

**NEW RECORDS OF SYRPHIDAE FROM DARJEELING
(WEST BENGAL) AND SIKKIM, INDIA, WITH DESCRIPTION
OF *MELISCAEVA DARJEELINGENSIS* SPEC. NOV.
(DIPTERA)**

DR. M. DATTA

Diptera In Charge

M. DATTA and M. CHAKRABORTI

ZOOLOGICAL SURVEY OF INDIA
BAGHICAN, NEW ALIPUR
CALCUTTA-700 068

Zoological Survey of India,
34, Chittaranjan Avenue, Calcutta-700012, India

The material brought together during 1971-1982 and deposited in the collections of the Zoological Survey of India, Calcutta, is dealt with. It is referable to 35 spp., 11 of which are new to the regional fauna, bringing the total number of spp. known from this territory to 101. *M. darjeelingensis* sp.n. (♂ holotype, ♀ allotype: Lloyd's Botanical Garden, Darjeeling) is described, figured, and its affinities are discussed.

INTRODUCTION

The State of Sikkim and the Darjeeling District in the State of West Bengal are very much alike physiographically as well as faunistically. There are reasons to believe that the mountain-type climate of the entire area has tremendous influence upon the diversity of flowers and their main visitors, the "flower flies".

The first attempt to reveal the syrphid fauna of the Eastern Himalaya was made by KERTÉSZ (1901). Subsequently, DE MEIJERE (1904, 1908), BRUNETTI (1907, 1908, 1913, 1915, 1923), COE (1964), and JOSEPH & SHARMA (1976) have contributed much to the regional literature. BRUNETTI's work in "*The Fauna of British India*" (1923) will continue to remain a constant source of reference.

The present paper incorporates all material so far accumulated in the Zoological Survey of India, Calcutta, during surveys of the area made by our colleagues as well as by external collectors as enumerated below:

Dr J.M. Julka (JMJ) – 1971	Dr A.N.T. Joseph (ANTJ) – 1978
Mr A.R. Bhowmik (ARB) – 1971	Dr M.S. Shishodia (MSS) – 1979
Mr H.S. Sharma (HSS) – 1973	Dr B.C. Das (BCD) – 1980
Dr P.K. Maity (PKM) – 1973	Mr R.N. Tiwari (RNT) – 1980
Dr J.K. Jonathan (JKJ) – 1974	Dr R.K. Varshney (RKV) – 1981
Dr G.K. Srivastava (GKS) – 1975	Dr R.K. Kacker (RKK) – 1982
Dr T.D. Soota (TDS) – 1977	Dr S.K. Dey (SKD) – 1982

As a result of this study, 11 species recorded here for the first time (asterisked) are added to the 90 species already known from the Darjeeling District and Sikkim. For the information on synonymy and general range of the taxa concerned, reference is made to the works of BRUNETTI (1923), KNUTSON et al. (1975), JOSEPH & SHARMA (1976; for *Sphaerophoria viridaenea*), and DATTA & CHAKRABORTI (1983, 1985).

SYSTEMATIC ACCOUNT

SYRPHINAE

SYRPHINI

(1) *Asarkina (Asarkina) ericetorum* (Fabricius)

Material. – 2 ♂, 2 ♀ (ZSI Reg. Nos 6999/H₆-7002/H₆), Kalimpong, Darjeeling, 19-24.IX.1980 (BCD); – 1 ♂ (ZSI Reg. No. 7003/H₆), Tumthangkhol, Darjeeling, 28.XII.1975 (GKS); – 1 ♂ (ZSI Reg. No. 7004/H₆), Rongli Tea Estate, Darjeeling, 24.III.1973 (HSS); – 1 ♀ (ZSI Reg. No. 7005/H₆), Ghoombhanjang, Sikkim, 10.VIII.1977 (TDS).

Face below produced forward; mesonotum with anterior collar of long and dense erect hairs; vein R₄₊₅ distinctly dipped into cell R₄₊₅; metathoracic epimeron with a tuft of short hairs. Surstylus broad basally, only slightly narrowed to broad subtruncate apex (cf. DATTA & CHAKRABORTI, 1983).

(2) *Betasyrphus serarius* (Wiedemann)

Material. – 1 ♂ (ZSI Reg. No. 7006/H₆), Sonada, Darjeeling, 28.IX.1978 (ANTJ); – 1 ♀ (ZSI Reg. No. 7007/H₆), Kalimpong, Darjeeling, 7.I.1971 (JMJ); – 1 ♀ (ZSI Reg. No. 7008/H₆), Kurseong, Darjeeling, 26.XII.1970 (JMJ).

Face densely pollinose; eyes densely and uniformly haired; antenna, at least upper surface, and arista black; upper and lower

sternopleural hair patches distinctly separated posteriorly; wings with dense microtricha on at least apical sixth. Abdominal markings very densely pollinose; surstylus long, rather slender and curved ventrally (cf. HIPPA, 1968; VOCKEROTH, 1969).

(3) *Dasysyrphus orsua* (Walker) *

Material. — 1 ♀ (ZSI Reg. No. 6842/H₆), Darjeeling, 27.IX.1980 (BCD).

Face slightly broader below, sub-shining, with broad black median stripe; eyes hairy throughout but more distinctly on lower surface; antenna and arista all black; upper and lower sternopleural hair patches broadly joined posteriorly; wings including alula entirely trichose; abdominal markings thinly pollinose.

The species has been reported earlier from India, Sri Lanka and Sumatra (KNUTSON et al. 1975).

(4) *Dideoides ovatus* Brunetti

Material. — 1 ♂ (ZSI Reg. No. 7009/H₆), Rangiroom, Darjeeling, 30.IX.1978 (ANTJ).

Eyes densely haired; mesonotum dull black; metasternum hairy; vein R₄₊₅ nearly straight; abdomen black, with orange spots and bands having orange hairs; tergite 9 of male terminalia strongly produced anteroventrally (cf. VOCKEROTH, 1969).

(5) *Dideopsis aegrota* (Fabricius) *

Material. — 1 ♀ (ZSI Reg. No. 7010/H₆), Kalimpong, Darjeeling, 19.IX.1980 (BCD); — 1 ♀ (ZSI Reg. No. 7011/H₆), Rayang, Darjeeling, 29.III.1973 (HSS).

