. 12 B, C) . . . . . *M. vesicaria* Hippa [Oriental: Thailand]
- Gonostylus without a comb-like row of very long setae subapically at the mesial margin, all the apical setae shorter than half the length of gonostylus, the dorsal side of gonostylus without a patch of tightly placed setae; paraapodemal lobe flat; hypoproct on each side with a row of setae flanking the apical part of aedeagus. 69
69. Gonostylus oval, at apical margin with ca. 10 black curved setae deviating from the other setosity (Hippa 2008: figs. 17 A, B) . . . . . *M. pellii* Hippa [Oriental: Thailand]
- Gonostylus attenuating on apical third, at apicomesial margin with one pale stout seta deviating from the other setosity (Hippa & Ševčík 2010: figs. 7 B, C). . . . . *M. hexacantha* Hippa & Ševčík [Oriental: Borneo]
70. Gonostylus long and narrow, over 4 times longer than broad at the middle; part of the setae at the mesial margin of the apicodorsal lobe of gonocoxa flat, blade-like (Hippa 2006: figs. 13 D, E) . . . . . *M. curvata* Hippa [Oriental: Peninsular Malaysia, Sumatra]
- Gonostylus at most 3 times longer than broad; all the setae on the apicodorsal lobe of gonocoxa normal, not flattened 71
71. The basomesial angle of gonostylus with two conspicuous very long curved setae which are thicker than the other ventral gonostylar setae and ca. twice longer than the width of gonostylus 72
- The basomesial part of gonostylus without conspicuous setae deviating from the general setosity, the length of the basomesial gonostylar setae at most equal with the width of gonostylus 73
72. The basomesial angle of gonostylus rounded; gonostylus with short curved black setae apicodorsally (Hippa 2006: fig. 12 D) . . . . . .*M. ferrata* Hippa [Oriental: Peninsular Malaysia, Borneo]
- The basomesial angle of gonostylus lobe-like produced; gonostylus without black curved setae apicodorsally (Hippa 2009: figs. 10 B, C) . . . . . *M. subferrata* Hippa [Oriental: Thailand]
73. The setae on the ventral part of hypoproct widely distributed, not concentrated on a single straight mesial row 74
- The setae on the ventral part of hypoproct concentrated on a single straight mesial row on each half, the two rows in normal position flanking the apical part of the aedeagus, in mounts often moved posteriod 80
74. Gonostylus divided into a broad basal half and a narrow apical half, the former double as broad as the latter; paraapodemal lobe very large, inflated (Hippa 2008: figs. 13 B, C) 75
- Gonostylus not divided into a broad basal and a narrow apical part; paraapodemal lobe small, flat 76
75. The narrow apical part of gonostylus as long as the broad basal part (Hippa 2008: figs. 13 B, C) . . . . . *M. inflata* Hippa [Oriental: Thailand]
- The narrow apical part of gonostylus shorter than the broad basal part (Papp 2004: figs. 15, 16) . . . . . .

. . . . . *M. bilobata* Papp [Oriental: Taiwan]

76. The two juxtagonostylar setae greatly unlike, one a short normal seta, the other a double as long megaseta; gonostylus ca 1.5 longer than broad, apically indistinctly bilobed (Hippa & Ševčík 2010: figs. 2 B, C) . . . . . *M. acehensis* Hippa & Ševčík [Oriental: Sumatra]

- The two juxtagonostylar setae similar, megaseta-like; gonostylus at least twice longer than broad, apically entire 77

77. Gonostylus with the setae on the mesial side normal, shorter than the length of gonostylus; the number of ventral setae on the hypoproct ca. 30 (Hippa 2006: fig. 12 B) . . . . . *M. fera* Hippa [Oriental: Peninsular Malaysia, Thailand)]

- Gonostylus with a longitudinal row of extremely long setae on the mesial side; the number of ventral setae on the hypoproct ca 15. 80

79. The long gonostylar setae situated at the dorsal mesial margin, the number of the setae 4 (Hippa 2009: fig. 11 B) . . . . . *M. tetrachaeta* Hippa [Oriental: Thailand)]

- The long gonostylar setae situated at the ventral mesial margin, the number of the setae ca. 8 (Hippa 2008 figs. 9 B, C) . . . . . *M. crinita* Hippa [Oriental: Peninsular Malaysia)]

