

A NEW *SYNDYAS* LOEW, 1857 (DIPTERA: HYBOTIDAE: HYBOTINAE) FROM MANGROVES IN SINGAPORE, WITH A REVIEW OF THE ORIENTAL AND AUSTRALASIAN SPECIES

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ABSTRACT. – *Syndyas singaporensis*, new species, is described from mangroves in Singapore. *Syndyas aterrima* de Meijere, 1913 (Ceram, Indonesia), *S. brevior* de Meijere, 1910, (Krakatau, Indonesia) and *S. elongata* de Meijere, 1910, (Java, Indonesia) are redescribed. Lectotypes are designated for *S. elongata* and *S. brevior*. A key, as well as a checklist, are given for all Oriental and Australasian species.

KEY WORDS. – Diptera, Hybotidae, *Syndyas* new species, Oriental, Australasian, mangrove.

INTRODUCTION

The subfamily Hybotinae is rare in Singapore. This subfamily radiated in regions with a temperate climate such as the Holarctic and it is far less common in tropical Oriental conditions. On a total of 544 samples recently taken in Singapore, only 17 samples yielded Hybotinae (Shamshev & Grootaert, 2007) comprising two records of *Syneches* Walker, five records of *Hybos* Meigen, and ten records of *Syndyas* Loew. The Tachydromiinae on the other hand, another hybotid subfamily, is more common and also more diverse. For example, during the same sampling campaign 987 individuals were recorded from the tachydromiine genus *Elaphropeza* Macquart, belonging to 52 species (Shamshev & Grootaert, 2007).

Syndyas is a genus of rather small Hybotinae that look quite fragile in comparison to the stouter *Hybos*, *Parahybos* Kertész, *Chilcottomyia* Saigusa, and *Syneches*. *Syndyas* is cosmopolitan in distribution. It is rare in the Palaearctic where only three species are known. It is most diverse in the Afrotropical Realm with 14 species, followed by the Oriental Realm with nine species. The Australasian Realm has three, the Nearctic six and the Neotropical only one species.

In the present paper, we describe a new species of *Syndyas* from Singapore and in order to confirm the identity of the new species it was necessary to revise the type material of the closest related species. Here, we redescribe *Syndyas aterrima* de Meijere, 1913, originally described from the

holotype female from Ceram (Australasia), *Syndyas brevior* de Meijere, 1910, described from two females, from Krakatau and a lectotype is designated for the specimen bearing the label “type”. Finally, *Syndyas elongata* de Meijere, 1910, described from several specimens from Krakatau and Jakarta is also redescribed and a lectotype is designated. It was not necessary to redescribe the other Oriental species since they have good recognizable characters as can be seen in the new key that is presented here for all Oriental and Australasian species.

It is remarkable that the new *Syndyas* species was only found in mangrove. As demonstrated elsewhere, the mangroves in Singapore have an unexpected high diversity of empidoid fauna (Evenhuis & Grootaert, 2002; Grootaert, 2006a, 2006b; Grootaert & Meuffels, 2001; Zhang et al., 2006, 2007) and merit a special attention from a faunistical point of view as well for conservation. Adult *Syndyas* are predators and the larval stages are unknown.

MATERIALS AND METHODS

For sampling of the material in Singapore and the administrative codes used, we refer to the papers of Shamshev & Grootaert (2007) and Zhang et al. (2008). The holotype of the new species is housed in the collections of the Raffles Museum, National University of Singapore (ZRC) and some paratypes are deposited in the collections of the Royal Belgian Institute of Natural Sciences in Brussels (RBINS).

De Meijere's material is stored in the collections of the Zoölogisch Museum Amsterdam (ZMAN). The information on the labels is placed between square brackets [...].

SYSTEMATIC ACCOUNT

Syndyas Loew, 1857

Genus diagnosis and redescription in Chvála, 1983: 99.

Species with holoptic eyes. Third antennal segment elongate ovoid with apical arista. Proboscis strong, directed forward. Hind femur generally thickened, club-shaped hind tibia and thickened hind first tarsomere. Basal section of vein M, the vein separating the two basal cells scarcely visible (distinct in both *Hybos* and *Syneches*).

