

ANNOTATED CHECKLIST OF THE DOLICHOPODIDAE (DIPTERA) OF SINGAPORE, WITH DESCRIPTIONS OF A NEW GENUS AND NEW SPECIES

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ABSTRACT. – Forty-four species of Dolichopodidae are listed from the island of Singapore, with 28 of these constituting new records for the country. One new genus: *Ngirhaphium*; and five new species: *Thinophilus murphyi*, *Thinophilus asiobates*, *Thinophilus longicilia*, *Ngirhaphium murphyi*, and *Scotiomyia singaporensis*, are described and illustrated.

KEY WORDS. – Singapore, Dolichopodidae, new genus, new species, taxonomy.

INTRODUCTION

The Dolichopodidae of Singapore have never been dealt with in any comprehensive fashion. Regional catalogs have included species occurring in Singapore (Dyte, 1975), and major taxonomic revisions have recorded species from this area (Becker, 1922) but, until now, no one paper has dealt specifically with a list of the taxa of long-legged flies from this region.

Singapore is an island republic, with a population of about 4 million people. It is positioned at the tip of the Malayan Peninsula and thus is reflective of Indonesian as well as mainland SE Asian faunal influences. The area is densely populated and only the centre of the island remains a quite natural area: especially Bukit Timah Nature Reserve, an elevated water-catchment area covered with a swamp forest (rain forest). The other semi-natural areas are the mangroves, scattered mainly on the northern coast (along the Johore Strait facing Malaysia) and on the numerous small, off-shore islands surrounding Singapore.

Our investigation of material during this study brings the total number of known species of Dolichopodidae in Singapore to 44, with 28 of these new records for the country. As more concentrated collecting for dolichopodids is conducted, we expect this number to increase.

MATERIALS AND METHODS

For the present paper, we primarily studied the collection

conserved at the Zoological Reference Collection of the Raffles Museum of Biodiversity Research at the National University of Singapore. In addition, new material was collected mainly in the mangroves.

Abbreviations for collections investigated in this study or where material is deposited: BPBM = Bishop Museum, Honolulu, Hawai'i, USA; KBIN = Royal Belgian Institute of Natural Sciences, Brussels, Belgium; ZRC = Raffles Museum of Biodiversity Research, Zoological Reference Collection, National University of Singapore, Singapore.

TAXONOMY

SUBFAMILY SCIAPODINAE

Remarks. – There are 161 unidentified specimens of Sciapodinae present in ZRC. The following are those species that have been recorded in the literature as occurring in Singapore or those that we have identified from representative material in the ZRC collection.

Amblysilopus Bigot, 1859

Remarks. – Dyte (1975) did not record any species of this genus in the Oriental catalog because he considered it a junior synonym of *Sciapus* Zeller. Since then, Bickel (1994) has revised the Australian Sciapodinae and concurrently clarified the generic limits of this and other sciapodine genera in the Indo-Pacific area. Only the single species below has been

published as occurring in Singapore. As they become identified, most probably more species will be added to the list for this genus as it occurs in Singapore.

Amblypsilopus abruptus (Walker, 1859)

Remarks. – Recorded in Dyte (1975) and Bickel (1994) as occurring in Singapore. No specimens were identified during this study. It was originally described from Sulawesi and occurs from Assam, India eastward through the Malesian Archipelago to the Bismarck Archipelago northeast of New Guinea.

Chrysosoma Guérin, 1831

Remarks. – Dyte (1975) recorded 158 species of *Chrysosoma* as occurring in the Oriental Region. Bickel's (1994) conspectus of Australian Sciapodinae clarified the generic limits of this and other sciapodine genera in the Indo-Pacific area.

Chrysosoma bearni Parent, 1935

Remarks. – Recorded in Dyte (1975) and Bickel (1994) as occurring in Singapore. No specimens were seen during this study. It was originally described from Sabah, Borneo and occurs also in Thailand, Java, Sumatra, and Singapore.

Chrysosoma fissum Becker, 1922

Remarks. – Recorded in Dyte (1975) and Bickel (1994) as occurring in Singapore. No specimens were identified during this study. It was originally described from a series of syntypes from Singapore and peninsular Malaysia.

Chrysosoma proliciens (Walker, 1856)

Remarks. – Dyte (1975) recorded the species *Chrysosoma divisum* Becker as occurring in Singapore. It was sunk as a junior synonym of *C. proliciens* by Bickel & Dyte (1989). No specimens identified during this study. It was originally described from Sarawak, Borneo. It occurs from India to Australia, Borneo, and Papua New Guinea.

Chrysosoma vittatum (Wiedemann, 1819),
new record

Material examined. – SINGAPORE: 1 male, 1915-2, no further data (ZRC); 1 male, Linden Drive, old secondary forest low foliage, coll. D. H. Murphy, 21 Oct. 1974 (ZRC); 1 female, Linden Drive, coll. D. H. Murphy, 9 Feb. 1975 (ZRC).

Remarks. – This species was recorded by Bickel (1994) from Sri Lanka, India, Indochina, Java, Sumatra, Sulawesi,

Vietnam, and the Philippines. The above material marks the first record of this species from Singapore.

Plagiozopelma Enderlein, 1912

Remarks. – *Plagiozopelma* was considered a junior synonym of *Chrysosoma* in Dyte (1975), hence there are no species listed under this genus in that catalog. Bickel's (1994) conspectus of Indo-Pacific Sciapodinae lists 63 species of this genus from the Australian and Oriental Regions. The two species below are the only ones previously published as occurring in Singapore.

Plagiozopelma alutiferum Parent, 1934

Remarks. – Recorded in Dyte (1975; as *Chrysosoma alutiferum*) as occurring in Singapore (type locality). Bickel (1994) recorded it from Singapore and peninsular Malaysia. No specimens were seen during this study.

Plagiozopelma lichwardti (Enderlein), 1912

Remarks. – Recorded in Bickel (1994) as occurring in Singapore. No specimens were identified during this study. It was described from Sumatra and also occurs in Borneo and peninsular Malaysia.

Condylostylus Bigot

Remarks. – Dyte (1975) listed 30 species as occurring in the Oriental Region. Bickel (1994) clarified the generic limits and revised the number of species occurring in the Oriental region to 21 species. The following is the only species of the genus previously recorded as occurring in Singapore.

Condylostylus tenebrosus (Walker, 1857)

Remarks. – Recorded in Dyte (1975) and Bickel (1994) as occurring in Singapore. No specimens were identified during this study. It was originally described from a series of syntypes from Singapore and peninsular Malaysia and is also known from Taiwan, Borneo, Java, and Sumatra.

SUBFAMILY NEUROGONINAE

Tenuopus Curran, 1924

Tenuopus sp.

Remarks. – Dyte (1975) mentioned a specimen collected by D. H. Murphy in Singapore that fits the description of this genus. We have not seen further specimens in subsequent collecting in Singapore to further corroborate the record.

SUBFAMILY HYDROPHORINAE

Cymatopus Kertész, 1901

Cymatopus malayensis Parent, 1935, new record

Material examined. – SINGAPORE: 8 males, 19 females, Labrador Park, cliffs on beach, coll. P. Grootaert, N. Evenhuis, 7 Oct.2000 (ZRC, KBIN); 2 males, Pulau Hantu, sandy beach near jetty, coll. N. Evenhuis, 14 Oct.2000 (BPBM); 3 males, 1 female, Lazarus Island, rocky area along north shore, coll. N. Evenhuis, 14 Oct.2000 (BPBM).

Remarks. – This species is widespread throughout the Malayan peninsula along usually rocky coasts and appears also on the islands of Borneo and Pulau Tioman. Although the species would be expected to occur in Singapore, it had not been reported in the literature from there previous to this study.

Thinolestris Grootaert & Meuffels, 1988

Thinolestris sp., new record

Material examined. – SINGAPORE: 16 males, 4 females, Labrador Park, rocky beach with sand patches, coll. P. Grootaert, N. Evenhuis, 7 Oct.2000 (KBIN); 1 male, 2 females, Labrador beach, intertidal rocks, coll. D. H. Murphy, Feb.1961 (in coll. C. E. Dyte). MALAYSIA: 5 males, 6 females, Sedili kecil, sandy and rocky beach, coll. P. Grootaert, 11 Oct.2000 (KBIN).

Remarks. – This species has the basal antennal segments yellowish, the third segment brown. It resembles *Th. obscura* Grootaert & Meuffels, 1988 from Molosso I. (North-Sulawesi) but the latter has the terga and sterna with short pale to whitish hairs. The Singapore species has black hairs and bristles on the abdomen. It is probably conspecific with an undescribed species from the coast of Brunei (Grootaert, in litt.).