Face slightly receding below; mesonotum with anterior collar of long erect hairs; vein R₄₊₅ slightly dipped into cell R₄₊₅; wings with broad dark brown band across median third; abdomen oval, dull black with orange-yellow spots and bands.

The species occurs throughout southeastern Asia (incl. Nepal), and has also been recorded from the Moluccas and Australia (KNUTSON et al. 1975).

(6) *Episyrphus balteatus* (De Geer)

Material. — 2 ♂, 3 ♀ (ZSI Reg. Nos 7012/H₆-7016/H₆), Kalimpong, Darjeeling, 20-25.IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7017/H₆), Lloyd's Botanical Garden, Darjeeling, 26.V.1971 (ARB); — 1 ♂ (ZSI Reg. No. 7018/H₆), Kurseong, Darjeeling, 28.XII.1970 (JMJ); — 2 ♀ (ZSI Reg. Nos 7019/H₆-7020/H₆), Lava, Darjeeling, 9-11.IX.1978 (ANTJ); — 1 ♀ (ZSI

Reg. No. 7021/H₆), Rangiroom, Darjeeling, 2.X.1978 (ANTJ); - 1 ♀ (ZSI Reg. No. 7022/H₆), Phungla, 16.IX.1978 (ANTJ); - 1 ♂ (ZSI Reg. No. 7023/H₆), Rangpoh, 10.IV.1973 (HSS); - 1 ♀ (ZSI Reg. No. 7024/H₆), Tosi View Point, Sikkim, 16.IX.1980 (BCD); - 1 ♀ (ZSI Reg. No. 7025/H₆), Gangtok, Sikkim, 2.VI.1979 (MSS); - 1 ♀ (ZSI Reg. No. 7026/H₆), Samsing, Neora Valley, 5.XII.1982 (RKK).

Eyes bare; base of antenna with a black dot above; mesonotum with two broad lateral stripes and two narrow submedian stripes; scutellum yellowish, base somewhat dark; metasternum hairy; abdomen linear, orange, with transverse black bands reaching lateral margins except a black median spot on tergite 1; male terminalia as described by HIPPA (1968) and VOCKEROTH (1969).

(7) *Meliscaeva darjeelingensis* sp. n. * - (Fig. 1)

Material. - Holotype: ♂ (ZSI Reg. No. 7032/H₆), India: West Bengal, Darjeeling, Lloyd's Botanical Garden, 2060 m, 4.I.1971 (JMJ). - Allotype: ♀ (ZSI Reg. No. 7033/H₆), same data as holotype. - Paratypes: 3 ♂, 2 ♀ (ZSI Reg. Nos 7034/H₆-7037/H₆ and 7099/H₆), same data as above.

A medium-sized, slender species with dark and sub-shining mesonotum; arcuate orange-yellow abdominal bands and face produced forward below, with oral opening twice as long as wide; male with broad elongate surstylus and laterally directed, rather slender superior lobe.

Male. - Body length 9.0-9.5 mm.

Eyes bare. Face yellowish-brown and sparsely yellow-haired; facial tubercle distinctly broad, rounded (in profile), shining, brownish, slightly produced forward below and with oral opening twice as long as wide; occiput blackish with grey hairs; vertical triangle elongate, black with yellow ocelli and black hairs; cheek yellowish with yellow hairs; faint brown mid-line from base of antennae to mouth border. Upper surface of antenna blackish and lower surface brownish, segment 3 elongate oval. Frons yellowish with a large semi-circular shining black prominence above antenna; long black hairs from above antennal prominence.

Mesonotum sub-shining black, pollinose, without stripe. Scutellum brownish-yellow, with long black hairs and with a fringe of white hairs from below hind margin. Pleura shining black, with shining whitish hairs. Anterior flat portion of mesopleuron haired. Upper and lower sternopleural hair-patches narrowly separated. Hypopleuron bare. Metasternum bare. Wing

length 9.0-10.0 mm, uniformly brownish, subcostal cell deep brown; posterior margin with a series of minute black sclerotized dots, microtricha in distal half. Legs essentially yellowish-orange; hind femur black except some basal portion and distal portion as well, underside with long hairs; hind tibia and tarsus black.

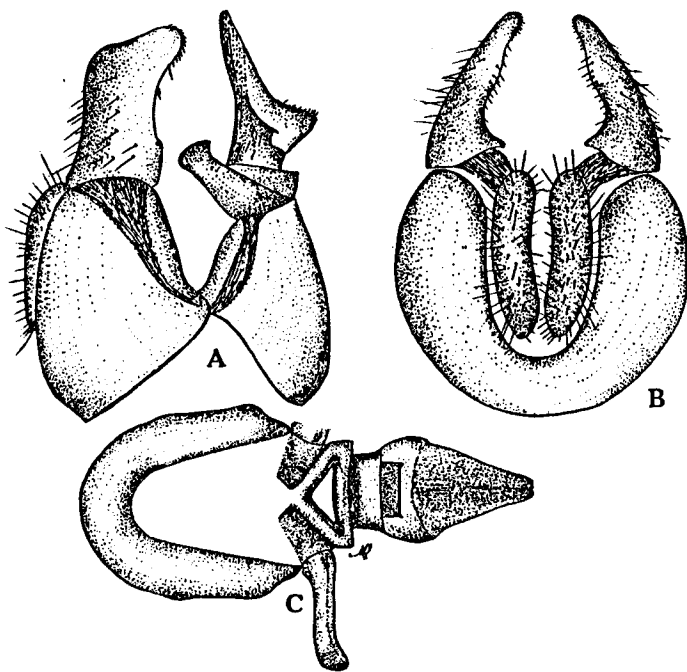


Fig. 1. *Meliscaeva darjeelingensis* sp. n., holotype ♂: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes (one side incomplete) and aedeagal base (ventral view).