The species resemble one another in leg setation, general body and leg colour. Colour of wing (clear, yellowish or brownish tinged), presence or absence of a wing stigma, length of the discal cell in relation to length of basal cells are reliable characters. The shape of the fore tibia (thickening caused by the development of the tibial gland), hind femur, hind tibia, hind tarsomere 1 are also useful characters. The male genitalia are quite distinct, but the genitalia of few species have been figured and several species are only known from the holotype female.

KEY TO ORIENTAL AND AUSTRALASIAN SYNDYAS

- 1 Discal cell shorter than basal cells 2
- Discal cell as long as basal cells 4
- 2 Discal cell very short, basal cells nearly 3 times longer. (Sri Lanka, Papua New Guinea) *S. parvicellulata* Bezzi
- Discal cell longer 3
- 3 Basal cells about 1.5 times as long as discal cell. Mesonotum black, without blue shine. Abdomen not elongated (Indonesia: Krakatau) *S. brevior* de Meijere
- Basal cells almost as long as discal cell. Mesonotum black in ground-colour, with a blue shine. Abdomen long and slender (Indonesia: Krakatau) *S. elongata* de Meijere
- 4 Tarsomeres 1 and 2 of all legs yellow (Taiwan) *S. orientalis* Frey
- All tarsomeres black 5
- 5 Wing clear (India, Myanmar) *S. vitripennis* Brunetti
- Wing not clear, but yellowish to brownish tinged 6
- 6 Wing yellowish tinged, no stigma (Philippines) *S. dapanana* Frey
- Wing brownish tinged, usually with stigma (except *S. eumera*) 7
- 7 Halter dark yellow, wing brown with dark brown stigma (China: Zheijang) *S. sinensis* Yang & Yang
- Halter black 8
- 8 Brown stigma present. Hind femur club-shaped (less distinct in *S. nigripes*) 9
- No stigma present. Hind femur very thickened (thickest near middle) (Papua New Guinea) *S. eumera* Bezzi
- 9 Veins R_{4+5} and M are straight running parallel toward costa. Hind femur ventrally with a row of bristles (not spiny). (Indonesia: Ceram) *S. aterrima* de Meijere

- Veins R_{4+5} and M converging towards wing tip, but turning up just before meeting the costa. Hind femur ventrally with a row of long spiny bristles 10
- 10 Hind femur strongly swollen (club-shaped). Tip of right epandrial lamella bifurcate, outer lobe bearing broad black bristly hairs (Singapore) *S. singaporensis*, new species
- Hind femur weakly swollen. Tip of right epandrial lamella bifurcate, outer lobe with only ordinary hairs (North Palaearctic, Oriental China – Guizhou, Hainan) *S. nigripes* (Zetterstedt)

Syndyas aterrima de Meijere, 1913

(Figs. 3, 6, 11)

Syndyas aterrima de Meijere, 1913: 53, Fig. 12 (wing).

Material examined. – Holotype female, INDONESIA, [Ceram, 25.II] [Mevr. De Beaufort leg. 1910] [*Syndyas aterrima* det. de Meijere Type] Red label [*Syndyas aterrima* de Meijere, 1913 ZMAN type DIPT.0473.1]. Female on pin, in bad condition: head missing, wings missing on thorax, but mid leg and one wing in a dry slide attached to pin.

Diagnosis. – Species with a brownish wing with a large brown stigma. Vein R_{4+5} and M straight. Hind femur spindle-shaped with a ventral row of interspaced bristles that are not spiny.

Redescription. – Female: length: 2 mm; wing: 2.5 mm.

Head (missing, description after de Meijere, 1913) Ocellar tubercle with 2 short black bristles. Eyes touching on frons, face very narrow, linear. Antenna black, medium-sized; third segment elongate oval, with a black, somewhat subdorsal arista that is much longer than the three antennal segments combined. Proboscis and palp shining black.

Thorax shining black, with a green metallic tinge when seen from behind. Hairs and bristles darkened but with a pale tinge. Posterior part of mesonotum covered with a brown dusting. Pleura also brown dusted. Dorsocentrals not distinct from other pilosity. Scutellum with a pair of black apical bristles and at least 4 black marginal hairs half as long as apicals, on the side (rubbed off on one side).