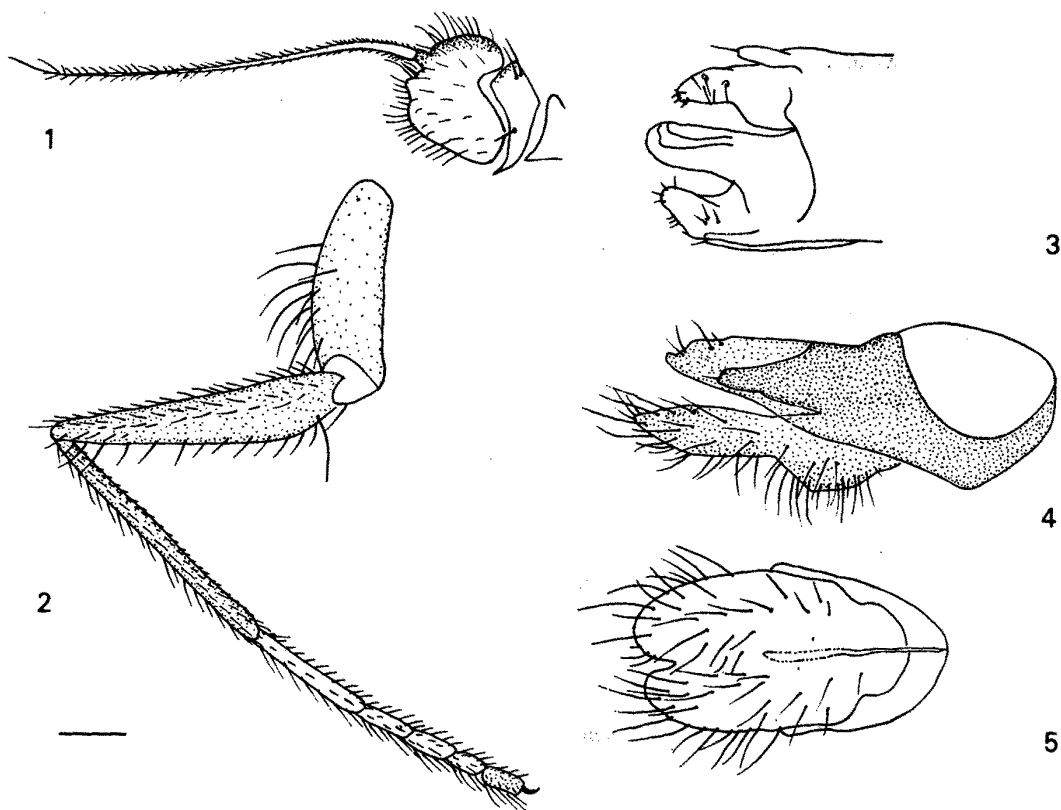
Thinophilus Wahlberg, 1844

Remarks. – *Thinophilus* is an extremely common genus in this region, being found along coastlines in various habitats including mudflats, mangroves, rocky shores, and sandy beaches. The genus is especially speciose in the Indo-Pacific region (e.g. see Grootaert & Meuffels, 2001, for species occurring in Thailand). Dyte (1975) recorded 24 species from the Oriental Region and easily that same number of new species await description. A revision of the entire genus from this area is urgently needed to clarify species limits and distributional ranges.

Thinophilus asiobates, new species

(Figs. 1-5)

Material examined. – Holotype – male, SINGAPORE: Mandai mangrove, coll. P. Grootaert, N. Evenhuis, 9 Oct.2000, sample n° 20036 (ZRC).



Figs. 1-5. *Thinophilus asiobates*, new species. Male paratype: 1. Antenna; 2. Fore leg; 3. Surstyli; 4. Hypopygium; 5. Cerci dorsally. Bar 0.1 mm.

Paratypes – SINGAPORE: 19 males, 16 females: same data as holotype (KBIN); 5 males, 3 females, Labrador beach, sandy beach, base of cliffs, coll. P. Grootaert, N. Evenhuis, 7 Oct.2000, sample n° 20034 (KBIN). Holotype in ZRC. Paratypes in KBIN and BPBM.

Etymology. – The name of this species derives from the Greek *asis*, mud, slime, + *bates*, one that walks; referring to its habit of walking along mud-flats.

Diagnosis. – A medium-sized species with yellow palpi; antennae yellow; arista subapical. Fore coxa yellow, posterior four coxae black. Legs yellow, tarsomeres 1-4 of fore leg contrastingly paler. 6 almost equally long dc; mesonotum greyish brown dusted without dull black spots. Propleural bristles pale. Wings unspotted. Fore femur ventrally at base with a long fine hair-like bristle, no other ventral bristles. Cerci brown, with dark hairs.

Description. – *Male*: Body length: 2.9-3.25 mm; wing length: 3-3.18 mm.

Head. Frons and face with shining dark metallic green ground-colour. Face wide; widest near antennae, narrowest in middle, but still wider than width of 3rd antennal segment. Clypeus half as long as epistoma, only slightly broader than long, hardly protruding. Palpi yellow, bearing few black bristly hairs. Rostrum dark brown. Postcranium brownish metallic green. 2 long diverging ocellars; 2 shorter converging verticals, pointing forward; 2 very small postocellars; 2 postverticals, much stronger and slightly longer than, and not in row with upper postoculars. Upper postoculars uniseriate, black; lower postoculars uniseriate, white hairs. **Antenna.** Basal segments yellow. Third segment yellow, rounded (Fig. 1). Arista subapical, 2.5 times as long as antenna, black, very shortly pubescent; basal arisal segment very short, black.

Thorax and scutellum shining dark metallic green, with a brownish grey dusting; No acr; 6 dc, almost equally long; foremost shortest, following gradually growing longer, prescutellar longest. Scutellum with 2 marginals, without lateral hairs. 1 upper and 2 lower, pale propleural bristles. **Legs.** Fore coxa yellow, covered with a white dusting; hind and mid coxae dark brown, greyish dusted and yellow anteriorly at their tips. Legs yellow, tarsomeres 1-4 (variable 1-2, 1-3) of fore leg contrastingly paler. Hind tarsi sometimes somewhat brownish.

Fore leg (Fig. 2). Coxa anteriorly on with a row of 4-5 rather long black hair-like bristles and some bristles interiorly; at tip with a crown of long, bent bristles. Femur ventrally near base with 1 single long, black hair-like bristle, about as long as greatest depth of femur; other ventral bristles minute; near tip 2-3 pv. Tibia nearly as long as femur, with 2 pd and 2 ad. First tarsal segment ventrally shortly spinulose. Length of tibia and tarsal segments (in mm): 1 : 0.38 : 0.17 : 0.15 : 0.12 : 0.12.

Mid leg. Coxa with a single, long, black exterior bristle, some interior bristles and a crown of black bristles at its tip. Femur ventrally at base also with a long black bristle; following bristles minute; also a few longer pv near tip. Tibia about as long as femur; 1 v, 2 ad, 2 pd and a crown of apicals. Length

of tibia and tarsal segments (in mm): 1.13 : 0.6 : 0.25 : 0.2 : 0.12 : 0.15.

Hind leg. Coxa with a long, black exterior bristle. Femur ventrally with short bristles; a strong preapical av and a slightly stronger preapical pv, both very short. Tibia slightly shorter than femur; 3 ad, 3 pd, two weak ventrals and a crown of preapicals. Length of tibia and tarsal segments (in mm): 1.45 : 0.33 : 0.3 : 0.25 : 0.15 : 0.15.

Wing feebly brownish tinged, unspotted. Veins brownish yellow or yellow. Apical part of M1+2 slightly bent running parallel with tip of R4+5. Tp straight, nearly as long as apical part of M3+4 1.5 times as long as Tp. Anal vein represented by a fold. Halteres pale yellow. Squamae yellow, with long whitish cilia.

Abdomen shining dark metallic green with coppery reflections; terga with very narrow dull black anterior borders. Hairs and bristles on terga short, black; hind marginals at sides longer. Hypopygium (Figs. 3-5) dark brown; cerci broad, brown, covered with short brown hairs (Fig. 5).

Female: Body length: 3.5 mm; wing length: 3.4-3.5 mm. As the male. Face much wider than in male; about as wide as depth of third antennal segment. Clypeus shorter than half the length of the epistoma. Legs bristled as in the male, but fore and mid femora without the long ventral bristle at base. Fore tarsi not pale.

Remarks. – *Thinophilus asiobates*, new species, differs from *Th. phollae* Hollis (1964) in having 6 dc (almost equally long) instead of 5 (3 short and 2 long dc). However, it fits also quite well with the description of *Th. valentulus* Parent. The latter is a species described on the basis of a single female found in N. Borneo (Kudat, Sabah) so we can not check the characteristic male characters being the pale colour of the fore tarsi as well as the presence of a basal bristle on the fore and mid femora (also absent in *T. phollae*). Parent (l.c.) mentions yellowish “favoris” while they are clearly white in the new species. Collection of fresh material at the type locality might help in separating both species.

Thinophilus longicilia, new species

(Figs. 6-11)

Material examined. – Holotype - male, SINGAPORE: Lim Chu Kang mangrove, beach at low tide, coll. N. Evenhuis, P. Grootaert, 13 Oct.2000 (ZRC).

Paratypes – SINGAPORE: 1 male, 1 female, same data as holotype; 1 female, Mandai mangrove, coll. P. Grootaert, N. Evenhuis, 9 Oct.2000; 1 male, Sungei Buloh mangrove, coll. P. Grootaert, N. Evenhuis, 6 Oct.2000. Holotype in ZRC. Paratypes in ZRC, KBIN, and BPBM.