Abdomen long, slender, parallel-sided and unmargined; markings orange-yellow; tergite 2 with a pair of well-separated large antero-posteriorly elongated spots, tergites 3, 4 and 5 each with a broad arcuate band. Sternites yellow. Terminalia (Fig. 1) greatly enlarged; surstylus elongate, slightly curved ventrally,

tapering gradually to rounded apex, the latter with short coarse hairs directed inwards; tergite 9 horseshoe-shaped, almost entirely accommodating kidney-shaped cerci. Sternite 9 with broad postero-ventral emargination. Superior lobe elongate, directed laterally, rather slender, expanded slightly at apex. Aedeagal base in form of a very short cylinder, slightly expanded apically, distal portion of aedeagus short, subcylindrical but flattened posteriorly, nearly basal $2/3$ moderately sclerotized and apical $1/3$ membranous, apex minutely pilose anteriorly.

Female. — Very similar to male, differing as follows: body length 9.5-11.0 mm; wing length 10.0-11.0 mm. Vertical space shining brassy aeneous, sometimes with a broad blackish stripe, thence to black spot above antenna or stripe reduced to a faint mid-line; ocelli ruby-red.

Affinities. — The species is close to the European *M. cinctella* (ZETTERSTEDT, 1843), subsequently recorded from India (Himachal Pradesh and West Bengal) and the Sri Lankan *M. ceylonica* (KEISER, 1958). The most important diagnostic features of the latter species lie in the head where the face is abruptly and strongly produced forward on the lower half, with the oral opening thrice as long as wide, unlike those in *darjeelingensis* and *cinctella*. The European species is, however, distinct from this species by the following features (among others): mesonotum sub-shining black; abdominal tergite 2 with large antero-posteriorly elongated orange-yellow spots on comparatively broad abdomen; laterally directed superior lobes and different structure of the male terminalia (cf. VOCKEROTH, 1969).

(8) *Metasyrphus (Metasyrphus) confrater* (Wiedemann) *

Material. — 2 ♂, 1 ♀ (ZSI Reg. Nos 7027/H₆-7029/H₆), Kalimpong, Darjeeling, 7-18.I.1971 (JMJ); — 1 ♀ (ZSI Reg. No. 7030/H₆), Lloyd's Botanical Garden, Darjeeling, 25.III.1973 (HSS).

Eyes bare; scutellum black-haired; metasternum haired; vein R₄₊₅ nearly straight, abdomen with three entire bands lying across middle of tergites; male terminalia (cf. VOCKEROTH, 1969) with a distinct tooth on ventral margin of superior lobe and surstylus short and broad.

The species occurs throughout the Oriental region, and has also been recorded from Japan and New Guinea (KNUTSON et al., 1975).

(9) *Metasyrphus (Metasyrphus) corollae* (Fabricius)

Material. — 1 ♀ (ZSI Reg. No. 7031/H₆), Lloyd's Botanical Garden, Darjeeling, 25.IV.1973 (HSS).

Eyes bare; scutellum white-haired; metasternum haired; vein

R₄₊₅ nearly straight, abdomen with three pairs of spots, clearly passing over lateral margins (cf. HIPPA, 1968).

(10) *Sphaerophoria indiana* Bigot

Material. — 3 ♂, 1 ♀ (ZSI Reg. Nos 7041/H₆-7044/H₆), Kalimpong, Darjeeling, 19.IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7045/H₆), Durbin Hill, Kalimpong, 25.IX.1980 (BCD); — 2 ♂ (ZSI Reg. Nos 7046/H₆-7047/H₆), Topkhana, Kalimpong, 21.IX.1980 (BCD); — 2 ♂ (ZSI Reg. Nos 7048/H₆-7049/H₆), Phawbasti, Kalimpong, 4.IX.1977 (TDS); — 1 ♂ (ZSI Reg. No. 7050/H₆), Rangpoh, Sikkim, 26.XII.1975 (GKS); — 1 ♂ (ZSI Reg. No. 7051/H₆), Deorali, Gangtok, 13.VIII.1977 (TDS); — 1 ♂ (ZSI Reg. No. 7052/H₆), Rangli Tea Estate, 24.III.1973 (PKM); — 1 ♀ (ZSI Reg. No. 7053/H₆), Mahanadi, 26.IV.1971 (ARB); — 2 ♂, 1 ♀ (ZSI Reg. Nos 7054/H₆-7056/H₆), Mirik, Darjeeling, 26.V.1980 (RNT).

Face entirely yellow, without median stripe; mesonotum black, with two more or less distinct greyish submedian stripes; frons in females with a broad black median stripe; scutellum bright yellow; subscutellar fringe absent; upper and lower sternopleural hair patches distinctly separated; metasternum haired; legs entirely yellow; for abdominal colouration and male terminalia cf. BAŃKOWSKA (1964).

(11) *Sphaerophoria viridaenea* Brunetti

Material. — 1 ♂ (ZSI Reg. No. 7038/H₆), Ghoombhanjang, Sikkim, 9.VIII.1977 (TDS); — 1 ♀ (ZSI Reg. No. 7039/H₆), Phungla, Sikkim, 16.IX.1978 (ANTJ); — 1 ♂ (ZSI Reg. No. 7040/H₆), Tiger Hill, Darjeeling, 26.IX.1978 (ANTJ).

Face yellow, with a distinct black median stripe; mesonotum blackish, unstriped; scutellum bright yellow; subscutellar fringe absent; upper and lower sternopleural hair patches distinctly separated; metasternum haired; legs entirely yellow; for abdominal colouration and male terminalia cf. BAŃKOWSKA (1964) and BANKOWSKA (op. cit.) and JOSEPH (1968), respectively.

(12) *Syrphus* sp.

Material. — 3 ♀ (ZSI Reg. Nos 7057/H₆-7059/H₆), Rangiroom, 30.IX.1978 (ANTJ).

The species is left for confirmation until male specimens will have become available.

BACCHINI

(13) *Baccha (Baccha) maculata* Walker — (Fig. 2)

Material. — 1 ♂ (ZSI Reg. No. 7060/H₆), Tiger Hill, Darjeeling, 26.IX.