Legs shining black. Fore femur without ventral bristles. Fore tibia spindle-shaped (Fig. 6), much swollen at basal third (opening of tibial gland not on a tubercle); a double row of long pale posteroventral bristles, twice as long as tibia is wide. The rows continue on the first tarsomere. Hind femur (Fig. 11) slender in basal half, thickened in apical half, ventrally with a row of black interspaced bristly hairs, in basal half the bristles are a little longer than femur is wide; in apical half the bristles are a little shorter than femur is wide. A few long pale dorsal hairs near base. Hind tibia thickened on apical third. First tarsomere on hind leg swollen, shorter than apical four tarsomeres together.

Wing (Fig. 3) brownish, a large stigma present (see discussion). Discal cell longer than basal cells, elongate rectangular, nearly 3 times as long as vein closing the discal

cell (dm-cu). Vein R_{3+4} and M straight, ending parallel in costa. Halter black.

Abdomen shining black, with paler hairs than on mesonotum, from some point of view appearing whitish.

Comments. – As can be seen on Fig. 3 the stigma is very large, but it is not clear if the area before the tip of R_1 is also darkened. De Meijere (1913) indicates only a long oval stigma on his figure between R_1 and R_{2+3} .

Frey (1938) reports this species from the Philippines (3 females from Luzon and a male and female from Mindoro). These specimens should be re-examined to see if they are really conspecific with the female holotype of *S. aterrima*.

***Syndyas brevior* de Meijere, 1910**
(Figs. 2, 8, 10)

Syndyas brevior de Meijere, 1910: 68, Fig. 5 (wing).

Material examined. – Lectotype female INDONESIA [E. Jacobson Lang Eiland Krakatau Mei 1908] [*Syndyas brevior* det. de Meijere type] red label [*Syndyas brevior* de Meijere 1910 ZMAN type DIPT.0476.1]; 1 female [E. Jacobson. Verlaten Eiland Krakatau Mei 1908] red label [*Syndyas brevior* de Meijere 1910 ZMAN type DIPT.0476.2]

Diagnosis. – A small species with clear wing membrane, no stigma and discal cell much shorter than basal cells. Hind femur thickened on apical 2/3 with a ventral row of spiny bristles, about half as long as femur is wide. Hind tarsomere slightly thickened and much shorter than following tarsomeres together.

Redescription. – Female: length: 2 mm; wing: 1.75 mm.

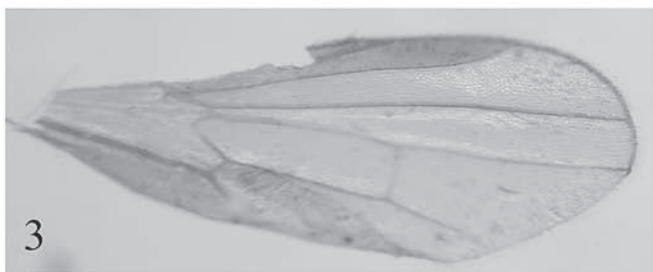
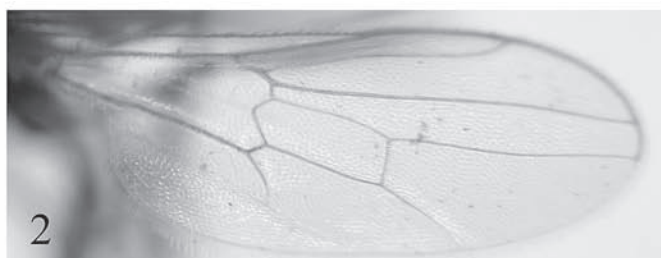
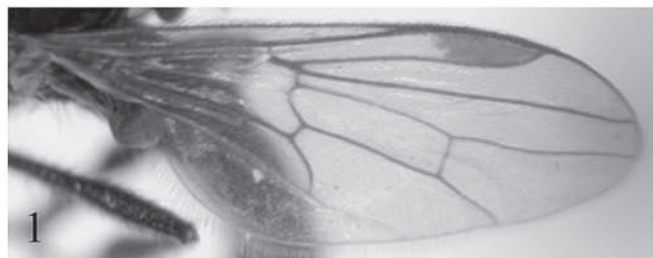
Head. Eyes holoptic, frons and face linear. A pair of proclinate ocellars as long as all antennal segments together.