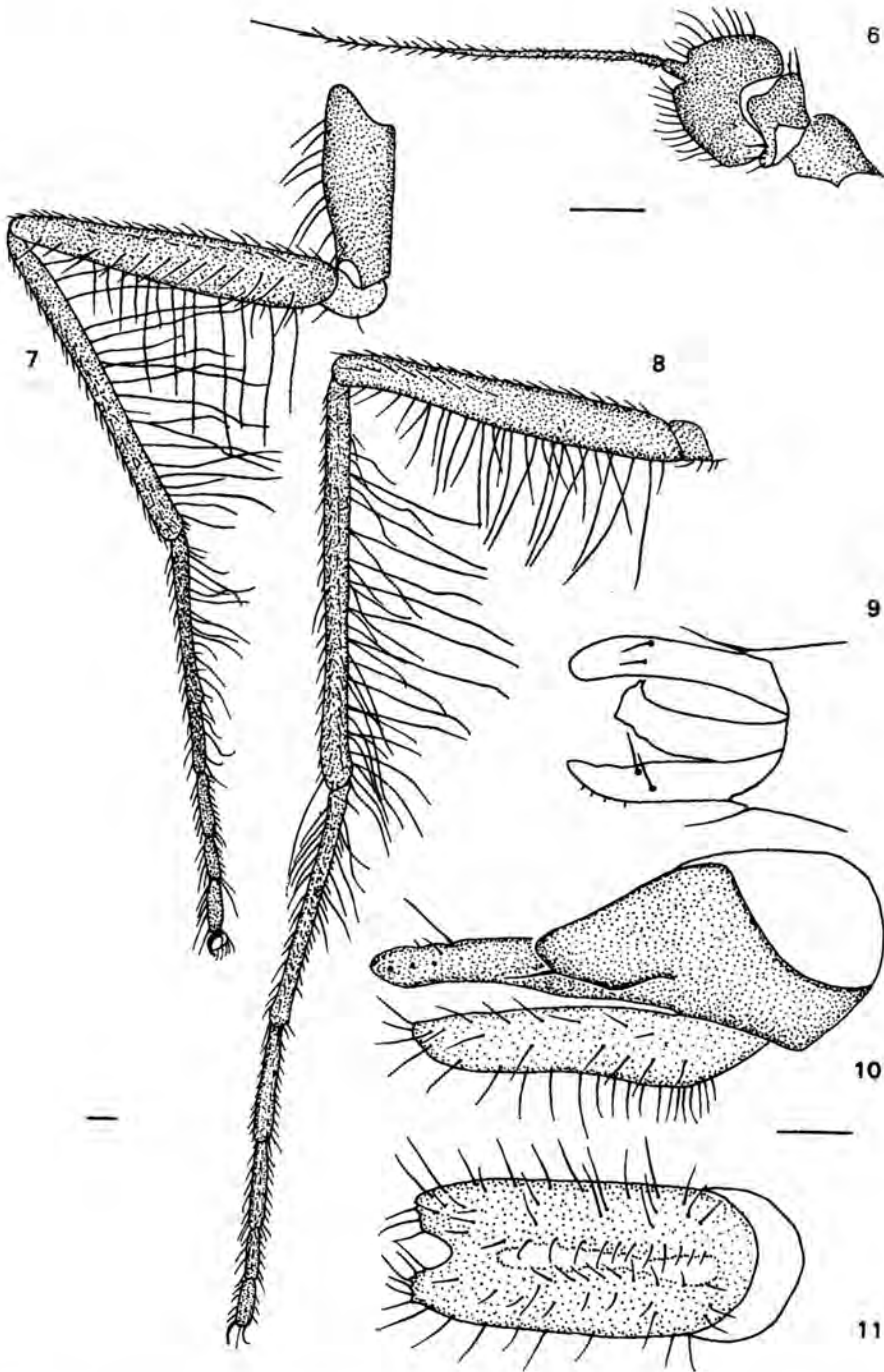
Diagnosis. – Medium-sized species with black palpi, almost entirely dark antennae and all coxae black. Fore and mid legs with very long hairs on femora, tibiae and first tarsal segments. 5 dc. Cerci black.

Description. – *Male*: Body length: 3.3-3.6 mm.; wing length: 2.75-3 mm.

Head. Frons and face with shining dark metallic green ground-colour. Face with white dusting, at its narrowest point less wide than depth of third antennal segment, and narrower than ocellar callus. Clypeus about half as long as epistoma, broader than long, feebly protruding. Palpi large, blackish, with white dusting, with a few very short, black hairs. Rostrum large, blackish, partly white dusted. Postcranium shining dark metallic green. 2 diverging ocellars; 2 very short verticals; 2 tiny postocellars; postverticals broken off. Upper postoculars uniseriate, black; lower postoculars hairlike, uniseriate, whitish from some points of view. **Antenna** short,

dark brown. Second segment short, encompassing third segment on upper half, bearing very short marginal bristles. Third segment short, rounded (heart-shaped), shortly pubescent (Fig. 6). Arista apical, about 2.5 times as long as antenna, very shortly pubescent; basal arista segment very short.

Thorax and scutellum with shining dark metallic green ground colour, with purple reflections; on mesoscutum 2 narrow purplish stripes between the rows of dc, bordering a broader, shining green median stripe, without purplish reflections. No acr. 5 dc, the hindmost of which is a little



Figs. 6-11. *Thinophilus longicilia*, new species. Male paratype. 6. Antenna; 7. Fore leg; 8. Mid leg; 9. Surstyli; 10. Hypopygium; 11. Cerci dorsally. Bar 0.1 mm.

longer and stronger than the other ones; in front of the anterior dc a very small bristlet. Scutellum with 2 marginal bristles, without lateral hairs. 1 fine, black upper and 3 whitish lower propleural bristles. Bristles on propleural collar also pale.

Legs black. All coxae brownish black. Fore trochanters yellow, but mid and hind trochanters exteriorly darkened; tip of femora and bases of tibiae brownish darkened; all tarsi blackish darkened except for the contrastingly pale yellowish first tarsal segments of all legs.

Fore leg (Fig. 7). Coxa anteriorly with few weak bristly hairs at base, and one or two longer bristles beyond middle; at apical rim 3-4 weak bristles. Femur ventrally with two rows of very long, straight, thin bristly hairs becoming shorter towards tip, the longest of which (on basal half of femur) are at least twice as long as greatest depth of femur. Tibia about as long as femur, bearing ventrally rows of very long, straight, thin hairs, their tips a little curled; the longest hairs are as long as the hairs on femur; no dorsal bristles. Tarsus ventrally with rows of thin hairs, longest near base of first segment, and gradually growing shorter on following segments; segments 4 and 5 slightly broadened. Length of tibia and tarsal segments (in mm): 1.13 : 0.5 : 0.25 : 1.9 : 0.13 : 0.15.

Mid leg (Fig. 8). Coxa with a black exterior bristle and some short anterior bristles. Femur ventrally with rows of long, bristle-like hairs, comparable to those on fore femur; posterodorsally on apical half a row of hairs. Tibia slightly longer than femur, ventrally with two rows of very long hairs, as on fore tibia. First tarsal segment ventrally with two rows of long, thin, straight hairs, that do not continue on following segments. Length of tibia and tarsal segments (in mm): 1.38 : 0.75 : 0.38 : 0.3 : 0.13 : 0.15.

Hind leg. Coxa with a black exterior bristle. Femur with 1 av at apical fourth, and 1 or 2 short, very thin ventral hairs near base (as long as femur is wide). Tibia longer than femur, with two short dorsal bristles, and a few short, weak apicals. Length of tibia and tarsal segments (in mm): 1.38 : 0.5 : 0.5 : 0.35 : 0.2 : 0.18.

Wing hyaline, tinged brownish, without dark shades. Veins dark brown. Apical part of M1+2 feebly bent upwards, running from there parallel to R4+5. Tp straight, a little shorter than apical part of M3+4. Anal vein only represented by a fold. Halteres pale yellow. Squamae yellowish, with white cilia.

Abdomen shining dark metallic green, with coppery reflections; no dull black bands. Hairs on terga black, short; hind-marginal bristles black, short, but longer on sides of first tergum. Fourth sternum with black bristles on protruding apical part. Hypopygium (Figs. 14-16) with broad dark cerci and black surstyli. Aedeagus long, coiled. Cerci fused (Fig. 16).

Female: Body length: 3.5 mm.; wing length: 3.25 mm. In most respects identical to male. Face a little broader than in male. Fore and mid leg with only very short bristles.

Remarks. – This species resembles *Th. cometes* Grootaert & Meuffels from Thailand in having the long hairs on the fore and mid leg. However, *Th. cometes* has completely yellow legs and the mid tibia has only short hairs and bristles.

The palpi are yellow and the antennae are also mainly yellow with dark upper border.

Thinophilus murphyi, new species

(Figs. 12-16)

Material examined. – Holotype – male, SINGAPORE, Mandai mangrove, coll. P. Grootaert, N. Evenhuis, 9 Oct.2000, sample n° 20036 (ZRC).

Paratypes – SINGAPORE: 1 male, same data as holotype (KBIN); 1 male, 1 female, Mandai jetty, mudflats, coll. P. Grootaert, N. Evenhuis, 9 Oct.2000 (BPBM). MALAYSIA: 7 males, 15 females, Kota Tinggi: Sedili kecil, low tide, coll. P. Grootaert, N. Evenhuis, 11 Oct.2000, sample n° 20046 (KBIN, BPBM). Holotype and some paratypes in ZRC. Other paratypes in KBIN and BPBM.

Etymology. – The present species is dedicated to Prof. Dr. D. H. Murphy, enthusiastic investigator of mangroves in Singapore, who brought us to various interesting sites in Singapore.

Diagnosis. – Medium-sized species with yellow palpi, antennae ventrally yellowish, and all coxae black. Fore coxae in male with a protruding hump covered with black bristles. 6 long dc. Mesonotum metallic green without black spots. Wing membrane unspotted. Cerci yellow.

Description. – *Male*: Body length: 5.75 mm.; wing length: 5.5 mm.

Head. Frons and face with shining dark metallic green ground-colour. Face with thin white dusting, narrowest point at the antennae and gradually widening below. Clypeus about a third length of epistoma, broader than long, protruding. Palpi large, largely yellow but with a brownish base, covered with long, black hairs. Rostrum large, blackish, bearing a few white hairs. Postcranium shining dark metallic green, with a whitish dusting. 2 long diverging ocellars; 2 equally strong; 2 tiny postocellars. Upper postoculars uniseriate, black; lower postoculars white, long, hairlike and pluriseriate. *Antenna* short, yellowish brown. Second segment dark above, yellow below, short, encompassing third segment on upper half, bearing very short marginal bristlets. Third segment short, rounded (Fig. 12), brownish above and on tip. Arista brown at basal third, whitish at tip; inserted dorsally, about 2.5 times as long as antenna, very shortly pubescent; basal arisal segment very short.