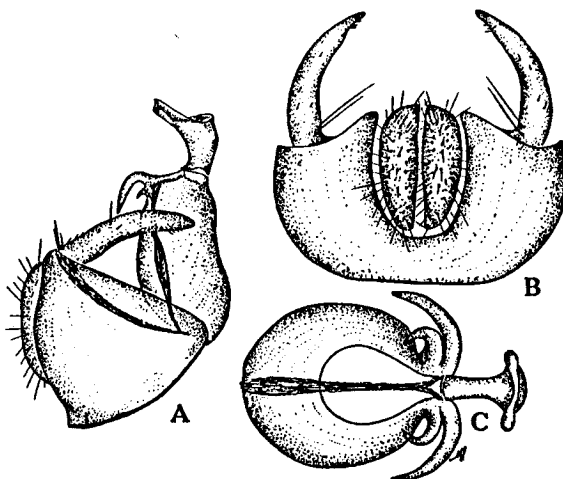


Fig. 2. *Baccha (B.) maculata*, ♂, Tiger Hill, Darjeeling: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

1978 (ANTJ); — 1 ♂ (ZSI Reg. No. 7061/H₆), Kalimpong, Darjeeling, 19. IX.1980 (BCD); — 1 ♀ (ZSI Reg. No. 7062/H₆), Lebong, Darjeeling, 25. IX.1978 (ANTJ); — 1 ♀ (ZSI Reg. No. 7063/H₆), Kalimpong, Darjeeling, 20. IX.1980 (BCD).

Eyes bare; arista bare; metasternum bare; mesopleuron anteriorly with a few distinct hairs; hypopleuron with a few hairs below spiracle; wings clear, anterior cross-vein and a streak from bifurcation of veins 2 and 3 down to upper margin of anal cell, brownish; abdomen distinctly petiolate and very slender; for male terminalia cf. Figure 2.

MELANOSTOMATINI

(14) *Melanostoma orientale* (Wiedemann)

Material. — 1 ♂ (ZSI Reg. No. 7064/H₆), Durbin Hill, Kalimpong, 25. IX.1980 (BCD); — 1 ♂, 1 ♀ (ZSI Reg. Nos 7065/H₆-7066/H₆), Topkhana, Kalimpong, 21. IX.1980 (BCD); — 2 ♂ (ZSI Reg. Nos 7067/H₆-7068/H₆), Algara, Darjeeling, 22. IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7069/H₆), Ranipal, 18. XII.1975 (GKS); — 2 ♀ (ZSI Reg. Nos 7070/H₆-7071/H₆), Rangiroom, 2. X.1978 (ANTJ); — 3 ♀ (ZSI Reg. Nos 7072/H₆-7074/H₆), Kalimpong, Darjeeling, 19-24. IX.1980 (BCD).

Eyes bare; face with two distinct bumps; arista hairy; abdomen shining black, with orange large quadrate or oblong spots anteriorly on at least tergites 3 and 4 laterally leaving a broad median space; for male terminalia cf. DATTA & CHAKRABORTI (1983).

(15) *Melanostoma univittatum* (Wiedemann) — (Fig. 3)

Material. — 3 ♂ (ZSI Reg. Nos 7075/H₆-7077/H₆), Kalimpong, Darjeeling, 19.IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7078/H₆), Sukna, Darjeeling, 7.I.1976 (GKS).

Eyes bare; face with a single angle only, being nearly straight above and below this point; arista hairy; abdomen orange coloured with narrow black border posteriorly on each tergite and a narrow indistinct black median line; for male terminalia cf. Figure 3.

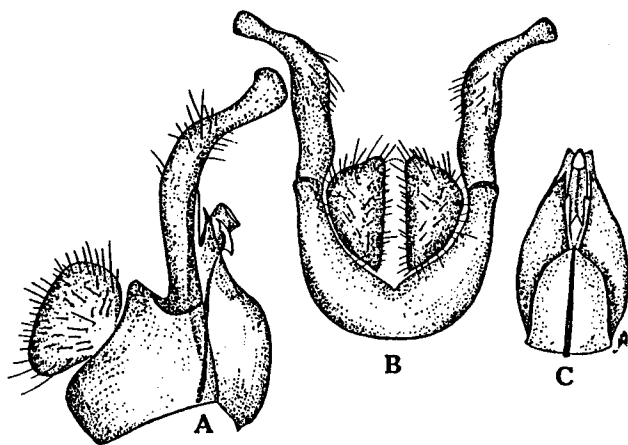


Fig. 3. *Melanostoma univittatum*, ♂, Sukna, Darjeeling: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

(16) *Xanthandrus* sp.

Material. — 1 ♀ (ZSI Reg. No. 7079/H₆), Lava, Darjeeling, 11.IX.1978 (ANTJ); — 1 ♀ (ZSI Reg. No. 7080/H₆), Rangiroom, 30.IX.1978 (ANTJ).

The species is left for confirmation until male specimens will have become available.

CHRYSTOTOXINI

(17) *Chrysotoxum quadrifasciatum* Brunetti *

Material. — 3 ♀ (ZSI Reg. Nos 7081/H₆-7083/H₆), Rangiroom, 2-3.X. 1978 (ANTJ); — 2 ♀ (ZSI Reg. Nos 7084/H₆-7085/H₆), Lebong, Darjeeling, 25.IX.1978 (ANTJ).

Eyes with long whitish hairs; face orange coloured, without any stripe; wings clear; abdomen grey, hairy, with linear arcuate orange bands and spots on terga.

So far the species was recorded from Meghalaya (India) and Laos (KNUTSON et al., 1975).

(18) *Chrysotoxum violaceum* Brunetti — (Fig. 4)

Material. — 1 ♂ (ZSI Reg. No. 7086/H₆), Rangiroom, 2.X.1978 (ANTJ); — 1 ♂ (ZSI Reg. No. 7087/H₆), Darjeeling, 27.IX.1978 (ANTJ).

Eyes with short sparse hairs; face orange with a broad black median stripe; wings brownish; abdomen shining black with black hairs; for male terminalia cf. Figure 4.