Postoculars short, black, with tips proclinate over the eye. Antenna black, third segment elliptical 3 times as long as wide. Arista missing. Palp and proboscis hidden.

Thorax black in ground-colour, with thin pale brownish pubescence. Mesonotum shining black on anterior 2/3, posterior third thinly covered (subshining) with brownish dusting. Pleura grey dusted. Large thoracic bristles brown. Acrostichals long biseriate, the rows widely separated; dorsocentrals uniseriate but with numerous hairs at sides, ending in a long prescutellar. A pair of long brown apical scutellars and some shorter marginal hairs on both sides.

Legs brownish-black. Fore femur without ventral bristles, a few fine black posteroventrals near tip. Fore tibia (Fig. 8) somewhat curved in dorsal view, slightly dilated, especially around the opening of the tibial gland, opening of the tibial gland not distinct; tibia with 2 short dorsal bristles and with a row of long posteroventrals, a little longer than tibia is wide, the row continuing on tarsomere 1. Tarsomere 1 with some long dorsal bristles, especially a basal one and a pair of apicals; following tarsomeres also with distinct dorsal hairs. Mid femur ventrally bare. Mid tibia with 4-5 brown dorsal bristles, twice as long as tibia is wide and a very long ventral preapical; a row of long brown posteroventrals. Mid tarsomere 1 with two long dorsals and a row of long posteroventrals and a long ventral near base. Hind femur club-shaped, slender on basal third, gently widening towards tip, near tip about twice as wide as at base, ventrally with a row of equally long spine-like bristles. Hind tibia club-shaped, narrow at base but quickly widening towards tip, at its widest part, 3 times as wide as at base (Fig. 10) dorsally with 3-4 long black bristles, in addition a pair of preapical dorsal bristles. Hind tarsomere 1 thickened, about half as long as following four tarsomeres together; with a pair of long preapical bristles.

Wing (Fig. 2) clear, without stigma. Discal cell short; basal cells about 1.5 times as long as discal cell. Vein R_{4+5} and



Figs. 1–4: *Syndyas* wings: 1, *S. singaporensis*, new species; 2, *S. brevior* de Meijere; 3, *S. aterrima* de Meijere; 4, *S. elongata* de Meijere.

M slightly converging near wing tip and ending parallel into costa.

Abdomen shining black. Tergites dorsally with short pale brownish bristles; basal tergite with long brown bristles at sides. Apical two segments and cerci brown dusted.

Comments. – Frey (1938) reports a male from the Philippines, unfortunately not giving any details. It is clear that in the future these specimens should be examined in order to try to establish conspecificity with the holotype female of Krakatau.

***Syndyas elongata* de Meijere, 1910**
(Figs. 4, 7, 12)

Syndyas elongata de Meijere, 1910: 67, Fig. 4 (wing).

Material examined. – Lectotype male (designated here) INDONESIA [E. Jacobson. Verlaten Eiland Krakatau Mei 1908] white label in long hand [*Syndyas elongata* det. de Meijere Type] red label [*Syndyas elongata* de Meijere 1910 ZMAN type DIPT.0478.1]; 3 females, same provenance as lectotype. 1 female [E. Jacobson Batavia Sept 1908]; 1 male, 1 female [Java Jacobson]. The latter specimens are probably from Tandjong Priok near Batavia, November, Jacobson leg as mentioned in de Meijere (1910), but there is nothing additional on the label.

Diagnosis. Slender species with long slender abdomen and wings. Wing clear with a faint yellowish stigma. Discal cell a little shorter than basal cells. Mesonotum shining black with a bluish tinge.

Redescription. – Male: length: 3.5 mm; wing: 2.5 mm.

