

On a small collection of Syrphid Flies (Diptera: Syrphidae) from the Kathmandu Valley and the Khumbu Himal Region (Nepal)

by

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ABSTRACT

Epistrophe aequalis (Walker), *Syrpitta pipiens* (L.), *Helophilus quadrivittatus* (Wiedemann), *Eristalis solitus* Walker and *Megaspis crassus* (Fabr.) are new to the fauna of the Kingdom of Nepal. It is demonstrated that *Sphaerophoria indiana* Bigot, listed earlier from East Nepal, actually is *S. bengalensis* Macquart. *Melanostoma orientale melanoides* f. nov. from Khumbu Himal is described.

The collections brought home by the second author from his 1972 Khumbu Himal Expedition (Nepal) contain also 50 Syrphidae specimens, referable to 16 species, five of which are new to the Nepalese fauna. They were collected in the course of September and October in the Kathmandu Valley and at various localities in the Mt. Everest Region. The material is in the collections of the Netherlands Centre for Alpine Biological Research, Utrecht.

The female of *Epistrophe aequalis* (Walker), known previously from a single specimen from India, is partly redescribed and its generic affiliation is reconsidered. A melanistic form of *Melanostoma orientale* (Wiedemann) is described for the first time. In addition, an attempt has been made to clarify the synonymy of *Eristalis quinquelineatus orientalis* Brunetti, 1923, versus *E. paria* (Bigot, 1880).

The general classification adopted in this paper is that of WIRTH et al. (1965). For the tribe Syrphini, however, the recent revision by VOCKEROTH (1969) was followed. For the genera *Eristalis* and *Megaspis* the subgeneric division as suggested by HULL (1940) is applied. *Mesembrius* is considered as subgenus in *Helophilus*.

For the itinerary of the expedition reference is made to the 1972 Annual Report of the Netherlands Centre for Alpine Biological Research.

LIST OF LOCALITIES

There is no uniformity in transcription of the Nepalese topographic names. Those listed below are in accordance with the following maps: "Khumbu Himal" by E. SCHNEIDER (1 : 50.000; Research Scheme Nepal Himalaya; München, 1963) for the region North of Namche Bazar; "Solu Khumbu" (1 : 250.000; in S. BEZRUCHKA, A guide to trekking in Nepal, Prakashan, Kathmandu, 1972) for the region between Lughla (Lukla) and Namche Bazar; and "Kathmandu Valley" (1 : 68.000, Kathmandu, 1972) for the surroundings of Kathmandu.

Kathmandu Valley

(1) *Chauni*. A suburb of Kathmandu, East of the Vishnumati River, ca. 1400 m.



Fig. 1. Dudh Kosi Valley from the trek Lughla — Namche Bazar. In the background Mt. Everest (left) and Lhotse (right). The syrphid flies were collected in the upper part, at the confluence of Dudh Kosi and Phunki Drangka. (Photo B. KIAUTA).

Fig. 2. A detail in the Phunki Drangka Valley. The spot on the photograph is frequented by *Eristalis himalayensis* Brunetti. (Photo B. KIAUTA).

This is a well cultivated area, with many gardens and some small pools. Material was collected in the garden of the Nepal Research Center (Thyssen House), at various similar places in the surroundings of the National Museum and in the area between the latter and the Swayumbhoonath Temple.

- (2) *Tribubvan*. Rice fields along the Bagmati River, between Damthik and Cuheswai, ca. 1400 m.
- (3) *Taudaha*. Village ca. 11 km South of Kathmandu, ca. 1350 m. In the rice fields and on the banks of the Teudaha Lake.

Khumbu Himal

- (4) *Lughla* (Lukla). Between Chutrawa and Phakding, ca. 2800 m. On vegetation on the walls along the trek.
- (5) *Phunki Drangka*. In a forest clearing under the waterfall; on the right bank, ca. 50 m above the confluence with Dudh Kosi; ca. 3400 m (Figs 1—2).
- (6) *Tengpoche Gonda*. In the meadows under the Tengpoche Monastery; ca. 3850 m.

SURVEY OF COLLECTED MATERIAL

SYRPHINAE

Syrphini

- (1) *Syrphus torvus* Osten Sacken, 1875
Tengpoche Gonda (3850 m), 1 ♂, 22.IX.1972.