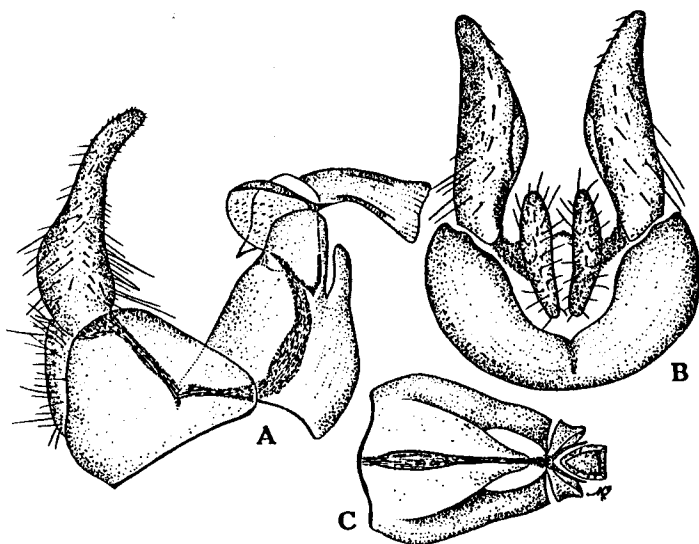


Fig. 4. *Chrysotoxum violaceum*, ♂, Darjeeling: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

PARAGINI

(19) *Paragus (Paragus) serratus* (Fabricius)

Material. — 2 ♂, 1 ♀ (ZSI Reg. Nos 7088/H₆-7090/H₆), Damdin, 12.IX.1978 (ANTJ); — 1 ♂, 1 ♀ (ZSI Reg. Nos 7091/H₆-7092/H₆), Rangpo, 26.XII.1975 (GKS).

Eyes hairy, with 3 white stripes; scutellum black with yellow margin, serrated; wings with anterior cross-vein distinctly before middle of discal cell; abdomen yellow with brown markings, punctate; aedeagus of male terminalia not divided into basal and distal portions (cf. DATTA & CHAKRABORTI, 1983).

(20) *Paragus (Pandasyophthalmus) tibialis* (Fallén)

Material. — 1 ♂ (ZSI Reg. No. 7093/H₆), Lava, Darjeeling, 9.IX.1978 (ANTJ); — 5 ♀ (ZSI Reg. Nos 7094/H₆-7098/H₆), Kalimpong, Darjeeling, 19-25.IX.1980 (BCD).

Eyes with whitish hairs; scutellum entirely black, smooth; wings with anterior cross-vein distinctly before middle of discal cell; abdomen shining black, punctate; aedeagus of male terminalia not divided into basal and distal portions (cf. DATTA & CHAKRABORTI, 1983).

(21) *Paragus (Pandasyophthalmus) rufiventris* Brunetti *

Material. — 8 ♂ (ZSI Reg. Nos 7100/H₆-7107/H₆), Kalimpong, Darjeeling, 19-25.IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7108/H₆), Topkhana, Kalimpong, 21.IX.1980 (BCD); — 2 ♂ (ZSI Reg. Nos 7109/H₆-7110/H₆), Munsong, 10.IX.1978 (ANTJ); — 1 ♂ (ZSI Reg. No. 7111/H₆), Ranipal, 22.IX.1978 (ANTJ).

As shown earlier (DATTA & CHAKRABORTI, 1983, pp. 244-245, figs 5-6), this taxon cannot be treated as a subspecies of *P. tibialis* as suggested by KNUTSON et al. (1975).

Eyes with whitish hairs; scutellum entirely black, smooth; wings with anterior cross-vein distinctly before middle of discal cell; anterior half of abdomen black and posterior half reddish-yellow, punctate; aedeagus of male terminalia not divided into basal and distal portions (cf. DATTA & CHAKRABORTI, 1983).

The species was reported from Assam, Bihar and Uttar Pradesh (India) and from Nepal, Pakistan and Sri Lanka (BRUNETTI, 1923; KNUTSON et al., 1975).

MILESIINAE

CHEILOSIINI

(22) *Rhingia binotata* Brunetti — (Fig. 5)

Material. — 1 ♂ (ZSI Reg. No. 7112/H₆), Rangiroom, 30.IX.1978 (ANTJ).

Scutellum entirely with soft long yellow hairs; metathorax with spiracular hair patch; costa extended beyond apex of wing; abdomen blackish, tergite 2 with pale yellow spot laterally towards base; ctenidion associated with male terminalia (cf. Fig. 5).

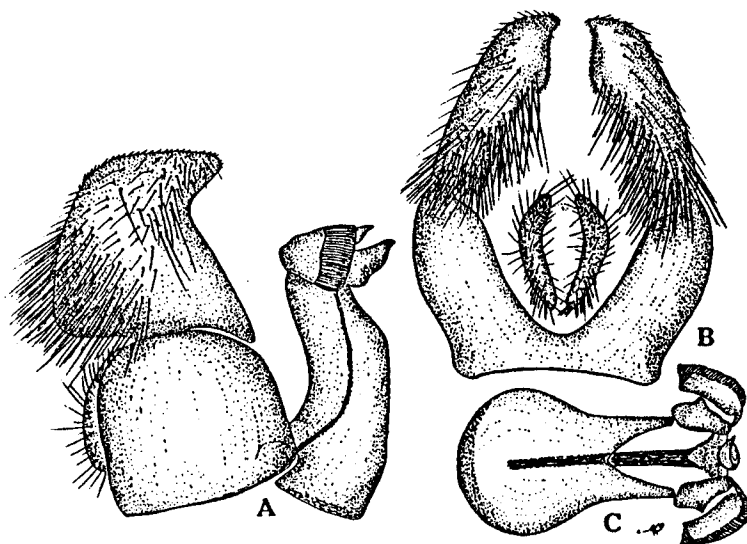


Fig. 5. *Rhingia binotata*, ♂, Rangiroom: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

(23) *Rhingia laticincta* Brunetti — (Fig. 6)

Material. — 2 ♂ (ZSI Reg. Nos 7113/H₆-7114/H₆), Lloyd's Botanical Garden, Darjeeling, 4.I.1971 (JMJ); — 1 ♀ (ZSI Reg. No. 7115/H₆), Kalimpong, Darjeeling, 7.I.1971 (JMJ); — 1 ♀ (ZSI Reg. No. 7116/H₆), Darjeeling, 27.IX.1980 (BCD).