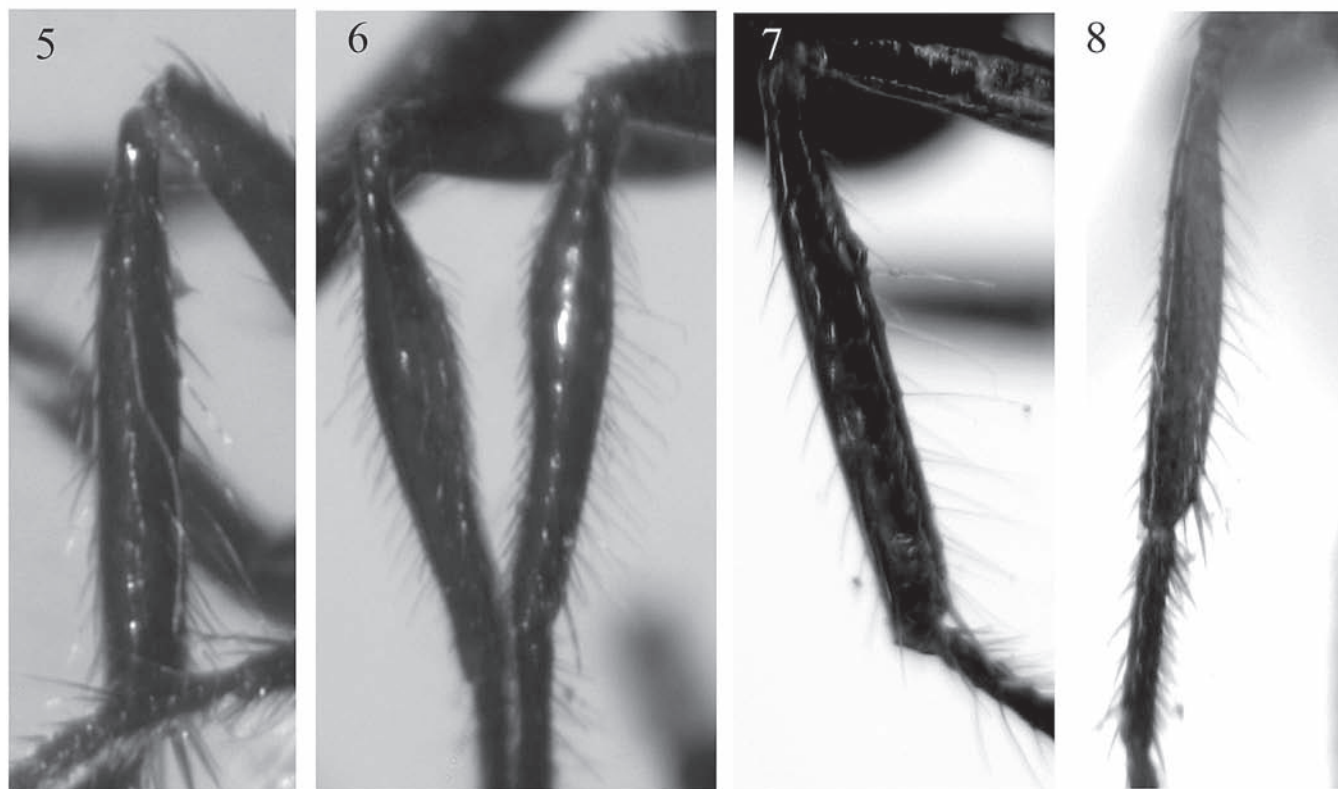
Head. Eyes holoptic, frons and face linear. A pair of proclinate ocellars as long as all antennal segments together. Postoculars long above, black, with tips proclinate over the eye. Antenna black, third segment elliptical 2.5 times as long as wide. Arista at least 3 times as long as all antennal segments combined. Palp and proboscis hidden.

Fore tibia (Fig. 7) dorsoventrally curved, only a little thickened; gland opening a little prominent, with a row of very long pale posteroventral bristles. Hind femur very slender on basal 2/3, only swollen on apical third (Fig. 12). Ventrally a row of fine bristles a little longer than femur is wide becoming spine-like on apical third (the club-shaped part). Hind tibia thickened on apical half, with at least 3 pairs of long fine dorsal bristles, the preapical pair the longest. Hind tarsomere 1 thickened and a little longer than following tarsomeres together.

Mesonotum shining black, viewed from behind with a greenish blue metallic shine. Posterior third of mesonotum covered by thin brown dusting. Pleura with the usual thin brown dusting and so only subshining. Scutellum with a pair of brown apical bristles and at least 2 hairs at each side.

Wing (Fig. 4) clear with a faint yellowish stigma. Veins brown. Discal cell a little shorter than basal cells. Squama black with very long, pale cilia. Halter black.