Thorax and scutellum with shining dark metallic green ground colour, without dull black impressions. No acr. 6 almost equally long dc, the shortest in front and the following gradually becoming longer, the hindmost a little outside the row of dc's. In front of the dc a band of short bristles. A long humeral with 2 hairs at side, a long posthumeral preceded by a hair, 1 presutural, 1 sutural, 1 postsutural, 1 supraalar, 1 postalar, 1 long notopleural (in fact in front of the suture). Scutellum with 2 marginal bristles, each flanked by a long hair. 3-4 short upper and 6 long black lower propleural bristles.

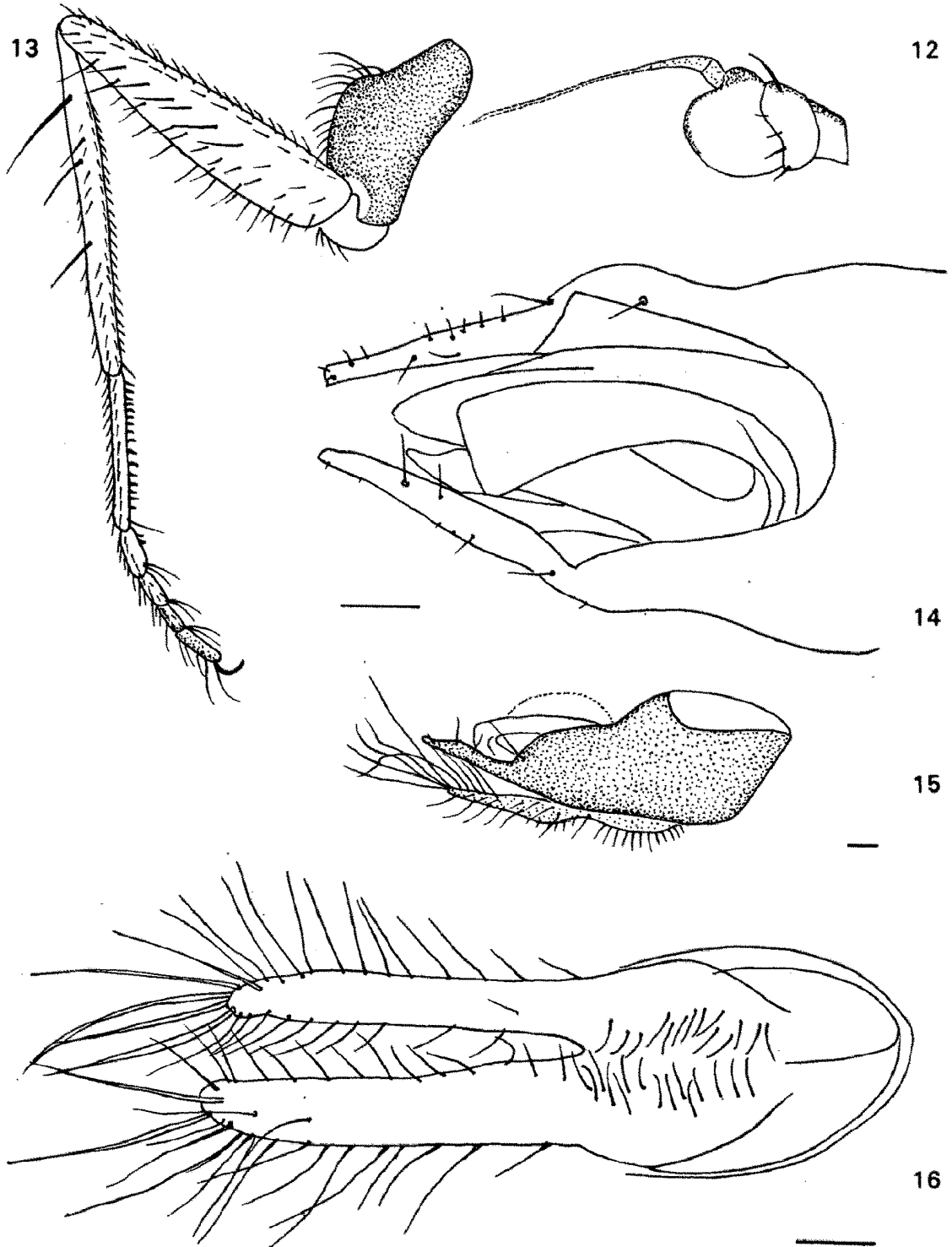
Legs yellow, all bristles black. All coxae brownish black, except for the anterior border of the front coxae. Tip of all

tarsal segments a little browned and terminal segment completely brown.

Fore leg. Coxa very thickened and protruding (Fig. 13) densely covered with long black somewhat bent bristles. Trochanter with a row of short black bristles. Femur thickened in basal two thirds; ventrally with short black bristles half as long as femur is wide; a row of erect posterior bristles and a row of posteroventral bristles with the longest bristles in apical fourth; a row of anteroventral bristles in

basal two thirds. Tibia with a very long pd on basal fifth; 3 strong but shorter pd, 3 ad. First tarsal segment as long as following segments together; ventrally with a double row of peg-like bristles, continuing on second segment. Segments 1-4 ventrally at tip with a pair of long hairs. Length of tibia and tarsal segments (in mm): 1.62 : 0.75 : 0.25 : 0.18 : 0.18 : 0.18.

Mid leg. Coxa with a long black exterior bristle and some short bristles in row above; short bristles anteriorly.



Figs. 12-16. *Thinophilus murphyi*, new species. 1. Male paratype; 12. Antenna; 13. Fore leg; 14. Surstyli; 15. Hypopygium; 16. Cerci dorsally. Bar 0.1 mm.

Trochanter densely set with short black bristles. Femur half as wide as fore femur; ventrally with a row of short bristles. Tibia with a long ventral near middle; 3 ad, 3 pd and some apicals. Segments 1-4 ventrally at tip with a pair of long hairs. Length of tibia and tarsal segments (in mm): 2.1 : 1 : 0.25 : 0.2 : 0.15 : 0.2.

Hind leg. Coxa with a single black exterior bristle. Femur as wide as fore femur; ventrally with a row of short bristles, the longest in the apical fifth; 2-3 long ad in apical third. Tibia with 4 long ad, 4 pd and long apicals. Segments 1-4 ventrally at tip with a pair of long hairs.

Length of tibia and tarsal segments (in mm): 2.37 : 0.62 : 0.5 : 0.3 : 0.2 : 0.25.

Wing hyaline, tinged brownish, without dark shades. Veins dark brown. Apical part of M1+2 feebly bent upwards, running from there parallel to R4+5. Tp straight, a little shorter than apical part of M3+4. Anal vein only represented by a fold. Halteres pale yellow. Squamae yellowish, with white cilia.

Abdomen shining dark metallic green, with coppery reflections; no dull black bands. Hairs on terga black, short; hind-marginal bristles longer on sides of all terga. Fourth sternum more densely set with black bristles. Hypopygium (Figs. 14-16) with yellow cerci.

Female: Body length: 5.2-5.6 mm.; wing length: 5-5.18 mm. Identical to male in most respects. Fore coxae thickened but not humpbacked like in male; bristles anteriorly shorter and more hair-like. Bristles on fore femur also shorter. Bristling on all tibiae like in male.

Remarks. – At first sight, *Th. murphyi* could be confused with *Th. amoenus* Parent from Sabah. However, Parent (1935) does not mention the humpbacked fore coxae, a very distinctive feature in the new species. Further, *Th. amoenus* has broad brown cerci with short hairs (short, thin cerci with long hairs in *Th. murphyi*). *Thinophilus amoenus* is about half the size (2.5 mm) of *Th. murphyi* (>5 mm)

Thinophilus sp. A, new record

Material examined. – SINGAPORE: 1 male, 1 female, Mandai mangrove, coll. D. H. Murphy, 17 Oct.1978 (ZRC); 1 male, 1 female, Jurong, edge and relict mangrove, coll. D. H. Murphy, 15 Apr.1976 (ZRC); 1 female, [no further locality data], '26/6-4', coll. D. H. Murphy (ZRC).

Remarks. – This species is similar to *Th. murphyi* in the unusual shape of the fore coxa, but differs from it by the distinct dark maculations laterally on the mesonotum, the different leg setation and distinct wing infuscation.

SUBFAMILY ACHALCINAE

Scepastopyga Grootaert & Meuffels, 1997

Scepastopyga sp., new record

Material examined. – SINGAPORE: 1 male, Bukit Timah Forest, sweeping, coll. D. H. Murphy, 13 Jan.1974 (ZRC).

Remarks. – This genus was previously only known from where it was originally described: Papua New Guinea. The record here shows that it can potentially occur throughout the Malesian Archipelago from New Guinea westward to Singapore and possibly into West Malaysia. More collecting needs to be done to acquire fresh material to assist in identification of this species and to better ascertain the distributional limits of this genus.

SUBFAMILY DIAPHORINAE

Chrysotus Meigen, 1824

Remarks. – *Chrysotus* is a worldwide genus. Some 14 species are known from the Oriental Region (Dyde, 1975). In the material examined in this study from Singapore, there are 11 unidentified pinned specimens in ZRC probably belonging to 2 species.

Diaphorus Meigen, 1824

Remarks. – Dyde (1975) recorded 46 species of *Diaphorus* from the Oriental Region, but only one species (*D. serenus* Becker) was specifically listed from Singapore. Some species, such as *Diaphorus exangulatus* Parent, *D. mandarinus* (Wiedemann), *D. resumens* Walker, *D. translucens* de Meijere, and *D. vagans* Becker have been reported from "Malaya" and could also occur in Singapore, but without a proper revision of the genus, it is difficult to identify these species at present. Those undetermined species listed below and distinguished by letters do not fit descriptions of known species of this genus, but we prefer not to name them until fresh material is collected and a proper revision of the genus is conducted.