Scutellum with yellow hairs on disc only; metathorax with

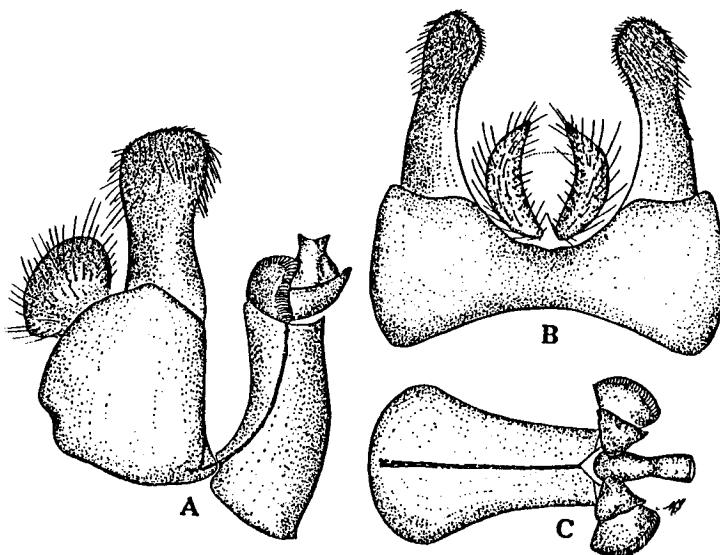


Fig. 6. *Rhingia laticincta*, ♂, Darjeeling: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

spiracular hair patch; costa extended beyond apex of wing; abdominal tergites 2, 3 and 4 mainly yellowish, with black elongate spots laterally on hind margin; ctenidion associated with male terminalia (cf. Fig. 6).

SPHEGINOBACCHINI

(24) *Spheginobaccha macropoda* (Bigot)

Material. — 1 ♀ (ZSI Reg. No. 7117/H₆), Rangpo, Darjeeling, 10.IV. 1973 (HSS).

Eyes haired. Face tuberculate; occiput with a deep crease on upper two-thirds; second basal cell microtrichose on apical third; hind femoral spines distinct; abdominal pattern always with more extensive dark areas, dark medial vitta on terga 2 and 3.

ERISTALINI

(25) *Eristalinus (Eristalinus) arvorum* (Fabricius)

Material. — 1 ♂, 1 ♀ (ZSI Reg. Nos 7118/H₆-7119/H₆), Kalimpong, Darjeeling, 18-24.IX.1980 (BCD); — 1 ♀ (ZSI Reg. No. 7120/H₆), Rangiroom, 25.V.1974 (JKJ).

Eyes brown-haired, spotted; antenna yellowish, arista slightly hairy at base; mesonotum yellow with black stripes; scutellum reddish-yellow; subscutellar fringe absent; abdomen yellow, hind margin of tergites narrowly black, spots often variable; superior lobe in male terminalia long, flask-like in basal two-thirds and cylindrical apically (cf. NAYAR, 1968; DATTA & CHAKRABORTI, 1983).

(26) *Eristalinus (Eristalinus) laetus* (Wiedemann) *

Material. — 1 ♀ (ZSI Reg. No. 7121/H₆), Rangiroom, 2.X.1978 (ANTJ).

The species is here understood as defined by BRUNETTI (1923), i.e. it is not considered conspecific with *Eristalis obscuritarsis* de Meijere.

Eyes brown-haired, spotted; antenna brown, arista hairy on basal half; mesonotum black with whitish hair, with black indistinct stripes; scutellum also black; subscutellar fringe absent; abdomen black, lateral spots transversely placed, those on tergites 3 and 4 united to form inverted V-shaped band.

The species has been reported from Bihar, Karnataka, Kashmir, Meghalaya, Rajasthan and Tamil Nadu (India) and from China and Nepal (BRUNETTI, 1923; DATTA & CHAKRABORTI, 1983).

(27) *Eristalinus (Eristalinus) quinquestriatus* (Fabricius) — (Fig. 7)

Material. — 1 ♂ (ZSI Reg. No. 7122/H₆), Kalimpong, Darjeeling, 19.IX.1980 (BCD).

Eyes brown-haired, spotted; antenna yellowish with brownish segment 3, arista bare; mesonotum black, with indistinct black stripes; subscutellar fringe absent; abdominal tergite 2 with a broad black band; tergite 3 with similar band with a black medium spot; tergite 4 with a curved yellow band; for male terminalia cf. Figure 7.

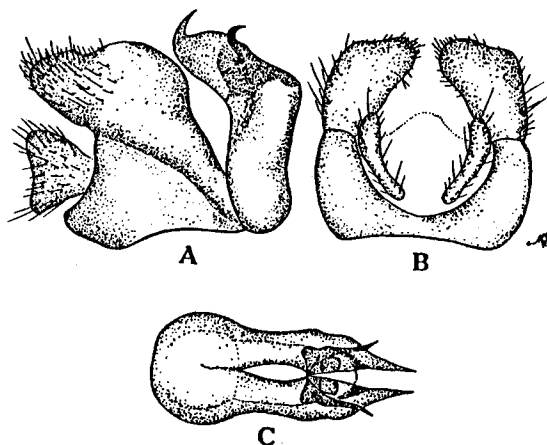


Fig. 7. *Eristalinus (E.) quinquestriatus*, ♂, Kalimpong: (A) terminalia (lateral view); – (B) tergite 9, cerci and surstyli (dorsal view); – (C) sternite 9, superior lobes and aedeagal base (ventral view).

(28) *Eristalinus (Eristalodes) paria* (Bigot)

Material. – 1 ♂ (ZSI Reg. No. 7123/H₆), Lebong, Darjeeling, 25.IX.1978 (ANTJ); – 2 ♂, 3 ♀ (ZSI Reg. Nos 7124/H₆-7128/H₆), Rangiroom, Darjeeling, 2-3.X.1978 (ANTJ); – 1 ♂ (ZSI Reg. No. 7129/H₆), Rangiroom, Darjeeling, 30.IX.1978 (ANTJ); – 1 ♀ (ZSI Reg. No. 7130/H₆), Lava, Darjeeling, 9.IX.1978 (ANTJ); – 1 ♂ (ZSI Reg. No. 7131/H₆), Lebong, Darjeeling, 18.V.1979 (MSS); – 1 ♂ (ZSI Reg. No. 7132/H₆), Ghoombhangjang, Sikkim, 6.VIII.1977 (TDS).

Eyes with bronze-brown hairs, with six longitudinal dark stripes; face with longitudinal stripe; antenna yellowish to brownish, arista microscopically hairy at its base, mesonotum yellowish-grey, with four black stripes, scutellum brownish-yellow; sub-scutellar fringe long; abdominal colouration variable; for male terminalia cf. DATTA & CHAKRABORTI (1983).