Abdomen long and slender, covered with short black hairs, even at base of basal segments. Genitalia as wide as abdomen.



Figs. 5–8. *Syndyas* fore tibia posteriorly: 5, *S. singaporensis*, new species; 6, *S. aterrima* de Meijere; 7, *S. elongata* de Meijere; 8, *S. brevior* de Meijere.

Female: length: 3.2–3.7 mm; wing: 2.4–2.5 mm. Identical in most respects to male.

Comments. – The male from Krakatau was selected as lectotype not only because its locality was mentioned first in the description, but also because it is a more precise site than Jakarta (Batavia).

***Syndyas singaporensis*, new species**
(Figs. 1, 5, 9, 13)

Material examined. – Holotype male: SINGAPORE: Sungei Buloh, 7 Sep.2005, Malaise trap 1 (25336, leg. P. Grootaert, Si1055, in ZRC of Raffles Museum, NUS, Singapore).

Paratypes: SINGAPORE, 1 female same provenance as holotype. **Sungei Buloh**, mangrove: 1 male, 1 female, 9 Dec.2002 (22057, Si301); 1 male, 1 Jun.2005 (25165, Si1639); 1 male, 22 Jun.2005 (25171, Si823; on pin, genitalia dissected); 1 male, 1 female, 6 Jul.2005 (25199, Si881); 1 male, 1 female, 20 Jul.2005, (25264, Si1056); 1 male, 27 Jul.2005 (25272, Si289); 1 female, 7 Sep.2005 (25264, Si1056); 1 female, 27 Nov.2003, sweeping (23092, Si92); 1 female, 13 Jan.2006 (26015, Si1581, RBINS). **Chek Jawa**, Pulau Ubin, mangrove, 1 male, 1 female, 19 Nov.2002, sweeping (leg. P. Grootaert, RBINS).

Diagnosis. – Species with brown wing and brown stigma. Discal cell almost as long as basal cells. Mesonotum anteriorly shining black. Hind femur club-shaped, ventrally with spine-like bristles.



Figs. 9–12. *Syndyas* hind leg: 9, *S. singaporensis* new species; 10, *S. brevior* de Meijere; 11, *S. aterrima* de Meijere; 12, *S. elongata* de Meijere.

Description. – Male: Length: 3.0–3.2 mm, wing 3.0–3.2 mm.

Head. Eyes holoptic, frons and face linear. A pair of proclinate ocellars as long as all antennal segments together. Postoculars short, black, with tips proclinate over the eye. Antenna black, third segment elliptical 3 times as long as wide. Arista bare, 3 times as long as antennal segments together. Palp elongate, black with a long black dorso-apical bristle.

Thorax black in ground-colour. Mesonotum shining black on apical half, posterior half thinly covered (subshining) with thin brownish dusting. Humeri brownish (paler than rest of mesonotum). Pleura grey dusted. Large thoracic bristles brown. Acrostichals long, biseriate; dorsocentrals uniseriate but with numerous hairs at sides. A pair of long brown apical scutellars and a series of shorter marginal hairs on both sides.

Legs. Anterior four legs shining brownish black; posterior pair intensively black. Fore coxa with short black hairs anteriorly. Fore femur without ventral bristles, a few fine black posteroventrals near tip. Fore tibia (Fig. 5) slightly spindle shaped with a very prominent opening of the tibial gland in the form of a tubercle, bearing a hair-like structure at tip; with a row of long posteroventrals, a little longer than tibia is wide; the row continues on fore tarsomere 1. Fore basal tarsomere with some long dorsal bristles, especially a

basal one and a pair of apicals. Following tarsomeres also with distinct dorsal hairs. Mid femur ventrally bare. Mid tibia with 4–5 black dorsal bristles, 3 times as long as tibia is wide and a very long ventral preapical; a row of long brown posteroventrals. Mid basal tarsomere with two long dorsals and a row of long posteroventrals and a very long ventral near base. Hind femur (Fig. 9) club-shaped, slender on basal half, gently widening towards tip, near tip about 1.5 times as wide as at base. Ventrally with a row of equally long spine-like bristles, in basal half the spines are a little longer than femur is wide; in apical half about as long as femur is wide. Hind tibia club-shaped, narrow at base but abruptly widening towards tip, at its widest part, 3 times as wide as at base (Fig. 9), dorsally with 3–4 long black bristles, in addition a pair of preapical dorsal bristles. Hind tarsomere 1 as long as following four tarsomeres together; much widened; with a few long bristles near tip.