The hairs on the face of our specimen are black, thus in agreement with the description of material from Simla District, India (BRUNETTI, 1923). The dust on the frons is golden, as described by COE (1965) instead of grey as in the European specimens.

The species has a wide holarctic distribution and has been recorded previously from the Taplejung District, East Nepal, where it was collected in November and December at an elevation less than 2100 m (COE, 1965).

- (2) *Epistrophe aequalis* (Walker, 1852) comb. nov. (Fig. 3)
Tengpoche Gonda (3850 m), 1 ♀, 22.IX.1972.

Originally, three males from the "Western Himalayas", were described as *Syrphus distinctus* Brunetti, 1915, but later, the same author (1923) synonymized the species with *Xylota aequalis* Walker, 1852. The description of the female was provided by NAYAR (1967a). The latter is incomplete and it seems that our Nepalese specimen deviates from the material collected by NAYAR at Dalhausie, India. It was considered useful, therefore, to add here a few additional notes.

H e a d. Frons at base of antennae more than one third of the head, narrowing to about one third of the original width on vertex. Frons moderately shining to dull black, with two conspicuous dusted spots across it, widely separated in the centre. The spots are connected with the dusting on the face by a relatively broad dusted area along the eye margins.

L e g s. Tarsi of front and middle legs darkened, particularly so in the former pair. Hind femora for about two thirds black, especially upper side. Basal half with rather long yellow hairs, anterior half with thick, black, short bristles and some longer ones in the middle region. Hind tibia, for about basal half, yellow; the whole surface covered by short black bristles. Tarsi entirely brownish-black.

A b d o m e n (Fig. 3). Lateral hind corners of 1st tergite with narrow triangular spots. Second tergite with a rather narrow pale pinkish-yellow band across the middle, where it is slightly interrupted; the lateral anterior corners continuing as narrow yellow margins, connecting the crossband with the yellow hind corners of the first tergite. The crossbands of tergites 3 and 4 are clearly in the anterior part of the segments, especially so in the fourth tergite. Posterior margins of all tergites, including the 5th and 6th, wholly black.

At first sight this striking species, with pinkish-yellow abdominal bands and rather long, deeply black antennae, closely resembles the common *Betasyrphus serarius* (Wiedemann, 1830). At closer inspection, however, it can be immediately separated from *Betasyrphus*. The absence of longer hairs on the anterior flat portion of the mesopleuron, the clear wings, the normal costa, the bare metastern-

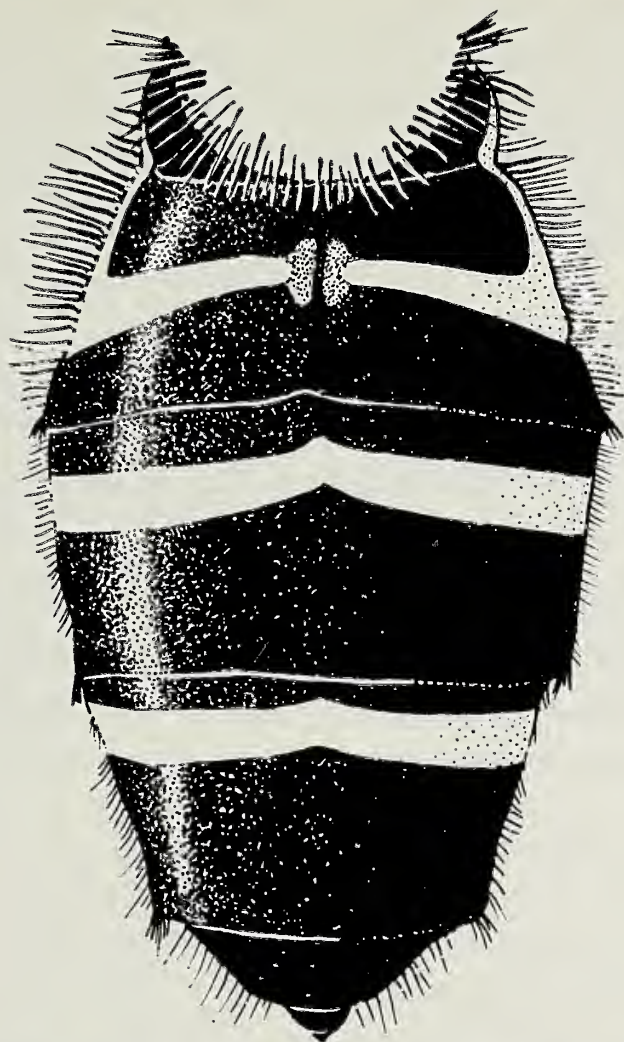


Fig. 3. *Epistrophe aequalis* (Walker) comb. nov.: abdomen of the female from the Tengpoche Monastery area.