(29) *Eristalis (Eristalis) tenax* (Linnaeus) *

Material. – 2 ♂ (ZSI Reg. Nos 7133/H₆-7134/H₆), Lloyd's Botanical Garden, Darjeeling, 20.X.1979 (MSS); – 1 ♀ (ZSI Reg. No. 7135/H₆), Darjeeling, 21.V.1979 (MSS); – 1 ♂ (ZSI Reg. No. 7136/H₆), Rangiroom, Darjeeling, 30.IX.1978 (ANTJ); – 1 ♀ (ZSI Reg. No. 7137/H₆), Rangiroom, 2.X.1978 (ANTJ); – 1 ♂, 2 ♀ (ZSI Reg. Nos 7138/H₆-7140/H₆), Tibetan Naya Basti, Darjeeling, 8.V.1971 (ARB); – 1 ♂ (ZSI Reg. No. 7141/H₆), Lloyd's Botanical Garden, Darjeeling, 26.V.1971 (ARB); – 1 ♀ (ZSI Reg. No. 7142/H₆), Phungla, Darjeeling, 16.IX.1978 (ANTJ).

Eyes brown-haired, with two longitudinal bands of denser hairs; antenna generally brownish-black, arista with hairs at its basal half; mesonotum shining brownish-black; scutellum brownish-yellow; subscutellar fringe present; abdominal colouration highly variable; for male terminalia cf. NAYAR (1968).

This is an almost cosmopolitan species, widespread also in the entire Oriental region (cf. also STONE et al., 1965).

(30) *Eristalis (Eoseristalis) cerealis* Fabricius *

Material. — 1 ♂, 2 ♀ (ZSI Reg. Nos 7143/H₆-7145/H₆), Rangiroom, Darjeeling, 30.IX.1978 (ANTJ); — 1 ♂, 1 ♀ (ZSI Reg. Nos 7146/H₆-7147/H₆), Lava, Darjeeling, 9.IX.1978 (ANTJ); — 1 ♂, 2 ♀ (ZSI Reg. Nos 7148/H₆-7150/H₆), Kurseong, Darjeeling, 2-3.V.1971 (ARB); — 2 ♂ (ZSI Reg. Nos 7151/H₆-7152/H₆), Gangtok, Sikkim, 15.IX.1980 (BCD); — 1 ♂ (ZSI Reg. No. 7153/H₆), Gangtok, Sikkim, 3.VI.1979 (MSS); — 1 ♀ (ZSI Reg. No. 7154/H₆), Gangtok, 2.VI.1979 (MSS); — 2 ♂ (ZSI Reg. Nos 7155/H₆-7156/H₆), Senchal, Darjeeling, 18.IV.1981 (RKV).

Eyes black with long upper brown hairs and lower off-white hairs, spotted; face with a black median line; antenna brownish, arista haired except apical portion; mesonotum brownish anteriorly but blackish posteriorly; scutellum brownish-yellow, subscutellar fringe long; abdominal colouration variable; for male terminalia cf. DATTA & CHAKRABORTI (1983).

The species is widespread throughout the Oriental region and in Japan, Kashmir, Korea and Sakhalin (LAMBECK & VAN BRINK, 1973; KNUTSON et al., 1975).

(31) *Eristalis (Eoseristalis) himalayensis* Brunetti

Material. — 1 ♀ (ZSI Reg. No. 7157/H₆), Lava, Darjeeling, 11.IX.1978 (ANTJ); — 1 ♀ (ZSI Reg. No. 7158/H₆), Rangiroom, Darjeeling, 30.IX.1978 (ANTJ); — 2 ♀ (ZSI Reg. Nos 7159/H₆-7160/H₆), Rangiroom, 2.X.1978 (ANTJ).

Eyes black with upper brown hairs and lower off-white hairs; face with a longitudinal band of dark brown hairs; antenna brownish, arista entirely haired; mesonotum black, with inconspicuous band along suture; scutellum reddish-brown, with a subscutellar fringe; abdomen bluntly conical, colouration variable.

(32) *Eristalis* sp.

Material. — 1 ♀ (ZSI Reg. No. 7161/H₆), Sukia Pokhri, Darjeeling, 28.IX.1980 (BCD).

The female specimen is insufficient for further identification.

MILESIINI

(33) *Lycastris albipes* Walker *

Material. — 1 ♀ (ZSI Reg. No. 7162/H₆), Badamtam, Darjeeling, 4.IV. 1982 (SKD).

Frons and face including rostrum shining black, with a light grey stripe laterally along rostrum; mesonotum black, with dense long black hairs; wings with extra stigmal cross-veins (nearly 6); hind legs black; abdomen black, with dense bright yellow hairs.

The species has been reported earlier from India (KNUTSON et al., 1975).

(34) *Lycastris flavohirta* Brunetti — (Fig. 8)

Material. — 1 ♂ (ZSI Reg. No. 7163/H₆), Tiger Hill, Darjeeling, 26.IX. 1978 (ANTJ).

Frons and face brown; rostrum black with grey stripe laterally all along; mesonotum black, with grey hairs; wings with extra costal veins (nearly 3); legs yellow except two-thirds of hind

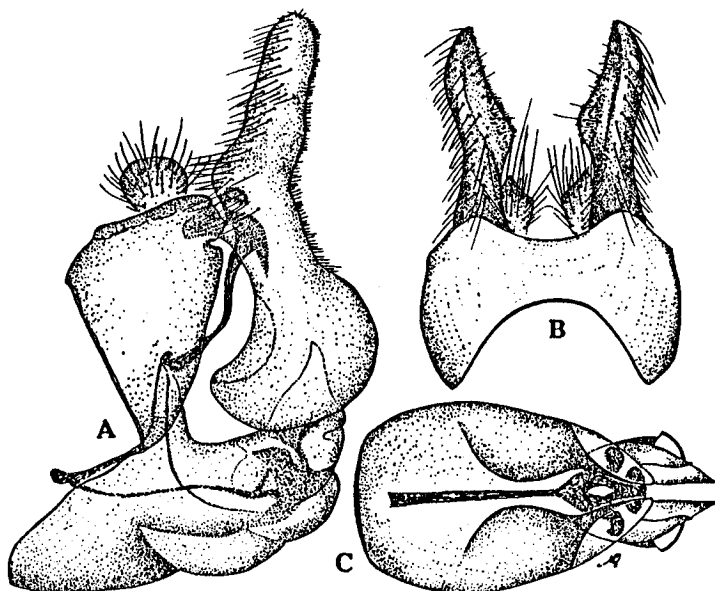


Fig. 8. *Lycastris flavohirta*, ♂, Tiger Hill, Darjeeling: (A) terminalia (lateral view); — (B) tergite 9, cerci and surstyli (dorsal view); — (C) sternite 9, superior lobes and aedeagal base (ventral view).

femur being black and tip of hind tibia brownish; abdomen black with grey hairs; male terminalia cf. Figure 8.