Wing (Fig. 1) brownish clouded, stigma dark brown occupying the whole apex of cell R_1 (between tip of R_1 and R_{2+3}). The vein separating basal cells hardly prominent. Discal cell almost as long as basal cells, elongate rectangular (almost three times as long as wide). Apical portion of vein Cu, 1.5 times as long as vein closing the discal cell (dm-cu). Veins R_{4+5} and M slightly diverging near middle, then converging and diverging again before meeting costa. Halter black. Squama and ciliation brown.

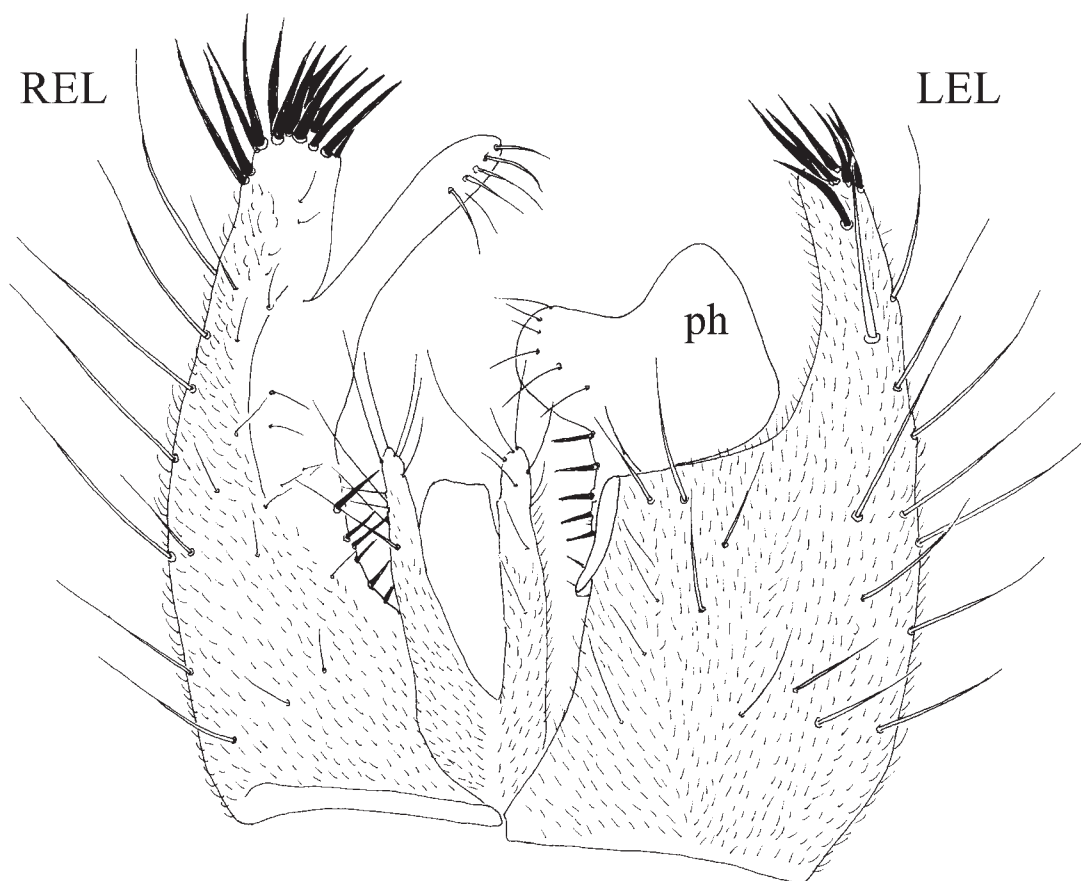


Fig. 13. *Syndyas singaporensis*, new species. Paratype male genitalia. REL, right epandrial lamella; ph, phallus; LEL, left epandrial lamella.