num, the only moderate length of the antennae, the bare eyes, the straight course of R_{4+5} , the faint traces of a margin on at least 3th and 4th tergites, the rather broad, but obscure median stripe of the face, the subovate abdomen and the only microscopic pile on the upper surface of the lower lobe of the squama seem to justify the placing of *aequalis* into the genus *Epistrophe* Walker, as defined by VOCKEROTH (1969), though only dissection of the male genitalia will reveal its generic position with certainty.

The species is new to Nepal and has been hitherto known from only four males (BRUNETTI, 1923) and one female (NAYAR, 1967a) — all from the Western Himalaya.

(3) *Episyrrhus balteatus* (De Geer, 1776)

Tribuhvan (1400 m), 1 ♀, 4.X.1972; Chauni (1400 m), 2 ♀, 27.IX/5.X.1972.

Our specimens agree with the typical Indian form as described and figured by BRUNETTI (1923), thus the second black crosslines on tergites are considerably narrower than in the European specimens. From Eastern Nepal COE (1965) described a variety with greyish-black longitudinal stripes on the abdomen. It is not clear which form NAYAR (1967a) collected in Tibet, but it is likely that his description refers to a more European-looking material.

The species is common throughout the Old World and has been repeatedly reported from various Himalayan localities, including the Punjab Himalaya, Tibet (NAYAR, 1967a) and East Nepal (COE, 1965) from elevations up to 3000 m.

In the post monsoon period it is rather common in the rice fields of the Kathmandu Valley and is often on wings also at cloudy weather. It does not seem to be bound to a certain vegetation.

(4) *Sphaerophoria bengalensis* Macquart, 1842

Chauni (1400 m), 4 ♂, 2 ♀, 11—14.IX.1972; 2 ♂, 27.IX/5.X.1972; Tribhuvan (1400 m), 1 ♂, 4.X.1972.

The male genitalia of two specimens from Chauni are almost identical with the figures of *S. indiana* Bigot, as given by JOSEPH (1968), in having the apical divisions of the anteroventral lobe of the surstylus rather broad and rounded, and in the presence of an extensive patch of short stout setae on the inner surface of the same lower lobe. The only difference is the presence of more and longer hairs on the apex of the anteroventral lobe so that in our specimens there is a continuous row of long hairs along the upper ridge of the surstylus. Superior lobe of sternite 9 with a row of rather long erect yellow setae on more than half of the upper ridge. In comparison with the figure of the superior lobe of *indiana*, as given by BANKOWSKA (1964), the general shape is somewhat more elongate, the setae are more densely placed, longer, and covering a larger surface. (The terminology used here is that of VOCKEROTH, 1969.)

VOCKEROTH (1971) pointed out that the specimens treated by JOSEPH (1968) as *indiana* are identical with *S. bengalensis*, hence we consider our material to belong to this species.

JOSEPH (1968) states that his *indiana* agrees with "forms 1 and 2" of BRUNETTI (1915). Our specimens agree with "form 2" in having dark brown markings on tergites 3 and 4, and in lacking a facial stripe. They are distinct, however, in having, in both sexes, the last two tarsal joints of the third pair of legs distinctly dark brown. (In "form 3", *nigritarsis* of BRUNETTI, 1915 = *nigritarsis* Joseph, 1968 = *indiana* Brunetti, 1915, as pointed out by VOCKEROTH, 1967, all tarsi of the hind legs are black, those of the front and middle legs brown.)

"Form 2" as understood by BRUNETTI (1915) was reported by him from "Shanghai, Simla, Nepal (Noalpur) and Bengal". COE (1965) mentioned *indiana* Bigot from East Nepal. From the above considerations it is clear that these records may refer to *bengalensis*. Nevertheless, it is for the first time now that the species is listed under this name for the Nepalese fauna. Its type locality is Bengal, and it has been recorded previously from the Punjab region as well.

Melanostomini

(5) *Melanostoma orientale* (Wiedemann, 1824), form *melanoides* nov.

Lughla (2800 m), 1 ♀, 23.IX.1972.