80. Cercus unusual, angulate, the apical part turned laterad (Hippa 2006: fig. 14 C) . . . . . *M. cerciflex* Hippa [Oriental: Peninsular Malaysia]

- Cercus usual, straight 81

81. Basomesial angle of gonostylus produced as a large pointed lobe (Hippa & Ševčík 2010: figs. 9 B, C) . . . . . *M. perangulata* Hippa & Ševčík [Oriental: Borneo, Thailand]

- Basomesial part of gonostylus at most weakly roundly produced 82

82. Sternite 9 narrow, more than twice longer than broad; gonostylus apicomesially with a thin plate-like lobe with a row of ca. 10 small setae at apex and subapically on the dorsal side with an L-shaped lobe (Hippa and Ševčík 2010: figs. 4 A, B) . . . . . *M. bruneiensis* Hippa & Ševčík [Oriental: Borneo]

- Sternite 9 broad, about as long as broad; apical part of gonostylus simple, at most with an apicomesial angle which is produced as a small lobe 83

83. Gonostylus with a small lobe at the mesial margin on its basal half, apart from the more or less pronounced basomesial angle, the lobe may be on the margin itself or just on the dorsal side so that in the ventral view it is not always freely exposed . . . 84

- Gonostylus without a lobe at mesial margin on its basal half 86

84. Gonostylus with a second lobe at the mesial margin just apical from the middle (Edwards 1928: fig. 2 a) . . . . . *M. orientalis* Senior-White [Oriental: Sri Lanka]

- Gonostylus without mesial lobe on its apical half, if there are two mesial lobes, the second one is formed by the slightly produced basomesial angle 85

85. Gonostylus ca. 3 times longer than broad, its apical setae very long, longer than twice the width of gonostylus (Hippa 2008: fig. 15 B) . . . . . *M. oblonga* Hippa [Oriental: Thailand]

- Gonostylus ca. 1.5 longer than broad, its apical setae as long as the width of gonostylus (Hippa 2007: figs. 15 B, C) . . . . . *M. gemella* Hippa [Australasian: Moluccas]

86. Gonostylus apically rounded, without apicolateral and apicomesial angle 87

- Gonostylus apically transverse, with an apicolateral and apicomesial angle, the latter more or less distinctly lobe-like produced 91

87. The setae on the ventral rows of hypoproct (sternite 10) very long, the longest ones twice longer than the width of gonostylus (Hippa & Ševčík 2010: fig. 6 C) . . . . . *M. dolichothrix* Hippa & Ševčík [Oriental: Borneo]

- The setae on the ventral rows of hypoproct (sternite 10) short, shorter than the width of gonostylus 88

88. The apical setae of gonostylus flat, in mounts usually characteristically looped, the apicodorsal lobe of gonocoxa with 3–4 setae, the apex of the lobe nonsetose. 89

- The apical setae of gonostylus unmodified, the apicodorsal lobe of gonocoxa with ca 10 setae, the apex of the lobe setose . 90

89. The juxtagonostylar megasetae geniculate; the parastylar lobe with one seta arising from a small sub-lobe at its anterior end (Hippa 2008: fig. 3 A, C) . . . . . *M. ancylochaeta* Hippa [Oriental: Peninsular Malaysia, Thailand]

- The juxtagonostylar megasetae gently curved; parastylar lobe with two setae arising from a small sub-lobe at its anterior end (Hippa 2008: Figs. 4 a, b; Hippa 2009: figs. 5 B, C and 6 A, B) . . . . . *M. epigrata* Hippa [Oriental: Thailand]

90. The dorsal side of gonostylus at its apical third with a transverse crest bearing a double row of setae, the longer of the rows with ca. 10 setae, the mesial margin of the gonostylus at the crest often pushed lobe-like mesiad; the dorsal apicomesial angle of gonocoxa acute or rectangular, with inconspicuous setae at its posterior margin (Hippa 2006: figs. 11 E, F) . . . . . *M. acutangula* Hippa [Oriental: Peninsular Malaysia, Thailand]

- The dorsal side of gonostylus at it apical third without a transverse seta-bearing crest but with two obscure transverse rows of ca. 4 setae each; the dorsal mesial margin of gonocoxa apically produced as a low angular lobe with a conspicuous comb-like row of 5–7 setae along its mesial margin (Hippa 2006: figs. 11 B, C) . . . . . *M. pectinata* Hippa [Oriental: Borneo, Peninsular Malaysia, Sulawesi, Thailand]