Diaphorus serenus Becker, 1922

Remarks. – Singapore was one of the type localities listed by Becker (1922). We have not seen specimens of this species in ZRC.

Diaphorus sp. A, new record

Material examined. – SINGAPORE: 2 males, Racecourse forest, coll. D. H. Murphy, 20 Dec.1976 (ZRC); 1 female, Bukit Timah, Taban Valley, coll. D. H. Murphy, 7 Mar.1976 (ZRC).

Diaphorus sp. B, new record

Material examined. – SINGAPORE: 9 males, 2 females, Dairy Farm, coll. D. H. Murphy, 26 Feb.1975 (ZRC); 1 female, Tampin mangrove edge, coll. D. H. Murphy, 6 Aug.1979 (ZRC); 1 female, Lim Chu Kang, coll. D. H. Murphy, 17 Nov.1979 (ZRC); 1 female, Bukit Timah, forest litter, 28 Nov.1966 [no collector] (ZRC).

***Diaphorus* sp. C, new record**

Material examined. – SINGAPORE: 1 female, Nee Soon area, coll. D. H. Murphy, 11 Jun.1977 (ZRC).

SUBFAMILY DOLICHOPODINAE

***Hercostomus* Loew, 1857**

Remarks. – *Hercostomus* is widespread throughout the Oriental Region (47 species recorded in Dyte, 1975), but curiously no species have ever been recorded from the Malayan Peninsula. The species below is the first record from the Peninsula.

***Hercostomus* sp., new record**

Material examined. – SINGAPORE: 5 females, Nee Soon Catchment area, coll. D. H. Murphy, 11 Jun.1974 (ZRC); 1 male, Labrador Park, beach, coll. P. Grootaert, 7 Oct.2000 (KBIN).

Remarks. – Although this species is undoubtedly new to science, we prefer not to describe it here pending further fresh-collected material from which to description. Only one male has recently been collected. More material is required before a proper description can be made.

***Lichtwardtia* Enderlein, 1912**

Remarks. – *Lichtwardtia* is a small genus of only 2 species endemic to the Oriental Region.

***Lichtwardtia ziczac* (Wiedemann, 1824), new record**

Material examined. – SINGAPORE: 1 male, Bukit Panjang, swamp rain forest, coll. P. Grootaert, N. Evenhuis, 5 Oct.2000 (KBIN); 1 male, 1 female, University campus, coll. & det. D. H. Murphy, 21 Jan.1975 (ZRC); 1 female, University campus, coll. D. H. Murphy, 30 Jan.1978 (ZRC); 1 female, Lim Chu Kang mangrove, 23.9–1, coll. D. H. Murphy (ZRC); 1 female, Bukit Timah Reserve, Taban valley, coll. D. H. Murphy, 5 Feb.1976 (ZRC).

Remarks. – This species is fairly widespread in the Oriental and Australasian Regions from India eastward to the Solomon Islands. Although expected to occur in Singapore, the record below is the first such for the species from this country.

***Paraclius* Loew, 1864**

Remarks. – *Paraclius* is, along with *Thinophilus*, one of the more speciose genera in this region. Dyte (1975) recorded 16 species from the Oriental Region, but a conservative estimate would put the total number of species at 2–3 times that number. The unnamed species below all represent new

species; however, descriptions of them are pending further collections of fresh material from which to make proper identifications.

***Paraclius abbreviatus* Becker, 1922**

Material examined. – SINGAPORE: 1 female, Bukit Timah, coll. D. H. Murphy, 5 Oct.1965 (ZRC); 1 female, same data except: 13 Jan.1974 (ZRC); same data except: degraded coastal hill forest on granite, 8 Jun.1967 (ZRC); 1 female, same data except: Taban Valley, 30 Jan.1976 (ZRC); 1 female, same data except: 1 Mar.1976 (ZRC); 1 male, 1 female, same data except: 1 Apr.1976 (ZRC); 2 males, 2 females, same data except: Jungle Fall Valley, 10 Apr.1976 (ZRC).

***Paraclius* sp. B, new record**

Material examined. – SINGAPORE: 1m [no further locality data], 20/6–33, coll. D. H. Murphy, 20 Jun.1975 (ZRC).

***Paraclius* sp. C, new record**

Material examined. – SINGAPORE: 1 male, Kranji mangrove, coll. D. H. Murphy, 16 Oct.1984 (ZRC); 1 male, Mandai mangrove, coll. D. H. Murphy, 7 Jun.1977 (ZRC).

***Paraclius* sp. D, new record**

Material examined – SINGAPORE: 2 males, 3 females, Linden Drive, roadside herbs at dusk, coll. D. H. Murphy, 17 Oct.1974 (ZRC).

***Paraclius* sp. E, new record**

Material examined. – SINGAPORE: 1 male, Sungei Buloh, coll. H. K. Lua, 18 Nov.1990 (ZRC); 3 males, 4 females, Seletar Park, stream and canal, #110, coll. H. K. Lua, 19 Aug.1990 (in alcohol) (ZRC).

Undetermined Genus

Dolichopodinae genus and species

Material examined. – SINGAPORE: 1 female, Potong Pasir, near figs, coll. D. H. Murphy, 1 Aug.1977 (ZRC).

Remarks. – A single female from Singapore represents an undetermined genus in the subfamily Dolichopodinae. It possesses a bulging clypeus bearing a pair of large bent bristles. Males of this genus need to be collected before a proper identification can be made.

SUBFAMILY MEDETERINAE

Medetera Fischer von Waldheim, 1822

Remarks. – Dyte (1975) recorded 14 species of this genus from the Oriental Region. Of those, only one (*M. grisescens* de Meijere) was recorded from the Malayan Peninsula, although not from Singapore. Bickel (1987) listed 3 species as occurring in Singapore. In addition to the record below, there are a further 7 unidentified specimens belonging to 2 species in the ZRC.

Medetera grisescens de Meijere, 1916

Remarks. – Recorded by Bickel (1987) from Singapore. No specimens were identified during this study. It was originally described from Java and is also known to occur in India, Sri Lanka, Bangladesh, Myanmar, Thailand, as Indonesia as well as the Seychelles and Samoa.

Medetera minima de Meijere, 1916, new record

Material examined. – SINGAPORE: 1 female, University grounds, light trap, [no date], coll. D. H. Murphy (ZRC).

Remarks. – This species was previously known from Java, Sumatra, Irian Jaya, peninsular Malaysia, Australia, Papua New Guinea, and the Solomon Islands. The above material marks the first record of this species from Singapore.

Medetera pumila de Meijere, 1916

Remarks. – Recorded by Bickel (1987) from Singapore. No specimens were seen during this study. This species was originally described from Java and is also known from Sumatra and Sri Lanka.

Medetera vivida Becker, 1922

Remarks. – Recorded by Bickel (1987) as occurring in Singapore. No specimens were identified during this study. It was originally described from Taiwan.

SUBFAMILY RHAPHIINAE

Ngirhaphium, new genus

Type species: *Ngirhaphium murphyi*, new species, by monotypy.

Etymology. – The genus name is composed of the name of Prof. Dr. Peter Ng from the National University of Singapore and the name of the related genus *Rhaphium* [(Gr., dim. of raphís) ‘small needle’].

Description. – Medium-sized species (Fig. 17) with a greyish dusting on a metallic green ground-colour. Antenna very long

in male, smaller in female. Arista apical, basal arista segment long. Rostrum in male small, very large in female. Face wide, clypeus only a narrow strap in male; very long in female, pointed. Vertex quite excavated (cf. Sciapodinae) and ocellar tubercle globular and raised above frons.

Thorax with biserial acr; multiseriate dc in front of suture, 6 post-sutural dc: 4 short and 2 long prescutellar.

Fore legs shorter than mid and hind legs. No exterior bristle on mid and hind coxae. Femora without conspicuous bristling. All tibiae with strong bristles. Fore leg in male with an asymmetrical protuberance on fourth tarsal segment (simple in female); terminal segment with a pair of normal claws and a claw-like structure beneath the posterior claw. Female with the claws as usual, but the terminal segment bears a long dorsal protuberance. Mid and hind legs with tarsal segments 1-4 with an apical comb of short spinules. Wing with tip of vein M1+2 sharply bent upward and ending near vein R4+5.

Diagnosis. – The genus is closely related to *Rhaphium* and especially to the species *Rh. longicorne* (Fallén). In *Rhaphium*, the basal arista segment is shorter than the apical segment. In *Ngirhaphium* the basal part is longer than the apical part. Both genera have short fore tarsi. *Rhaphium* has the fore tarsomeres 4 and 5 normally shaped, has no apical row of spinules on the tarsal segments 2-4 of the mid and hind legs. Vein M1+2 can converge slightly to R4+5 in *Rhaphium*, but in *Ngirhaphium* vein M1+2 bends upward sharply before the tip of the wing and eventually ends close to R4+5 in the wing tip (much like in some *Paraclius* spp.). *Ngirhaphium* has 6 “long” dorsocentrals with 4 short and 2 long prescutellars. Finally, *Rhaphium* has 2 external bristles on the hind coxae. *Ngirhaphium* has no exteriors on the mid nor the hind coxae.