We refer to this specimen as form *melanoides* nov., as it is uncertain whether it is merely a melanistic specimen of *orientale*, or represents a local subspecies. Additional material may clarify its status. The following are features in which our

specimen deviates from the description of the *orientale* female as given by BRUNETTI (1923).

L e g s. Front and middle legs yellow-orange, hind legs partly darkened. Femora with an obscure darkened band about two thirds from base. Tibiae with a very broad, unclearly limited, dark brown band in the middle. All tarsi darkened above. Pubescence of legs yellow-orange, save for short brown bristles on tip of femora, on base of tibiae and on upper side of tarsi of hind legs.

A b d o m e n. Tergites 2 and 3 wholly shining black, tergite 4 with very obscure traces of brown-orange spots near the anterior margin, tergite 5 with small, subtriangular brownish-orange, well separated spots near the anterior edge. Anterior corners of the same tergite with small triangular markings of the same colour. Sides of the anterior margin of tergite 6 obscure brown-orange. Tergite 7 wholly shining black.

This species is common and widely distributed in the Oriental Region. Previously it was recorded from East Nepal, at elevations between 1200-2100 m (COE, 1965). Our specimen, like those published by COE, was captured in the vicinity of running water.

MILESINI

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(6) *Syritta pipiens* (Linnaeus, 1758)

Chauni (1400 m), 2 ♀, 11—14.IX.1972; 1 ♀, 27.IX/5.X.1972.

This very common holarctic species is widely distributed in the East and is known from several Himalayan localities (BRUNETTI, 1923). For the Nepalese fauna it is new.

Eristalini

(7) *Helophilus (Mesembrius) quadrivittatus* (Wiedemann, 1819)

Chauni (1400 m), 3 ♂, 2 ♀, 11—14.IX.1972; 1 ♀, 27.IX/5.X.1972; Taudaha (1350 m), 1 ♀, 3.X.1972.

Our specimens perfectly agree with BRUNETTI's description (1923), save for a distinctly darker tergite 1. The latter is completely black in our males, while only the front corners are yellow in our females. In both sexes the centre of the hind edge, opposite the hind edge of the scutellum, is dusted bluish-green.

The species is apparently new to Nepal, though it is widely distributed in the Indian plains and in the Oriental Region. In the Kathmandu Valley it is common everywhere, particularly so in the cultivated country. At Taudaha lake it is one of the flies that most often fall victim to the extremely aggressive dragonfly, *Orthetrum sabina* (Drury).

(8) *Eristalis (Eristalis) himalayensis* Brunetti, 1908

Phunki Drangka (3400 m), 1 ♂, 17.IX.1972; Tengpoche Gonda (3850 m), 1 ♂, 22.IX.1972.

It is widely distributed in the Himalayan range, predominantly in the sub-

alpine and alpine zones, between 1700 en 4300 m altitude (cf. BRUNETTI, 1923; COE, 1965; NAYAR, 1967b). The first Nepalese records were published by COE (1965). In forest clearings under the Tengpoche Monastery it is rather common, particularly so at places near water.

(9) *Eristalis (Eristalis) solitus* Walker, 1849

Chauni (1400 m), 1 ♀, 11—14.IX.1972; Tribuhvan (1400 m), 1 ♀, 4.X.1972.

This is the first Nepalese record, though the species is rather common throughout the Himalayan region (BRUNETTI, 1923). It is a summer species, on wings from April onwards. Our record is the latest seasonal record known.

(10) *Eristalis (Eristalis) tenax* (Linnaeus, 1758)

Chauni (1400 m), 1 ♀, 27.IX/5.X.1972.

This cosmopolitan species has been hitherto recorded both from East Nepal (up to 2300 m) and from the surroundings of Kathmandu (COE, 1965).

(11) *Eristalis (Eristalodes) paria* (Bigot, 1880)

Chauni (1400 m), 4 ♂, 11—14.IX.1972.

We are not certain as to the identity of our material. BRUNETTI (1923) described var. *orientalis* of *Eristalis quinquelineatus* (Fabricius, 1781), which, having striped eyes, certainly is an *Eristalodes*. In the same publication he synonymized *Eristalis paria* (Bigot, 1880) with the nominate form of *quinquelineatus*. Subsequently CURRAN (1928) has given a detailed description of the female of *paria*, based on two specimens from Java, and stated that this was the only Oriental *Eristalodes* known to him.