Abdomen shining black. Tergites dorsally with short pale brownish bristles; basal three tergites with very long pale bristles at sides. Sternites narrow, shining brownish black, with few moderately long dark hairs. Genitalia (Fig. 13) with tip of right epandrial lamella bifurcate; outer lobe bearing flattened black bristly hairs, inner lobe with a row of ordinary hairs. Left epandrial lamella at tip also with flattened black bristly hairs. Cerci rather short. Tip of phallus very broad.

Female: length: 2.9–3.1mm; wing: 3 mm. In most respects identical to male.

Comments.—*Syndyas singaporensis*, new species superficially, resembles *S. aterrima* de Meijere from Ceram. The wing in the latter species is also brownish tinged, but veins R_{4+5} and M are straight and run parallel toward costa. The hind femur bears a row of long ventral hairs and no spine-like bristles as in the new species.

S. singaporensis, new species, also resembles *S. nigripes* (Zetterstedt) that has however a slender hind femur with little dilated tip while the hind femur is more distinctly club-shaped in *S. singaporensis*, new species. The tip of the right surstylus is bifurcate in both species, but in *S. singaporensis*, new species, it bears flattened black bristly hairs while only ordinary hairs in *S. nigripes*. The shape of epandrial lamellae, length of cerci and shape of phallus are completely different in both species. Nevertheless we suppose that both species are closely related.

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Checklist of Oriental and Australasian *Syndyas*

- Syndyas aterrima*** De Meijere, 1913. **Oriental:** Philippines? **Australasian:** Indonesia: Ceram.
Syndyas aterrima De Meijere, 1913, Bijdr. Dierk. 19: 53. Type locality: Indonesia: Ceram.
- Syndyas brevior*** De Meijere, 1910. **Oriental:** Indonesia, Philippines?.
Syndyas brevior De Meijere, 1910. Tijdschr. Ent. 53: 68. Type localities: Indonesia: Krakatau, “Lang Eiland” and “Verlaten Eiland”.
- Syndyas dapana*** Frey, 1938. **Oriental:** Philippines.
Syndyas dapana Frey, 1938. Not. Ent. 18: 62. Type locality: Philippines: Dapa, Siargao.
- Syndyas elongata*** De Meijere, 1910. **Oriental:** Indonesia.
Syndyas elongata De Meijere, 1910. Tijdschr. Ent. 53: 67. Type localities: Indonesia: Krakatau, Verlaten Eiland; Batavia [Jakarta], Tjandjong Priok near Batavia (Jakarta), Java.
- Syndyas eumera*** Bezzi, 1904. **Australasian:** Papua New Guinea.
Syndyas eumera Bezzi, 1904. Ann. Hist. Nat. Mus. Natl. Hung. 2: 323. Type locality: Papua New Guinea: Sattelberg.
- Syndyas nigripes*** (Zetterstedt, 1842). **Palaeartic:** Austria, Belgium, China, Czech, England, Finland, Germany, Hungary, Italy, Netherlands, Poland, Russia, Sweden, Switzerland? **Oriental:** China.

Ocydromia nigripes Zetterstedt, 1842. Dipt. Scand. 1: 240. Type locality: Sweden: Suecia media, Ölandia [= Öland].

Syndyas orientalis Frey, 1938. **Oriental:** China (Taiwan).

Syndyas orientalis Frey, 1938. Not. Ent. 18: 61. Type locality: China: Taiwan, Chosokei.

Syndyas parvicellulata Bezzi, 1904. **Oriental:** Philippines, Sri Lanka? **Australasian:** Papua New Guinea.

Syndyas parvicellulata Bezzi, 1904. Ann. Hist. Nat. Mus. Natl. Hung. 2: 321. Type localities: Sri Lanka: Colombo; Papua New Guinea: Sattelberg.

Syndyas sinensis Yang et Yang, 1995. **Oriental:** China.

Syndyas sinensis Yang et Yang, 1995 Insects of Baishanzu Mountain, Eastern China: 503. Type locality: China: Zhejiang: Baishanzu.

Syndyas singaporensis, new species. **Oriental:** Singapore. Type locality: Singapore, Sungei Buloh.

Syndyas vitripennis (Brunetti, 1913). **Oriental:** India, Myanmar.

Leptopeza vitripennis Brunetti, 1913. Rec. Ind. Mus. 9: 31. Type locality: India: Oncha Gaon, Naini Tal; Myanmar: Rangoon.