Ngirhaphium murphyi, new species

(Figs. 17-24)

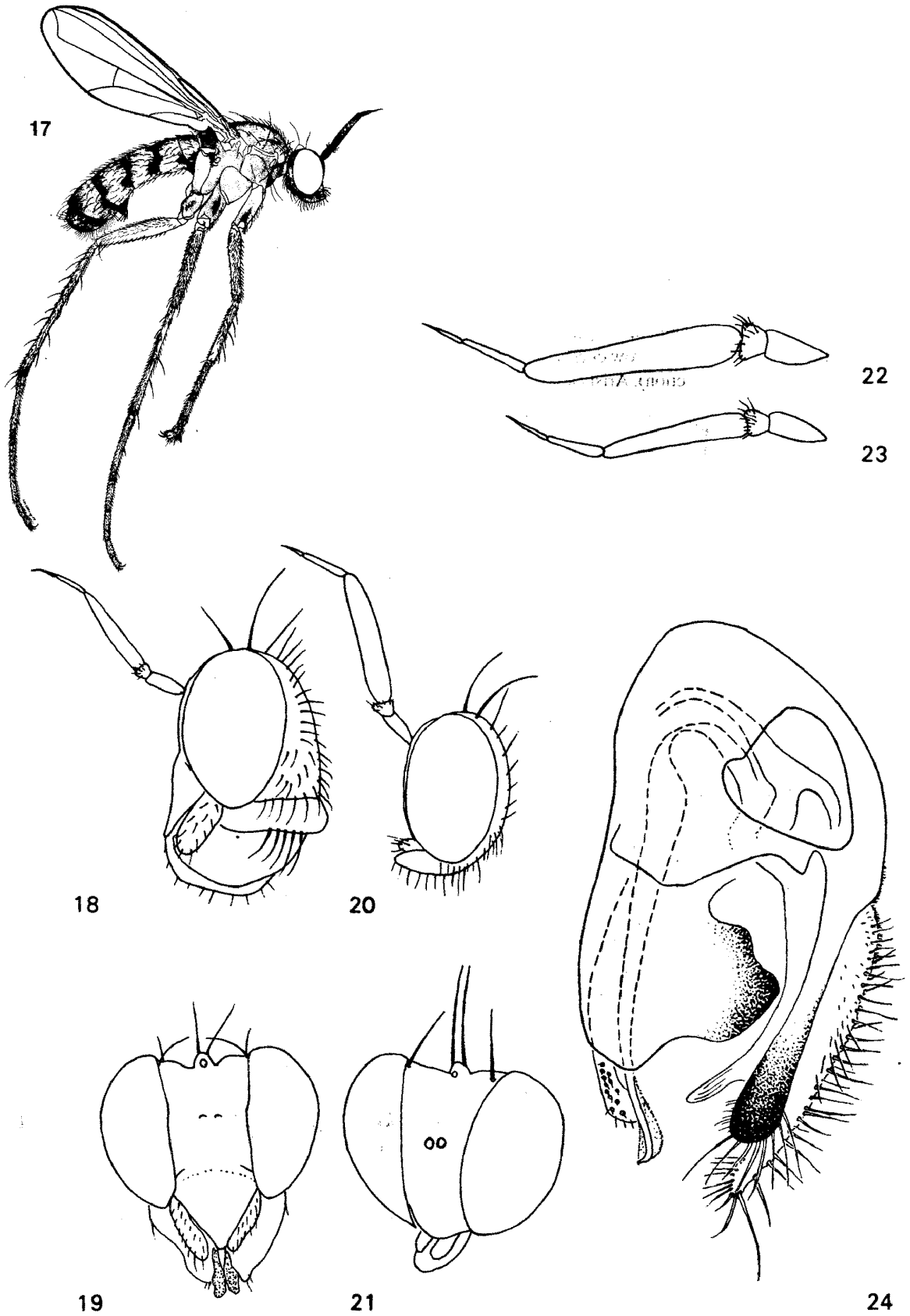
Material examined. – Holotype - male, SINGAPORE: Kranji mangrove, on vegetation, coll. D. H. Murphy, 16 Oct. 1984 (ZRC)

Paratypes – SINGAPORE: 7 males, 4 females, same data as holotype (in ZRC, 1 male, 1f in KBIN, 1m in BPBM); 1 female, Mandai mangrove, coll. D. H. Murphy, 17 Oct. 1978 (ZRC); 3 females, Lim Chu Kang mangrove, mud flats at low tide, perching on shoots and roots of mangrove trees, coll. N. L. Evenhuis, 13 Oct. 2000 (BPBM) (Fig. 28 shows the habitat of the Lim Chu Kang paratypes).

Etymology. – The present species is dedicated to Prof. Dr. D. H. Murphy, nicknamed as the “king of the mangrove” (Ng & Sivasothi, 1999: 51).

Description. - *Male*: Body length: 5.7- 6.7 mm.; wing length: 5.28 – 6 mm.

Head. Frons shining metallic green, sunken between the eyes, wide in front becoming even wider behind; ocellar callus small, globular and raised above the frons (frons seen from behind deeply excavated, like in Sciapodinae). Face wide (Fig. 21), as wide as front of frons, parallel-sided, silvery



Figs. 17-24. *Ngirhaphium murphyi*, new genus, new species. Paratypes: 17. Male habitus; 18. Female head profile; 19. Male head profile; 20. Female head in front; 21. Male head in front; 22. Male antenna; 23. Female antenna; 24. Hypopygium. Bar 0.1 mm.

grey dusted with a very narrow clypeus (hardly a tenth of the length of the face). Eyes pass beyond the border of the face; eyes densely set with silvery hairs. Palpi strap-shaped, brownish at base, yellowish at tip and bearing long, black hairs. Rostrum in male very small in comparison to the huge female rostrum (Figs. 18, 19); brown with long black hairs. Postcranium dark metallic green, with a fine greyish dusting. 2 long diverging ocellars; 2 slightly shorter, converging verticals; A pair of strong postverticals well separated from the postoculars. Upper postoculars strong, uniseriate, black; lower postoculars white, becoming longer below and pluriseriate. *Antenna* very long (Fig. 22), completely black. First segment long, bare; second segment narrow, apically densely set with bristles. Third segment very long strap-shaped, laterally flattened, but with a narrow dorsal flat area (so somewhat triangular in cross-section). Arista apical with a long basal segment and a shorter apical segment. Ratio of first, second, third segment and basal and apical arista segments: 0.37 : 0.07 : 1.1 : 0.3 : 0.15 (in mm).

Thorax and scutellum with a shining dark metallic green ground-colour, covered with a fine grey dusting. A shining stripe on each acr-row. All hairs and bristles black. Acr biseriate, the rows more widely separated in front, while closer together behind. Presutural dc multiseriate; 6 post-sutural dc: 4 short and 2 long prescutellars. A pair of strong scutellars. A long humeral with a shorter bristle in front; a very strong posthumeral, 2 strong notopleurals, 1 postsutural, 1 supraalar, 1 postalar. 4 short upper and 2 very long black lower propleural bristles.

Legs yellow, all bristles black. All coxae greenish black in ground-colour, covered with a fine greyish dusting. Tip of mid and hind tibiae, annulated black at tip. Tip of all tarsal segments a little browned and terminal segments completely black.

Fore leg shorter than mid and hind leg. Fore femur a little swollen in basal half; a row of fine pv in apical half; a row of short ventral bristles, distinct only in apical half. Fore tibia with 4 strong ad and 4 strong pd. All tarsal segments densely set with long hairs. Fourth tarsal segment with a dorsal, asymmetrical forked protrusion, extending over the terminal segment (the outer branch of the fork shorter than the inner one). Terminal segment with a pair of long normal claws and a thicker third claw-like structure beneath the posterior claw. 2 well developed pulvilli and an empodium. (The female has an apical protuberance on the terminal segment). Segments 1-4 ventrally at tip with a pair of long hairs. Length of tibia and tarsal segments (in mm): 1.85 : 1.03 : 0.37 : 0.29 : 0.22 : 0.15 (in mm).

Mid leg. Coxa with short bristles anteriorly; no exterior bristle. Mid femur a little stronger than fore femur; ventrally with inconspicuous bristles; a strong anterior preapical. Tibia with a 5 pd, 4 d and 5 longer pd and a crown of long apicals. Segments 1-4 ventrally at tip with a pair short spinules as well as a comb of black bristles. Length of tibia and tarsal segments (in mm): 2.9 : 1.6 : 0.74 : 0.60 : 0.4 : 0.3.

Hind leg. Coxa bare. Hind femur stronger than mid femur, as wide as fore femur; ventrally with inconspicuous bristles; a strong anterior preapical. Tibia with 5 long av, 4 ad, 5 pd

and crown of long apicals. Segments 1-4 ventrally at tip with a pair short spinules as well as a comb of black bristles. Length of tibia and tarsal segments (in mm): 4.01 : 1.6 : 0.9 : 0.7 : 0.4 : 0.37.

Wing hyaline, faintly tinged brownish, but anteriorly between costa and r4+5 with a yellowish tinge. Veins dark brown. M1+2 sharply bent upwards and ending in costa closely near tip of R4+5. Tp straight, about as long as apical part of M3+4. Anal vein well developed. Halteres pale yellow. Squamae yellowish, with yellow cilia.

Abdomen with 5 externally visible segments; shining dark metallic reddish-green; tips and sides of terga with a silvery dusting. Terga densely set with quite long, black bristles; hind-marginal bristles hardly longer than the other bristles. Hypopygium (Fig. 24) sessile with long strap-shaped cerci.

Female: Body length: 7-7.3 mm; wing length: 6.9-7.1 mm.

Head: antennae (Fig. 23) slightly shorter than in male: Ratio of first, second, third segment and basal and apical arista segments: 0.29 : 0.07 : 0.7 : 0.3 : 0.22 (in mm). Clypeus very large (Fig. 20), protruding over rostrum; tip pointed. Rostrum huge (Fig. 18): in side view nearly as long as an eye. Palpi long, strap-shaped, completely brownish black. Shape and bristling of legs similar to that of male except otherwise mentioned.