The descriptions mentioned are all fragmentary and insufficient for a safe identification. The difficulties are particularly due to the uncertainty as to the number of eye stripes both because of the actual variation and because of apparently different methods of counting.

A third *Eristalodes* was described, after a single male, by NAYAR (1967b) as *Eristalis santhoshi*, but we are not convinced of its specific status.

BRUNETTI (1923) reported *orientalis* from various Himalayan localities (up to 2300 m). COE (1965) mentioned *paria* from East Nepal, where its highest locality is at an elevation of almost 3400 m. NAYAR (1967b) reported *orientalis* from the Punjab Himalaya, where it should occur almost at the same localities as *santhoshi*.

(12) *Eristalis (Lathyrrophthalmus) arvorum* (Fabricius, 1787)

Chauni (1400 m), 1 ♂, 5 ♀, 11—14.IX.1972; 1 ♂, 27.IX/5.X.1972; Taudaha (1300 m), 1 ♂, 1 ♀, 3.X.1972.

This species is widespread in the Oriental Region and common on the Indian Subcontinent. From East Nepal and Kathmandu (320—2000 m) it has been recorded by COE (1965). At least in the post monsoon period it apparently represents an important item in the diet of the dragonfly *Orthetrum sabina* (Drury).

(13) *Eristalis (Lathyrophthalmus) quinquestriatus* (Fabricius, 1794)

Chauni (1400 m), 2 ♂, 1 ♀, 11—14.IX.1972.

Known from various Oriental localities, including the Kumaon, Darjeeling and Assam Himalaya, and a single Nepalese record from the Kathmandu Valley (BRUNETTI, 1923).

(14) *Megaspis (Dolichomerus) crassus* (Fabricius, 1787)

Chauni (1400 m), 1 ♀, 11—14.IX.1972.

This is the first record for Nepal, though the species has been repeatedly reported from various localities in the Himalayan region (up to 1300 m) (BRUNETTI, 1923).

(15) *Megaspis (Megaspis) errans* (Fabricius, 1787)

Chauni (1400 m), 1 ♀, 11—14.IX.1972.

It is very common throughout the East (BRUNETTI, 1923) and was reported by COE (1965) from East Nepal (650 and 2000 m).

(16) *Megaspis (Megaspis) zonata* (Fabricius, 1787)

Chauni (1400 m), 1 ♀, 11—14.IX.1972; 1 ♂, 27.IX/5.X.1972.

This common Oriental species has been recorded from October through February from elevations of nearly up to 2200 m in East Nepal by COE (1965).

PHENOLOGICAL NOTE

Though our small material is by no means representative for the fauna of the Kathmandu Valley, we may mention to have noticed a striking decrease both in number of specimens captured and in number of species encountered from September 11 to October 5. While during the first collecting trips in the Valley (September 11—14) the monsoon was not yet completely over, the humidity of the air in the second period (September 27—October 5) was considerably lower, which may have caused a pronounced difference in abundance of flies on wings (30 specimens of 10 species in the first period, against 15 specimens of 8 species in the second). The intensity of collecting was essentially the same during both periods. As far as we know, no syrphid collections were ever made during the monsoon period in Nepal.

Acknowledgements

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Basing on field studies carried out in the East Pyrenees, the author describes in extenso the ecology and ethology of European *Calopteryx* species. Behaviour is dominated by optical orientation. Postmetabolic maturation takes 10 days. During this time the imagines form social groups and show a light compass reaction for orientation. Mature males occupy territories which are defended against conspecific males. The boundaries are marked optically by a territorial flight. Once occupied, they are maintained for some time. A specific prelude to courtships, including display of the coloration of the ventral surface of the last three abdominal segments, display of the egg-laying site, and a courtships flight ("Werbeflug"), precedes mating. The coloration of the "Schlusslicht" and certain phases in the prelude are responsible for species separation. Sperm transfer occurs, contrary to the opinion of BUCHHOLTZ, after tandem formation. Wheel position takes approx. 90 seconds. The male protects the female during oviposition which can occur without and with submersion. Analogies between behaviour of Calopterygidae and vertebrates are discussed. Evolution of the Odonata and the systematical position of the Calopterygoidea are discussed basing on morphological and ethological data. In spite of the too high price the book must be recommended to everyone interested in Odonata. — Gerhard JURZITZA