91. The apical part of aedeagus straight 92

- The apical part of aedeagus curved ventrad 93

92. The narrow apical part of aedeagus ca. twice longer than the broad basal part, with wing-like lateral lobes; the dorsal mesial margin of gonocoxa forming posteriorly a narrow finger-like lobe with unmodified fine seta (Hippa & Ševčík 2010: fig. 12 B, C). . . . . *M. stricta* Hippa & Ševčík [Oriental: Sumatra]

- The narrow apical part of aedeagus as long as the broad basal part, without lateral wing-like lobes; the dorsal mesial margin of gonocoxa posteriorly forming a large, broad rounded lobe with thick short setae (Hippa & Ševčík 2010: figs. 8 B, C) . . . . . .

. . . . . .*M. hyboloma* Hippa & Ševčík [Oriental: Borneo]

93. The apicomesial angle of gonostylus lobe-like produced (Hippa 2006: fig. 10 B) . . . . . *M. calcarata* Hippa [Oriental: Peninsular Malaysia, Thailand]

- The apicomesial angle of gonostylus not lobe-like produced 94

94. The setae dorsally at the apico mesial angle of gonostylus in two short transverse rows (Hippa 2006: fig. 10 C) . . . . . .*M. transversa* Hippa [Oriental: Peninsular Malaysia, Thailand]

- The setae dorsally at the apicomesial angle of gonostylus in longitudinal rows or in an unarranged patch at the gonostylar margin (Hippa 2006: fig. 10 A). . . . . *M. procera* Hippa [Oriental: Borneo, Peninsular Malaysia, Thailand]

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References

Edwards, F.W. (1928) Nematocera. *In*: British Museum (Natural History), *Insects of Samoa and other Samoan Terrestrial Arthropoda*, Part VI, Diptera, 23–108.

Hippa, H. (2006) Diversity of *Manota* Williston (Diptera: Mycetophilidae) in a Malaysian rainforest: description of twenty-seven new sympatric species. *Zootaxa*, 1161, 1–49.

Hippa, H. (2007) The genus *Manota* Williston (Diptera: Mycetophilidae) in Melanesia and Oceania. *Zootaxa*, 1502, 1–44.

Hippa, H. (2008) New species and new records of *Manota* Williston (Diptera, Mycetophilidae) from the Oriental region. *Zootaxa*, 1723, 1–41.

Hippa, H. (2009) New species and new records of *Manota* Williston (Diptera, Mycetophilidae) from Thailand. *Zootaxa*, 2017, 1–33.

Hippa, H. & Kjærandsen, J. (2010) Fungus gnats of the genus *Manota* Williston (Diptera, Mycetophilidae) in Japan. *Entomological Science*, 13, 226–233.

Hippa, H. & Papp, L. (2007) The genus *Manota* Williston (Diptera: Mycetophilidae) in Thailand, with the description of seven new species. *Zootaxa*, 1528, 41–60.

Hippa, H. & Ševčík, J. (2010) Notes on Oriental and Australasian Manotinae (Diptera, Mycetophilidae), with the description of thirteen new species. *Zootaxa*, 2333, 1–25.

Jaschhof, M. & Jaschhof, C. (2010) The genus *Manota* Williston (Diptera: Mycetophilidae) in New Zealand. *Zootaxa*, 2387, 28–38.

Papp, L. (2004) Seven new species of Manotinae (Diptera: Mycetophilidae) from Asia and Papua New Guinea. *Acta Zoologica Academiae Scientiarum Hungaricae*, 50(3), 227–244.

Papp, L., Merz, B. & Földvári, M. (2006) Diptera of Thailand. A summary of the families and genera with references to the species representations. *Acta Zoologica Academiae Scientiarum Hungaricae*, 52(2), 97–269.

Senior-White, R.A. (1922) New Ceylon Diptera (Part II.). *Spolia Zeylanica*, 12, 195–206.

Ševčík, J. (2002) *Manota chinensis* **sp. n.**, a second Palaearctic species of Manotinae (Diptera: Mycetophilidae). *International Journal of Dipterological Research*, 13(1), 23–26.

Søli, G.E.E., Vockeroth, J.R. & Matile, L. (2000) Families of Sciaroidea. *In*: Papp, L. & Darvas, B. (Eds.), *Contributions to a Manual of Palaeartic Diptera*. Science Herald, Budapest, pp. 49–92.