Fore leg: Fore tibia with a crown of very long apical bristles. Fourth segment as usual, without the protuberance like in the male. Terminal tarsal segment with a dorsal protuberance and with the usual claws and pulvilli. Ratio of tibia and tarsal segments in mm: 1.85 : 1.2 : 0.37 : 0.3 : 0.26 : 0.26.

Mid leg: ratio of tibia and tarsal segments in mm: 2.9 : 1.6 : 0.7 : 0.52 : 0.37 : 0.29.

Hind leg: ratio of tibia and tarsal segments in mm: 4.2 : 1.7 : 0.7 : 0.67 : 0.37 : 0.37.

SUBFAMILY PELOROPEODINAE

Acropsilus Mik, 1878

Acropsilus spp., new record

Material examined. – SINGAPORE: 1 male, Bukit Panjang, swamp rain forest, coll. P. Grootaert, N. Evenhuis, 5 Oct.2000 (KBIN).

Remarks. – No less than 5 species of this genus collected by sweeping herbs at the sides of a water duct in the swamp forest of Bukit Panjang have been identified. As far as can be seen, all are new to science.

SUBFAMILY SYMPYCINAE

Chaetogonopteron de Meijere, 1913

Remarks. – The genus *Chaetogonopteron* is very rich in species in tropical regions. Dyte (1975) reported 52 species from the Oriental mostly as *Sympycnus*.

***Chaetogonopteron chaeturum* Grootaert & Meuffels, 1999, new records**

Material examined. – SINGAPORE: 1 male, Bukit Timah, Taban Valley, coll. D. H. Murphy, 5 Feb.1976 (ZRC); 6 males, 2 females, Kranji mangrove, coll. P. Grootaert, 6 Oct.2000 (KBIN). MALAYSIA: Sabah: 2 males, 3 females, Mt. Kinabalu, streamside forest trail near park, ca. 5000 ft., coll. C. S. Ng, 20-21 Jun.1976 (ZRC); Kota Tinggi: 1 male, Kota Tinggi waterfall, coll. P. Grootaert, 11 Oct.2000 (KBIN). 1 male, Endau-Rompin National Park, coll. P. Grootaert, 12 Dec.2001 (KBIN)

Remarks. – This species was previously known only from Thailand (Grootaert & Meuffels, 1999) and Xishuangbanna, Yunnan, China (Yang & Grootaert, 1999). The above material marks the first records of this species from Singapore and Malaysia.

***Chaetogonopteron laetum* (Becker, 1922)**

Remarks. – Recorded in Dyte (1975) as occurring in Singapore. No specimens were found in ZRC during this study.

***Chaetogonopteron mutatum* (Becker, 1922)**

Remarks. – Recorded in Dyte (1975) as occurring in Singapore. No specimens were found in ZRC during this study.

In addition to the species above, two undetermined species of *Chaetogonopteron* (representing undescribed species) were noted in the collections examined.

***Chaetogonopteron* sp. A, new record**

Material examined. – SINGAPORE: 2 male, 1 female, Bukit Timah forest, coll. D. H. Murphy, 8 Oct.1974 (ZRC); 1 female, same data except: over muddy path in rain (ZRC).

***Chaetogonopteron* sp. B, new record**

Material examined. – SINGAPORE: 2 females, Bukit Timah forest, streamside, coll. D. H. Murphy, 11 Aug.1974 (ZRC).

***Hercostomoides* Meuffels & Grootaert, 1997**

***Hercostomoides indonesianus* (Hollis, 1964), new records**

Material examined. – SINGAPORE: 1 male, 2 females, Linden Dr., roadside herbs at dusk, coll. D. H. Murphy, 17 Oct.1974; 1 male, Linden Dr., old secondary forest, coll. D. H. Murphy, 21 Oct.1974; 1 male, MacRitchie Reservoir, streamside grass, coll. D. H. Murphy, 25 Oct.1983 (all in ZRC). MALAYSIA: 1 female, Endau-Rompin National Park, coll. P. Grootaert, 12 Dec.2001 (KBIN).

Remarks. – This species was originally described from Java and Sumatra (as *Telmaturgus indonesianus*) by Hollis (1964). Later, Meuffels & Grootaert (1997) reported it from Thailand, Viet Nam, Malaysia (Sarawak, Borneo) and the Philippines. The material examined above marks the first record of this species from Singapore and West Malaysia.

***Scotiomyia* Meuffels & Grootaert, 1997**

Remarks. – The genus *Scotiomyia* was originally described from Papua New Guinea on the basis of 2 species. The new species below marks the first record of this genus outside of New Guinea.

***Scotiomyia singaporensis*, new species (Figs. 25-27)**

Material examined. – Holotype – male, SINGAPORE: Bukit Timah forest, coll. D. H. Murphy, 1 Oct.1977 (ZRC).

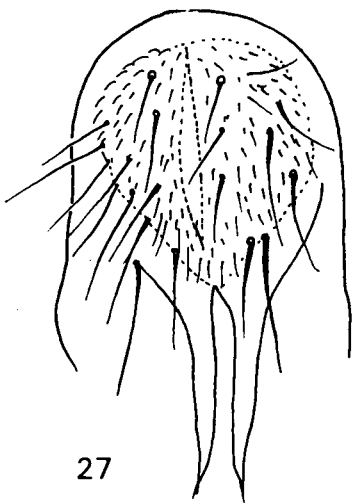
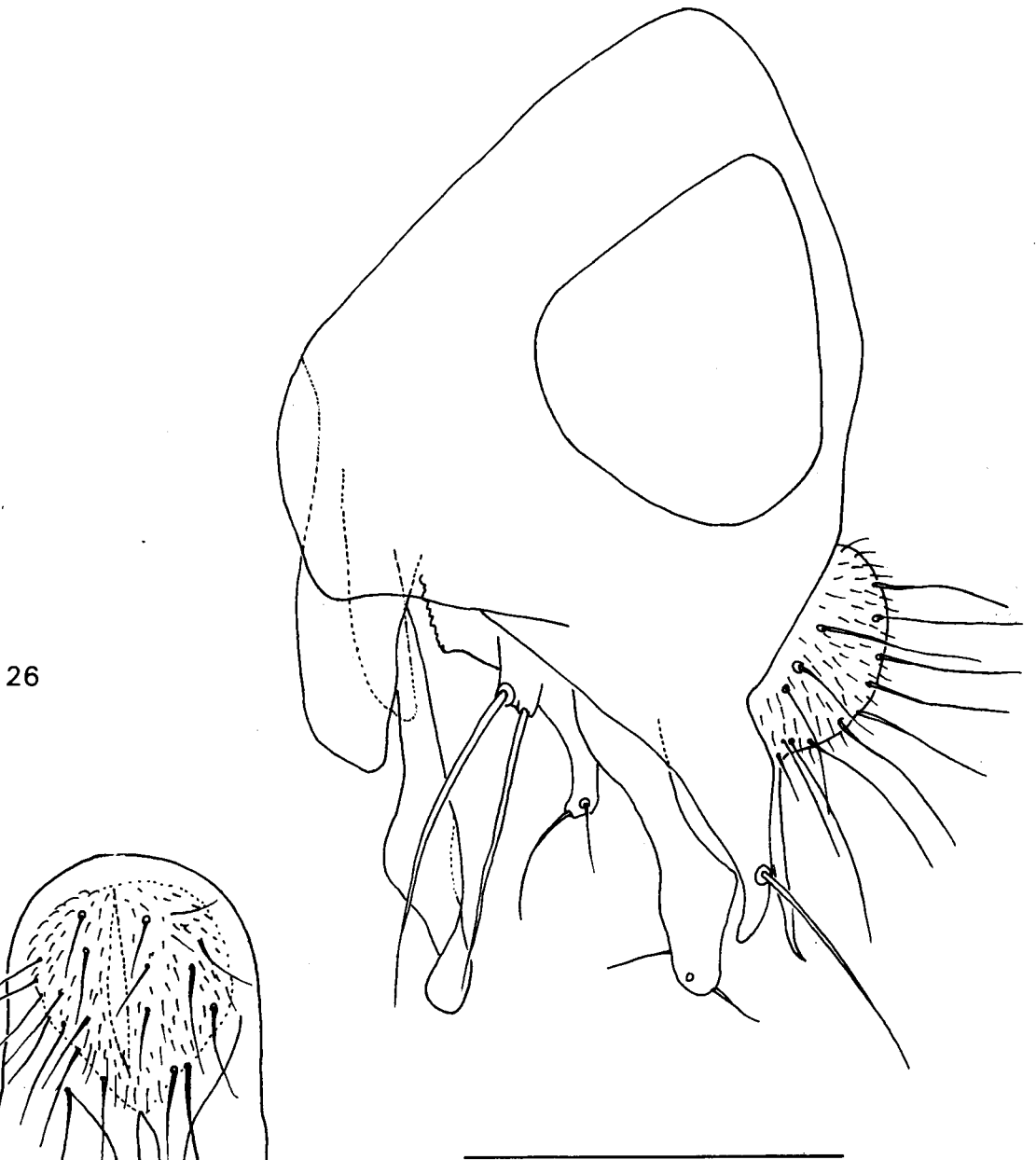
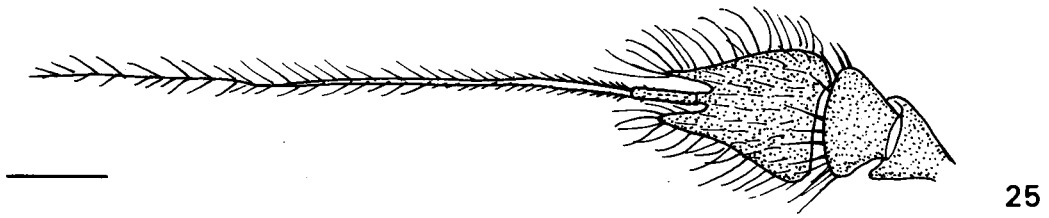
Paratypes – SINGAPORE: 6 males, same data as holotype (ZRC); 1 male, same data except: 21 Oct.1983 (ZRC); 1 male, Bukit Panjang, coll. P. Grootaert & N. Evenhuis, 5 Oct.2000 [specimen lost].