XYLOTINI

(35) *Xylota nursei* Brunetti *

Material. — 1 ♀ (ZSI Reg. No. 7164/H₆), Rangiroom, Darjeeling, 30. IX.1978 (ANTJ).

Frons and face bright yellow; wings uniformly greyish; mesonotum without stripes or patches; hind trochanter with blunt tubercle; hind femur with a double row of small spines outside; abdomen largely metallic-bronze.

The species was originally described from Simla (BRUNETTI, 1923).

ACKNOWLEDGEMENTS

We are grateful to Dr B.K. TIKADER, Director and Dr A.N.T. JOSEPH, Officer-in-Charge of the Diptera Section, Zoological Survey of India, Calcutta, for placing the material at our disposal and for providing laboratory facilities during the course of this investigation. We have much pleasure in acknowledging the helpfulness and generosity of Dr H. HIPPA, University of Turku, Finland, for confirming the identity of the species and for imparting his extensive knowledge on the Syrphidae during his stay at Calcutta. We also thank Mr P. PARUI, Senior Zoological Assistant of our Section for various assistance in the laboratory.

REFERENCES

- BAŃKOWSKA, R., 1964. Studien über die paläarktischen Arten der Gattung *Sphaerophoria* St. Farg. et Serv. (Diptera, Syrphidae). *Annls zool., Warsz.* 22: 285-353.
- BRUNETTI, E., 1907. Notes on the Oriental Syrphidae. Part I. *Rec. Indian Mus.* 1: 379-380.
- BRUNETTI, E., 1908. Notes on Oriental Syrphidae, with descriptions of new species. Part I. *Rec. Indian Mus.* 2: 49-96.
- BRUNETTI, E., 1913. New and interesting Diptera from the Eastern Himalayas. *Rec. Indian Mus.* 9: 255-277.
- BRUNETTI, E., 1915. Notes on Oriental Syrphidae, with descriptions of new species. Part II. *Rec. Indian Mus.* 11: 201-257.
- BRUNETTI, E., 1923. *The fauna of British India including Ceylon and Burma. Diptera*, vol. 3. Taylor & Francis, London.
- COE, R.L., 1964. Diptera from Nepal. Syrphidae. *Bull. Br. Mus. nat. Hist. (Ent.)* 15: 255-290.

- DATTA, M. & M. CHAKRABORTI, 1983. On a collection of flower flies (Diptera: Syrphidae) with new records from Jammu and Kashmir. *Rec. zool. Surv. India* 81: 237-253.
- DATTA, M. & M. CHAKRABORTI, 1985. Fauna of Namdapha: Arunachal Pradesh. Insecta: Diptera. *Rec. zool. Surv. India* 82: 231-252.
- DE MEIJERE, J.C.H., 1904. Neue und bekannte süd-asiatische Dipteren. *Bijdr. Dierkunde* 17/18: 83-118.
- DE MEIJERE, J.C.H., 1908. Studien über südostasiatische Dipteren, Part. III. *Tijdschr. Ent.* 51: 190-332.
- HIPPA, H., 1968. A generic revision of the genus *Syrphus* and allied genera (Diptera, Syrphidae) in the Palaearctic Region, with descriptions of male genitalia. *Acta ent. fenn.* 25: 1-94.
- HIPPA, H., 1978. Classification of Xylotini (Diptera, Syrphidae). *Acta zool. fenn.* 156: 1-153.
- JOSEPH, A.N.T., 1968. On the 'forms' of *Sphaerophoria* St. Farg. et Serv. (Diptera, Syrphidae) described by Brunetti from India. *Oriental Insects* 1: 243-248.
- JOSEPH, A.N.T. & H.S. SHARMA, 1976. New records of Syrphidae (Diptera) from Sikkim, India. *Newsl. zool. Surv. India* 2: 252-254.
- KEISER, F., 1958. Beitrag zur Kenntnis der Syrphidenfauna von Ceylon (Dipt.). *Revue suisse Zool.* 65: 185-239.
- KERTÉSZ, K., 1901. Neue und bekannte Dipteren in der Sammlung des Ungarischen National Museums. *Termeszettud. Füzet.* 24: 403-432.
- KNUTSON, L.V., F.C. THOMPSON & J.R. VOCKEROTH, 1975. *A catalog of Diptera of the Oriental Region*, vol. 2, pp. 306-374. Univ. Hawaii Press, Honolulu.
- LAMBECK, H.J.P. & J.M. VAN BRINK, 1973. Contribution to the knowledge of the taxonomy, faunal composition and cytology of the syrphid flies (Diptera: Syrphidae) of Kashmir (India). I. Taxonomic account and faunal composition. *Genen Phaenen* 16: 87-100.
- NAYAR, J.L., 1968. Male genitalia of Eristalinae from California (Syrphidae: Diptera). *Pan-Pacif. Entomologist* 44: 153-167.
- STONE, A., C.W. SABROSKY, W.W. WIRTH, R.H. FOOTE & J.R. COULSON, 1965. *A catalog of the Diptera of America North of Mexico*. U.S. Dept Agric., Washington, D.C.
- THOMPSON, F.C., 1974. The genus *Spheginobaccha* de Meijere (Diptera: Syrphidae). *Trans. Am. ent. Soc.* 100: 261-267.
- VOCKEROTH, J.R., 1969. A revision of the genera of the Syrphini (Diptera: Syrphidae). *Mem. ent. Soc. Can.* 62: 1-176.
- ZETTERSTEDT, J.W., 1843. *Diptera Scandinaviae. Disposita et descripta*, vol. 2, pp. 441-894. Privately published.