Description. – *Male.* Body length: 2.25 mm; wing length: 2 mm.

Head. Frons and face with blackish ground-colour, covered with a fine grey dusting. Frons broad: face narrowing below antennae, at its narrowest part about as wide as length of third antennal segment. Palpi small, yellowish-brown, with short black hairs and a black apical bristle. Rostrum dark brown. Postcranium blackish. 2 strong diverging ocellars, 2 strong verticals, 2 very small postocellars. Postocular cilia uniseriate, black. **Antennae** (Fig. 25) short, dark yellowish brown. Third segment about as long as deep, rounded triangular, with a deep apicodorsal notch, so that ventral margin ends into a long acute point. Arista three times as long as antenna, inserted in the apicodorsal notch. First arisal segment as long as the extensions on the third segment, apical half of second segment long pubescent.

Thorax. Mesoscutum, scutellum and pleurae with yellowish-brown ground-colour (without metallic green hue) feebly shining. All hairs and bristles black. Acr short, uniseriate in apical half, biseriate and a little diverging in posterior part; 6 dc: 4 anterior short (still longer than 3rd antennal segment), 2 prescutellars much longer. 1 humeral, 1 very long posthumeral, a presutural, a sutural, 2 notopleurals (inner one short, outer one longer), 2 supraalar, 1 long postalar. Scutellum with 2 long marginals, a pair of hairs between the marginals, as well as a hair at outside of the marginals. 1 long, but weak black propleural bristle, and a minute hair above it.

Legs completely yellow (including all coxae), but tarsi a little brownish. **Fore leg.** Coxa anteriorly with short black hairs. Exteriorly and apically a row of few black bristles. Trochanter bare. Femur a little swollen in basal half, without bristles, except for a tiny preapical pv. Tibia shorter than femur, with a short black dorsal serration and a short black



Figs. 25-27. *Scotiomyia singaporensis*, new species. Paratype male. 25. Antenna. 26. Hypopygium; 27. Cerci. Bar 0.1 mm.

posterodorsal bristle just beyond middle. Length of tibia and tarsal segments (in mm): 0.6 : 0.3 : 0.15 : 0.12 : 0.12 : 0.1.

Middle leg. Coxa exteriorly with short black hairs, 1 or 2 rather feeble black bristles near apex and a long black exterior bristle. Trochanter with a short black bristle. Femur a little swollen in basal third, with a black anterior preapical. Tibia with 2 ad, preceded by a small bristle near base, 2 pd, and 1 weak pv; a circlet of 4 apicals. Length of tibia and tarsal segments (in mm): 0.8 : 0.37 : 0.25 : 0.17 : 0.12 : 0.1.

Hind leg. Coxa with a black exterior bristle, shorter and weaker than an coxa II. Trochanter bare. Femur wider than femur II, widest near middle; with a black anterior preapical. Tibia with a small ad on basal quarter, 2 rather short pd, and a dorsal bristle near apex; dorsally near middle with a short serration. First tarsal segment short. Length of tibia and tarsal segments (in mm): 0.87 : 0.12 : 0.03 : 0.22 : 0.15 : 0.12.

Wing hyaline, slightly brownish tinged. Veins R4+5 and M1+2 distally practically parallel, feebly diverging towards apices. Tp straight, much shorter than apical part of M1+2. Fringe along hind margin of wing very short. Anal vein distinct but not reaching wing margin. Halteres yellow; squamae brown with long black cilia.

Abdomen with first segment yellowish-brown, following terga contrastingly blackish brown ground-colour, covered with a fine dusting but feebly shining. Sterna brown, lighter brown towards sides. Hairs on terga short, black, but marginals long. Genital capsule and eighth sternum yellow, as well as all appendages (Figs. 26-27); apical appendages of cerci, thin and short, hidden between the surstyli; without the spine-like apical bristles typical for the genus.

Female: Unknown.

Remarks. – The very typical antennae with the arista inserted in an apical notch and long dorsal and ventral extensions suggest that the present species should be placed in the genus *Scotiomyia*. It fits indeed very well in *Scotiomyia* although there are some surprising differences. Instead of 5 dorsocentrals, there are 6. The acr are biserial for the genus, but in this species are irregularly uniserial in front and only slightly biserial on the posterior part of the mesoscutum. The anal vein is very distinct in this species, while it is absent in the other two. Finally, the apical appendages on the cerci are thin and short, being hidden between the surstyli. Moreover they do not bear apical spinules which otherwise are typical for the genus. As to the sclerotisation of the costa, the basal part between the insertion on the thorax and the humeral vein is indeed thickened, but there is no further thickening as in the two species from New Guinea. Another character of the genus was that the costa fades beyond R4+5 (i.e. not reaching vein M). This condition is only seen in a single specimen of the Singapore species. In the other specimens of *singaporensis* it looks appears that the costa reaches vein M. May be this is because all material of the species described above is dry while the Papuan material were conserved in alcohol.

Teuchophorus Loew, 1857

Remarks. – This genus has not previously been recorded from Singapore. The two species recorded below were recently collected by the authors and probably represent new species.



Fig. 28. Lim Chu Kang mangrove mudflat habitat of *Ngirhaphium murphyi*, new species.

***Teuchophorus* sp. A, new record**

Material examined. – SINGAPORE: 2 males, Labrador Park, rocky beach with sand patches, coll. P. Grootaert, N. Evenhuis, 7 Oct.2000 (KBIN).

***Teuchophorus* sp. B, new record**

Material examined. – SINGAPORE: 3 males, 3 females, Kranji mangrove, coll. P. Grootaert, 6 Oct.2000 (KBIN).

Unplaced to Subfamily

***Phacaspis* Meuffels & Grootaert, 1990**

Remarks. – This genus was originally described on the basis of 2 species found in a mangrove on the south coast of Papua New Guinea (Coral Sea). Two species were recently reported from Thailand: one from the mangroves along the Andaman Sea and one from the Gulf of Siam (Grootaert & Meuffels, in press). This shows that the genus has a quite wide distribution.

***Phacaspis mitis* Grootaert & Meuffels, 2002,
new record**

Material examined. – SINGAPORE: 10 males, Sungei Buloh, mangrove, coll. P. Grootaert, N. Evenhuis, 5 Oct.2000 (KBIN). MALAYSIA: Sedili Kecil, 1 male, coll. P. Grootaert, N. Evenhuis, 12 Oct.2000 (KBIN).

Remarks. - This species was originally described from Thailand. The above material marks the first records of it from Singapore and West Malaysia.

ACKNOWLEDGEMENTS

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LITERATURE CITED

- Becker, T., 1922. Dipterologische Studien. Dolichopodidae der Indo-Australischen Region. *Capita Zoologica*, **1**(4): 1-247.
- Bickel, D. J., 1987. A revision of the Oriental and Australasian *Medetera* (Diptera: Dolichopodidae). *Records of the Australian Museum*, **39**: 131-182.
- Bickel, D. J., 1994. The Australian Sciapodinae (Diptera: Dolichopodidae), with a review of the Oriental and Australasian faunas, and a world conspectus of the subfamily. *Records of the Australian Museum Supplement*, **21**: 1-394.
- Bickel, D. J. & C. E. Dyte, 1989. Family Dolichopodidae. In: Evenhuis, N. L. (ed.), *A Catalog of the Diptera of the Australasian and Oceanian Regions*. E.J. Brill, Leiden & Bishop Museum Press, Honolulu. Pp. 393-418.
- Dyte, C. E., 1975. Family Dolichopodidae. In: Delfinado, M. D. & D. E. Hardy (eds.), *A Catalog of the Diptera of the Oriental Region*. Volume II. Suborder Brachycera through division Aschiza, suborder Cyclorrhapha. University Press of Hawaii, Honolulu. Pp. 212-258.
- Grootaert, P. & H. J. G. Meuffels, 1999. Description of *Chaetogonopteron chaeturum* n. sp., a very common dolichopodid fly from South Thailand (Insecta, Diptera, Dolichopodidae). *Belgian Journal of Entomology*, **1**(2): 335-341.
- Grootaert, P. & H. J. G. Meuffels, 2001. Notes on marine dolichopodid flies from Thailand (Insecta: Diptera: Dolichopodidae). *Raffles Bulletin of Zoology*, **49**(2): 339-353.
- Hollis, D., 1964. Notes and descriptions of Indonesian Dolichopodidae (Insecta, Diptera) in the Zoölogisch Museum, Amsterdam. *Beaufortia*, Amsterdam, **10**(129): 239-274.
- Meuffels, H. J. G. & P. Grootaert, 1997. A remarkable new sympycnine genus *Hercostomoides* from South Asia, with remarks on the genus *Telmaturgus* (Diptera, Dolichopodidae). *Studia Dipterologica*, **4**(2): 473-478.
- Ng, P. K. L. & N. Sivasothi, 1999. *A guide to the mangroves of Singapore* 1. The Ecosystem & Plant Diversity. Singapore Science Centre. Singapore. 160 pp.
- Parent, O. P., 1935. Diptères conservés au Muséum des Etats Malais confédérés. *Annals and Magazine of Natural History*, (xx) **15**: 194-215, 354-369, 426-441, 519-531.
- Yang, D. & P. Grootaert, 1999. Dolichopodidae (Diptera: Empidoidea) from Xishuangbanna (China, Yunnan province): the Dolichopodinae and the genus *Chaetogonopteron* (I). *Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen. Serie Entomologie*, **69**: 251-277.